**From:** Jon Epstein <epstein@ecohealthalliance.org>
**Sent:** Tue, 10 Jan 2017 18:28:08 -0800
**Subject:** Re: That was fun
**To:** "Towner, Jonathan (Jon) (CDC/OID/NCEZID)" <jit8@cdc.gov>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, "ckjohnson@ucdavis.edu" <ckjohnson@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, "Klena, John D. (CDC/OID/NCEZID)" <irc4@cdc.gov>, "Nichol, Stuart T. (CDC/OID/NCEZID)" <stn1@cdc.gov>

Hi Jon and all,
I wholeheartedly agree. It was a very productive meeting and really great to get to spend time together and talk science!
Thanks to you, John, and Stuart for being terrific hosts. Looking forward to speaking again soon.

Cheers,
Jon

P.S. Having just caught up with my colleagues who nearly became permanent residents of Atlanta, I was happy to have jumped on the earlier flight!

On Tue, Jan 10, 2017 at 4:00 PM, Towner, Jonathan (Jon) (CDC/OID/NCEZID) <jit8@cdc.gov> wrote:

Hi Folks,

Before we get any further from our visit last week I just wanted to reach out and say thanks again for making your way to Atlanta, we really enjoyed the visit, particularly the productive and open conversations. We definitely want to keep the lines of direct communication going! I trust that you all got back safely despite the threats of nasty weather here, and that for those of you out west, you're keeping dry☺

Cheers,

Jon

--

**Jonathan H. Epstein DVM, MPH**

*Vice President for Science and Outreach*

EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

1.212.380.4467 (direct)
REDACTED (mobile)

web: ecohealthalliance.org

Twitter: @epstein_jon

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

**Sent:** Sun, 30 Apr 2017 20:53:57 -0700
**Subject:** PREDICT Discussion
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Sara Heydari <sheydari@usaid.gov>
**Cc:** Jon Epstein <epstein@ecohealthalliance.org>, "predict@ucdavis.edu" <predict@ucdavis.edu>, PREDICTMGT <predictmgt@usaid.gov>, rajesh bhatia [redacted] Manish Kakkar <manish.kakkar@phfi.org>, Tapan Dhole [redacted] Debapriyo Chakraborty <chakraborty@ecohealthalliance.org>

Dear Sara,
Thank you very much for meeting with us this morning. It was excellent to connect and discuss the path toward full implementation. We appreciate your guidance and support. Of course, consistent with interactions to date, the team will keep you well informed of progress. Hopefully approvals for all work will be received soon, and we can into full training, sampling, testing, and risk identification mode.
Have a nice day,
Jonna

Jonna AK Mazet, DVM, MPVM, PhD
Professor of Epidemiology & Disease Ecology
Executive Director, One Health Institute
Global Director, PREDICT Project of USAID Emerging Pandemic Threats Program

School of Veterinary Medicine
University of California
1089 Veterinary Medicine Drive
Davis, CA 95616, USA
+1-530-752-3630
onehealthinstitute.net

For scheduling and logistical issues, please contact:
Ms. Liz Chase
eschase@ucdavis.edu
+1-530-752-3630

On Fri, Apr 14, 2017 at 3:15 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Dear Sara,
Thank you for your concurrence on my travel to meet with our (Predict's) India team. I also look very much forward to meeting with you at the mission on Monday, May 1st. What time do you normally start your work day there? Would it be possible to get on your calendars early, as I have an international flight that departs at 1:15 pm?
If appropriate from your end, I would like to bring Rajesh Bhatia and Debapriyo "Debo" Chakraborty with me to our meeting. I believe you are acquainted with both of them.

Please let me know if you would like any other information in advance and if you would like a formal presentation or a more casual out-brief.

Also a small request for a recommendation: can you suggest the most convenient hotel to the mission? We have identified the Shangri-La's Eros Hotel and The Claridges, but I wonder if you can endorse one of these or give us a better suggestion.

Thank you again and looking forward to being with you,
Jonna

Jonna AK Mazet, DVM, MPVM, PhD
Professor of Epidemiology & Disease Ecology
Executive Director, One Health Institute
Global Director, PREDICT Project of USAID Emerging Pandemic Threats Program

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For scheduling and logistical issues, please contact:
Ms. Liz Chase
eschase@ucdavis.edu

+1-530-752-3630

**From:** Sara Heydari [mailto:sheydari@usaid.gov]
**Sent:** Thursday, April 06, 2017 7:41 PM
**To:** Cassandra Louis Duthil
**Cc:** Daniel Schar; Damrongwatanapokin, Sudarat (RDMA/OPH); Angela Wang; Andrew Clements; Alisa Pereira; Katie Leasure; Elizabeth Leasure; David John Wolking; Xerses Sidhwa; Marietou Satin
**Subject:** Re: PREDICT International Travel Requests

Hi Casandra and Katie-

Thank you for providing more information on the scope of Dr. Mazets visit to India. We would be interested in an out-brief at the mission on Monday May 1st.

Thanks,

Sara

**From:** Peter Daszak <daszak@ecohealthalliance.org>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** David J Wolking <djwolking@ucdavis.edu>, Elizabeth Leasure <ealeasure@ucdavis.edu>, Alison Andre <andre@ecohealthalliance.org>, "Evelyn Luciano" <luciano@ecohealthalliance.org>
**Subject:** RE: 2 papers from Zhengli that I probably should cite PREDICT for..
**Sent:** Wed, 10 May 2017 17:12:17 +0000

Good point re. P1 vs. P2 – I'll check and let you know....

Cheers,

Peter

**Peter Daszak**
*President*

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+1.212.380.4465 (fax)
www.ecohealthalliance.org

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**From:** [redacted] **On Behalf Of** Jonna Mazet
**Sent:** Tuesday, May 9, 2017 7:22 PM
**To:** Peter Daszak
**Cc:** David J Wolking; Elizabeth Leasure; Alison Andre; Evelyn Luciano
**Subject:** Re: 2 papers from Zhengli that I probably should cite PREDICT for..

Agree on both -- first using the Predict-adjacent wording with "benefitted from the ....of USAID PREDICT." Sounds like the other is a direct Predict acknowledgement. Are those viruses from P-1? If so, great. If P-2, I don't think they're cleared for release, so we'd need to handle that process ASAP before the pub comes out.
Congrats,
J

On Tue, May 9, 2017 at 9:49 AM, Peter Daszak <daszak@ecohealthalliance.org> wrote:
Hi Jonna,

Zhengli's cranking out great results again and has 2 drafts that I am editing right now. Either of these will make some news, and I want to be careful that we get ahead of the curve and have PREDICT acknowledged in the right way.

The first one is from sampling under the NIAID project, hummingbird IRB, and shows that 6/400 or so people have bat SARS-like CoV antibodies. Conclusion is that SL-CoVs from bats are spilling over into people in China, and therefore there is a risk of another SARS-like pandemic. The samples are not collected under PREDICT, but I'd like to acknowledge both NIAID and PREDICT as funding my involvement, e.g. the PREDICT funds could cover my helping draft the ms…

The second one shows that a pig CoV closely related to a known bat CoV is involved in pig die-offs in China. There are some PREDICT and NIAID samples from bats that were sequenced and used in the phylogeny of this pig virus. I think that makes it a direct PREDICT acknowledgement?

What do you think?

Cheers,

Peter

**Peter Daszak**
*President*

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www.ecohealthalliance.org

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Karen L Wood <klwood@ucdavis.edu>
**CC:** Jonna Mazet <jkmazet@ucdavis.edu>;David John Wolking <djwolking@ucdavis.edu>;Kidan Araya <karaya@ucdavis.edu>
**Sent:** 11/9/2017 1:48:50 AM
**Subject:** Re: PREDICT-2 Equipment Request - 10.23.2017

Hi Karen,

The equipment requests for Tanzania (2), Rwanda, and Cambodia are approved.

(UCD requests to be considered separately by the AO.)

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Oct 23, 2017, at 6:28 PM, Karen L Wood <klwood@ucdavis.edu> wrote:

Good morning, Andrew –

Please find attached a request for approval to purchase equipment. Detailed justification for each item, as well as accompanying quotes from vendors, are included. Please don't hesitate to contact me should you require any additional information.

Best,

Best,
Karen
~~~~~~~~~~~~~~~~~~~~~~~~~~
Karen Wood
One Health Institute
University of California, Davis
530.754.9034
~~~~~~~~~~~~~~~~~~~~~~~~~~

**From:** "William B. Karesh" <karesh@ecohealthalliance.org>
**To:** Andrew Clements <aclements@usaid.gov>
**Cc:** Patrick Dawson <dawson@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>, "djwolking@ucdavis.edu" <djwolking@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>, "predictmgt@usaid.gov" <predictmgt@usaid.gov>
**Subject:** Re: VIP visit Jordan
**Sent:** Thu, 15 Feb 2018 14:42:15 +0000

Thanks!! Very nice to hear.
BK

Sent from my iPhone
**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

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President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

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On Feb 15, 2018, at 4:33 AM, Andrew Clements <aclements@usaid.gov> wrote:

FYI. Good feedback.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** Amy Kay <akay@usaid.gov>
**Date:** February 15, 2018 at 10:01:17 AM GMT+1
**To:** Ashna Kibria <akibria@usaid.gov>
**Cc:** Andrew Clements <aclements@usaid.gov>
**Subject: Re: VIP visit Jordan**

Hi Andrew and Ashna,
I'm here in Amman and the report out from the PREDICT site visit was that it went very well!
Nancy Eslick is the Acting Mission Director.

Thanks,
Amy

On Fri, Feb 9, 2018 at 6:17 PM, Ashna Kibria <akibria@usaid.gov> wrote:

thanks for this info!

On Fri, Feb 9, 2018 at 3:48 AM, Andrew Clements <aclements@usaid.gov> wrote:

FYI

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** "William B. Karesh" <karesh@ecohealthalliance.org>
**Date:** February 9, 2018 at 12:50:32 AM GMT+1
**To:** "predict@UCDAVIS.EDU" <predict@UCDAVIS.EDU>, "predictmgt@usaid.gov" <predictmgt@usaid.gov>
**Cc:** Patrick Dawson <dawson@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>
**Subject: Fwd: VIP visit Jordan**

FYI, from out Jordan Country Coordinator.
BK

Sent from my iPhone
**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

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EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

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Begin forwarded message:

**From:** Ehab Abu-Basha <abubasha@just.edu.jo>
**Date:** February 8, 2018 at 5:47:53 PM EST
**To:** Patrick Dawson <dawson@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>, Molly Turner <turner@ecohealthalliance.org>, "William B. Karesh" <karesh@ecohealthalliance.org>
**Subject: VIP visit**

Hi All,

I just wanted to let you know that we will have a VIP visit from the USAID new mission Director to PREDICT team and we will have a site trip to Ajloun site. We did a "dry run" visit to the site today with Myasa and her new deputy director and another staff member from USAID to prepare for the mission Director visit next coming Sunday. This is an important visit since the mission director is interested to see and lean more about PREDICT project.

We prepared everything and logistics for this visit and I will let you know the outcomes.

Yours,

Ehab

Ehab Abu-Basha, DVM, MSc., Ph.D
Faculty of Veterinary Medicine
Jordan University of Science and Technology

REDACTED

--
You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
To unsubscribe from this group and stop receiving emails from it, send an email to predictmgt+unsubscribe@usaid.gov.
To post to this group, send email to predictmgt@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/0DEA1D77-156C-44C0-9646-085C332495CE%40ecohealthalliance.org

--
**Ashna Kibria, MPH**

Public Health Advisor
Emerging Threats Division
USAID/Washington, Bureau for Global Health
Phone: 202.712.1210 (office) | 571.213.6982 (cell)
Email: akbria@usaid.gov

--
Amy Kay | Senior Health Advisor | GHFP | Middle East Bureau | USAID | 1300 Pennsylvania Ave. NW, Washington, D.C. | 4.9.55 | 202-712-1067 | akay@usaid.gov

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Christine Kreuder Johnson <ckjohnson@ucdavis.edu>
**CC:** predictmgt@usaid.gov <predictmgt@usaid.gov>;djwolking@ucdavis.edu <djwolking@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;Tracey Goldstein <tgoldstein@ucdavis.edu>
**Sent:** 3/11/2020 6:50:34 AM
**Subject:** Re: Need input on human COVID-19 testing for Hill briefing tomorrow

I haven't told the missions yet about the extension. Expect to do that today or tomorrow. Will let you know when I do.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Mar 11, 2020, at 2:47 PM, Andrew Clements <aclements@usaid.gov> wrote:

Hi Chris,

We have a Hill briefing tomorrow and need additional detail on the testing of suspected human cases under the new P2 extension. Can you provide more information on what the assistance will include?

I imagine it will include technical and possibly commodity (e.g. primers, reagents, PPE for lab staff) assistance. Any expected equipment needs? Any other categories of assistance?

Thanks!

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** Evelyn Luciano <luciano@ecohealthalliance.org>
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**CC:** Peter Daszak <daszak@ecohealthalliance.org>;David John Wolking <djwolking@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;Molly Turner <turner@ecohealthalliance.org>;Emma Lane <lane@ecohealthalliance.org>
**Sent:** 1/6/2017 10:38:30 AM
**Subject:** Re: Workplan etc. for the $200K from PREDICT for "IDEEAL-like activities in Indonesia"

Hi Liz,

Please find a revised workplan and budget for the IDEEAL work in Indonesia. Apologies for the delay in sending this to you.

If you have any questions, please let me know.

Thanks. And Happy New Year!

Stay well,

Evelyn

**PREDICT-2 IDEEAL Indonesia Workplan**

**Introduction**

Kalimantan (Indonesian Borneo) and the island of Sumatra are home to pristine and biodiverse forests, many of which have now been lost to intensive land degradation and land use development including rubber and oil palm plantations. At the same time, Indonesia is one of countries with the largest increase in forest loss between 2000 to 2013, with the highest rate of 20,000 $km^2$/year between 2011 to 2012. Recently, Indonesia has come under scrutiny for massive peatland fires, which had profound health, economic, and environmental impacts. Our cost-benefit analysis comparing costs and benefits of avoiding deforestation due to palm oil expansion in neighboring Sabah (Malaysia) found that, once human health (specifically cost of malaria treatment) and ecosystem services costs were included, the region has already converted too much land, too quickly, and potentially in the wrong places, resulting in overall economic loss. Expanding this model to Indonesia (i.e. Kalimantan and Sumatra) is a natural extension of the current model, as these areas are also sites of significant development driven by the global demand for palm oil.

**Workplan**

The EHA IDEEAL team will work with INDOHUN team, One Health Workforce (OHW), and PREDICT Indonesia team to expand the current IDEEAL model to Indonesia, specifically Sumatra and Kalimantan, and to further promote the model as a development decision-making tool, engaging local communities and building scientific capacity. This partnership will leverage EcoHealth Alliance IDEEAL team's technical expertise and working knowledge of Borneo, as well as INDOHUN's and the PREDICT Indonesia's team experience conducting work in the region.

The close proximity of Sabah and East Kalimantan allows for a natural expansion of the project into Indonesia. Both regions share similar ecological attributes which means that the wildlife, and the diseases that are linked to land use change are probably very similar and overlapping. Furthermore, many of the same palm oil corporations have operations in both Malaysian and Indonesia. Due to this close connection, the EHA team will lead the initial expansion and data collection into Kalimantan and Sumatra, with support from INDOHUN. This will allow EHA staff to model the health and economic impacts of deforestation due to the expansion of palm oil across all of Borneo.

EHA will meet with the INDOHUN/OWH team initially via teleconference to coordinate efforts and maximize resources. EHA will travel to Jakarta to meet with the Department of Forestry, and the Department of Health, Primate Research Center at Bogor Agricultural University, and other relevant parties to identify and obtain infectious disease health data, land use and land cover change data for Indonesia and to identify concerns of particular interest to the government (e.g. targeted infectious diseases).

During this visit, the team will also provide in-person technical guidance and training on data acquisition and data cleaning needed to inform the spatial analysis and economic modeling activities and to discuss ways to build student capacity and involve the OHW.

UCDUSR0005318

Team members will also work with INDOHUN and PREDICT Indonesia team to identify staff that can work with EHA to collect datasets, and to identify local NGOs that can work with the team to adapt and disseminate the IDEEAL toolkit. In addition, the EHA team will perform extensive literature review and gather relevant publically available remote sensing and other spatial and economic data sets. To ensure cross-collaboration, monthly calls between the team in Indonesia, Malaysia, and EHA New York will be scheduled.

The initial scoping visit to Jakarta will be followed up by a field site visit to either Riau or Kalimantan. During this visit, the team will engage with local health departments and hospitals to assess the quality of and begin collection of infectious disease health data and statistics, as well as local land use and land cover data where available. The team will also work to engage local stakeholders and communities in the work and assess local interest in the project and begin to organize the community outreach portion of the project.

During a second visit to the region, the EHA team will continue to build relationships with local partners, provide technical training to students and staff (e.g. R workshops), and work to implement the economic and spatial analysis for Indonesia, including estimation of deforestation rates, costs of malaria treatment and the economic cost of health and ecosystem services. The team will also train facilitators to disseminate the IDEEAL toolkit to communities in Kalimantan, and conduct field visits to communities to disseminate the toolkit. The EHA team will also provide support for toolkit dissemination in Sumatra, as needed.

The EHA team will also travel to the Eastern Economic Association meeting in February 2017 and the United States Society for Ecological Economics conference in July 2017 to present results and current progress from the IDEEAL model. Presenting at economic conferences will allow for increased recognition of IDEEAL modeling, as many past presentations have been at ecology and health conferences.

This work will allow for the development of an economic models valuing health and ecosystem services costs of palm oil in Borneo and Sumatra, increased research capacity of local teams, and strengthen community and partner knowledge on One Health, specifically the links between health and land use change.

**M&E Indicators**
Strategic Objective: To implement quantitative models and build multisector partnerships around the economics of altered landscapes and infectious disease emergence so as to contribute to sustainable land-use decision-making.

**Objective 1:** Increased access to resources considering health and ecosystem services data in land use planning

- Output 1.1: Datasets acquired, cleaned and formatted
  - Output Indicator 1.1.a: Number of land use/land cover datasets acquired
  - Output Indicator 1.1.b: Amount of health data on malaria cases from Kalimantan and Sumatra collected

- Output Indicator 1.1.c: Healthcare cost data for Indonesia collected and cleaned

- Output 1.2: Economic and spatial modeling refined
  - Output Indicator 1.2.a: Spatial model on palm oil suitability expanded to Kalimantan
  - Output Indicator 1.2.b: Economic equilibrium model expanded to include Indonesian data

**Objective 2**: Increased knowledge of disease and land use issues and incorporation of health into land-use planning

- Output 2.1: Health and Land Use Change Toolkit Disseminated to partners
  - Output Indicator: 2.1.a: Number of communities reached by the IDEEAL toolkit
  - Output Indicator 2.1.b: Number of facilitators trained on information dissemination
  - Output Indicator 2.1.c: IDEEAL toolkit adapted for Indonesian context

**Objective 3**: Strengthened capacity for data analysis, information dissemination and evidence-based planning among local partners

- Output 3.1: Local partners trained on economics and land use issues
  - Output Indicator 3.1.a: Number of stakeholder groups engaged in the project
  - Output Indicator 3.1.b: Number of meeting with local governments, private sector, and NGOs to raise awareness about the project
  - Output Indicator 3.1.c: Number of students trained in data collection and data cleaning for the project

**Budget**:

Travel:

Q1 & Q3: Trip to Jakarta for EHA team (Carlos, Erica, Allison, Yasha) plus trip to proposed field sites to meet with stakeholders (entire team, or different team members going to different sites?) [Note: Q3 trip will ideally include toolkit training and presentation]

+Travel to Jakarta (~1 week in Jakarta)

+Travel from Jakarta to Riau and/or Kalimantan (can a trip to Kalimantan be combined with other existing trips to Sabah for other projects?) (~1 week in the field)

Q1 & Q3: Travel to economics conferences for science staff

Staff:

Yasha Feferholtz (Economic Modeler): 20%
Carlos Zambrana-Torrelio (Senior Modeler): 12%
Allison White (Community Engagement Coordinator): 20%
Erica Johnson (Spatial Modeler): 20%
Emma Lane (Program Asst.): 15%

Supplies:

- Printing, photocopying, internet in the field
- Projector
- Toolkit training workshop supplies (e.g. markers, paper, notebooks)

Conference fees:

- Eastern Economic Association (EEA), New York, New York
- United States Society for Ecological Economics (USSEE), St. Paul, Minnesota

Sub-award and Consultancies:

- Sub-award to Conservation Medicine
- 2 Consultancies for toolkit training, adaptation, and dissemination:
    - 1 NGO/CBO in Kalimantan
    - 1 NGO/CBO in Sumatra

**From:** Karen Saylors <ksaylors@metabiota.com>
**To:** Alisa Pereira <apereira@usaid.gov>, Eddy Rubin <erubin@metabiota.com>, Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** "Andrew (GH/HIDN) Clements" <AClements@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, "kchittenden@usaid.gov" <kchittenden@usaid.gov>, "cchrisman@usaid.gov" <cchrisman@usaid.gov>, "alongwagar@usaid.gov" <alongwagar@usaid.gov>
**Subject:** Re: LN2 machine in Makeni
**Sent:** Sat, 14 Jan 2017 01:40:39 +0000

We definitely will keep you updated Alisa. Thank you for all your guidance and support.
Best wishes,
Karen

---

**From:** Alisa Pereira <apereira@usaid.gov>
**Date:** Friday, January 13, 2017 at 5:37 PM
**To:** Karen Saylors <ksaylors@metabiota.com>, Eddy Rubin <erubin@metabiota.com>, Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** "Andrew (GH/HIDN) Clements" <AClements@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, "kchittenden@usaid.gov" <kchittenden@usaid.gov>, "cchrisman@usaid.gov" <cchrisman@usaid.gov>, "alongwagar@usaid.gov" <alongwagar@usaid.gov>
**Subject:** Re: LN2 machine in Makeni

Thank you, Karen.

The machine being purchased with non USAID funds does not need any approval from our side, but we would appreciate being kept in the loop since it impacts the overall implementation of predict activities.

Thank you again.
Alisa

Sent from my iPhone

On Jan 13, 2017, at 8:26 PM, Karen Saylors <ksaylors@metabiota.com> wrote:

Hello Jonna, Alisa, Kendra and Saad,
We have received final confirmation from USAID that the Liquid Nitrogen plant is being relocated to Ghana, and Metabiota is moving on our commitment to purchase a new LN2 plant from Metabiota overhead. Please pardon our delay in writing to you, but I needed to discuss some of the interim details with our PREDICT Country Coordinator, Professor Gbakima, with whom I believe you recently met, Kendra.

–We have assurance that until the new machine arrives and is installed in Makeni, we can continue to get LN2 from CDC Njala. The LN2 machine that we have been accessing there produces only 15 liters of LN, but from recent conversations with Jonna and her team, it seems there may be increased capacity there, so Njala remains a stable source of LN2 to continue to fill our dry shippers.
—We have obtained quotes and PREDICT has already paid Stirling Cryogenics for installation, training and 2 years of maintenance for an instrument to be located at Makeni. From our experience Stirling is the distributor that offers the best service in Africa. We will move ahead with ordering the machine as soon as we get sign-off from USAID on this plan, and will keep the team apprised on the timeline for shipping, customs clearance, transportation to Makeni, and installation, as soon as we have those details.
—Regarding other EPT partners, our Sierra Leone PREDICT team has been supporting FAO with training and implementation advice and we have extended office space to them in Freetown. We do not have visibility on FAO's sampling plans, but once this LN2 machine is functional, we will coordinate with them on LN2 to support EPT work. Prof Gbakima plans to discuss their timeline and needs with Tesfai when he returns to the country.
– In addition, the Ministry of Health and Sanitation are expecting to get LN2 from this plant at Makeni, a commitment that will be respected.

I apologize for the miscommunication around this Liquid Nitrogen plant issue and please accept our commitment to following through quickly and with full transparency on the plan and timeline once finalized.

Sincerely,
Karen

Karen Saylors, Ph.D.

Vice President, Field Research| Metabiota
Director of Scientific Operations, Metabiota, PREDICT Consortium
Deputy Director, PREDICT Behavioral Surveillance
425 California Street, San Francisco, CA 94104
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**From:** Brian Bird <bhbird@ucdavis.edu>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>; Tracey Goldstein <tgoldstein@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@ucdavis.edu>; Jon Epstein <epstein@ecohealthalliance.org>
**Sent:** 1/17/2017 4:12:14 PM
**Subject:** My notes from the CDC trip

Hey folks,

Here were the main points and action items I have from my notes from the trip to Atlanta. They aren't in any particular order except as how they appeared chronologically. Can you each take a bit of time and look through these and see if my memory of them fits with what you remember? Quite possible I missed some of the things or got the exact details wrong for what we discussed and offered to the folks there, so I want to have this vetted a bit between us before we share back with them. Then we can reconcile our collective memories of the visit and make more definite plans of action. Kiena is doing the same process on their side as well.

-b

Notes from the CDC VSPB – UCDavis – EcoHealth Visit:

1. Bangladesh: Possible collaboration to further investigate IgM+ Nipah case specimens and those cross reactive for both hendra/nipah for virus isolation attempts at CDC?
2. Outbreak response general activities: Look into feasibility of utilizing PREDICT field teams for animal surveillance activities is interesting clusters of cases pop-up and warrant further investigation in areas where difficult for VSPB to work.
3. ASIA: Possible avenue for collaboration using Nepal-India-Bangladesh livestock transit corridor as a model of CCHFV translocation/surveillance?
4. CDC LAB: Sharing of pan-Rabies virus qRT-PCR assay (LRN assay? Mentioned by Dr. Damon) with PREDICT team.
5. Workforce Uganda: New UWA lab being built. UCD to share list of One-Health workforce students trained as lab/field staff to potentially work in the new lab.
6. Uganda: VSPB offered to run specimens from Tierra Kelley's study on their filovirus serology assays to help sort out the western-blot serology in that paper if it continues to have challenges in getting accepted. Will use bank of Tanzania human sera as a negative control panel (see #10 below).
7. Tanzania: VSPB offer to run human RVFV IgM and IgG serology from the R&B project and other VHFs on specimens from the VISHA project;
8. Tanzania: VSPB to share Sosuga reagents to test interesting possible paramyxovirus positive cases. VSPB interested in virus isolation from positive RVFV or other VHF specimens.
9. Tanzania: UCD to work out shipping needs/requirements from TZ.
10. Tanzania: UCD to provide these sera above as a bank of human sera (presumably filovirus negative) to serve as bank of "sticky" African sera as a reagent for further VHF diagnostics development.
11. PREDICT Ebola host project: VSPB offer to consider providing additional reagent (lysates) for serologic testing to support that activity (discussion led by Pierre).
12. PREDICT One-Health Lab: UCD to share Tracey and Simon's protocols and controls for the multi-family RT-cPCR assays, and their improved filovirus assay with VSPB diagnostics.
13. Sierra Leone: VSPB offer to share LN2 plant for cold-chain in support of ebola surveillance activities in-country. PREDICT to pay maintenance or service contract/operating expenses. Plan to keep plant at Njala University under care of Dr. Lebby with PREDICT using multiple dewars to stockpile LN2 when/where needed.
14. Sierra Leone: UCD to share our financial management/tracking tools to see if those are helpful in managing CDC CoAg in Salone.
15. Generally, both sides open to investigating how UCD and VSPB can partner in future activities/grants /proposals and interesting ideas come about and are feasible.

-b

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Jon Epstein <epstein@ecohealthalliance.org>;Jonna Mazet <jkmazet@ucdavis.edu>
**Sent:** 1/19/2017 3:12:00 AM
**Subject:** Fwd: PRO/AH/EDR> Avian influenza (22): India, HPAI H5N1

FYI because of recent crow die-offs in Bangladesh. Orissa outbreaks were H5N1 but all other recent ones in India have been H5N8.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** promed-edr@promedmail.org
**Date:** January 18, 2017 at 11:46:45 PM GMT+1
**To:** promed-post@promedmail.org, promed-edr-post@promedmail.org, promed-ahead-post@promedmail.org
**Subject: PRO/AH/EDR> Avian influenza (22): India, HPAI H5N1**
**Reply-To:** promedNOREPLY@promedmail.org

AVIAN INFLUENZA (22): INDIA, HPAI H5N1
**********
A ProMED-mail post
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International Society for Infectious Diseases
<http://www.isid.org>

In this report:
[1] Gujarat, India
[2] Odisha, India

******
[1] Gujarat, India
Date: Fri 13 Jan 2017, 5:57 PM IST
Source: Business Standard , Press Trust of India (PTI) [edited]
<http://www.business-standard.com/article/pti-stories/over-150-birds-culled-after-being-detected-with-bird-flu-117011300891_1.html>

As many as 159 birds, mostly guinea fowl, kept at an animal care centre in Memnagar area in the heart of the city, have been culled after some of them, brought here recently, were found to be infected with avian influenza, commonly known as bird flu.

"A team of Animal Husbandry department culled 159 birds, mostly guinea fowls and some ducks, at the rescue centre in Memnagar area. Culling was done after samples of some guinea fowls tested positive for H5N1

avian influenza virus," said an official of district bird flu control room.

After the culling operation carried out at the centre run by "Sarva Dharma Rakshak Seva Trust", and to stop the bird flu from spreading, the city police issued a notification declaring the 1 km [approx 0.62 mi] area surrounding the centre as "Affected Zone" while 10 km [approx 6.2 mi] area has been declared as "Alert Zone".

With this order, people are barred from taking out any birds, eggs or any machinery outside the farm. In addition, people are prohibited from going inside the farm. Police have also banned the sale and consumption of poultry products in 10 km [approx 6.2 mi] area.

On 4 Jan 2017, over 1400 birds kept at a rescue centre run by Asha Foundation in Hathijan area on the outskirts of the city, were culled after authorities found symptoms of bird flu in 7 guinea fowl, which had died under mysterious circumstances.

Earlier on 2 Jan 2017, residents living near Vastral area caught a truck driver when he was off-loading over 800 guinea fowl near SP Ring Road. While 700 of these poultry birds were taken to Asha Foundation, around 150 were sent to Meenagar based rescue centre.

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communicated by:
ProMED-mail
<promed@promedmail.org>

******
[2] Odisha, India
Date: Sun 15 Jan 2017
Source: Odisha Sun Times [edited]
<http://odishasuntimes.com/2017/01/15/bird-flu-in-odisha-capital-as-crows-test-positive-for-h5n1/>

The deadly H5N1 virus has appeared in Odisha capital [Bhubaneswar] as blood samples of dead crows have tested positive for the avian influenza [virus]. The samples were sent to the National Institute of High Security Animal Diseases (NIHSAD), Bhopal. Around 53 crows were found dead in Bhubaneswar in the last 2 weeks following which blood samples of some crows and poultry were sent to NIHSAD for H5N1 test.

However, chicken sample test reports have not come yet and there is no evidence of suspected death of chickens. Therefore, denizens of Bhubaneswar can eat chicken and egg without any hesitation, informed an official of Fisheries and Animal Resources Development Department (FARDD), Odisha.

According to a senior official of FARDD, blood samples of dead crows sent from Panposh in Sundargarh district, Saliasahi in Bhubaneswar and ward no 2 in Baripada Municipal Corporation, were confirmed for bird flu (H5N1) virus. Test reports of chicken and cranes have not come

yet.

The state Housing and Urban Development (H&UD) department has issued a notification to take precautionary measures after bird flu was confirmed in Sundargarh, Bhubaneswar and Baripada. It has directed to burn carcass of crows and cranes found in the state and to administer preventive vaccine to poultry. Besides, it has asked to send blood samples of crows and cranes to the Animal Disease Research Institute at Phulnakhara on the outskirts of Odisha capital keeping the local veterinary doctor informed.

"No chicken has been detected with bird flu in Bhubaneswar and we have not received death case of any chicken in the city," said Bhubaneswar sub-divisional veterinary officer Dr Balaram Saha. "We are administering preventive vaccine to chickens as a precautionary measure and to date, 5000 chickens have been vaccinated," he added.

--
communicated by:
ProMED-mail from HealthMap Alerts
<promed@promedmail.org>

[In 2016, 3 outbreaks of HPAI H5N1 were detected in India, in poultry farms in January and May, and in crows in December (in Odisha). Since November 2016, also subtype H5N8 has been reported in India. - Mod.PMB

A HealthMap/ProMED-mail map can be accessed at:
<http://healthmap.org/promed/p/142>.]

[See Also:
2016
---
Avian influenza (150): India (OR) HPAI H5N1, poultry, wild birds, OIE
http://promedmail.org/post/20161229.4729418
Avian influenza (97): India (Punjab) poultry, H5N8, spread, OIE
http://promedmail.org/post/20161111.4621355
Avian influenza (94): India (HR) poultry, H5N8, spread, OIE
http://promedmail.org/post/20161110.4617396
Avian influenza (93): Switzerland, Austria, wildfowl, H5N8, Croatia, susp, RFI http://promedmail.org/post/20161110.4618279
Avian influenza (92): Germany (SH) wild birds, H5N8, 1st cases
http://promedmail.org/post/20161109.4617139
Avian influenza (91): Poland (ZP) wild, H5N8, OIE
http://promedmail.org/post/20161108.4614616
Avian influenza (90): India (KL) poultry, H5N8, OIE, (HR) poultry, susp, RFI http://promedmail.org/post/20161105.4609424
Avian influenza (89): Hungary (BE,CS) poultry, wild bird, HPAI H5N8, OIE http://promedmail.org/post/20161104.4608240
Avian influenza (86): India (KL) poultry, H5N8, 1st outbreak, RFI
http://promedmail.org/post/20161028.4591328
Avian influenza (82): India, Delhi zoo, H5N8, NOT H5N1
http://promedmail.org/post/20161021.4576300
Avian influenza (81): H5N1, India, Delhi zoo

http://promedmail.org/post/20161020.4573601
Avian influenza (42): India (KA) HPAI H5N1, poultry, OIE
http://promedmail.org/post/20160513.4218976
Avian influenza (41): India (KA) HPAI H5N1, poultry
http://promedmail.org/post/20160509.4210295
Avian influenza (13): India (TR) HPAI H5N1, poultry, OIE
http://promedmail.org/post/20160121.3952808
2015
---
Undiagnosed die-off, avian - India: (OR) multiple species, RFI
http://promedmail.org/post/20151214.3861360
Avian influenza (118): India (TG) HPAI, poultry, susp, RFI
http://promedmail.org/post/20150509.3351587
Avian influenza (107): India (MN) HPAI H5N1, poultry, susp, RFI
http://promedmail.org/post/20150502.3337773
Avian influenza (81): India (TG) HPAI H5N1, poultry, spread
http://promedmail.org/post/20150414.3297244
Avian influenza (53): India (Uttar Pradesh) HPAI H5N1, OIE, RFI
http://promedmail.org/post/20150319.3241127
Avian influenza (28): India (KL) HPAI H5N1, turkey, OIE
http://promedmail.org/post/20150130.3130964
2014
---
Avian influenza, human (128): India (CH,UP) H5N1, susp
http://promedmail.org/post/20141223.3051376
Avian influenza (113): India (CH) H5N1, ducks, OIE, RFI
http://promedmail.org/post/20141219.3043523
Avian influenza (96): India (KL) H5N1, ducks, OIE
http://promedmail.org/post/20141125.2989239
Avian influenza (95): India (KL) poultry HPAI H5, RFI
http://promedmail.org/post/20141125.2989067
Undiagnosed die-off, avian - India: (MH) heron
http://promedmail.org/post/20140403.2378210
Avian influenza (27): India (OR) H5N1, crow, OIE
http://promedmail.org/post/20140221.2293254
2013
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Avian influenza (81): India (CT) H5N1, poultry, OIE
http://promedmail.org/post/20130806.1866838
Avian influenza (20): India (BR) H5N1, poultry, OIE
http://promedmail.org/post/20130311.1581271
Avian influenza (16): India (OR) wild birds, susp
http://promedmail.org/post/20130227.1562290
2012
---
Avian influenza (67): India (GJ) follow-up
http://promedmail.org/post/20121210.1444730
Avian influenza (63): India (GJ) follow-up
http://promedmail.org/post/20121206.1440449
Avian influenza (62): India (GJ) wild birds, susp.
http://promedmail.org/post/20121204.1437680
Avian influenza (58): India (KA), H5N1, poultry, OIE
http://promedmail.org/post/20121026.1367316

Avian influenza (16): India (BH) crow, H5N1
http://promedmail.org/post/20120219.1046187
Avian influenza (02): world update, India, Bhutan
http://promedmail.org/post/20120128.1024582
2011
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Avian influenza (76): India (JH) crow, H5N1
http://promedmail.org/post/20111205.3536]
.....sb/prnb/ao/sh

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<postmaster@promedmail.org>.
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**From:** "William B. Karesh" <karesh@ecohealthalliance.org>
**To:** "Kendra (Jakarta/Health) Chittenden" <kchittenden@usaid.gov>
**Cc:** PREDICTMGT <predictmgt@usaid.gov>, Jim Desmond <desmond@ecohealthalliance.org>, Jon Epstein <epstein@ecohealthalliance.org>, Monica Dea <mdea@usaid.gov>, Mildred Howard <mphoward@usaid.gov>, "Louise Flynn REDACTED "predict@ucdavis.edu" <predict@ucdavis.edu>
**Sent:** Tue, 31 Jan 2017 15:20:44 +0000
**Subject:** [predict] Re: Liberia REDISSE workplan
Draft MOH and MOA Workplan BK_JHE (revised 4-Jan-2017 REDISSE.xlsx
ATT00001.htm

HI Kendra,
Attached is the plan with our comments (in blue or green). Primarily we noted where Environ/wildlife expertise and authorities need to be included to achieve One Health goals.

People at the World Bank also asked me to share our comments with them and I am at the Bank today.

**From:** Kendra Chittenden <kchittenden@usaid.gov>
**Sent:** Tue, 31 Jan 2017 13:28:53 -0500
**To:** "William B. Karesh" <karesh@ecohealthalliance.org>
**Cc:** PREDICTMGT <predictmgt@usaid.gov>, Jim Desmond <desmond@ecohealthalliance.org>, Jon Epstein <epstein@ecohealthalliance.org>, Monica Dea <mdea@usaid.gov>, Mildred Howard <mphoward@usaid.gov>, "Louise Flynn [redacted] "predict@ucdavis.edu" <predict@ucdavis.edu>
**Subject:** [predict] Re: Liberia REDISSE workplan

Billy--
thank you very much!!

On Tue, Jan 31, 2017 at 1:20 PM, William B. Karesh <karesh@ecohealthalliance.org> wrote:

> HI Kendra,
> Attached is the plan with our comments (in blue or green). Primarily we noted where Environ/wildlife expertise and authorities need to be included to achieve One Health goals.

People at the World Bank also asked me to share our comments with them and I am at the Bank today.

--

Kendra Chittenden, Ph.D. | Senior Infectious Disease Advisor| USAID | mobile (703-209-5424) KChittenden@usaid.gov

**From:** Megan M Doyle <mmdoyle@ucdavis.edu>
**To:** "predict-surveillance@ucdavis.edu" <predict-surveillance@ucdavis.edu>
**Cc:** William Karesh <karesh@ecohealthalliance.org>, Catherine Machalaba <machalaba@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** PREDICT surveillance team call Thurs, Feb 2nd, 2017 @ 10am PT/1pm ET
**Sent:** Wed, 1 Feb 2017 01:58:27 +0000
PREDICT surveillance status.xlsx
PREDICT_SOP_Providing Assistance During a Disease Outbreak_v.12Dec2016.docx
PREDICT Outbreak Involvement Guidance April 11 2016.pdf
Attachment
Attachment

Hi PREDICT Surveillance Team,

Below please find agenda for our call this **Thurs. Feb 2nd, 2017 @ 10am PT/1pm ET.**

Call in: [redacted] Access code: [redacted]
International Dial-in number: 310-765-4820 (toll charges apply)

**Agenda**
-EIDITH updates
-Government contacts for reporting (Tracey)
-Barcoding (Tracey)
-Revised surveillance status (attached)
-M&E indicators for surveillance
-PREDICT outbreak SOP and guidance review (attached)
-Current outbreaks/AI communications
-GHSA/JEE updates (David)
**-Asia updates/field activities (since we have a full agenda, please feel free to send written updates by Friday, Feb 3rd in lieu of verbal updates, if desired)**

Thank you, talk to you all soon!
Megan

**Megan Doyle**
Research Associate
One Health Institute
UC Davis School of Veterinary Medicine
C: [redacted]
E: mmdoyle@ucdavis.edu
S: megan.m.doyle

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# PREDICT Outbreak Involvement Guidance

During infectious disease outbreaks, PREDICT is sometimes asked by the host government to provide assistance. All involvement in outbreak investigations and responses by PREDICT personnel, using USAID funds, will be considered on a case-by-case basis in consultation with USAID AOR. Said consultation will be made without delay by the PREDICT PI or her designated representative.

When requested to support an outbreak investigation or response, PREDICT personnel (usually Country Coordinator) should rapidly gather as much information about the situation as possible and report this information up the chain to his/her regional lead, who will contact the PREDICT PI or designated representative immediately.

In cases of disease of unknown origin, PREDICT will consider support for governments in response to outbreaks if the following criteria are met:

- Credible threat to human health likely from an infectious cause (based on symptoms) or evidence for multi-species involvement (i.e. host jumping) with associated animal morbidity and mortality
- Evidence of animal origin or involvement in disease dynamics (e.g. animal host is thought to be involved in transmission)

If assistance is offered in these circumstances, PREDICT personnel will endeavor to keep expectations regarding level of involvement and duration of response reasonable, including that assistance may be halted if a non-zoonotic disease cause is identified.

If the cause of disease is reasonably known and the disease is thought to be human-to-human or vector-borne transmitted, PREDICT will likely not actively participate in the investigation or response. However, if requested by the affected country's government for support or by another US government agency, PREDICT will consider providing assistance in consultation with USAID.

In the case of a zoonotic disease outbreak with a diagnosed cause, PREDICT involvement will be determined based on the following stated USAID priorities:

- An epidemic or pandemic is imminent
- Disease is caused by a zoonotic pathogen that is a priority for USAID Emerging Pandemic Threats Program (e.g. filovirus, influenza virus, coronavirus, or henipavirus), especially if there is evidence for multi-species involvement
- PREDICT involvement is reasonably likely to result in information that expands on what is known about a priority disease's transmission dynamics or distribution (geographic or host)
- There is a realistic doubt that the cause of the outbreak has been properly diagnosed, and PREDICT involvement can help to identify the actual cause

In any case, PREDICT's role in an outbreak investigation or response should be primarily advisory to the affected country's government. When requested, we aim to support in areas of technological or knowledge gaps. The expectation for the duration of PREDICT's involvement should never be open-ended, and there should be a defined plan for support based on prioritized needs, identified roles, and anticipated costs. In general, PREDICT's role should be primarily advisory with potential field support only in gap areas, such as identifying animal/environmental exposure risks, or by providing access to alternative laboratory approaches, when the cause of disease is unknown. Specific activities should be proposed and approved on an ongoing basis through the appropriate PREDICT and USAID chain.

USAID | UC DAVIS VETERINARY MEDICINE | WCS | EcoHealth Alliance | METABIOTA

**From:** "Lisa Kramer" <lkramer@usaid.gov>
**Sent:** Tue, 24 Jan 2017 14:01:31 +0300
**Subject:** Influenza A H5N8 Resource Materials
**To:** "msancho@usaid.gov" <msancho@usaid.gov>, mlangalis@usaid.gov, "Kassahun Belay" <kbelay@usaid.gov>, "Yung-Ting Bonnenfant" <ybonnenfant@usaid.gov>, "John Edgar" <jedgar@usaid.gov>, "Joshua Karnes" <jkarnes@usaid.gov>, "Ezra Mwijarubi" <emwijarubi@usaid.gov>, "John Mckay" <jmckay@usaid.gov>, "Richard Munyaneza" <rmunyaneza@usaid.gov>, "Janean Davis" <jdavis@usaid.gov>, "Jean-Felly Numbi" <jnumbi@usaid.gov>, "Karen Koprince" <kkoprince@usaid.gov>, "GHSD Unit Mail List (USAID)" <ghsdunitmaillistusaid@usaid.gov>, "Morzaria, Subhash (FAORAP)" <[redacted]>, "Makonnen, Yilma (FAORNE)" <[redacted]>, "Gwenaelle Dauphin" <[redacted]>, "Kivaria, Fredrick (FAOUG)" <[redacted]>, "Fasina, Folorunso (FAOKE)" <[redacted]>, "Tadesse, Zelalem (FAOTZ)" <[redacted]>, "scott newman" <[redacted]>, "Jonna Mazet" <jkmazet@ucdavis.edu>, "Christine Kreuder Johnson" <ckjohnson@ucdavis.edu>, "Brian Bird" <bhbird@ucdavis.edu>, "Tracey Goldstein" <tgoldstein@ucdavis.edu>, predict@ucdavis.edu, "Kirsten Gilardi" <kvgilardi@ucdavis.edu>, "Zimmerman, Dawn" <zimmermand@si.edu>, "Mike Cranfield" <[redacted]>, "Benard Ssebide" <[redacted]>, "Julius Nziza" <[redacted]>, "Joseph Kamau" <jkamau@primateresearch.org>, "Ngaju kebede" <[redacted]>, "Susan Scribner" <[redacted]>, "Sambe Duale/PRP/Projects/DAI" <[redacted]>, "Andrew Kitua" <[redacted]>, "David Mutonga" <david.mutonga@theparladiumgroup.com>, "Samuel Muriuki" <[redacted]>, "Winyi Kaboyo" <[redacted]>, "Thomas Nyariki" <[redacted]>, "Jean Felix Kinani" <[redacted]>, "John Kunda" <[redacted]>, "FALL, Ibrahima-Soce" <socef@who.int>, "ALI AHMED, Yahaya" <aliahmedy@who.int>

WHO-framework-20140428-web.pdf
FAO update (Sep 2016) – H5N8 and potential for spread.pdf
Scientific Task Force on Avian Influenza and Wild Birds H5N8 HPAI December 2014 final.pdf
H5N8 overview for RA Dec 2016.pdf

Colleagues,

This email contains technical materials for H5N8 and for general outbreak preparedness. These documents will be particularly helpful to partners providing guidance to National One Health Platforms and others coordinating outbreak preparedness and response.

- Link for a global H5N8 avian influenza update 16 January 2017: http://www.fao.org/ag/againfo/programmes/en/empres/H5N8/situation_update.html
- Attached is an FAO H5N8 update September 2016.
- Attached FAO H5N8 Overview December 2016
- Attached FAO Scientific Task Force on H5N8 December 2014
- Link to the WHO Assessment of risk associated with influenza A(H5N8) virus http://who.int/influenza/human_animal_interface/avian_influenza/riskassessment_AH5N8_201611/en/
- Attached is the WHO document: Public health events of initially unknown etiology: A framework for preparedness and response in the African Region

**Lisa Kramer**
Regional Emerging Pandemic Threats Advisor
USAID/Kenya and East Africa
[redacted] (O)
C)

## Scientific Task Force on Avian Influenza and Wild Birds statement on:

### H5N8 Highly Pathogenic Avian Influenza (HPAI) in poultry and wild birds

### 3rd December 2014

*This statement, from the UN CMS/FAO Co-Convened Scientific Task Force on Avian Influenza and Wild Birds is released in response to the recent H5N8 HPAI developments (November 2014) to inform stakeholders in governments, poultry sector, disease control, wildlife management, site management and conservation sectors about the potential interaction between wild birds and H5N8 HPAI virus and appropriate ways of taking action.*

**KEY MESSAGES**

1. *Highly pathogenic avian influenza (HPAI) outbreaks are most frequently associated with intensive domestic poultry production and associated trade and marketing systems.*
2. *In 2014 multiple outbreaks of H5N8 HPAI occurred in domestic poultry in the Republic of Korea with subsequent outbreaks in Japan, China, Germany, the Netherlands and the United Kingdom. Most detections have been at relatively biosecure poultry production facilities but with some detections in wild bird species – with wild birds possibly being infected by poultry and vice versa.*
3. *Typically, spread of HPAI virus is via contaminated poultry, poultry products and inanimate objects although wild birds may also play a role.*
4. *The Scientific Task Force on Avian Influenza and Wild Birds, co-convened by the United Nations Environment Programme/Convention on Migratory Species (UNEP/CMS) and the Food and Agriculture Organization (FAO), urges agencies and organisations to:*
    a. *conduct thorough epidemiological evaluation to determine the true source of the virus including possible transmission through national and international poultry trade, and mechanisms of transmission among domestic and wild birds;*
    b. *regardless of the source of infection, focus disease control actions on affected farms, with the aim of minimising the risk of disease spread to other poultry farms and/or wildlife, ensuring that affected and nearby farms are biosecure to prevent wildlife-poultry contact;*
    c. *ensure there is no consideration of killing of wild birds or negatively affecting wetland habitats as disease control measures; and*
    d. *recognise that focussing attention on wild birds, to the exclusion of other potential viral vectors, can misdirect critical resources away from effective disease control and result in continued spread among poultry populations and economic losses to farmers and national income, as well as negative conservation outcomes and loss of biodiversity.*



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**Current situation**

Publications report the detection of H5N8 HPAI virus in domestic poultry in China in 2010[1]. In mid-January 2014, the Republic of Korea reported the first of a large number of poultry outbreaks of H5N8 HPAI in chickens, domestic ducks and domestic geese. The virus was then responsible for outbreaks in poultry in Japan (April 2014), in China (September 2014), and more recently (November 2014) in closed and semi-closed poultry productions systems in Germany, then the Netherlands and United Kingdom.

During the numerous Republic of Korea outbreaks, in early 2014, a number of wild birds were reported as having died from H5N8 HPAI including Baikal Teal (*Anas formosa*) and Bean Geese (*Anser fabalis*) with isolations subsequently from a range of waterbird species including Common Coot (*Fulica atra*), Tundra Swan (*Cygnus columbianus*), Greater White-fronted Goose (*Anser albifrons*), Mallard (*Anas platyrhynchos*), Common Teal (*Anas crecca*) and Chinese Spot-billed Duck (*Anas zonorhyncha*). In November 2014, the virus was isolated from faecal samples from two Tundra Swans in Japan. The first wild bird detection in Europe was from a Common Teal shot on 16th November approximately 50km from the German poultry outbreak reported on 6th November, with the Netherlands reporting the virus in faecal samples from two Eurasian Wigeon (*Anas penelope*) on 1st December.

**What is the role of wild birds in H5N8 HPAI?**

Prior to the Chinese report of the virus in poultry in 2010, global wild bird surveillance efforts have not detected this particular strain of avian influenza virus in wild birds. It seems likely that the virus originated in poultry and has probably been able to spill into wild birds and back into poultry, with more typical anthropogenic transmission routes involved too. Although this remains speculative, such a pattern was also seen with H5N1 HPAI virus.

With respect to the western European H5N8 HPAI poultry outbreaks, investigations are underway to try to determine the source of the virus. There is speculation that the virus has been spread from eastern Asia via wild birds. Firstly, it should be noted that direct migration by wild birds from eastern Asia (e.g. China or Korea) to western Europe would be highly unusual. Flyways are characteristically 'north – south' (with some areas of 'overlap' of contiguous flyways at higher latitudes), and waterbirds breeding in northeast Asia tend to migrate southwards into east and southeast Asia, and not into Europe. Movement of the virus from eastern Asia into western Europe via wild birds within an apparently short timeframe would be extraordinary, particularly in the absence of extreme weather conditions during this time.

Over longer time frames and breeding seasons there would be a possibility of westward movement of circulating AI viruses moving between contiguous populations and flyways. In this scenario, even in regions where wild bird surveillance data are lacking, it might be expected that poultry outbreaks of the virus would have occurred across Eurasia if this virus was circulating widely in wild birds. To date, this has not happened, and the potential remains for anthropogenic introduction of the virus, to any part of the world, including Europe, with subsequent spread to wild birds.

[1] *Zhao et al. (2013). Veterinary Microbiology 163, 351-357*



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**H5N8 and human health**

Unlike H5N1 HPAI, H5N8 has not been shown to infect humans and, on the basis of current knowledge, it is considered a low public health risk although appropriate hygiene measures should be taken.

**What actions should be taken?**

***Poultry farms and markets***

In accordance with FAO and OIE guidance, most H5N8 HPAI disease control measures should focus on poultry farms and bird markets including quarantine, stamping out, strict biosecurity, cleaning and disinfection, and trade and movement restrictions. If implemented properly, these steps will help control outbreaks and prevent the spread of the virus. Outreach and communication allied industries of the poultry sector would be indispensable for compliance and preventing economic losses.

***Wild birds***

To protect wild birds and prevent them from being involved in any onward spread of virus, all efforts should be taken at poultry farms and during disease control operations to reduce environmental contamination and risks to wild birds, particularly in wetland areas which can be particularly sensitive and contain susceptible bird species.

Measures should be taken to keep wild birds away from the infected farms *e.g.* by reducing any attractants such as food and open water, and, where appropriate, increasing deterrents such as scaring devices (*e.g.* flags) in the immediate vicinity of affected farms. Away from affected farms, disturbance to wild birds should be minimised, to allow them to remain in these lower risk areas.

Despite a recent publication on H5N8[2] suggesting otherwise, killing wild birds should not be considered as a control measure as this is diversionary, impractical, inefficient and contrary to the advice of all the major animal health agencies. Similarly, negatively affecting wild bird habitat, by *e.g.* applying disinfectants to the natural environment including wetlands, is not advisable, as this is ineffective against the virus and can harm the environment, wildlife and fisheries. Such measures are also contrary to conservation commitments accepted by Contracting Parties to both the Convention on Migratory Species and the Ramsar Convention on wetlands.

Disproportionately blaming wild birds for the introduction and spread of HPAI viruses, to the exclusion of other possible routes of transmission (as has happened during previous outbreaks of H5N1 HPAI), can lead to less focused disease control activities, potential spread of virus and dismissal of accountability of responsibilities. The media, academics and human and animal health agencies are requested to act responsibly when considering the role of wild birds in avian influenza, and avoid implicating them as the source of the virus if the evidence does not support this.

[2] *Kang et al. (2015). Emerging and Infectious Diseases 21, Number 2 – February 2015*



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**The Scientific Task Force on Avian Influenza and Wild Birds**

The United Nations Environment Programme/Convention on Migratory Species (UNEP/CMS) and Food and Agriculture Organization (FAO) co-convened the Scientific Task Force on Avian Influenza and Wild Birds in 2005. It works as a communication and coordination network and continues to review the role of wild birds in the epidemiology of AI and the impact of the disease on wild birds, promoting a balanced opinion based on currently available evidence. Task Force observers include the United Nations Environment Programme, World Health Organisation and World Organisation for Animal Health (OIE). Task Force members include FAO, CMS, and African Eurasian Waterbird Agreement, BirdLife International, Ecohealth Alliance, International Council for Game and Wildlife Conservation, Ramsar Convention, Royal Veterinary College, Wetlands International, and Wildfowl & Wetlands Trust.

**FURTHER INFORMATION**

**OIE:** H5N8 Q&A
http://www.oie.int/en/for-the-media/press-releases/detail/article/questions-and-answers-on-high-pathogenic-h5n8-avian-influenza-strain-update-17112014/

**FAO:** This FAO Manual provides practical guidance for wild bird surveillance techniques:
http://www.fao.org/docrep/010/a1521e/a1521e08.htm

**Ramsar Convention:** The Ramsar Wetland Disease Manual provides specific practical guidance on preventing and controlling avian influenza and a range of other wetland-related disease issues:
http://www.awt.org.uk/redm
http://stng.ramsar.org/stng-publications/ramsar-technical-reports/tr-no-7-ramsar-wetland-disease-manual-guidelines-for-assessment-monitoring-and-management-of-animal-disease-in-wetlands-2012

Ramsar's Handbook on avian influenza and wetlands provides a major source of information, including a risk assessment for wetland managers and dealing with the media: http://ramsar.ogis.ch/pdf/lib/hbk4-04.pdf

**Multilateral Environmental Agreements on HPAI from Ramsar Convention, Convention on Migratory Species and the African Eurasian Waterbird Agreement:**
http://ramsar.ogis.ch/pdf/res/key_res_x_21_e.pdf
http://ramsar.ogis.ch/pdf/res/key_res_ix_21_e.pdf
http://www.cms.int/sites/default/files/document/Res_9_08_Wildlife_Disease_En.pdf
http://www.cms.int/sites/default/files/document/CPRes_8_27_Avian_Influenza_eng_0.pdf
http://www.unep-aewa.org/sites/default/files/document/nov4_11_responding_threat_ai_final_0.doc



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# Public health events of initially unknown etiology: A framework for preparedness and response in the African Region

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Final editing of this document was undertaken by the Framework Technical Review Group, whose members include Dr Tshinda Florence and Dr Benido Impoumatz from the WHO Regional Office for Africa, Ms Lisa Kramer from PMDI, Ms Renee Petronella of USAID-EPT/KENYON/DRC and Douglas Nash, MD, from USAID-EPT/WARPO/DRC.

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# ACRONYMS

| | |
|---|---|
| EMC | Epidemic Management Committee |
| IDSR | Integrated Disease Surveillance and Response |
| IEC | information, education, communication |
| IHR | International Health Regulations |
| IPC | infection prevention and control |
| M&E | monitoring and evaluation |
| PHE | public health event |
| PPE | personal protective equipment |
| RRT | rapid response team |
| WHO | World Health Organization |

# PREFACE

Following the adoption of the WHO African Region's Integrated Disease Surveillance and Response (IDSR) Strategy in 1998 (1) and the International Health Regulations (IHR) in 2005 (2), the ministries of health in the WHO African Region committed to work collaboratively to minimize the effects of public health events (PHEs) on human health, livelihood, travel and commercial trade by improving preparedness, surveillance systems and response capacity for PHEs (3, 3). The WHO African Regional Office and its partners remain committed to implementation of IDSR and IHR in the Member States and to supporting the use of accurate and timely health information to guide decision-making during PHEs, including emergencies, whether of infectious or non-infectious etiology.

Although technical guidelines are available for Member States to strengthen the response to PHEs with disease-specific etiology such as yellow fever, cholera and anthrax, there is a dearth of guidance on appropriate steps in the early phases of detection, reporting, alert management, field investigation and response for PHEs of initially unknown etiology. To address that issue, the WHO Regional Office for Africa has worked closely with public health leaders and subject-matter experts in the Region and partner organizations to draw up and design this framework to serve as a concise and easy-to-use technical and managerial guide for senior level decision-makers and members of national emergency management committees (EMCs) and rapid response teams (RRTs) in Member States.

This framework is designed to supplement the more detailed information contained in the IDSR Technical Guidelines (3) and to enhance country-level emergency preparedness and response capacity, including capability to manage alerts of PHEs before they become public health threats of national, regional or international importance. The framework also aims to improve understanding of the process of assessing the credibility of an alert by an EMC and to strengthen the capacity to organize and deploy a well-qualified and equipped RRT to conduct a field investigation. The framework underscores the importance of monitoring and evaluation (M&E) during this process, as well as of using M&E findings, including those from after-action reviews (AARs) to strengthen preparedness and response capacity of Member States.

In accordance with IHR (2) and the IDSR Regional Strategy (1), the components of this framework are grouped into three phases: preparedness, response, and monitoring and evaluation.

We advise that this framework be read alongside the relevant sections of the IDSR Technical Guidelines (3) and the technical documents and scientific articles cited herein.

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# 1 INTRODUCTION

### 1. PHEs of initially unknown etiology

A public health event (PHE) is defined as any occurrence that may have negative consequences for human health, including those that have not yet caused disease or illness but that have potential and those that may require a coordinated response (2, 4). This framework focuses on PHEs of initially unknown etiology, which are PHEs for which the cause has not yet been determined. For such events, the One Health approach (5) is recommended, where the ministry of health works in close collaboration with other ministries and multilateral partners to enhance teamwork and improve efficiencies in preparedness, response, and monitoring and evaluation (M&E).

### 2. Categorization of PHEs of initially unknown etiology

Between 2000 and 2022, the secretariat of health in the WHO Africa Region identified a mean of 100 PHEs annually (see the WHO EMS[1]). The majority of these occurred in areas characterized by poverty, armed conflict and/or suboptimal health care delivery or access (5). Typically, during an alert management stage, a PHE is initially categorized as being of unknown etiology. Once there is laboratory confirmation of the cause of illness, the PHE can be categorized as infectious or non-infectious, with infectious events further classified as zoonotic or non-zoonotic.

### 3. Mapping of PHEs of initially unknown etiology

Fig. 1 presents a map on the distribution of PHEs identified in the WHO Africa Region during 2022. All the PHEs were initially classified during the alert management stage as being of unknown etiology. PHEs in the Region reported to the EMS during 2022 and 2023 were categorized under the following groups, listed in in order of decreasing frequency and magnitude:

- infectious disease outbreaks
- moderate or severe malnutrition events
- outbreaks of undetermined etiology
- natural and human caused disasters
- animal disease outbreaks
- toxins and chemical exposures

Examples of PHEs from non-infectious toxins and chemical exposures include food, water and environmental contamination; exposure of animals to toxic chemicals; chemical hazards; and radiation or nuclear incidents.

Fig. 1 – Distribution of PHEs in the WHO African Region in 2022. Source: WHO EMS.

The rapid growth in industrial activity in sub-Saharan Africa, including exploration for fossil fuels and mining, is increasingly exposing communities to non-infectious health risks (5). Examples of such exposures on the continent include lead (Pb) toxicity poisoning in young children involved in artisanal gold mining in Nigeria during 2010 (6) and contamination of a river system in South Africa by mercury (Hg) from an industrial processing plant in 2011 (7).

[1] The EMS is a system of WHO that used to track and monitor public health events





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Like some non-infectious PHEs, infectious PHEs – which include zoonotic diseases and foodborne or waterborne diseases such as cholera, shigellosis, salmonellosis and amoebiasis (1), (2) - often in diverse geopolitical boundaries (3, 4) to both 2015 and 2016, aside from Ebola cholera which accounted for approximately 30% of confirmed PHEs, an estimated 24% of confirmed infectious disease outbreaks were zoonotic (see WHO EMRI). Other important PHEs related to infectious diseases recently identified in the African Region and reported via ProMED Mail[1] and WHO EMR were due to ovine and pandemic influenza, meningococcal meningitis, anthrax, measles, acute poliomyelitis, yellow fever, malaria, dysentery, plague, dengue, or the Ebola, Marburg, Crimean-Congo, Lassa and Rift Valley viral haemorrhagic fevers.

## 4. PHEs and the One Health approach

Scientific and public health experts agree that the majority of infectious agents identified as causes of human illness in recent decades originated in domesticated animals or wildlife, such as SARS, the highly pathogenic avian influenza, Ebola and Marburg (2, 3). The importance of zoonotic diseases in the Region reinforces the logic for using the One Health multisectoral approach to evaluate PHEs. Multisectoral national teams of professionals working together on the diseases involving the animal, human and ecosystem interface can strengthen efficiencies by sharing important and timely health information from their respective surveillance systems and working collaboratively in the field. This type of coordination and teamwork can lead to better understanding of the epidemiology of emerging or re-emerging diseases, as well as identify unknown modes of transmission, elements that will improve the efficiency of disease prevention and control efforts (4).

## 5. Aims and target audience of this framework

The overall aim of this framework is to minimize human morbidity and mortality associated with PHEs by:

- providing the countries of health in the WHO African Region with technical and managerial guidance for early and effective preparedness for and response to PHEs;
- improving PHE preparedness and response systems;
- strengthening multisectoral and multidisciplinary communication and coordination; and
- complementing the IDSR Technical Guidelines (5).

The specific objectives of the framework are to

- describe the core functions and responsibilities of country-level structures - that is, the EMC and the RRT - for effective PHE management;
- call attention to the critical importance of preparedness activities and methods to enhance response capacity;
- outline the step-by-step PHE response activities; and
- provide key indicators for M&E of national preparedness and response activities.

The target audience for this framework includes:

- senior policy-makers and decision-makers;
- EMC leadership and members; and
- RRT leadership and members.

## 6. IDSR and the PHE framework

More than 10 years ago, the WHO Regional Office for Africa and WHO Member States in the Region, along with their technical partners, adopted a strategy for developing and implementing comprehensive public health surveillance and response systems in the Region.

[1] A program for the International Society for Infectious Diseases (ProMED) that tracks infectious diseases. It can be accessed at http://www.promedmail.org/



To highlight the essential link between surveillance and response, the subsequent document, which is referred to as the "IDSR Technical Guidelines" (5), in short, was widely adopted and adopted throughout the Africa Region. Since the adoption of the IDSR Technical Guidelines and its revisions in 2010, significant progress has been made by Member States in preparing for and responding to public health events.

Based on the challenges and lessons learned in dealing with PHEs in the Region, the WHO AfricanRegionalOfficeadjustanddeveloped this new framework for preparedness and response, and beta-tested it in Uganda and the Democratic Republic of Congo in 2013. This framework, which aligns with IHR and IDSR requirements, is designed to clarify awareness relating to management of alerts, the role of the EMC in preparedness, the importance of real-time communication among entities participating in the EMC, and the critical aspects of the preparedness phase. Table 1 shows the key topics contained in the IDSR Technical Guidelines related to strengthening of PHE preparedness and response capacity at the district level, compared with those of the framework.

Table 1 - IDSR Technical Guidelines compared with the PHE framework

| Component | IDSR Technical Guidelines | Framework |
|---|---|---|
| Level of government | | |
| National | + | + |
| District | + | + |
| Preparedness | ++ | + |
| Response | | |
| Alert management | + | + |
| Field investigations | + | + |
| Field Response | | |
| Unknown etiology | + | + |
| Known etiology | + | + |
| M&E | ++ | + |
| Purpose of document | Comprehensive guidelines describing the steps for organizing preparedness activities in the district. Emphasis is on 40 well-understood priority diseases and conditions in the African Region (see Annex 1) for skills, activities and tasks relevant to each level in a public health surveillance and response system. | Practical guide on preparedness for PHE detection and response in the earliest phase, prior to determination of the etiology. |

*Note: + – Emphasized in document; 0 – Not highly emphasized; – – Not applicable

In order to achieve the maximum benefit of this Framework, EMC members and stakeholders are encouraged to consider the flow of disease surveillance information in their country, including from formal and informal sources as well as from the private health sector and industry. Then, ministries responsible for the data can enhance appropriate strategies and methods to promptly identify alerts and manage the response in coordination with the EMC.



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## 1. The three phases of the framework

PHEs often evolve quickly and unexpectedly and may involve novel infectious agents or previously unknown modes of transmission. Therefore, Member States are encouraged to establish a strong foundation for preparedness to be able to deal as promptly and as effectively as possible with these threats. Additionally, response is often complex, requiring well-informed planning, decision-making and multisectoral collaboration. M&E plays a critically important role in this process, enabling the lessons learnt from previous field investigations to be applied to address identified gaps, thereby enhancing preparedness (Phase I) and future response activities (Phase II). In line with IHR (2) and the IOER regional strategy (1), this framework categorises these activities into three phases as shown in Fig. 2.

Fig. 2 – The three phases of the framework

# COUNTRY-LEVEL STRUCTURES FOR EFFECTIVE PHE MANAGEMENT 2

Although not a specific phase, it is imperative that the core functions and responsibilities required for realizing early and effective preparedness for, response to, and M&E of a PHE be handled by the country-level coordinating structure and individuals who serve as institutionally supported EIRT members (see Annex 2). This section describes the roles and responsibilities of the EMC and EIRT.

Consistent with IOER and IHR specifications, the WHO African Region, together with Member States, identified key management and institutional structures with the primary responsibility for PHE preparedness and response, and to enable, plan, manage, and monitor and evaluate related activities, as defined below.

### 1. Emergency Management Committee

The EMC is designed to be a multisectoral platform for coordinating inputs from the national health agencies responsible for human, domesticated animal, environmental and wildlife health, for collaborative assessment of credibility of reports of PHEs of potential national importance. The Member States are responsible for developing the legal framework, policies and actions to establish EMCs, permitting mobilisation of appropriate resources, allocating budgets and authorising disbursement of funds for preparedness and response activities. Fig 3 shows an example of the structure of a typical EMC.

Fig. 3 – Structure of a typical EMC[1]

[1] The EMC structure is not independent of other bodies in the organogram.



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The EMC is a formal government body that includes senior technical and health management representatives officially responsible for preparedness, response and M&E activities related to PHEs of national importance. Members are formally appointed and, in line with the One Health approach, should include representatives from the ministry of health and the ministries responsible for livestock, wildlife and environmental health, national laboratories and other agencies as required, such as the police, military and civil aviation, as well as national and international health organizations and development partners including WHO.

Based on the EIDR Technical Guidelines, the core functions and responsibilities of the EMC include to:

- develop a formal national PHE preparedness and response plan;
- develop and implement a formal emergency communication plan that covers procedures for sharing the latest information on PHEs among the EMC, the RRT and other government agencies and partners and informing and educating the public on PHEs and effective measures to prevent disease transmission or limit high risk behaviours;
- maintain the terms of reference for RRT roles;
- maintain a roster or computerized database of the names, titles, education, training, skills, experience, vaccination history and contact details of RRT members;
- obtain approvals for deployment of RRT members for field investigations;
- ensure policies and procedures are in place for immediate disbursement of funds to enable prompt RRT deployment during PHEs and for any other official PHE response activity;
- solicit for supplemental resources from key partners and stakeholders for technical, financial, laboratory, logistical or other needs;
- oversee procurement of emergency materials and pre-positioning of supplies in adequate stock levels at secure and strategic locations;
- work with the relevant ministries to identify PHEs of national importance based on historical trends, latest surveillance information, risk mapping and the WHO and national priority disease thresholds;
- plan and implement emergency preparedness and response training;
- plan periodic simulation activities;
- coordinate after-action reviews to evaluate PHE response;
- implement recommendations from after-action reviews to strengthen preparedness and response capacity; and
- communicate important developments to the national EIDR focal point.

## 2. Rapid response team

### a. Core functions and responsibilities

The core functions and responsibilities of a national or subnational level RRT as detailed in the EIDR Technical Guidelines include:

- investigate rumours and media reports on PHEs of importance, including possible disease outbreaks and other public health emergencies;
- propose appropriate strategies and methods for field investigation of PHEs and disease prevention and control measures;
- organize risk communication activities;
- coordinate response activities with subnational health officials, partners and other agencies during PHEs;
- plan and support RRT training and capacity building;
- prepare detailed reports of field investigations;
- contribute to the final evaluation and the after-action review of each outbreak response CE.

### b. RRT membership and deployment

An official database or up-to-date roster of subject-matter experts qualified to carry out the core RRT functions should be created during the preparedness phase. The information should be regularly updated and should include details on the professional qualifications of each individual, formal education, specialized training and level of experience with emergency response, disease surveillance systems and field investigation of disease outbreaks, including supervisory experience. Job responsibilities of RRT members should be drawn up and agreed upon by all relevant technical and political entities prior to RRT member deployment. Deployment of RRT field members to investigate PHEs should be based on the alignment of their field experience and expertise with the core RRT functions needed and assurance that the planned investigation is balanced and scientific. Those selected for an RRT should participate in all relevant meetings and activities.

The EMC works with representatives from relevant ministries to determine the proper number and type of subject-matter experts required for an RRT to conduct the appropriate field investigation based on current information about the type of PHE reported and an assessment of available resources. Following the logic of the One Health multisectoral approach, the recommended membership of an RRT should comprise the following experts at a minimum:

- manager or team leader
- human or animal epidemiologist
- clinician or infection control specialist
- veterinarian or wildlife expert
- environmental scientist or public health officer
- social mobilization expert
- logistician
- laboratory specialist.

Annex 2 contains descriptions of RRT roles.

Each Member State can develop country-specific guidelines for RRT membership, which may vary based on the profile of the PHE being investigated , that is, if the disease has an infectious or non-infectious etiology , and resource availability. Other specialties may be added to the job descriptions for RRT members provided in Annex 2. EMC leadership may work with partner organizations to ensure that the composition of the RRT includes the necessary expertise. It should be noted that experienced RRT members may be capable of fulfilling multiple core functions. For example, a health or veterinary officer who has experience in dealing with outbreaks and appropriate training is often capable of serving as both the epidemiologist and the RRT leader.

Findings from field investigations, even if preliminary, should be promptly communicated by the RRT leaders to the leadership of the national EMC, which is responsible for sharing the real-time information with officials from the ministries of health and agriculture, the wildlife and environmental agencies, national reference laboratories and other key government institutions and partner organizations. The RRT must also remain in close communication and coordinate work with the local EMC leadership, such as district level representatives, to keep them and agency representatives updated about the scientific findings from the field investigations.





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# 3 IMPLEMENTING THE THREE PHASES OF THE FRAMEWORK

## PHASE 1: PREPAREDNESS

Preparedness is the foundation of a Member State's human and institutional capacity to prevent, respond to and manage PHEs. Therefore, one of the key responsibilities of the EMC is to engage with senior decision-makers to ensure that the resources and the formal legal framework are in place for optimal preparedness. The EMC is also responsible for working closely with individual ministries - respecting their areas of responsibility - to coordinate preparedness planning to ensure early identification of possible disease outbreaks, epidemics or other PHEs and to plan a unified strategy for response.

Owing to the frequency and complexity of disease outbreaks and disasters and the potential risk for terrorism-related PHEs, Member States and ministries of health are encouraged to establish an emergency operations centre to respond to such PHEs in a coherent, effective and efficient manner. This centre can serve as the health ministry's central location for organising, coordinating, supporting and managing all aspects of the response and planning efforts to tackle evidence-based PHEs.

The institutions and systems involved in preparedness, in line with the IDSR Technical Guidelines (3) and other relevant documents (3), (4), are described below. Properly maintaining these systems to undertake their activities should facilitate prompt RRT deployment, enhance the capacity to determine the etiology of the PHE being investigated and hasten the implementation of appropriate disease prevention and control measures.

### 01 EMC

- Established by senior decision-makers as a formal governmental structure based on a legal framework
- Staffing structure that includes representatives from the ministries responsible for coordinated decision-making on emergency preparedness and response
- Includes national reference laboratories, the WHO focal point, multilateral health agencies and key stakeholders
- Has at least one individual for each of its core roles

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### 02 RRT

- A group of qualified technical experts available for immediate deployment as required by the EMC
- Maintains a roster or database populated with details of a minimum of one, preferably more, qualified individual for each of its positions
- Provides updated training for each expert on the roster
- Ensures that training of its members includes conducting of field investigations
- Trains members to work with educational partners and communities

### 03 Disease surveillance systems

- Respective ministries are responsible for ongoing, systematic collection and analysis of data for human, animal and environmental health and for providing these data to the EMC
- The EMC is responsible for information analysis and decision-making on preparedness and response to PHEs
- Surveillance systems are operational at national, provincial, district and community levels
- Event and indicator-based surveillance
- An essential component for prompt identification of PHEs of national importance
- Should include formal mechanisms for real-time sharing of key public health information across sectors and ministries
- Historical information is useful for risk mapping, to identify possible PHEs and to determine disease trends[7]

### 04 Training and capacity building

- Scenario-based field training or drills are highly useful for preparedness and response
- Recommendations from after-action reviews following each PHE response should be routinely implemented to improve preparedness
- Includes review of relevant scientific articles

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[7] Dobrowski, [illegible] Rev Sci Technol 12, p. [illegible]







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## 05
Infection prevention and control

- Standard precautions [1], basic infection control, and universal precautions should be routinely applied to protect health workers and patients from infection
- Existing policies and procedures apply to and should be enforced for all clinicians and staff involved in emergency response and community action
- National vaccination policies should apply to all situations and people, including clinicians and RRT members
- If additional technical guidance is needed, technical experts can be sought to provide it
- The existing infection control policy should be reviewed and gaps addressed

## 06
National communication plan

- EMC should oversee the exchange of PHE information among the ministries, the RRT and educational officials
- Information sharing by EMC to routinely include WHO Region of the Africa focal point and key stakeholders
- Community health education and outreach should include methods of disease prevention and likely factors or behaviours associated with a high risk for exposure to disease

## 07
Logistics and finance

- EMC needs the authority to control resources such as personnel, materials and equipment and distribution channels to support rapid emergency response to PHEIs
- Policies need to be in place for accountability and for appropriate requirements for per diems, lodging, transportation, personal protective equipment (PPE), medical materials, general supplies and communication devices
- A budgetary mechanism for timely release of funds needs to be set up prior to the field investigation stage.
- A system is needed to oversee procurement and pre-positioning of materials
- Systems need to be in place for rapid acquisition of financial, technical or material support from WHO or other partners to fill gaps
- Logistical capacities need to be strengthened in line with the requirements of the regional logistical plan [2]

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## 08
Formal PHE response plan

- The EMC should to develop a formal country-adapted and context-relevant national plan
- Formal terms of reference describing the responsibilities and qualifications of each RRT member should be prepared as part of preparedness actions
- Response plan should include methods to process alerts
- Standardised epidemiological and clinical data collection templates should be provided for use during field investigation and response stages
- The plan should be updated based on new information, PHE profile and after-action review recommendations
- The response plan should operationalise the steps identified in the framework
- The plan needs to be aligned with the IDSR Technical Guidelines [3]
- The plan uses risk mapping and disease trends to identify unexpected PHEIs [4]

## 09
Diagnostic laboratories

- This is a national system of government laboratories, including reference and district level facilities
- Formal agreements are drawn up with international laboratory networks to fill gaps in the national system and provide the full range of diagnostic capacities
- Existing laboratory policies, procedures, agreements, operating procedures, and biosafety and biosecurity norms apply to EMC and RRT activities
- The laboratories provide recommended protocols and materials for safe shipping of samples nationally and internationally

## 10
Research

- Algeria Declaration on Research [5]
- Operational research should be designed and activities planned prior to an outbreak
- Research activities should facilitate the work of the RRT and not delay or interfere with the PHE response
- Best practices are required for human subject protection, environmental protection, ethical review board related issues and research logics

[1] See: https://www.who.int/csr/resources/publications/ebola/guidance-for-prevention-and-control-of-ebola-in-health-care-settings.pdf
[2] See: Draft Annex of PoA-G 2016.

[3] Reference: IDSR. Best practices of the epidemic preparedness and response policy p. 20.

## PHASE II: RESPONSE

Phase II deals with the recommended step-by-step activities for the successful conduct of the three sequential stages of a response to a PHE by an EMC or RRT (see Fig. 1 to 3):

- stage 1: alert management
- stage 2: field investigation
- stage 3: field response

Details provided in this framework can serve as a recommended checklist for key activities, although the profile of each PHE, as well as the local capacity, will determine to what degree and in what manner each stage will be implemented. Although the activities are presented in approximate chronological order, some may be carried out in parallel.

### 1. Stage 1: Alert management

Alert management is the first stage in the PHE response process. The objective is to promptly identify PHEs of possible national or international importance. An alert occurs when health information from a formal or informal source reports the presence or likely commencement of a PHE (3b). Alerts may be categorized based on whether they have formal or informal sources. An example of a formal source is a routine review of existing public health or livestock health surveillance systems data. An informal source could be the media or a private citizen providing a written or verbal alert report.

The alert management stage aims to verify the occurrence of a suspected PHE, commence a field investigation if necessary and report the details to the next level, as defined by the IDSR Technical Guidelines (3b). Box 1 lists criteria that might be useful in gauging the importance of an alert about a possible PHE.

To draw the maximum benefit from this framework, EMC members and stakeholders are encouraged to be knowledgeable of the flow of disease surveillance information in their country, including from formal and informal sources, the private health sector and industry. That way the countries responsible for the data can use appropriate strategies and methods to promptly identify alerts and manage PHEs, working in coordination with the EMC. Fig. 1 provides an illustration of the flow of "pre-alert" information from a variety of formal and informal sources, its subsequent triage by the responsible countries to determine the presence or absence of a PHE of potential national importance and the role of the EMC to assess the credibility of an alert and to accurately report the information to the WHO Africa Regional Office focal point.

**Box 1 – Alert criteria useful to determine whether to initiate a field investigation of a PHE**

**1. Degree of the uncertainty**

Consider the source and the potential validity of the alert as well as the potential for the alert to cause panic. Available epidemiological data

**2. Available epidemiological data**

Consider the size and health status of the population affected, giving special attention to vulnerable and marginalized groups, the expected or observed rise in mortality or morbidity, and the method transmission or degree of transmissibility of the pathogen.

**3. Contextual information**

Review the access of the population to local health care delivery systems, and the resources, the level of preparedness and the response capacity of the local authorities. Identify the likely population vulnerabilities, public misperceptions, degree of panic and robustness of the civil society's coping mechanisms. EMCs should also consider the likelihood of concurrent PHEs drawing from the limited local emergency resources.

**4. Magnitude, duration and severity of the suspected PHE**

Establish the magnitude of the PHE based on factors such as the proportion of the population affected or displaced, geographical area and number of districts affected, number of persons hospitalized, number of deaths, case fatality rate, presence of susceptible or high risk groups and duration of the PHE.

**5. Potential risk for international spread**

Mode of transmission, disease severity, size of susceptible population, crowding and population displacement may increase the potential of a PHE to extend beyond a locality or a Member State's borders.

**6. Political implications of not responding**

The PHE might be a risk to the reputation of leaders if response is not prompt, or have the potential to bring about the loss of their credibility or authority, or a threat to social and economic stability.

**7. Media interest**

Level of interest of the media to the alert, possibility of inaccurate or incomplete information, and the potential for the media reports to result in fear or panic in the population.

Fig. 4 – Alert reporting and assessment, and PHE management information flow

The activities under alert management have an emphasis on characterizing PHEs and developing standardized clinical and epidemiological case definitions following the IDSR strategy (3).

They involve the following steps:



Fig. 5 – Stage 1 – Alert management activities (5 steps) ►

## **Step 1.** Ensure the establishment of an alert network during the preparedness phase.

- A process for regular review of information from formal disease surveillance systems
- A mechanism to capture information from informal sources reporting the presence of PHEs of potential national importance
- Regularly reviews information on possible PHE from other agencies, the private sector and digital disease surveillance systems such as Promed
- Has an established and functional system to promptly identify unexpected PHEs of national importance
- Applies a multisectoral and multidisciplinary (One Health) approach
- Develops clinical and epidemiological case definitions and epidemic thresholds and disseminates them for all priority diseases

## **Step 2.** Maintain vigilance

- Regularly monitor formal and informal sources of potential PHEs, as credible alerts may not always be obvious. For example, fibrovirus outbreaks often are initially recognized from an epidemiological link among cases rather than a specific clinical case-definition (16, 18).

## **Step 3.** Receive alerts and assess their credibility

- Use standardized criteria to determine if the alerts are credible (see Box 3) and recording how and by whom the alert was communicated to the EMC
- Proactively enquire in the community and/or request for more information from sources of alerts when needed

## **Step 4.** Commence coordination of the field investigation once an alert is determined as credible, coordinating the field investigations with other agencies with roles in the investigation

- The EMC and RRT determine the possible public health risks and ensure the relevant stakeholders are informed and are ready to support the field investigations
- WHO, which coordinates international support through regional mechanisms and the Global Outbreak Alert and Response Network, may be requested for assistance. It is important that commencement of the field investigations be not hindered by lack of logistical or financial resources if previous scenario-based field and deployment training for EMC and RRT ensured that the management processes needed for effective and prompt multisectoral response were in place.

## **Step 5.** Evaluate

- The alert management stage should be regularly evaluated for efficiency and effectiveness (see Box 4, indicators 4.1, 4.2).

## 2. Stage 2: Field investigation

The field investigation is the second stage of the PHE response process. During field investigation activities, it is important that the national and district EMCs remain in close communication. Deployed RRT members need to work collaboratively with local health officials, clinicians and nurses, as well as community leaders. The priorities for RRTs are (1) to collect the epidemiological information needed to determine such factors as the magnitude or scope of the problem, for example the number of people that are ill, hospitalized or with a fatal outcome due to the disease of interest; the likely mode of transmission; and the high risk groups such as young children or occupations, and (2) to use the available information to implement appropriate disease prevention and control actions.

RRT leadership should coordinate work with local health facilities and laboratory staff to both understand the magnitude and severity of the PHE and ensure that clinical samples are properly collected and transported per appropriate protocol to the laboratories identified earlier on for diagnostic testing and confirmation of the cause of the disease. RRT case-management experts and those trained in infection control and prevention should work closely with local health facility and hospital staff to ensure that treatment of patients is optimal, respecting cultural and ethical sensitivities. The field investigation activities cover 20 steps (IDSR Section 4, p. 100-103; 104-107).

Fig. 4 – Stage 2 – Field investigation activities (19 steps)

### Step 1. Prepare for fieldwork

- Determine, in coordination with the EMC and the personnel local authorities what is needed for supplies and commodities and the type of transport to conduct the fieldwork.
- Select appropriate medication, and treatment protocols based on the best knowledge on the type of condition or illness and likely mode of transmission as determined by a trained medical doctor.
- Pack field supplies, including diagnostic sampling kits (as recommended by official laboratory protocols), office materials and equipment, communication devices, data collection templates, and data analysis tools such as a laptop computer with appropriate statistical software (see IDSR-recommended packing lists for laboratory supplies (IDSR, Annex 4B, p. 123) and personal protective equipment (IDSR, Annex 4C, p. 124)).
- Ensure availability of appropriate vehicles or other transportation means and funds for field expenses, such as standard per diem for food and lodging during official deployment.
- Include essential mandatories, the official letter authorizing the travel, useful technical documents, such as IDSR Technical Guidelines, IHR and this framework, and appropriate standard operating procedures and policies.

### Step 2. Arrive at the location

- Coordinate arrival with local, district, national and regional health and political authorities, and define the roles and responsibilities of each party, ensuring complementarity of the entities' investigative responsibilities.
- Proceed to the geographic location where the PHE of initially unknown etiology is occurring.

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### Step 3. Conduct a preliminary assessment and develop an initial case definition

- Together with local authorities, review all available sources of information about the affected community, including patient registers at each health facility.
- Use demographic and epidemiological data combined with symptom and clinical data to develop an initial case definition in order to identify persons showing similar symptoms or illness of interest.

Note: All stakeholders should adhere to the initial case definition. Case definitions may be modified once additional information is available (see IDSR Annex 4, Indicator 3.3).

- Provide standardized data collection templates, modified as needed from those designed during the preparedness phase.

### Step 4. Formulate a hypothesis about the possible cause of the illness or disease

- Based on the data collected, including on symptoms of people with the illness, formulate a hypothesis about the likely mode of transmission of the disease and its most likely etiology, for example if it is caused by an infectious agent, a chemical or a toxin.
- Ensure access to the potential hazard or blockade if the source is food, such as water, food or a particular location.
- Regularly review the latest information about the PHE and modify the hypothesis as appropriate.

### Step 5. Collect and send specimens or samples for laboratory diagnosis

- Collect appropriate samples from patients, animals or the environment affected by the PHE, consulting with laboratory and epidemiological experts and following laboratory protocols to confirm the diagnosis.
- Inform the laboratory that samples are being sent (see Annex 5, Indicator 3.3).
- Explain the procedures and reasons for the diagnostic tests to suspected patients and their family, observing cultural norms and, whenever possible, obtain their verbal consent.
- Label each specimen using permanent ink. For each sample include a unique identification number linked to the case patient's name, age, gender and residence.
- Include a log of the specimens in the shipping container and retain one copy with the RRT leader or health facility to ensure that the diagnostic test results will be linked to the correct sampled individuals.

Note: An agreement with private laboratory facilities defining procedures for their support during an emergency field investigation should have been secured during the preparedness phase.

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Fig. 8 – Stage 2 – (continued)

**Step 6.** Train and educate

- Provide training on proper treatment of patients who are found from the diagnosis to have the disease.
- Train health staff on proper use of disinfectants, sterile techniques and case management as needed.
- Educate local authorities and the population about the risk factors for the disease, methods to limit high risk behaviour and home-based care of ill family members.
- Provide access to essential medicines and PPE and related training to local health staff and field investigators.

**Step 7.** Ensure optimal clinical care

- Ensure that optimal clinical care and early clinical management are provided for those affected by the PHE (see Annex 5, Indicator 5.2), being considerate of cultural and ethical concerns. Optimum patient care is defined as the best possible care available based on the probable and eventual diagnosis of the PHE and the contextual setting.

**Step 8.** Communicate to EMC and enact support channels

- Communicate the key field investigation findings to the EMC at regular intervals to keep the leadership informed and to ensure that technical and political support channels can be activated and utilized to support the response effort. The EMC should commence IHR reporting (2) at the national level as appropriate.
- Consider requesting an in-situ diagnostic laboratory.

**Step 9.** Prepare a field investigation report

- Write a detailed report to inform all the relevant authorities and stakeholders of the situation at hand. A template for such a report can be found in Annex 6.

**Step 10.** Identify potential research

- Identify practical research topics that may determine the cause of the disease or contribute to improved disease control, prevention or treatment.

Remember: Ensure that the standards for clinical research and human subject protection are respected. The appropriate study protocol that is approved by the ethical review board must be used and written consent must be obtained for research participation from individuals, who should also be informed about the potential risks, benefits, alternatives and responsibilities of the study prior to enrolling in it. Special permission will be needed for illiterate participants.



## 2. Stage 3: Field response

Field response is the third stage of the PHE response process. It aims for coordination and mobilization of resources and personnel to implement an appropriate public health response (3).This stage mainly works to prevent disease transmission and to ensure that optimum patient care is provided. Primary transmission involves human infection through a single or multiple events from a hazardous source, while secondary transmission typically results from a direct contact with a person's infected bodily fluids during the acute phase of their illness or their remains or with contaminated fomites.

Typically, an RRT remains on the PHE site during the transition from the field investigation to the "full-blown" field response stage. A laboratory diagnosis confirming the cause of the PHE typically triggers the implementation of the more appropriate and effective response activities. Recommended field response activities include regular review of outbreak information to determine whether to scale up, maintain or scale back the level of the response effort (Fig. 9). As a part of these activities, efforts are focused on reducing exposure to the agent causing the illness, whether it is infectious or non-infectious, and providing optimum clinical care, based on the etiological agent identified.

Fig. 9 – Stage 3 – Field response activities (3 steps)

**Step 1.** Scale-up response components

- In no predetermined order of priority, the RRT commences the response components in Fig. 9 or ensures each component is addressed by a relevant entity and activities are aligned with national and/or international standards.
- Components are aimed at preventing exposure to the agent (infectious or non-infectious) responsible for the PHE and ensuring the provision of optimum patient care for those infected/affected.

**Step 2.** Maintain response components

- Ensure response are effective and sustainable throughout the duration of the event.

**Step 3.** Scale-back response components

- In discussion with multi-sectoral and multidisciplinary stakeholders, EMC and RRT can coordinate to slowly begin to scale-back the response components based on updated epidemiological data.
- Remain vigilant as premature scaling-back of activities may result in further transmission.
- Where possible, conduct post-PHE health services restoration, patient follow-up, reporting, and research according to country guidelines.

Step 1: Scale-up response components

Step 2: Maintain response components

Step 3: Scale-back response components

In line with the ICER strategy (1) the field response comprises the following 3 components:



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Fig. 5 - Field response components

## 1

Epidemiological surveillance and case detection

- A system, such as contact tracing, is set up for community leaders and members to alert the RRT of suspected cases of the disease of interest.
- Individuals exhibiting symptoms matching the PHE epidemiological or clinical case definitions are referred to a health facility for clinical assessment and, if appropriate, hospital admission.
- The aim is to identify PHE cases and allow for prompt hospitalisation to minimise, where relevant, secondary transmission to the community (see Annex 6, Indicator 4.2).
- Additional samples may need to be collected from patients or the affected environment during the course of the PHE to guide case management.

## 2

Case diagnosis

- Individuals displaying symptoms matching the case definition criteria are categorised as suspected cases.
- Samples may be obtained for laboratory confirmation of the PHE. Patients with laboratory-confirmed negative test results are discharged and assessed for an alternative illness or remain in the ward and are re-tested if clinical suspicions still remains (29).
- RRT contributes to discussions about discharge protocols and long-term patient follow-up.

## 3

Care activities in the health facility

- The aim is to identify possible contact cases and allow for prompt isolation of patients to stop secondary transmission.
- The activities include screening hospitalised persons and outpatients, as well as corpses.
- The general wards refer suspected cases to the specified hospital ward or isolation unit.
- The RRT should encourage the health facility authorities to operate all normal services unless the PHE response overwhelms the facility capacity and it becomes necessary to suspend or reduce non-essential services during the PHE (Annex 6, Indicator 4.3).

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## 4

Case management

- All patients receive optimal care, which is the best possible care available based on the probable diagnosis of a PHE and the contextual setting (Annex 6, Indicator 4.3).
- Case management protocols used are to be based on national or international standards.

## 5

Design and construction of an isolation unit

- For an infectious disease, the RRT designs and constructs an appropriate isolation unit, with the design based on the suspected mode of transmission, and separate areas provided for suspected and confirmed cases.
- The size of the structure should provide adequate room for patient accommodation to avoid cross-contamination.
- Transparent, wall-like net fencing (20) is erected around the isolation ward, and only a single entrance and exit is provided in order to control patient and staff flow.

## 6

Provide psychosocial support and psychological care

- The aim is to assist in handling of burials, disinfection and home-based risk reduction for patients, families and the community.
- Directly communicate with patients and their families and caregivers about the PHE and the required procedures in order to attain their agreement with the programme and participation, allay fear and anger, reduce patient stigmatisation and quell rumours and panic in the community (22, 23).
- Ensure relatives of deceased people participate in burial and disinfection activities and allowed to bereavery across.
- Mitigate misunderstandings about the objectives and the activities of the RRT to improve relationships with patients' families and the community.
- Depending on the type of event and taking into account the local culture, language and gender specific issues, provide illiterate persons with appropriate health education and related information.

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## 7

Peripheral health facility support

- Train health staff from facilities in the area affected by PHE on case definition, disease surveillance and provision of optimal care and treatment.
- Support for peripheral health facilities will be based on the type of PHE in question.

## 8

Information, education and communication campaign

- Typically undertaken at the beginning of the field response stage, although its planning occurs during the preparedness phase.
- Aims to increase, via mass media communication and discussions with community groups and families, understanding of the PHE and response efforts and to encourage assessment and hospitalisation of suspected and confirmed cases at health facilities.
- Mitigates fear and anger, reduces patient stigmatisation and quells rumours and panic in the community (21, 22) (Annex 5, Subsection 4.3).
- A spokesperson is identified by the EMC and RRT to coordinate communication at the national, district or provincial levels, ensuring that information about the PHE is accurate, timely and available simultaneously at all levels and to the media.
- The communication campaign is dependent on the type of PHE occurring.

## 9

Safe burial and disinfection

- The RRT works with family members to adapt burial practices to reduce the risk of disease transmission and, where possible, to incorporate innocuous traditional burial rites such as song, dance and use of coffins. For example, families may identify the corpse before burial, carry and lower the coffin into the grave using gloves and fill the grave with earth, but may not touch the corpse.
- Household items suspected to be exposed to the vector are disinfected with a 0.5% chlorine solution, and items such as mattresses and clothing are burnt and replaced.
- The processes for disinfection, burning and replacement of household items are explained to and witnessed by family members to facilitate acceptance of the procedures and stem rumours.
- The nature of the burial and disinfection procedures is dependent on the type of PHE occurring.*

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## 10

Home-based risk reduction

- This procedure is used for individuals who resist hospital-based care.
- The patient is advised to stay in one room alone while a designated caregiver is provided with personal protective equipment and trained to take care of the patient. Ideally the caregiver should be healthy and immune-competent and to have been immunised to the disease causing the PHE by vaccination or a past infection. The caregiver should have access to basic hygiene items such as soap and water and appropriate personal protective equipment, based on the cause of the illness. For example a mask is needed if the illness is a respiratory infection.
- The patient is followed up daily by a medical professional and a psychologist who ensure adherence to the home-based risk reduction protocol, replenish medical stocks and assess the patient's clinical status. At each visit, the patient is encouraged to accept hospitalisation, as home-based care is a provisional measure, with health facility-based patient management as the preferred practice.
- The type of home-based risk reduction care is dependent on the type of PHE being dealt with.

## 11

Infection control in the health facility

- Involves the detection and isolation of cases, as well as the use of standard precautions, such as generic infection control (23).
- Activities include improving water quality, storage and delivery, as well as creating systems for safe disposal of sharps and contaminated waste.
- The number of injections given should be limited where possible, and single use vials and syringes should be encouraged.
- When an infectious disease is suspected, effective disinfection of the health facility requires spraying the structure and materials with a 0.5% chlorine solution. Hospital staff and RRT members should wear appropriate personal protective equipment, including hoods, goggles, masks, aprons, aprons, gloves (two pairs) and boots.
- Staff should be trained in the correct method of donning, removing and discarding contaminated protective equipment.

Note: Neither patients nor clinical paperwork should be sprayed with the chlorine solution. Patient's hands or feet may be sprayed only with their or their caregiver's verbal consent.





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Monitoring and evaluation involves the systematic collection, analysis and interpretation of data on preparedness and response activities. Stakeholders should use timely, accurate and properly analysed information from monitoring and evaluation to plan, implement and improve the public health strategy. For this framework, monitoring focuses on routine and continuous tracking of EMC and IRT preparedness and response capacities, as well as the efficiency and effectiveness of the response action, including alert management, field investigation and field response. Evaluation will provide periodic assessment of how well EMCs and IRTs meet their objectives, for example the efficiency and effectiveness of the response in reducing the population's exposure to the causal agent, modifying high risk behaviours or providing early, optimal clinical care for those infected (24).

Monitoring and evaluating of emergency preparedness and response capacity is best achieved by using practical indicators that can be measured repeatedly and directly or indirectly over time (24) and that are valid and reliable. Indicators can be expressed as whole numbers, ratios or percentages. Reliability is an estimate of the consistency of the measurement, whereas validity is an estimation of its accuracy.

Indicators are typically categorised as being of either process or outcome nature. Process indicators measure progression and activity performance. Outcome indicators measure how well the EMC or IRT initiative is accomplishing its stated objectives, such as how much by comparison health determinants within a defined population improve over weekly or monthly intervals after the field investigation and response stages.



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# ANNEXES

## Annex 1 – IDSR core functions and activities by health system level

| | COMMUNITY |
|---|---|
| Identify | • Use simple case definitions to identify priority diseases, events, conditions or other hazards in the community |
| Report | • Report essential information on priority diseases, events, conditions or hazards to health facility and appropriate authorities |
| Analyze and Interpret | • Involve local leaders in observing, recording and interpreting disease patterns, events and trends in the community<br>• Undertake verbal autopsies on causes of deaths |
| Investigate and confirm | • Support event investigation activities |
| Respond | • Assist local authorities in selecting response activities<br>• Ensure the community seeks care immediately in cases of emergency and danger signs of disease, events and conditions<br>• Participate in response activities including home-based care<br>• Mobilize resources appropriate for the activity at hand<br>• Carry out community health education for behaviour change |
| Communicate (Feedback) | • Give feedback to community members about reported cases, events and prevention activities |
| Evaluate | • Verify if public health interventions were undertaken as planned<br>• Verify the community response to the public health action |
| Prepare | • Participate in disaster or emergency preparedness and management committees<br>• Participate in risk mapping of potential hazards<br>• Conduct community based surveillance<br>• Manage emotional contingency emergency stock<br>• Participate in training, including simulation exercises |



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## Annex 1 – IDSR core functions and activities by health system level (continued)

| | HEALTH FACILITY |
|---|---|
| Identify | • Use standard case definitions to detect, confirm and record priority diseases or conditions<br>• Collect and transport specimens for laboratory confirmation<br>• If possible, use local laboratory capacity to confirm or isolate |
| Report | • Report case-based information for immediately notifiable diseases<br>• Report summary data to the next level<br>• Report laboratory results from screening of sentinel populations<br>• Report laboratory results to the next level |
| Analyse and interpret | • Prepare and periodically update graphs, tables and charts to provide information on time, person and place for reported diseases and conditions<br>• From the informative analysis, immediately report any disease or condition that<br>– exceeds an action threshold<br>– occurs in locations where it previously was absent<br>– presents unusual trends or patterns<br>• Interpret results in planning action and initiate public health actions with local authorities |
| Investigate and confirm | • Take part in investigation of reported outbreaks<br>• Collect, package, store and transport specimens for laboratory confirmation |
| Respond | • Manage cases and contacts according to standard case management guidelines<br>• Take relevant control measures |
| Communicate (feedback) | • Communicate with community members about outcomes of reported cases and prevention activities |
| Evaluate | • Assess community participation<br>• Conduct self assessment on surveillance and response activities<br>• Monitor and evaluate programme targets and indicators for measuring the quality of the surveillance system<br>• Monitor and evaluate programme timeliness and completeness of reporting from health facilities to the district<br>• Monitor and evaluate timeliness of response to outbreaks<br>• Monitor and evaluate prevention activities and modify them as needed |
| Prepare | • Participate in disaster or emergency preparedness and management committees<br>• Participate in rapid response training<br>• Conduct risk mapping of potential hazards<br>• Conduct training of the community<br>• Participate in simulation exercises |



| | DISTRICT, STATE, PROVINCE |
|---|---|
| Identify | • Collect surveillance data from reporting sites, including designated points of entry, in a timely manner and review their quality<br>• Ensure a reliable supply of data collection and reporting tools is available at the reporting sites<br>• Collect and transport specimens for laboratory confirmation<br>• If possible use local laboratory capacity to confirm cases |
| Report | • Make sure health facilities know and use standard case definitions for reporting priority diseases and conditions<br>• Make sure health facility staff know when and how to report priority diseases and conditions<br>• Report data on time to the next level<br>• Report laboratory results to the next level<br>• Periodically conduct risk assessment for priority diseases, events, conditions or hazards |
| Analyse and interpret | • Define denominators and ensure their accuracy<br>• Aggregate data from health facility reports<br>• Analyse data by time, place and person<br>• Periodically update graphs, tables and charts to describe reported diseases, events and conditions<br>• Calculate PHE rates and thresholds<br>• Compare current data with previous data<br>• Make conclusions about trends, thresholds and analysis results<br>• Describe risk factors for priority diseases or conditions |
| Investigate and confirm | • Arrange and lead investigations of reported diseases or outbreaks<br>• Assist health facilities in ensuring safe collection, packaging, storage and transport of laboratory specimens for confirmatory testing<br>• Receive and interpret laboratory results<br>• Decide if the reported outbreak is confirmed<br>• Report the confirmed outbreak to the next level<br>• Distribute specimen collection kits for special surveillance activities |
| Respond | • Select and implement appropriate public health response depending on the disease. For example plan to strengthen case management, conduct immunisation, or improve control and prevention activities<br>• Convene an epidemic response committee and plan a response to the PHE<br>• Conduct training for emergency activities<br>• Plan timely community information and education activities<br>• Alert neighbouring areas and districts about the confirmed outbreak |
| Communicate (feedback) | • Alert nearby areas and districts about the outbreak<br>• Give health facilities regular, periodic feedback about routine control and prevention activities<br>• Provide feedback on surveillance and data quality findings |



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## Annex 1 – IDSR core functions and activities by health system level (continued)

| | DISTRICT, STATE, PROVINCE (CONTINUED) |
|---|---|
| Evaluate | • Monitor and evaluate programme targets and indicators for measuring the quality of the surveillance system<br>• Conduct regular supervisory visits |
| Prepare | • Participate in disaster or emergency preparedness and management committees<br>• Conduct training and simulation exercises for staff<br>• Conduct risk mapping of potential hazards<br>• Support and conduct health facility-based surveillance<br>• Develop and manage contingency plans<br>• Put together and support a rapid response team<br>• Document response activities |

| | NATIONAL LEVEL |
|---|---|
| Identify (continued on the next page) | • Develop, update guidelines and ensure compliance with national policy and guidelines<br>• Develop policies and procedures for the national laboratory networks, including quality assurance systems<br>• Use national laboratories for confirmatory and specialized testing if necessary<br>• Collect and transport specimens for additional analysis at WHO collaborating centres as necessary |
| Report | • Report immediately notifiable diseases and events to the appropriate authorities<br>• Report other priority diseases and events on time<br>• Include all relevant laboratories in the reporting network<br>• Use the IKR decision instrument to determine risks for priority diseases, events, conditions or hazards<br>• Inform WHO as indicated in IHR (2005) |
| Analyze and interpret | • Set policies and procedures for analyzing and interpreting data<br>• Analyse and interpret data from a national perspective<br>• Regularly convene meetings of the technical coordinating committee to review the analysed and interpreted data before wider dissemination<br>• Carry out special analyses to forecast magnitude and trends of priority disease events |
| Investigate and confirm (continued on the next page) | • Ensure guidelines and standard operating procedures for outbreak investigations are available at all time<br>• Coordinate and collaborate with international authorities as needed during investigations<br>• Alert laboratories and support their participation<br>• Provide logistic support for acquisition of supplies, equipment, reagents, specimen transport media, health promotion budget etc. |



| | NATIONAL LEVEL (CONTINUED) |
|---|---|
| Investigate and confirm (continued) | • Share information with regional and international networks about confirmed outbreaks<br>• Use the decision instrument to decide whether the outbreak is a potential PHEIC<br>• Process specimens from investigations and send timely results as required to each level<br>• Request additional specimens as needed<br>• Participate in the epidemic response team |
| Respond | • Develop policies and procedures for responding to cases and outbreaks of priority diseases and conditions<br>• Support epidemic response and preparedness activities including deployment of rapid response teams<br>• Report and disseminate results of outbreak response to bulletins and the media using press releases and briefings |
| Communicate (feedback) | • Develop and regularly distribute a regional bulletin on epidemiology and public health<br>• Give districts regular, periodic feedback about routine PHE control and prevention activities<br>• Release information quickly in a transparent manner and listen to the affected community<br>• Document provision of appropriate and timely feedback |
| Evaluate | • Regularly monitor IDSR and laboratory core indicators<br>• Conduct outbreak investigations following after-action reviews<br>• Support annual monitoring of IKR core capacities<br>• Conduct regular IDSR review meetings<br>• Conduct regular supervisory visits |
| Prepare | • Develop policies, procedures and training strategies for reporting priority diseases, conditions and events at each level<br>• Adapt and distribute risk mapping guidelines<br>• Adapt and distribute guidelines for disaster or emergency preparedness plans<br>• Develop messages for community education<br>• Develop and manage contingency plans<br>• Organize and support national rapid response teams<br>• Develop and organize simulation exercises<br>• Establish and maintain a national public health emergency command and operations centre |

| | NATIONAL WHO REPRESENTATIVE, WHO REGIONAL OFFICE |
|---|---|
| Identify | • Develop and disseminate generic guidelines for PHE surveillance<br>• Document and share IDSR best practices<br>• Provide technical support to the national level for detection and confirmation of priority diseases, conditions and events<br>• Inform countries about health problems that may cross borders |



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## Annex 1 – IDSR core functions and activities by health system level (continued)

| | NATIONAL WHO REPRESENTATIVE, WHO REGIONAL OFFICE (CONTINUED) |
|---|---|
| Identify | • Coordinate support from the international reference laboratory network and from centres of excellence |
| Report | • Collect and compile reports on outbreaks and international notifiable diseases and events<br>• Produce annual regional profiles or situation reports for priority diseases, conditions and events |
| Analyze and interpret | • Develop and disseminate standard guidelines for analysis of data for each priority disease<br>• Provide technical support to the national level to improve capacity for data analysis |
| Investigate and confirm | • Upon request, provide support to countries for investigation or assessment of outbreaks, diseases or events<br>• Provide support for coordination of laboratory participation during investigations<br>• Provide support for risk assessment using the IHR decision instrument |
| Respond | • Coordinate and support response activities by the Strategic Health Operations Centre, technical experts, virtual rapid response teams etc. and for preparation of guidelines, SOPs etc.<br>• Mobilize resources and facilitate partnerships among Member States or institutions |
| Communicate (feedback) | • Provide feedback on collaboration with national and regional levels<br>• Disseminate risk-communication guidelines<br>• Share information with partners and stakeholders |
| Evaluate | • Use reports from countries to assess IDSR systems and advocate for improvements<br>• Develop, update or review guidelines and tools for IDSR and IHR monitoring and evaluation<br>• Promote, guide and support operational research |
| Prepare | • Mobilize resources for training, logistics and supervision<br>• Develop, update or review guidelines for disaster or risk management<br>• Maintain and update a roster of experts for rapid response teams<br>• Develop, update or review training programmes for IDSR and IHR implementation<br>• Maintain a public health emergency command and operations centre |



## Annex 2 – Institutional RRT members' minimum core skills and responsibilities

| RRT members | Minimum core skills and experience required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Manager or team leader | • Relevant management or team leadership experience with PHEs, including in outbreak response<br>• Experience with disease surveillance and response to PHEs<br>• Ability to engage technical and political entities within the national government<br>• Demonstrated leadership qualities<br>• Field experience in surveillance or risk management and response<br>• Scientific reputation in the subject matter of expertise<br>• Ability to advocate for and mobilize resources from technical and political bodies | • Maintain communication with and work in coordination with multisectoral institutions identified by the EMC as sources of RRT membership<br>• Ensure that both technical and political mechanisms respond appropriately to a PHE<br>• Oversee the technical activities of each RRT member<br>• Assume responsibility for assessing RRT preparedness and response capabilities, working with the RRT epidemiologist to determine the indicators from recommendations<br>• Oversee testing of the functionality, agility and readiness of the RRT through scenario-based field training at least once every six months once a PHE has been recognized<br>• With the epidemiologist, oversee the management and interpretation of all RRT-generated data<br>• Manage the biannual updating of the country-adapted and context-relevant PHE response plan<br>• Lead the writing of a concise, accurate monthly RRT report providing details on the alerts received, deemed credible, found to have infectious or non-infectious etiology, and responded to by the RRT, with their corresponding timeframes | • Name<br>• Job title<br>• Organization<br>• Contact details |



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*Annex 2 – Institutional RRT members' minimum core skills and responsibilities (continued)*

| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Epidemiologist (continued on the next page) | • Postgraduate degree in epidemiology or equivalent experience in a field epidemiology training programme<br>• Proven field experience in responding to PHE outbreaks | • Investigate and analyse epidemiology of clusters of suspected, probable or confirmed diseases by factors of time, place, person and mode of disease transmission, as well as to determine the etiology of a PHE<br>• Establish or strengthen active disease surveillance activities and follow-up on case contacts<br>• With the manager or team leader, oversee the determination and interpretation of communicable indicators<br>• Working with the team leader, support mobilization of field teams for rapid outbreak assessment or investigation<br>• Evaluate the current alert and response systems, including existing case definitions<br>• Supervise data management, analysis and interpretation<br>• Lead the planning of the strategy and methods to determine the etiology of the illness during a PHE<br>• Ensure clear routine reporting of key information on PHEs to the EMC at national, district or provincial level<br>• Liaise with international partners in the field as directed by the EMC to facilitate field investigation and response | • Name<br>• Job title<br>• Organization<br>• Contact details |



| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Epidemiologist (continued) | | • Identify the factors in the occurrence of the PHE in question<br>• Update and share surveillance data with the rest of the team<br>• Set in motion mechanisms to break the contamination chain for infectious diseases<br>• Provide guidance on risk prevention in the field<br>• Share emerging data with team members on a regular basis and determine the need for surveillance and response | |
| Clinician or infection control expert (continued on the next page) | • Medical or nursing university degree<br>• Field experience in effective clinical case management during PHEs<br>• Referral system skills<br>• Clinical experience in infection control, training of professionals in infection control measures, and implementing and evaluating infection prevention and control practices | • Directly support proper case-management and provision of optimum care for cases in health facilities and the community<br>• Provide guidance on clinical and epidemiological case definitions<br>• Collect robust demographic, treatment, and patient monitoring data for improved clinical response to PHEs<br>• Assess infection control practices in health care facilities in affected areas<br>• Provide guidance on the necessary infection control equipment for central, provincial and district-level hospitals and facilities during a PHE<br>• Review and, where appropriate, recommend changes to update infection control guidelines based on lessons learnt at health care facilities during PHEs | • Name<br>• Job title<br>• Organization<br>• Contact details |

*Annex 2 – Institutional RRT members' minimum core skills and responsibilities (continued)*

| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Clinician or infection control expert (continued) | | • Conduct appropriate on-site infection prevention and control training for staff at provincial or district hospitals after reviewing local infection control measures<br>• Coordinate work with all the response teams<br>• Report on findings of investigations and assist the RRT or international team and national authorities to formulate a plan of action, and participate in after-action reviews | |
| Social mobilization expert | • University degree in social sciences or communication<br>• Experience in social mobilization or behavioural communication approaches, PHE surveillance and response and rumour management | • Undertake rapid appraisals to understand perceptions, knowledge, beliefs and practices within households, communities and health care settings in affected areas in relation to PHE control, prevention, and treatment interventions<br>• Identify barriers and facilitating factors, including sociocultural and organizational contexts, that may affect the uptake of recommended risk reduction and health protection measures within households, communities and health-care settings<br>• On the basis of the findings of the rapid assessment, advise and make recommendations to the RRT leader on the design and implementation of effective communication strategies and interventions<br>• Based on the findings from the rapid assessment, develop effective social mobilization strategies that support outbreak control and prevention measures | • Name<br>• Job title<br>• Organization<br>• Contact details |



| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Veterinarian | • University degree, preferably an advanced degree in field epidemiology<br>• Experience in animal health, particularly disease detection and reporting<br>• Solid background in zoonoses<br>• Mastery of diseases affecting wildlife and aquatic animals | • Create a list of materials and equipment required for zoonoses, particularly for sampling<br>• Manage diagnostic activities for animal diseases<br>• Oversee the application of biosecurity measures if required<br>• Lead information analyses and investigations in the event of suspected outbreaks affecting animals<br>• Calibrate and strengthen surveillance of animal hosts<br>• Collect available data to produce needed animal health information<br>• Collaborate easily with public health partners<br>• Guide epidemic control measures for animal disease vectors<br>• Assess household practices for animals to maximize the effectiveness of disease control efforts | • Name<br>• Job title<br>• Organization<br>• Contact details |
| Wildlife specialist (continued on the next page) | • University degree in a wildlife science or a closely related field<br>• Experience in planning, managing, coordinating, monitoring and evaluation of wildlife related projects. | • Establish the precise pathogenic agents<br>• Define the relationship between pathogenic agents and host and the environment: parasites, commensalism, symbiosis<br>• Know pathogenic agent roles to understand how they are maintained in nature<br>• Establish the role of pathogenic agents in nature conservation and in the preservation of biodiversity<br>• Know wild animal pathology (symptoms, etc.) | • Name<br>• Job title<br>• Organization<br>• Contact details |



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*Annex 2 – Institutional RRT members' minimum core skills and responsibilities (continued)*

| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Wildlife specialist (continued) | | • Ensure proper expertise about bush meat and safe butchering, handling and preparation<br>• Protect food against rats and other creatures<br>• Determine animal pathogenic agents<br>• Determine the relationship between different disease-factors: vectors, reservoirs, hosts<br>• Behaviour of pathogens responsible for diseases<br>• Ensure nature conservation and biodiversity preservation<br>• Knowledge of wild animal pathologies<br>• Bush meat control<br>• Food control | • Name<br>• Job title<br>• Organisation<br>• Contact details |
| Anthropologist (continued on the next page) | • University degree in medical anthropology<br>• Extensive experience in developing, implementing and evaluating medical anthropological policies, procedures, and tools in low-resource settings<br>• Experience in PHE response and emergency situations | • Work with community leaders and in collaboration with the RRT leader to better understand local cultural attitudes to the PHE, and to identify beliefs and practices, including behaviours that may amplify or help control the PHE<br>• Identify and incorporate local beliefs and practices into patient care and PHE response efforts<br>• Contribute to the design and conduct of ecological and epidemiological studies as appropriate<br>• Investigate social and anthropological issues that would promote better understanding of community perceptions of the PHE | • Name<br>• Job title<br>• Organisation<br>• Contact details |



| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Anthropologist (continued) | | • Investigate cultural and social norms within the communities that will contribute to developing better rapport and trust<br>• Support documentation of the anthropological aspects of the PHE | |
| Environmental health specialist<br><br>Non-biologist, specialised in basic sciences (chemistry, biology, physics, mathematics) | • Environmental quality surveillance<br>• Food chain surveillance<br>• Environmental risk assessment of disease exposure | • Conduct environmental investigations of ecological factors related to disease risk<br>• Lead the work on prevention of diseases related to the environment, that is, "sound the alert" for such diseases | • Name<br>• Job title<br>• Organisation<br>• Contact details |
| Logistician (continued on the next page) | • University degree or equivalent level of education in supply chain management, emergency response logistics, or PHE response logistics | • Ensure logistical support is provided for preparedness and investigations of, and responses to, PHEs for each discipline or technical area, such as transport for patient samples for laboratory diagnosis<br>• Maintain stockpiles of essential materials such as personal protective equipment for use during the investigation or response to a PHE | • Name<br>• Job title<br>• Organisation<br>• Contact details |



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*Annex 2 – Institutional RRT members' minimum core skills and responsibilities (continued)*

| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Logistician (continued) | • Field experience in logistical operations for responding to infectious disease outbreaks or other public health emergencies | • Identify strategic storage points for supply stocking to support the response<br>• Provide guidance on logistics and supply chain management at all levels<br>• Provide logistical support for tracking shipment of samples to identified laboratories<br>• Ensure administrative procedures are observed during field operations and address financial management and human resource issues<br>• Manage finances when relevant<br>• Look after logistical communication devices<br>• Identify and collaborate with local resource persons at the PHE location<br>• Develop a response data base<br>• Coordinate team security | |
| Occupational health specialist<br>or doctor<br>Industrial hygienist<br>Toxicologist<br>Local inspector from the health, hygiene and environmental committee | • Monitor and inspect employee health in the workplace<br>• Monitor and inspect workplace conditions<br>• Assess the risk of exposure to chemical substances in the workplace<br>• Surveillance and inspection of security regulations in the workplace | • Participate in setting up preventive measures for protection of employees and the work environment, such as medical protocols and injury prevention processes<br>• Ensure ongoing surveillance in the workplace | • Name<br>• Job title<br>• Organization<br>• Contact details |



| RRT members | Minimum core skills and experiences required | Minimum responsibilities for PHE preparedness, response and monitoring and evaluation | Personal and professional details |
|---|---|---|---|
| Laboratory specialist (1 to 2) | • University degree in microbiology, biology or a related laboratory science<br>• Field experience in the interaction of laboratories and surveillance activities | • Provide guidance on establishment of an operational system for safe and appropriate collection, packaging and transport of samples from the field to the reference laboratory<br>• Develop standard operating procedures for participation of laboratories in investigation and laboratory confirmation of PHEs<br>• Set up systems for efficient linkage of laboratories and epidemiology teams<br>• Work in close coordination with response teams to enhance national, regional and international laboratory networks to allow efficient laboratory identification of epidemic-prone diseases and public health risks | • Name<br>• Job title<br>• Organization<br>• Contact details |
| Financial officer* (continues on the next page) | • University degree<br>• Previous finance experience in a ministry of health | • Take responsibility for application of appropriate principles of accounting and finance to support deployment of the RRT during a PHE<br>• Ensure RRT members understand the rules and requirements for deployment-related payments and reimbursements<br>• Organize for rapid replenishment of funds when required<br>• Organize for petty cash for staff deployed to the field<br>• Ensure that all financial transactions processed during out of office hours are recorded and cleared on the first subsequent day of business<br>• Clear all financial documents | • Name<br>• Job title<br>• Organization<br>• Contact details |

*Some positions are suggested based standards required in the PHE



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## Annex 2 – Institutional RRT members' minimum core skills and responsibilities (continued)

| | | |
|---|---|---|
| Financial officer (continued) | | • Monitor cash flow and work with counterparts on cost sharing for relevant activities<br>• Determine the alert threshold for financial and logistical needs<br>• Coordinate technical aspects of deployment of staff to field operations<br>• Develop an organizational chart, working with the team leader |

## Annex 3 – Preparedness and response capacity indicators

The following recommended key indicators will facilitate EMCs and RRTs in the WHO African Region to measure and evaluate their preparedness capacity for a PHE. Only data generated by the EMC and RRT should be used. All indicators are to be reported monthly, unless stated otherwise.

| Number | Indicator | Numerator/denominator* |
|---|---|---|
| 1.1 | Percentage of RRT member positions filled by a professional who fulfils all required core qualities (see Annex 2) | Number of RRT member positions filled by a professional who fulfils all of the required core functions (see Annex 2), divided by the total number of RRT member positions, both filled or not yet filled |
| 1.2 | The number of scenario-based field training events conducted by the EMC or RRT | NA/not applicable<br>It is essential that EMC or RRT preparedness training be conducted and evaluated at least once every six months. |
| 1.3 | The EMC or RRT has developed and written a country-adapted and context-relevant response plan for PHEs | NA/not applicable<br>It is essential that the response plan be reviewed at least once every six months and, if necessary, revised. |

* Numerator is divided by the denominator and multiplied by 100 to calculate the percentage.



## Annex 4 – Alert management indicators

The following recommended key indicators will facilitate EMCs and RRTs in the WHO African Region to measure and evaluate the timeliness and effectiveness of their management actions for PHE alerts. Only data generated by the EMCs and RRTs under the supervision of its manager or team leader and the epidemiologist should be used. All indicators are to be reported monthly, unless stated otherwise.

| Number | Indicator | Numerator/denominator* |
|---|---|---|
| 2.1 | Percentage of alerts received by the EMC or RRT that it deems credible | Number of alerts received by the EMC or RRT that it deems credible, divided by total alerts received by the EMC or RRT |
| 2.2 | Percentage of alerts received by the EMC or RRT that the it deems credible and that are later determined to be associated with an infectious disease | Number of alerts received by the EMC or RRT that it deems credible and that are later determined to be associated with an infectious disease, divided by the total alerts received by the EMC or RRT that it deems credible |
| 2.3 | Proportion of alerts deemed credible by the EMC for which field investigations start within 48 hours of being considered credible | Number of alerts received by the EMC that it deems credible for which an RRT field investigation is started within 48 hours of being considered credible, divided by total alerts received by the EMC that it deems credible and for which an RRT field investigation is started. |

* Numerator is divided by the denominator and multiplied by 100 to calculate the percentage.



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## Annex 5 – Field investigation indicators

The following table of recommended key indicators may facilitate RRTs in the WHO African Region when measuring and evaluating the timeliness and effectiveness of the RRT's field investigation of PHEIs. Only data generated from the RRT, overseen by its manager/team leader and the epidemiologist, will be used. All indicators are to be reported monthly, unless stated otherwise.

| Number | Indicator | Numerator/Denominator* |
|---|---|---|
| 3.1 | Percentage of samples sent to a diagnostic laboratory identified by the RRT during the preparedness phase that were sent following the laboratory's sample-shipping protocol | Number of samples sent to a diagnostic laboratory identified by the RRT during the preparedness phase that were sent according to the laboratory's sample shipping protocol, divided by total samples sent to the diagnostic laboratory identified by the RRT during the preparedness phase |
| 3.2 | Percentage of PHE patients who the RRT confirmed were receiving optimum care during the field investigation stage | Number of PHE patients who the RRT confirmed were receiving optimum care during the field investigation stage, divided by total PHE patients identified during the field investigation stage<br>Note: Optimum patient care is defined as the best possible care available based on the probable and eventual diagnosis of the PHE and the contextual setting under which the patients are hospitalized. |
| 3.3 | Percentage of PHE patients whose epidemiological and clinical data the RRT found recorded by the health facility personnel during the field investigation stage | Number of PHE patients whose epidemiological and clinical data the RRT found recorded by health facility personnel during the field investigation stage, divided by the total PHE patients attended to by the health facility personnel during the RRT field investigation stage |
| 3.4 | Were local authorities involved in the field investigation? (yes or no)? | NA (not applicable) |

* Denominator to be fixed by the laboratory, as it multiplied (100) to calculate the percentage.



## Annex 6 – Field response indicators

The following recommended key indicators may facilitate RRTs in the WHO African Region to measure and evaluate the timeliness and effectiveness of their field response to PHEs. Only data generated by the RRT under the guidance of its manager or team leader and the epidemiologist should be used. All indicators are to be reported monthly, unless stated otherwise.

| Number* | Indicator* | Numerator/Denominator* |
|---|---|---|
| 4.1 | Percentage of confirmed PHE patients detected by the epidemiological surveillance system who receive appropriate clinical care or hospitalization within 48 hours of PHE confirmation | Number of confirmed PHE patients detected by the epidemiological surveillance system who receive appropriate clinical care or hospitalization within 48 hours of PHE confirmation, divided by total confirmed PHE patients detected by the epidemiological surveillance system<br>Note: Early identification of PHE patients allows for prompt hospitalization and minimization of secondary transmission in the community. |
| 4.2 | Number of PHE IEC campaign sessions the RRT conducts at the PHE site during the field response stage for either the affected community or health personnel or both | NA (not applicable)<br>Note: IEC campaign sessions increase understanding of the PHE and acceptance of the response, and encourage health facility-based assessment and hospitalization for suspected and confirmed cases. Moreover, IEC sessions mitigate local civil anger among family members, reduce patient stigmatization and quell rumours and panic in the community. |
| 4.3 | As assessed by the RRT, the percentage of identified PHE patients who receive optimum patient care at any time during the field response stage | Number of identified PHE patients who receive optimum patient care at any time during the field response stage, divided by the number of identified PHE patients<br>Note: Optimum patient care is defined as the best possible care available based on the probable and eventual diagnosis of the PHE and the contextual setting under which the patients were hospitalized. |

* Denominator to be fixed by the laboratory, as it multiplied (100) to calculate the percentage.



pCDuWP0000380

*Use this template to prepare your field investigation report. Please copy and paste it into a new Microsoft Word document to help you provide the required information and format your report.*

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## REPORT FOR RESPONDING TO AN INVESTIGATION OF A PUBLIC HEALTH EVENT OF UNKNOWN ETIOLOGY

1. Provide a brief summary of the investigation, indicating whether or not a public health event (PHE) of unknown etiology is currently transpiring. Include the name(s) of the villages, towns, districts and country involved. Where possible, provide population numbers for each.

2. Describe the clinical presentation of the patients as assessed by patient registrars, local health authorities or family or friends.

3. Describe the clinical presentation of the patients as assessed by the RRT clinician.

4. Provide a descriptive epidemiology of the PHE. All data should be described and categorized by person, place and time and presented with analyses and interpretation.

   a. Patient's demographic details' summary (i.e. age, gender, occupation, town or village of residence)

   b. Number of cases and deaths (reported by epidemiological week)

   c. Incidence rate (reported by epidemiological week)
   Incidence rate is defined as the number of new cases of a disease that occur during a specified period in a population at the risk of developing the disease during the same specified period of time.

   Incidence rate = Total number of persons who developed a certain disease during a specified time period, multiplied by k (1000 or 10 000), and divided by number of persons at risk of a certain disease in specified time period

   Case fatality ratio (CFR) (reported by epidemiological week)

   d. Case fatality ratio is an incidence proportion. It is the proportion of people among those who develop a disease who proceed to die from it. It does not measure the development of the disease but rather death from the disease. The CFR should be used as a description of the proportion of people who succumb to an infectious disease.

   e. Case fatality ratio = Number of people who die from a certain disease, divided by number of people who developed the disease

   f. Attack ratio (reported by epidemiological week)
   Attack ratio is a type of incidence ratio used for acute diseases. It measures the proportion of the population affected by the PHE of unknown etiology until the present time.

   Attack ratio = Number of people at risk of a disease who develop the disease, divided by the number of people at risk of the disease

5. Provide the proposed and preliminary epidemiological and clinical case definitions agreed on by the RRT and local health authorities.

6. Include a map of the affected area, with village locations of the identified cases and deaths.

7. Describe how the PHE might be transmitted and the population potentially at risk.

8. Describe the RRT's proposed response activities to control the primary and/or secondary transmission of the PHE of unknown etiology.

9. Provide a security assessment, including information about the affected area's context, security, airports, rivers, lakes and roads.

10. Describe the availability, usage and needs for all resources, including staff, cold chain equipment, vehicles, fuel, medical materials and drug stocks.

11. List the names and locations of the diagnostic laboratories where the samples were sent.

12. State whether or not the RRT would like to request for an on-site diagnostic and patient monitoring laboratory, and if so, what concrete steps are being taken to ensure that such a laboratory is obtained.

13. Describe the current planning, action and potential next steps of the RRT.

14. Describe the factors that demonstrate the capacity of the local health authorities to safely and effectively treat the infected patients and bury the dead.





UCDUSR000588

15. Recommend whether or not specialists not currently part of the RRT are needed to be sent to the PHE location, such as medical toxicologists, medical psychologists, chemical or hazardous material specialists, etc., to satisfy the One Health approach requirements.

16. Provide the disease chronology information if it is available:

a. Date the initial alert was received by the epidemic management committee, rapid response team, or equivalent body (dd/mm/yyyy) .....

b. Date of arrival of the rapid response team at the location (dd/mm/yyyy) .....

c. Date of laboratory confirmation of the etiology of the PHE (dd/mm/yyyy) .....

This report was prepared on (dd/mm/yyyy) .....

Please provide your name and contact details, writing clearly and preferably typing them in an using block letters. This report was written by:

1. Name: .....
Institution and position: .....
Phone: ..... E-mail: .....

2. Name: .....
Institution and position: .....
Phone: ..... E-mail: .....

3. Name: .....
Institution and position: .....
Phone: ..... E-mail: .....



## Annex 8 – Participants in WHO African Region beta-testing workshops

Uganda workshop

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**Civil Aviation Authority**
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Dr Byamukama Agaba,
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Dr Julius Bazewise,
Mr Wanyi Kabeyi,
Dr Amone Jackson Kaka,
Dr Dan Epamasoywa,
Mr Lawrence Lubwago,
Ms Lilian Lumaga,
Dr Henry Luzze,
Dr Isaac Makumbi,
Mr Mugagga Malendo,
Mr Okuona Morris,
Mr Fred Mulabya,
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Dr James Sekagaya,
Dr Victor Tugumisirize,
Dr Patrick Tushemereirwe
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Dr Janet Nakagwdde,
Dr Mulwesi Wilson
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Luke Nyakarahuka, PhD;
**Uganda Wildlife Authority**
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**UPDF**
Dr Henry Ryabe
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Ms Sandra Butler Ruth Walrop, PhD;
**USAID Uganda**
Thomas Easley, DVM
**WHO Uganda country office**
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Tamara Curtis Nemo, PhD



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**Médecin du Monde**

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Dr Musafiri Ndemere (Maniema)

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**USAID IPT RESPOND Project/ Ecology & Environment**

Louise Flynn, PhD

UCDUSR0005369

Food and Agriculture Organization
of the United Nations

# Intercontinental spread of H5N8 highly pathogenic avian influenza –

## Analysis of the current situation and recommendations for preventive action

Les Sims - *Asia Pacific Veterinary Information Services;* Ian Brown - *Director of EU/OIE/FAO International Reference Laboratory for Avian Influenza, Weybridge, UK;* Sergei Khomenko - *Disease Ecologist, FAO-HQ, Rome, Italy;* Sophie von Dobschuetz – *Veterinary Epidemiologist, FAO-HQ, Rome, Italy*



UCDUSR0005370

# Extent of H5N8 outbreak

- Rapidly evolving and changing daily
- As of 23 November, confirmed H5N8 cases in wild birds +/- poultry in Russia, India, Hungary, Poland, Germany, Denmark, Switzerland, Netherlands, Sweden, Croatia, Israel, Iran ... with more expected.
- Role of wild birds in long distance intercontinental movement now indisputable (building on evidence from 2005 onwards)
- Once virus is in poultry other routes of transmission can occur

UCDUSR0005371

- First wave

2005-06

Ubsu-Nur Lake

Spring 2005 (May)

Summer 2005 (July–August)

Autumn 2005 (September–October)

Winter 2005/2006 (December–February)

Spring 2006 (March)

UCDUSR0005372

- Second wave

2009-10

UCDUSR0005373

# Third wave

2014-15

Clade 2.3.4.4

Clade 2.3.2.1c

# Fourth wave 2016 – so far

- All intercontinental Gs/GD-lineage H5 viruses have emerged or evolved in China
- Presumably relates to close interactions between infected domestic and wild waterbirds (what more can be done?)
- Intercontinental strains of virus that move via wild birds are not necessarily the ones that are prevalent in domestic poultry in China (e.g. 2005 Clade 2.2; 2016 Clade 2.3.4.4 H5N8)
- Not all H5 strains appear to have the capacity to undertake intercontinental migration (e.g. 1997 H5N1 viruses were poorly adapted to ducks and did not spread)
- Predictions/warnings rely on good active and passive surveillance systems and early reporting of findings (especially from areas with no or few poultry such as lakes on Tibetan Plateau, Mongolian lakes and Southern and Far North Eastern Russian Federation)

## PREDICTIONS

- Likely to see on-going transmission and spread in Europe and South Asia; virus could cycle for several years
- Egypt at high risk and new strain will likely complicate control if/once incursion occurs (assuming it can compete with existing strains)
- West Africa also at risk based on experiences from 2006 and 2015.

| | | |
|---|---|---|
| CREATOR:<br>EU Reference Laboratory<br>DATE: 22/11/2016 | **Highly Pathogenic Avian Influenza outbreaks in October and November 2016** | Animal & Plant Health Agency |

UCDUSR0005378

# Current status of H5N8 HPAI in Europe Wild birds

- Nine countries with detections in wild birds (minimum 82 events)
  - DE 16; AT 2; HU 1; PO 3; DK 12; NL 7; CR 2; SWITZ 38; SE 1
  - Species affected c15 and rising -predominantly diving duck species
  - **All associated with mortality events/die offs**

  - Potential change in virus pathogenicity for wild birds cf 2014/15

# Current status of H5N8 HPAI in Europe Poultry

- Four EU MS's with poultry outbreaks (total 27)
  - DE 11; AT 1; HU 14; DK 1
  - Turkeys ; ducks , chicken (layers & breeders), geese , mixed ,

- Clinical signs variable from severe mortality to mild
  - Turkeys 6-100%; Chicken Breeders 10-100% IVPI at EURL 3.0
  - Domestic duck 5-70%
  - Domestic Geese- high mortality

# FAO OIE Reference lab – Weybridge UK

- Support on diagnostics

http://flu-lab-net.eu/

ENQUIRIES FOR ADVICE/SUPPORT

AIWRL@apha.gsi.gov.uk

UCDUSR0005381

# ACTION AGAINST WILD BIRDS IS NOT RECOMMENDED!

- **No benefit is to be gained** through culling of wild birds or habitat destruction.
- Spraying of birds or the environment with disinfectant is **counter-productive, harmful to the environment and not effective** from a disease control perspective.
- There is **no justification for any pre-emptive culling** of endangered species in zoological collections.

UCDUSR0005382

# AVIAN INFLUENZA BIOSECURITY GUIDE

# YOU CAN MAKE A DIFFERENCE

NFU

British Free Range Egg Producers Association

BIOSECURITY

**Preventive measures applied at the farm, external environment, and entry points to the chicken house.**

It reduces the risk of introducing pathogens that could affect the health of the flock, and could help stop the spread of avian influenza.

## Prevent the spread of avian influenza

Important whole site considerations:

- All staff and guests should have training on farm procedures before starting work
- Only clean vehicles with disinfected wheels and wheel arches can enter or exit (or where access is not essential they should be left at site perimeter).
- Strictly limit and control access to poultry flocks
- Keep visitors to a minimum and ensure you keep a visitor book
- Maintain active rodent controls
- Minimise contact between poultry and wild birds
- Create and regularly update biosecurity and AI contingency plans

Anything intended for use inside the shed such as bedding and foodstuffs should be safely stored on the outside and not open to the environment including wild birds and their faeces

## TOOLS AND EQUIPMENT

Must Haves:

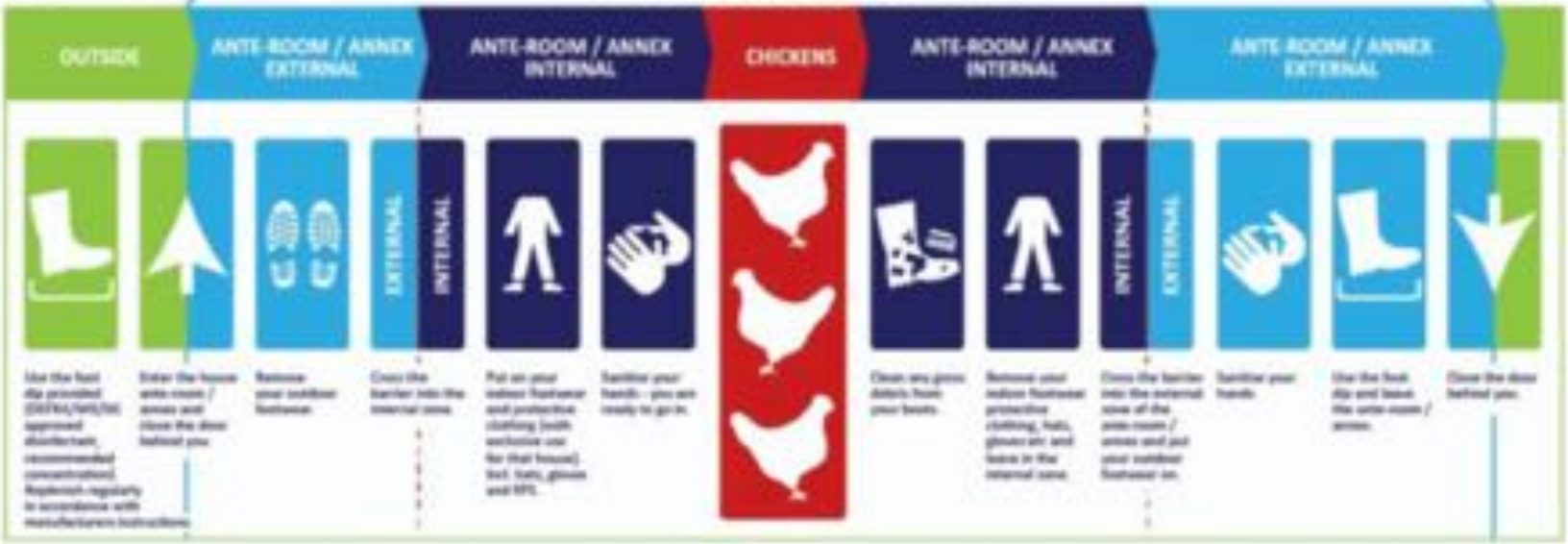
- Dedicated tools for each house
- Do - Disinfect tools and equipment regularly and always before entering the house
- Do - Protect tools from contamination by vermin or wild bird droppings.

Reduce the number of personnel coming on site, and of those that do, restrict access to limit possible contamination

The ante-room/annex has two areas using a barrier (20cm high). Internal to the chicken house and external.

## HOUSE ENTRY & EXIT PROCEDURE

The external zone has everything you need to perform your work without crossing back to the external zone




LIMIT THE ATTRACTIVENESS OF THE SITE TO WILD BIRDS - INCLUDING LOCHS, STANDING WATER, GRAZING AREAS AND SPILT FOOD

UCDUSR0005383

# Recommendations to producers and poultry workers (1/2)

- **Report sick or dead birds** – wild birds and poultry – to local authorities!
- **Step up biosecurity measures** in order to **prevent potential virus introduction** from wild birds or their faeces (1/2):
  - Keep poultry and other animals away from wild birds and their sub-products or droppings through **screens, fences or nets.**
  - **Keep wild birds and rodents away** from poultry feed and bedding.
  - **Never use water accessed by wild birds** (e.g. coming from waterfowl habitats) for poultry.

UCDUSR0005384

# Recommendations to producers and poultry workers (2/2)

- **Step up biosecurity measures** (2/2):
  - Avoid the introduction of pathogens through contaminated clothes, footwear, vehicles or equipment used for hunting:
    - **Do not allow unauthorized** people or cars on your premises
    - Workers should have **dedicated clothing** for their work with or near poultry
    - Car or truck tires, equipment and boots should be **cleaned and disinfected** upon entering premises or poultry housing

# Recommendations to veterinary services (1/3)

- **Action on wild birds not recommended!**
- **Raise awareness** about HPAI, precautionary measures as well as reporting mechanisms for sick or dead birds.
- **Provide mechanisms for reporting** sick or dead birds (hotlines, collection points), including advice on their safe handling.
- Provide means for and ensure **proper disposal of carcases** after sample collection.
- **Ensure means for laboratory testing are in place** to detect the currently circulating avian influenza viruses, esp. clade 2.3.4.4.
- **Collaborate with hunting associations** for lab testing of hunted birds and knowledge about arrival of migratory birds.

UCDUSR0005386

# Recommendations to veterinary services (2/3)

- Ensure **preparedness plans are in place** (PPEs, trained staff for culling and disposal, disinfectants, emergency budget, etc..).
- **Control measures for captive wild birds** in affected places should be based on:
  - strict movement control
  - isolation
  - limited culling of affected birds only when necessary
- **Perform gene sequencing** for all H5 viruses detected in non-endemic countries, **and share results** with the global community in a timely manner > for better understanding virus spread.

# Recommendations to veterinary services (3/3)

- *Countries at risk:* increase surveillance efforts in poultry and dead wild birds
- *Vaccinating countries (H5):* Current vaccination strategies, including vaccine selection, may need to be revised

# General recommendations to those in contact with poultry or wild birds

- **Report sick or dead birds** to local authorities!
- **General good food safety practices:**
  - **Wash hands** properly and often. Always do so after handling birds or other animals, when cooking or preparing animal products, and before eating.
  - **Eat only well-cooked meat products.**
  - **Do not collect, consume or sell animals found sick or dead.** (report to local authorities instead!)

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# Important FAO links and documents

FAO's AI webpage (www.fao.org/avianflu) provides access to:

- **H5N8 HPAI Global Disease Situation Update**
- **EMPRES Watch**: H5N8 HPAI clade 2.3.4.4 detected through surveillance of wild migratory birds in the Tyva Republic, the Russian Federation – potential for international spread
- **EMPRES News**: H5N8 highly pathogenic avian influenza detected in Hungary and in the Republic of India
- **AGAH guidelines**:
  - Wild Birds and Avian Influenza
  - Preparing for Highly Pathogenic Avian Influenza
  - Biosecurity for Highly Pathogenic Avian Influenza [and more…]

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Food and Agriculture Organization of the United Nations

empres watch

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# H5N8 highly pathogenic avian influenza (HPAI) of clade 2.3.4.4 detected through surveillance of wild migratory birds in the Tyva Republic, the Russian Federation – potential for international spread

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## Summary

A Goose/Guangdong/96 lineage H5N8 highly pathogenic avian influenza (HPAI) virus of clade 2.3.4.4 was detected in migratory birds at Lake Ubsu-Nur in the Tyva Republic of the Russian Federation, located on the Central Asian Flyway, in early June 2016 (World Organisation for Animal Health (OIE), 2016; Department for Environment, Food and Rural Affairs, 2016). In past seasons, detection of HPAI virus in this region of the Russian Federation was followed by detection of similar viruses in other locations, especially to the west and south of the Tyva Republic. All countries along this flyway and those to the west in the former Soviet Republics, the Middle East, Eastern Europe and even Africa (especially West Africa) should be on the alert for incursions of this virus. Movement of virus within 18 months of first detection in southern Russia to the Korean Peninsula and Japan has also occurred on two occasions (2006 and 2010). Proactive surveillance and early reporting of these results by Russian scientists is an excellent demonstration of how surveillance is used as a tool for early warning. Note that as the virus may not necessarily be fatal for wild birds, the first evidence of infection may only be when spillover occurs into domestic poultry populations, especially galliformes, which are more likely to show signs of disease when infected.

## Background

### The event

Testing of samples collected in late May and early June 2016 during a targeted survey for avian influenza and Newcastle disease viruses at Ubsu-Nur (Anonymous, 2016), on the border between western Mongolia and the Tyva Republic in the Russian Federation, resulted in detection of H5N8 HPAI virus belonging to clade[1] 2.3.4.4 (see Map 1). The virus was confirmed in samples from several species of waterbirds, including six black-headed gulls (*Larus ridibundus*), four grey herons (*Ardea cinerea*), four great cormorants (*Phalacrocorax carbo*), one great-crested grebe (*Podiceps cristatus*), one common tern (*Sterna hirundo*) and one duck (family Anatidae; species unidentified) (OIE, 2016). The variety of species in which H5N8 HPAI virus was detected represents a typical waterbird community that can moult at the same sites, though would occur in different habitat types and use different feeding methods. Although some carcasses of birds were found, there were no large-scale mortalities due to avian influenza of the magnitude observed in 2006 (Savchenko *et al.*, 2012), at least in the Russian sector of the lake (OIE, 2016).

This is the fifth known occasion that Goose/Guangdong/96 lineage H5 HPAI virus has been detected in wild migratory birds at this particular location. The absence of keeping of domestic poultry in the vicinity of Lake Ubsu-Nur strongly suggests that the virus was introduced to this location by wild waterbirds. With currently ongoing moulting and post-breeding movements of waterbirds, there is a possibility that the pathogen could be introduced into the Siberian lowland, thus opening a way for the virus to invade stopover sites along the West Eurasian and Afro-Eurasian waterbird migration systems. Prior to 2016, waterbird mortalities at Ubsu-Nur due to Goose/Guangdong-lineage H5N1 HPAI virus were observed in 2006 (clade 2.2), 2009, 2010 (both clade 2.3.2.1c) and 2015 (clade 2.3.2.1c).

In May–June 2006, about 4 000 waterbirds (mainly breeding and particularly juvenile great-crested grebes) died at the site due to H5N1 virus infection. A further 400 dead birds were found during the summer die-offs in 2009 and 2010, including great crested-grebe, bean goose (*Anser fabalis*), Pallas's gull (*Ichthyaetus ichthyaetus*), Eurasian

1 A formal system of clade nomenclature has been established for haemagglutinin sequences of highly pathogenic H5 viruses belonging to the Goose/Guangdong/96 lineage (see Smith *et al.*, 2015; available at http://www.ncbi.nlm.nih.gov/pubmed/25966531).

UCDUSR0005391

**Map 1. Location of the site of wild bird sampling at Lake Ubsu-Nur, on the border between western Mongolia and the Tyva Republic, the Russian Federation.**

Map data ©2012 Google, Imagery ©2014 TerraMetrics

surveillance location at Ubsu-Nur Lake

Source: FAO

spoonbill (*Platalea leucorodia*), great cormorant, unidentified Anatidae, egrets and other species. In May–June 2015, eight carcasses were found: from *Sterna* sp. (3), common coot (1) (*Fulica atra*) and great-crested grebe (5). An additional 100 samples were collected from shot waterbirds belonging to the orders Podicipediformes, Pelecaniformes, Anseriformes, Charadriiformes and Gruiformes. A number of samples were found positive, either serologically (*Ph. carbo*, red-crested pochard *Netta rufina*) or virologically (*Sterna* sp. (3), *P. cristatus* (2)). Unfortunately, it was unclear from the information provided whether positive samples came from dead or live birds (Anonymous, 2015). Notably, all Ubsu-Nur die-offs (2006–2016) took place in the period May–June, which corresponds with the breeding season for most of the species found to be infected. This suggests that early summer movements of Anatidae resulting in introduction of H5 HPAI to Ubsu-Nur (and elsewhere) lead to infection of a diversity of breeding waterbirds and their subsequent involvement in the transmission cycle.

On all but one occasion, when Goose/Guangdong/96 lineage H5 HPAI virus was detected in migratory birds in Ubsu-Nur it was followed by detection of similar viruses along the Central Asian Flyway to South Asia (Bangladesh in 2007, Nepal in 2010) or to the west (Bulgaria and Romania in 2010). In 2005, the detection of this lineage elsewhere in the Central Asian Flyway in the southern part of the Russian Federation heralded the first spillover of Asian-origin H5N1 HPAI into Europe, the Middle East and Africa. An H5N1 virus found in the same location in 2014 was followed by detection of similar viruses in West Africa and Eastern Europe.

## The location

Lake Ubsu-Nur (Ubsu-Nur, Uvs-Nuur – latitude 50.3 N, longitude 92.7 E) is a 70 km by 80 km shallow brine lake (average salinity 18.5–19.7 g per litre, locally varying), located mainly within Mongolia with a small part crossing into the Tyva Republic, the Russian Federation (Commission of the Russian Federation of the United Nations Educational, Scientific and Cultural Organization (UNESCO), 2016). It is the largest of the lakes in Uvs Hollow, located on a biogeographical divide between Siberia and Central Asia, where the world's most northern desert meets the most southern tundra of the Northern Hemisphere. Ubsu-Nur is a huge wetland area that congregates a great abundance and diversity of aquatic birds that stop over or come for breeding. It is an important stopover site for migratory birds using the Central Asian Flyway, which covers a large continental area of Eurasia between the Arctic Ocean and the Indian Ocean (Convention on the Conservation of Migratory Species of Wild Animals (CMS), 2016). However, some breeding species of Uvs Nur such as Swan Goose (*Anser cygnoides*) (Murygina, 2014) overwinter exclusively in central and southeast China (Yellow River and the coast of the East China Sea), thus providing a possible direct link from the epicentre of HPAI evolution to the Central Asian Flyway system.

Summertime densities of 2 000 individual waterbirds per 10 km of the shoreline are reported (Ozenskaya, 2008). The lake received relatively little attention from ornithologists and it is only now that both its Russian and Mongolian parts are being more comprehensively investigated. During a 2014 survey, Archimaeva (Murygina, 2014), whose expedition surveyed the whole perimeter of the lake, found many colonies of waterbirds, which were exceptionally abundant at the mouth of Tesin-Gol river just south of the Russian sector of the lake. Gulls, terns, great cormorants, grey herons, various species of ducks, whooper swans (*Cygnus cygnus*) and large concentrations of Eurasian spoonbills (*Platalea leucorodia*), as well as multiple species of waders were reported to be present at this site. Greylag goose (*Anser anser*) and Swan goose (*Anser cygnoides*) broods were also recorded, the latter implying a possible direct connection to China. It is also noted that Ubsu-Nur is an important summer staging area for non-breeding individuals and a moulting site for waterfowl changing their primaries, including ducks, swans and geese, who arrive from other destinations due to particularly favourable conditions and virtual lack of disturbance from humans.



UCDUSR0005392

**Map 1. Transcontinental west-southwest spread of H5N1 HPAI clade 2.2 virus from Asia to Europe and Africa between May 2005 and April 2006.**

Source: FAO

## The concern

The detection of clade 2.3.4.4 virus in the south of the Russian Federation represents an early warning for countries to the west of this location that this H5N8 virus can, once again, emerge in the Afro-Eurasian flyway systems as waterbird breeding and moulting seasons progress and are followed by the fall migration to the overwintering areas. The findings at Lake Ubsu-Nur correspond broadly with the breeding season of resident species and onset of moulting and postbreeding aggregation of waterfowl.

This repeated pattern whereby Goose/Guangdong/96-lineage H5 is detected in wild birds in the southern Russian Federation (Ubsu-Nur or other Siberian wetlands to the west of Ubsu-Nur) can trigger HPAI occurring in other wild birds and poultry populations later in the season (from September to December onwards). Countries bordering the Caspian and Black seas (Azerbaijan, Bulgaria, Romania, the Russian Federation, Turkey, Ukraine) and possibly also Western Europe, should be on high alert given virus spread to these places in the winter of 2005/06 (Ottaviani *et al.*, 2010) and subsequent years (Sharshov *et al.*, 2012).

## Learning from the past

In some regions, trade-related activities constitute the most important risk factor for local and cross border spread of HPAI virus. However, it is clear that wild birds have played a major role in introducing the virus into new areas over long distances and probably at times played a role in sustaining the transmission cycle of at least several Goose/Guangdong lineage H5 viruses between the years (Sims and Brown, 2016). Long distance transmission associated with wild birds has been observed periodically since 2003 and occurred in several major waves; for example, from mainland Asia to Japan, and from Asia to Europe, North America and, apparently, to Africa. Although wild birds were implicated in the long distance intercontinental spread of clade 2.3.4.4 virus from Asia to northern Europe and North America in 2014–2015, this virus was not detected in the southern part of the Russian Federation prior to intercontinental spread (a similar virus was only detected from a Eurasian Wigeon (*Anas penelope*) in the Sakha Republic in the northeastern part of the Russian Federation in September 2014 (OIE, 2014). Therefore, these cases are not considered further in this report.

In the following sections, we outline three occasions in which positive findings in wild birds in the south-central part of Siberia in the Russian Federation (in 2005/06, 2009 and 2014) were followed by detection of the same virus in wild birds or poultry further west and south, suggesting that such a scenario of spread may repeat itself in 2016/17. In two of these cases (2005 and 2009), a similar virus was also detected in the Republic of Korea and Japan (winter of 2006/07 and 2010/11), some 18 months after the first detection in southern Siberia.

## H5N1 HPAI clade 2.2, 2005/06

In May 2005, a major die-off of birds in Qinghai Lake, China was caused by clade 2.2 H5N1 HPAI (Chen *et al.*, 2006). Clade 2.2 H5N1 HPAI virus was then detected in southern Russia in July 2005 (in Novosibirskya Oblast) and gradually spread west (Adhoch, 2005). Westward spread resulted in two massive waves of outbreaks in poultry: in July–August 2005 in the south of the Siberian lowland, and during the winter of 2005/06 in the areas just north of the Caucasus. Although no reports on surveillance findings or wild bird die-offs from Ubsu-Nur were received in 2005, Mongolia reported cases of H5N1 HPAI clade 2.2 in late July/early August 2005 further south, in



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**Map 3. Transcontinental west-southwest spread of H5N1 HPAI clade 2.3.2.1c from Central Asia to Europe and Southern Asia between May 2009 and April 2010.**

*Source: FAO*

**Map 4. Transcontinental spread of H5N1 HPAI new clade 2.3.2.1c virus from Central Asia to Europe, Southern Asia between September 2014 and July 2015.**

*Source: FAO*



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Khuni Nuur (300 km from Lake Ubsu-Nur) and Erhel Nuur (OIE, 2005).

As shown in Map 2, clade 2.2 H5N1 HPAI virus was detected in Kazakhstan in August, and in Croatia, Romania and Turkey in October 2005. This was followed by the detection of the virus in Ukraine in December 2005. The virus was next detected in West Africa and Egypt. It further spread across central and northern Europe, starting in February 2006 following a spell of very cold weather. Disease, mainly in poultry, associated with this clade 2.2 virus was also reported in Afghanistan, India, Iran (Islamic Republic of), Iraq, Israel, Jordan, Pakistan and Palestine in the first quarter of 2006 (Sharshov, 2012). Virus was subsequently detected at Lake Ubsu-Nur in the Tyva Republic in June 2006 and highly similar viruses were reported from the Republic of Korea and Japan in the winter of 2006/07.

## H5N1 HPAI clade 2.3.2.1c, 2009/10

Another wild bird die-off occurred in Qinghai Province in northwestern China (Qinggahu Lake, saline) in May 2009 from which a H5N1 clade 2.3.2.1c HPAI virus was isolated. This was followed in June 2009 by a report of 58 wild birds from Lake Ubsu-Nur testing positive for a closely related virus. A similar virus was also detected in wild birds in Mongolia in Erhel Nuur (OIE, 2009a) and Dotoin Tsagaan Nuur (OIE, 2009b), 800 km from Ubsu-Nur. By October, a single case was reported in Western Russia in Moskovskaya Oblast (OIE, 2009c). This was followed by incursions of a closely related virus as far as Romania and Bulgaria (i.e. common buzzards, *Buteo buteo*) in 2010 with a similar virus also being detected in Nepal (OIE, 2010) and Iran (Kord et al., 2011). Clade 2.3.2.1c virus was again detected in birds at Lake Ubsu-Nur in 2013 and was followed by outbreaks associated with very similar virus to that found in the Tyva Republic and Mongolia in the Republic of Korea and Japan the following winter, thereby repeating a pattern seen in 2006.

## H5N1 HPAI clade 2.3.2.1c, winter 2014/15

A clade 2.3.2.1c virus that was clearly differentiated from the one detected in 2009/10 was found in poultry in September 2014 in Altayskiy Kray, the Russian Federation. Similar viruses were subsequently detected in India (Tosh et al., 2016), in the Middle East (Naguib et al., 2015) and in Eastern Europe and West Africa, initially in Nigeria (Monne et al., 2015). Outbreaks in falcons (*Falco* spp.) in Dubai were likely the result of hunting trips to Central Asia resulting in contact between falcons and wild birds, or importation of birds of prey from those areas (Naguib et al., 2015; Kord et al., 2011) (Map 4).

The virus in West Africa subsequently caused a significant number of outbreaks in domestic poultry in Nigeria (468 outbreaks, as of 25 July 2016) as well as in Burkina Faso (39), Cameroon (17), Côte d'Ivoire (33), Ghana (47) and the Niger (2) (Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES), 2016) and remains endemic. This introduction followed a similar pattern to outbreaks in 2006 that were preceded by detection of virus in the southern part of the Russian Federation. It is not known whether these viruses arrived in West Africa by wild birds or other routes, but phylogenetic evidence suggests that the former is possible (Kord et al., 2011; Monne et al., 2015).

Clade 2.3.2.1c virus was subsequently detected in western Kazakhstan in May (including dead *Ph. Carbo*), in the Volga Delta (Dalmatian pelicans, *Pelecanus crispus* and rooks), and Novosibirsk (mainly rooks; *Corvus frugilegus*) in the Russian Federation, in Iran (Islamic Republic of) in June 2015 and in the Tyva Republic at Ubsu-Nur Lake in June 2015 in two Great Crested Grebe (*Podiceps cristatus*) and two Common Terns (*Sterna hirundo*) (OIE, 2015). A similar virus was also detected in Inner Mongolia in May 2015 and Qinghai in July 2015 (Bi et al., 2016).

## Conclusions

The surveillance conducted at Lake Ubsu-Nur and the prompt reporting by the Russian Federation, providing information on the subtype and clade of the virus, are highly valuable for early warning and outbreak preparedness purposes. Countries and places in Central Asia, the Caucasus, the Middle East, Europe and West Africa – especially those that have experienced outbreaks in 2005/06, 2009/10 and/or 2014/15 (as shown in Maps 2, 3 and 4) – should be on alert over the next 6 to 12 months, as westward and southern spread of the H5N8 virus is likely. If the virus enters Egypt or West Africa, where H5N1 HPAI viruses are already present or even entrenched in poultry populations it would further complicate disease control. South Asia may also be at risk of incursion of this H5N8 HPAI clade 2.3.4.4 virus, potentially arriving there with fall migration in 2016. Based on past experience, this virus could also arrive in the Republic of Korea and Japan within the next 18 months. Clade 2.3.4.4 virus is already circulating widely in China.

Though considered a zoonotic virus, clade 2.3.4.4 viruses have so far shown limited propensity for causing disease in humans (less than 20 human cases of influenza A(H5N6) and none to date for influenza A(H5N8). Molecular evidence from sequence information is awaited to assess whether the virus identified at Lake Ubsu-Nur has features typical of viruses that can cause disease in mammals.

Retrospective outlook at H5N1 HPAI virus dynamics in the last 11 years strongly suggests that waterbirds of Central Asia can propagate newly emergent avian influenza viruses to their breeding or moulting quarters during spring migration. Once delivered to stopover or moulting locations these viruses have the potential to spread in colonially breeding non-Anatidae species (gulls, terns, cormorants, spoonbills etc.) and result in more or less detectable mortalities (depending on their respective properties). This may facilitate further spread from wetland to wetland. Additional monitoring and systematic seasonal surveillance at selected wetland sites in Central Asia could prove to be a very useful means of forecasting avian influenza epidemics in Eurasia, the Middle East or Africa.

## Recommendations

Countries located to the west and south of Tyva Republic; in particular, those that have been affected by clade 2.2 H5N1 HPAI in 2005–2006, and clade 2.3.2.1c virus in 2009–2010 and 2014–2015 should be on high alert for incursions of the virus. Likewise, passive surveillance should be intensified in these places through raising of local awareness about the importance of reporting sick or dead birds, both poultry and wild birds. These should be tested for avian influenza viruses. National authorities need to ensure the means for laboratory testing are in place to detect clade 2.3.4.4 viruses. The OIE/FAO Network of Expertise on Animal Influenza (OFFLU) can advise on appropriate tests and protocols (see www.offlu.net).

It is recommended that farmers and poultry producers enhance their biosecurity measures in order to prevent potential virus introduction from wild birds or their faeces.

General recommendations include:

- Keep poultry and other animals wherever possible away from wild birds: screens, fencing or nets can be used to avoid possible contacts between species and help prevent transmission.
- Report sick or dead animals: It is important that all signs of illness or sudden and unexplained deaths in



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poultry, farmed birds, wild birds or other animals are reported to local authorities (veterinary services, public health officials, community leaders etc.) so that they can deal with them safely and help stop diseases from spreading.

- Hunting associations and wildlife authorities should be notified of the possibility of the H5N8 and other viruses presence in waterfowl hunted at the end of summer and during fall migration 2016. Hunters may provide very efficient means of introducing avian influenza viruses to poultry through fomites and by feeding scraps to poultry and, therefore, have to be warned of the risk and informed about mitigation measures.
- Wash your hands often. You should always do so after handling birds or other animals, when cooking or preparing animal products, and before eating.
- Eat well-cooked meat products.
- Do not prepare sick or dead animals for food and do not give or sell them to others. Such animals should also not be fed to other animals.
- Seek immediate advice from your physician if you show signs of fever after being in contact with poultry, farmed birds, wild birds or other animals.

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## NOTES



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## CONTACT

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**From:** "Lisa Kramer" <lkramer@usaid.gov>
**Sent:** Tue, 24 Jan 2017 13:49:01 +0300
**Subject:** Fwd: Updates on HPAI Outbreak in Uganda - Sunday January 22, 2017
**To:** "GHSD Unit Mail List (USAID)" <ghsdunitmaillistusaid@usaid.gov>, "Jonna Mazet" <jkmazet@ucdavis.edu>, "Christine Kreuder Johnson" <ckjohnson@ucdavis.edu>, "Brian Bird" <bhbird@ucdavis.edu>, "Tracey Goldstein" <tgoldstein@ucdavis.edu>, predict@ucdavis.edu, "Kirsten Gilardi" <kvgilardi@ucdavis.edu>, "Zimmerman, Dawn" <zimmermand@si.edu>, "Mike Cranfield" [redacted], "Benard Ssebide" [redacted], "Julius Nziza" [redacted], "Rudovick Kazwala" [redacted], "Joseph Kamau" <jkamau@primateresearch.org>, "Nigatu kebede" [redacted], "Susan Scribner" [redacted], "Sombe Duale/PRP/Projects/DAI" [redacted], "Andrew Kitua" <[redacted]>, "David Mutonga" <david.mutonga@theoaladumgroup.com>, "Samuel Muriuki" [redacted], "Winyi Kaboyo" [redacted], "Thomas Nyariki" [redacted], "Jean Felix Kinani" [redacted], "John Kunda" [redacted], "FALL, Ibrahima-Socé" <socef@who.int>, "ALI AHMED, Yahaya" <aliahmedy@who.int>, "msancho@usaid.gov" <msancho@usaid.gov>, mlangalli@usaid.gov, "Kassahun Belay" <kbelay@usaid.gov>, "Yung-Ting Bonnenfant" <ybonnenfant@usaid.gov>, "John Edgar" <jedgar@usaid.gov>, "Joshua Karnes" <jkarnes@usaid.gov>, "Ezra Mwijarubi" <emwijarubi@usaid.gov>, "John Mckay" <jmckay@usaid.gov>, "Richard Munyaneza" <rmunyaneza@usaid.gov>, "Janean Davis" <jdavis@usaid.gov>, "Jean-Felly Numbi" <jnumbi@usaid.gov>, "Karen Koprince" <kkoprince@usaid.gov>

Bird flu news - New Vision Monday January 23 2017.JPG
Press Statement - AVIAN INFLUENZA_Uganda.doc

Colleagues,

Attached is a press statement issued yesterday by the government of Uganda regarding the HPAI outbreak. We are expecting to know the virus sub-type today.

Lisa

**Lisa Kramer**
Regional Emerging Pandemic Threats Advisor
USAID/Kenya and East Africa
[redacted] (O)
[redacted] (C)

THE REPUBLIC OF UGANDA

# JOINT PRESS STATEMENT ON THE AVIAN INFLUENZA (BIRD FLU) OUTBREAK.



UCDUSR0005401

**JOINT PRESS STATEMENT ON THE AVIAN INFLUENZA (BIRD FLU) OUTBREAK.**

**Ladies and Gentlemen**

The Avian Influenza National Task Force wishes to provide the public with updates on the status of Highly Pathogenic Avian Influenza (HPAI) outbreak in Wakiso, Kalangala and Masaka districts.

Following a joint (MAAIF and MoH) declaration of an outbreak of Avian Influenza among wild birds on January 15th 2017 in the country, we would like to update you as follows:

a. This disease has been reported in Lutembe Village, Bweya Parish of Sissa Sub-county, Wakiso District, Mazinga, Bubeke, Kyamuswa, Bufumira, Bujumba and Mugoye sub counties in Kalangala district and Bukakata and Kyesiga sub counties in Masaka district, all located on the shores of Lake Victoria.

b. The disease has been confirmed only in wild migratory birds, domestic ducks and chicken.

c. Wakiso district has reported no cases in domestic birds, but UWA estimates about 950 white winged black tern migratory birds to have died in the district so far.

d. Masaka estimates to have lost about 1,250 domestic birds and about 150 wild birds from 5 landing sites.

e. Kalangala has witnessed 221 wild birds, 2,918 domestic ducks and 1,200 chicken dead.

f. No other domestic animals have been reported to be affected

g. The disease is currently restricted along the shores of Lake Victoria;

h. No cases have been reported from commercial poultry units so far.

i. Currently there are no human suspects of Avian Influenza recorded in all the affected districts.

Government of Uganda through the line ministries and agencies has taken the following actions to avert further spread of the disease.



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1. Preliminary multi-sectoral investigations were conducted at Lutembe Bay and Bukakata landing site on January 5, 2017.
2. Samples of water, dead birds, and bird droppings were collected and sent to Directorate of Water Resources, NADDEC and Uganda Virus Research Institute (UVRI) on January 5, 2017. Highly Pathogenic Avian Influenza H5 was confirmed by both NADDEC and UVRI on January 13, 2017; Water contamination was ruled out as cause of death of wild birds.
3. The Ministry of Agriculture Animal Industry and Fisheries (MAAIF) has communicated to all DVOs to investigate and report any suspected cases.
4. Multi-sectoral National Task Force meetings chaired on rotational basis by MAAIF and Ministry of Health are convened daily since January 16th 2017 attended by officials from MOH, MAAIF, UWA, OPM, UWEC, WHO, CDC, UNICEF, USAID/P&R, FAO, Uganda Red Cross, MUWRP at PHEOC.
5. Advance teams have been dispatched to Wakiso, Masaka, and Kalangala districts.
6. Fifteen (15) at-risk districts along Lake Victoria shores have been notified to be on high alert.
7. An alert desk and team has been set up at the Ministry of Health and that of Agriculture.
8. Masaka, Kalangala and Wakiso District Task Force teams have been activated and are conducting regular meetings, while District Rapid Response Teams are actively responding to the outbreak.

   In Masaka district, the Rapid Response Team has instituted checkpoints to restrict movement of poultry and poultry products.
9. The public is being sensitized on how to prevent spread of this disease through print and electronic media (Radio, Press releases and Television).
10. Through the poultry producers' organizations, MAAIF is reaching out to and sensitizing all poultry farmers on how to prevent and control the disease.

We would like to specifically clarify on the following:



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1. To date there are no human suspected cases of Avian Influenza identified or isolated; and

2. There has been no massive killing (culling) of any domestic birds in any of the affected districts as has been reported by some media houses.

   The government of Uganda is appealing to the poultry farmers and traders, tourists and the general public to remain calm as our teams of experts work tirelessly to contain this outbreak.

   We appeal to the general public to follow the advice and guidelines given for this purpose and specifically to the media houses, to practice responsible reporting. The joint National task force will strive to provide you with regular updates on the disease situation until we have overcome.

For additional information or clarification, please call the following numbers ( REDACTED **(Toll free),** REDACTED ).

**FOR GOD AND MY COUNTRY**



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Newspapers in Education (NIE) project.

Ochatre noted that over the last five years PEDN and Vision Group, through the weekly Pakasa pull-out, have promoted financial literacy in secondary

*ideas, challenges and lessons.* **Ochatre**

trying to address the key issues affecting the youth financially and at the workplace," he explained.

Jeaniter Nanyonjo, Vision Group's NIE manager, explained that the project this time round will

investing shared in the school financial clubs has spurred them in the right direction. Now we want to focus on soft skills related to the real work when they get to the workplaces," she stressed.

# Ugandans free from bird flu, says Mbonye

**By Gerald Tenywa**

Uganda does not have any human victims or suspects of avian influenza, also known as bird flu, according to Dr Anthony Mbonye, the director of health service (clinical and community health) at the health ministry.

"We do not have any human cases of bird flu," Mbonye told *New Vision* and described the 20 suspected cases among the fishermen at Lutembe landing site and on Bussi Island in Wakiso as a false alarm.

"We sent a team to Lutembe and Bussi and discovered that what was being referred to as suspected cases were alarmist."

Mbonye, who was speaking on Saturday after a day-long meeting organised by the national task-force on bird flu, pointed out that the situation was under control.

Dalaus Katende, a fisherman at Lutembe, said there was panic among the fishermen, who claimed they had symptoms similar to those of bird flu. The Government responded by testing samples from the dead birds and water in parts of Lutembe bay.

However, contrary to reports from Mbonye that the wild birds at Lutembe had stopped dying, Katende said they continue to die.

"The experts should come early in the morning and I take them to the roosting grounds. Most of the birds die at night, but scavenging birds and animals eat them in the day," he said.

Mbonye said the Government set a task-force to give an update on bird flu tomorrow.

**The white-winged black tern. There has been a persistent death of birds at Lutembe bay**

**What is bird flu?**

Bird flu is a contagious disease caused by a virus related to human influenza. Some strains of the disease have been passed to humans but this is rare. While all bird species are susceptible domestic poultry are vulnerable to infection.

**Background**

The Government last week confirmed the outbreak of bird flu on some parts of Lake Victoria shores.

The cases of death of wild birds, the white-winged black terns at Lutembe bay that had persisted for about two weeks, were first reported to the Ministry of Agriculture, Animal Industry and Fisheries on January 2.

On January 15, another report came from Masaka where domestic ducks and chicken had died at Kachanga village in Bukibanga parish and Bukakata sub-county. The carcasses were delivered to the National Veterinary Diagnostic Laboratory in Entebbe. It was later confirmed that the deaths were due to bird flu.

**Symptoms**

The disease has similar symptoms with the common flu and has an incubation period of three to four days and is accompanied by sneezing, as well as coughing, high temperature, chest pain, difficulty in breathing, the muscle aches, but it does not spread through air.

The keepers of birds should watch out for symptoms such as a swollen head, discoloration of the neck, throat and loss of appetite. Respiratory distress, diarrhoea and when birds lay fewer eggs, according a statement from the Ministry of Health.

# Section 7.1 Providing Assistance during a Disease Outbreak

Prepared by
the PREDICT Consortium

**Objective:** To provide guidance to PREDICT teams on how to plan for disease outbreak response activities and assist governments with disease outbreak investigations.

*This document was made possible by the generous support of the American people through the United States Agency for International Development (USAID) Emerging Pandemic Threats PREDICT program. It was drafted to support activities conducted under PREDICT and is intended for an audience of qualified professionals trained in standard, associated best practices. This guide is not intended for use by untrained individuals.*

*The contents of this document are the responsibility of the authors and do not necessarily reflect the views of USAID or the United States Government. USAID, PREDICT, and the authors of this guide bear no responsibility for the actions of non-PREDICT-affiliated individuals implementing the material herein.*

*For more information about the contents of this guide, please contact predict@ucdavis.edu.*

**Suggested Citation Form:** PREDICT-2 Health Consortium 2016. PREDICT Operating Procedures: Guide for Providing Assistance during a Disease Outbreak



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## Section 7.1.1. Confirmation of Knowledge

When you are familiar with the information in this guide, please complete the PREDICT quiz *Section 8.4.17 Providing Assistance during a Disease Outbreak.*

## Section 7.1.2. PREDICT's Guiding Principles during Outbreaks

During infectious disease outbreaks, PREDICT is sometimes asked by host governments to provide assistance. All involvement in outbreak investigations and responses by PREDICT personnel, using USAID funds, will be considered on a case-by-case basis in consultation with USAID headquarters. Said consultation will be made without delay by the PREDICT Global Director (Dr. Jonna Mazet) or her designated representative.

When requested to support an outbreak investigation or response, PREDICT personnel (usually the Country Coordinator) should rapidly gather as much information about the situation as possible and report this information up the chain to his/her regional lead, who will contact the PREDICT Global Director or designated representative immediately.

In cases of disease of unknown origin, PREDICT will consider support for governments in response to outbreaks if the following criteria are met:

- Credible threat to human health likely from an infectious cause (based on symptoms) or evidence for multi-species involvement (i.e. host jumping) with associated animal morbidity and mortality
- Evidence of animal origin or involvement in disease dynamics (e.g. animal host is thought to be involved in transmission)

If assistance is offered in these circumstances, PREDICT personnel will endeavor to keep expectations regarding level of involvement and duration of response reasonable, including that assistance may be halted if a non-zoonotic disease cause is identified.

If the cause of disease is reasonably known and the disease is thought to be human-to-human or vector-borne, PREDICT will likely not actively participate in the investigation or response. However, if requested by the affected country's government for support or by another US government agency, PREDICT will consider providing assistance in consultation with USAID.



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In the case of a zoonotic disease outbreak with a diagnosed cause, PREDICT involvement will be prioritized based on the following stated USAID considerations:

- An epidemic or pandemic is imminent
- Disease is caused by a zoonotic pathogen that is a priority for the USAID Emerging Pandemic Threats Program (e.g. filovirus, influenza virus, coronavirus, flavivirus, or henipavirus), especially if there is evidence for multi-species involvement
- PREDICT involvement is reasonably likely to result in information that expands on what is known about transmission dynamics or distribution (geographic or host) of a priority pathogen
- There is a realistic doubt that the cause of the outbreak has been properly diagnosed, and PREDICT involvement can help to identify the actual cause

In any case, PREDICT's role in an outbreak investigation or response should be primarily advisory to the affected country's government. When requested, PREDICT aims to support in areas of technological or knowledge gaps. The expectation for the duration of PREDICT's involvement should never be open-ended, and there should be a defined plan for support based on prioritized needs, identified roles, and anticipated costs. In general, PREDICT's role should be primarily advisory with potential field support only in gap areas, such as identifying animal/environmental exposure risks, or by providing access to alternative laboratory approaches, when the cause of disease is unknown. Specific activities should be proposed and approved on an ongoing basis through the appropriate PREDICT and USAID contacts.

## Section 7.1.3. PREDICT's Role and Activities during a Disease Outbreak

### 1. PREDICT Responsibilities and Expectations

Host country governments, ministries, or national entities responsible for responding to an outbreak may request technical support from PREDICT. ***When invited or requested to assist* and working in consultation with PREDICT leadership (see *Section 7.1.4 for a list of leadership contacts*), and after approval from USAID, country teams may engage in outbreak investigation and response activities.** PREDICT responsibilities during an outbreak are primarily to provide technical support at the field and/or laboratory level with regard to disease surveillance, animal and human case investigations, and understanding ecological and behavioral risk. **It is important to note that each outbreak may require different levels or types of support, and PREDICT team activities in each outbreak will vary.**

The expectation of the USAID Emerging Pandemic Threats Program is that PREDICT will assist the host government when invited or requested to provide assistance. The engagement of the outbreak investigation team is limited to countries where the PREDICT project is actively engaged in disease surveillance.



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## 2. PREDICT Outbreak Response Activity Supervision and Approval Process

Prior to the involvement of any PREDICT team, approval must first be given by PREDICT and USAID Headquarters leadership as described below and in and the ***Section 7.1.9. Appendix V. diagram***

***PREDICT team outbreak response deployments cannot occur UNTIL approval from USAID Headquarters in Washington DC is received.***

Outbreak investigation activity approval process must follow this multi-step process:

1) A request or invitation for assistance must be received from a National government agency or National task force.
2) The Country Coordinator should immediately forward all formal requests to their PREDICT implementing partner lead.
3) The PREDICT partner lead will then send this request to the PREDICT outbreak email box predict-outbreak@ucdavis.edu that is accessed by all relevant Global leadership personnel listed in Section 8.3 PREDICT Leadership Contacts including the Director (Dr. Jonna Mazet), and the PREDICT Surveillance Lead (Dr. Christine Johnson), and Pathogen Detection lead (Dr. Tracey Goldstein).
4) The Global Director and relevant global team leads will determine if the outbreak response request fits with the guiding principles and goals of PREDICT. If consistent with PREDICT outbreak investigation guidelines, the PREDICT Global Director will forward the official request to USAID headquarters (HQ).
5) USAID HQ will determine if final approval will be granted for outbreak response activities. The ultimate decision to activate outbreak investigation and any response activities resides with USAID leadership.
6) Once approval is obtained from USAID, the Country Coordinator will be notified by PREDICT leadership to proceed with the approved outbreak investigation activities.

## 3. PREDICT Country Coordinator Responsibilities

The PREDICT Country Coordinator is responsible for planning and preparing the PREDICT outbreak response activities. Country Coordinators should consult with their partner lead and global team lead regarding how much time, effort, and resources should be devoted to outbreak preparedness and response. At a minimum, each Country coordinator should fill-out the In country contacts list (see ***Section 7.1.8. Appendix IV***) as soon as possible and return that by email to predict-outbreak@ucdavis.edu for information tracking purposes.

If PREDICT outbreak assistance is approved, the Country Coordinator is the *lead PREDICT contact in country* unless or until PREDICT leadership assigns another lead contact person.



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During an outbreak the *lead PREDICT contact* for outbreak response is responsible for:

1. Initiating and updating the *Outbreak Rapid Report Form* and the *Outbreak Action Timeline* daily (Blank forms available in ***Section 7.1.5. Appendix I*** and ***Section 7.1.6. Appendix II***). These forms contain summary information on the outbreak and provide a detailed list of activities and actions undertaken in relation to the outbreak including by the PREDICT team.
    a. These forms must be sent daily to the regional implementing partner lead, and to the PREDICT outbreak email box (predict-outbreak@ucdavis.edu) so that all PREDICT leadership personnel listed in Section 8.3 PREDICT Leadership Contacts can be informed daily about in country outbreak activities.
    b. The PREDICT Global Director and Surveillance and Pathogen Detection Leads, and potentially others will review and forward to USAID Headquarters.
2. Adhering to this Outbreak Response Guide and and any other further developed management plans. (see ***Section 7.1.7. Appendix III Outbreak Assistance Checklist*** for guidance)
3. Coordinating directly with the PREDICT partner lead for the affected country and ensuring communication with PREDICT leadership, and the USAID Mission as directed by PREDICT leadership and Surveillance and Pathogen Detection leads.
4. Liaising directly with the affected country's National Outbreak Committee or Task Force, or with the ministry in charge of managing the PREDICT-assisted portion of the outbreak response.
5. Ensuring that in-country contact lists are updated (see ***Section 7.1.8. Appendix IV***)
6. Managing or supervising the PREDICT-led activities that may include activities listed in the table below.
7. Preparing all written communications, with direction from PREDICT leadership and partner leads, in accordance with the national guidelines, and WHO and OIE guidelines as appropriate.
8. Preparing a post-outbreak review of the PREDICT team's implementation activities during the outbreak.

If an outbreak in animals or humans occurs and PREDICT is not invited to participate, the Country Coordinator should, to the extent that he or she can, maintain communication with the National outbreak investigation team. Also, the PREDICT Country Coordinator should regularly communicate significant events and information related to the outbreak to PREDICT partner leadership and Surveillance and Pathogen Detection Leads.

For an overview of the process and list of activities see ***Section 7.1.7 Appendix III Outbreak Assistance Checklist*** and ***Section 7.1.9. Appendix V diagram*** to assist with preparation for and involvement in outbreak responses.



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## Section 7.1.4. PREDICT Leadership Contact List for Outbreak Investigation Activities and Reporting

**Key Personnel and Contacts**

**Copy predict-outbreak@ucdavis.edu on all email communications**

**Global Director:** Jonna Mazet
Email: jkmazet@ucdavis.edu Phone: +1-530-754-9035
During outbreak emergency only, mobile for text alerts: +1-530-304-1231

**Surveillance Lead**: Christine Johnson
Email: ckjohnson@ucdavis.edu Phone: +1-530-752-1238

**Pathogen Detection Leads:**
Tracey Goldstein, Email: tgoldstein@ucdavis.edu Phone: +1-530- 754-7953
Simon Anthony, Email: sja2127@columbia.edu

**EPT Liaison:** Billy Karesh
Email: karesh@EcoHealthAlliance.org Phone: +1-212-380-4463

**Global Operations Officer:** David Wolking
Email: djwolking@ucdavis.edu Phone: +1-530-754-0470



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## Section 7.1.5. Appendix I. PREDICT Outbreak Rapid Report

**Today's Date:**
**Cumulative day of the outbreak investigation:**
**Working Title of Investigation**: (*e.g., Primate_dieoff_Rwanda_2016*)

| **Please describe the disease signs and symptoms and species affected (humans, domesticated animals, wildlife:** |
|---|
| |

| **Location** | |
|---|---|
| **Country:** | |
| **District:** | |
| **Village/Town:** | |
| **GPS Coordinates (if known):** | |
| **Date that first case(s) of illness occurred (if known or estimate):** | |
| **Date that PREDICT was first notified of outbreak:** | |

| **Key Information** | **Description of Findings/Actions/Outcomes** |
|---|---|
| How many affected individuals? | Human: Suspected_____ Confirmed_____ Deaths_____<br>Domestic animal: Suspected_____ Confirmed_____ Deaths_____<br>Wild animal: Suspected_____ Confirmed_____ Deaths_____ |
| How was outbreak first noticed? | |
| Where was the first reported case? What is/was the extent of geographic spread? Include comments on the apparent speed of spread. | |
| Has the country requested support from PREDICT (include date of request)? | |
| If so, which government agency requested PREDICT support? | |
| When was PREDICT response initiated (date)? | |
| Are other EPT partners involved in the response (which ones and how)? | |



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USAID | PREDICT

## PREDICT Outbreak Rapid Report (Page 2)

*The following information may not be known initially. Please fill in as information becomes available and update the report name with the current date (i.e., "Monkeypox_DRC_2016_August_27")*

**Working title of Investigation:**
**Today's Date:**
**Cumulative day of the outbreak investigation:**

| | |
|---|---|
| What type of assistance did PREDICT initially provide? Which PREDICT personnel were involved? | |
| When was the first official acknowledgement of the outbreak (by which government agency or other reputable body and date)?<br><br>When was a response initiated and by whom? Which agencies were involved? Who was in charge of the national response? | |
| Was the cause of the outbreak confirmed by a laboratory?<br>If so, give details, including cause, species, specimen types tested and dates of testing if known. | |
| Where was the laboratory testing performed (name of laboratory)? | |
| Number of days between initiation of government response and lab confirmation of laboratory results. | |
| **Summary of the Outbreak:** | **To be filled after active outbreak activity has ceased** |
| **Working name of the outbreak (e.g., Yellow Fever - DRC)** | |
| **Total number of cases:** | **Human: Suspected_____ Confirmed_____ Deaths_____**<br>**Domestic animal: Suspected_____ Confirmed_____ Deaths_____**<br>**Wild animal: Suspected_____ Confirmed_____ Deaths_____** |
| **Summary of PREDICT Team response activities during the outbreak.** | |



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## Section 7.1.6. Appendix II. PREDICT Response Timeline

The Outbreak Action Timeline should be updated to include details of each significant event related to the outbreak. An updatable version of this form can be found in EIDITH to ease data collection and reporting.

**Working Title of Investigation:**

**Key Events:**

| Date | Day # | Notification or Action Taken |
|---|---|---|
| | | First notification of unusual disease activity to PREDICT team |
| | | CC notification to PREDICT lead partner |
| | | PREDICT lead partner notification to PREDICT leadership |
| | | Invitation to assist from government received by PREDICT team |
| | | Notification of USAID of government invitation by PREDICT Global Director |
| | | USAID/PREDICT communication back to government request |
| | | First Outbreak Taskforce meeting attended by PREDICT CC or PREDICT team members |
| | | First deployment of PREDICT teams to outbreak field site |
| | | First specimen collection |
| | | First specimens delivered to laboratory |
| | | First laboratory preliminary results |
| | | First laboratory confirmed results |
| | | First report of results to government and taskforce |
| | | First notification to USAID of government cleared laboratory results |
| | | |



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## Section 7.1.7. Appendix III. Outbreak Assistance Task Checklist

| Outbreak Assistance Task Checklist | Date completed or updated |
|---|---|
| **1. Start Outbreak Rapid Report Form and Response Timeline (Appendices I and II)** | |
| **2. Confirm PREDICT assistance responsibilities and coordinate with partners** | |
| a. Reviewed the PREDICT outbreak response guidance. | |
| b. Discussed PREDICT assistance role with PREDICT partner lead. | |
| c. Confirmed PREDICT roles with PREDICT leadership. | |
| d. Confirmed PREDICT roles at request of national authorities. (Please list the roles agreed upon for the PREDICT team.) | |
| e. Confirmed role as member or advisor to National Task Force if appropriate. | |
| f. Coordinated with EPT partners if appropriate. Please list all partners and persons contacted and activities coordinated in this section. | |
| **3. Prepare for fieldwork** | |
| a. Assembled appropriate SOPs covering the samples and data to be collected. | |
| b. Received necessary permission/clearance for activities (e.g., wildlife and livestock sampling permits, IRB approval, mission orders). | |
| c. Developed contingency plan with contacts for staff evacuation and treatment. | |
| d. Purchased and assembled all field and cold chain supplies. (Consult with the PREDICT partner lead to prioritize and balance outbreak response and ongoing PREDICT project supplies/activities.) | |
| e. Made payment arrangements for field staff and materials. | |
| f. Made vehicle and driver arrangements. | |
| g. Considered accommodation and other travel arrangements for fieldwork. | |
| h. Contacted laboratories to prepare for receiving samples. (Confirmation of possible Select Agent pathogens must be done in an appropriate facility. Please contact the Pathogen Detection Team (predict-outbreak@ucdavis.edu) if you have any questions). | |
| **4. Monitoring and reporting during the course of the outbreak** | |
| a. Update written summary of PREDICT assistance activities and results daily (PREDICT Outbreak Rapid Report Form and Outbreak Response Timeline in Appendices I and II). | |
| b. Check with Task Force or appropriate ministry for latest outbreak updates (daily or frequent communications). | |



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| | |
|---|---|
| c. Set schedule for and provide daily updates to PREDICT leadership. | |
| **5. Handling and tracking samples** | |
| a. Designated a sample manager. | |
| b. Designated laboratory for sample testing. | |
| c. Assured proper cold chain transport and storage of samples. | |
| d. Recorded and entered sample data into EIDITH. | |
| e. Obtained EXPORT permit(s) from National authorities if samples are to be exported. | |
| f. Obtained IMPORT permit(s) from recipient laboratories if samples are to be exported. | |
| g. Shipped samples. List recipient laboratories. | |
| **6. Communicate field investigations or surveillance findings to national task force (or lead ministry)** | |
| a. Share results with Pathogen Detection lead to assist with preparation of finding report<br>b. Prepared findings report draft. | |
| b. Obtained PREDICT Leadership and Executive Board review and approval of findings. | |
| c. Deliver findings report to national task force or lead ministry. | |
| **7. Other tasks as needed (list any other needed tasks that are important for the specific outbreak assistance effort).** | |
| | |
| | |
| | |
| | |
| **8. Post -outbreak review and plan update.** | |
| a. Facilitated post-outbreak review of PREDICT team's implementation of the case investigation, surveillance, communications, coordination and other activities during the outbreak. | |
| b. Updated PREDICT Outbreak Response Plan based on lessons learned from this outbreak. | |



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## Section 7.1.8. Appendix IV. In-Country Government Outbreak Contact Worksheet

**(to be completed and returned by email to predict-outbreak@ucdavis.edu for tracking purposes)**

**Public health ministry or department:**
Name:_____
Email: _____
Cell phone: _____

**Livestock ministry or department:**
Name:_____
Email: _____
Cell phone: _____

**Wildlife/Environment ministry or department:**
Name:_____
Email: _____
Cell phone: _____

**OIE focal point:**
Name: _____
Organization: _____
Email: _____
Cell phone: _____

**IHR focal point:**
Name: _____
Organization: _____
Email: _____
Cell phone: _____

**FAO:**
Name:_____
Email: _____
Cell phone: _____



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**WHO:**
Name: _____
Email: _____
Cell phone: _____

**EPT ONE HEALTH WORKFORCE Project:**
Name: _____
Organization: _____
Email: _____
Cell phone: _____

**EPT PREPAREDNESS and RESPONSE Project:**
Name: _____
Organization: _____
Email: _____
Cell phone: _____

---

**Other Important Contacts:**

Name: _____
Organization: _____
Email: _____
Cell phone: _____

Name: _____
Organization: _____
Email: _____
Cell phone: _____

Name: _____
Organization: _____
Email: _____
Cell phone: _____



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**Section 7.1.9. Appendix V. Overview of the Approval Process and Steps for PREDICT Outbreak Response Activities**

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## Section 7.1.10. Appendix VI. Key Contacts to Know

### Key contacts to know:

- International Agencies
  - WHO
  - OIE
  - FAO
  - US CDC (if present in country)
  - China CDC (if present in country)
- National Government
  - Ministry of Health
  - Ministry of Livestock
  - Ministry of Environment/Sanitation
  - Ministry of Wildlife
  - National Public Health and National Veterinary Laboratories
- Local/Regional Government
  - District Medical, Wildlife, and Veterinary Officers
  - Heads of Local hospitals, clinics, treatment centers
- Other Partner Organizations
  - Non-governmental Organizations
    - Medicins sans Frontiers
    - Unicef
    - Save the Children
    - Other health support groups
    - Environmental health groups



UCDUSR0005422

**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Elizabeth S Chase <eschase@ucdavis.edu>
**CC:** Tracey Goldstein <tgoldstein@ucdavis.edu>;Jon Epstein <epstein@ecohealthalliance.org>;daszak (daszak@ecohealthalliance.org) <daszak@ecohealthalliance.org>;(andre@ecohealthalliance.org) <andre@ecohealthalliance.org>
**Sent:** 2/14/2017 11:41:57 AM
**Subject:** Re: Liberia Call for Feb 16

Just as a heads-up. I have feedback from the Mission that I shouldn't share by email that highlights every concern that I thought they might raise from the staffing plan. We need to have our plans and answers tight for that meeting.
Thanks,
J

On Tue, Feb 14, 2017 at 11:17 AM, Elizabeth S Chase <eschase@ucdavis.edu> wrote:

Greetings all,

We are trying to schedule a 30 minute Liberia call to peepare for the trip and discuss feedback from the mission.

I know the surveillance call is taking place February 16 from 10-11 PST/1-2 EST but we are hoping we could schedule the Liberia call to begin at: 10:30 am PST/1:30 EST. (Jon may have to get permission to drop off the surveillance call) If that is a possibility. Great.

If the above option will not work, another option would be to have the Liberia call start at 12pm PST/3:pm EST.

Either option will work but Jonna would really like to have the call scheduled for that day. And if we can confirm today, that would be great.

Thank you so much, Liz

**Liz Chase**

Executive Assistant to Dr. Jonna Mazet

One Health Institute

University of California, Davis

530-752-3630

eschase@ucdavis.edu

UCDJ5R0005424

**From:** Jon Epstein <epstein@ecohealthalliance.org>
**Sent:** Wed, 15 Feb 2017 13:34:17 +0000
**Subject:** Re: Liberia Call for Feb 16
**To:** Elizabeth S Chase <eschase@ucdavis.edu>
**Cc:** Alison Andre <andre@ecohealthalliance.org>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Peter Daszak <daszak@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>

Hi,
I will be able to join the 1:30 call time.

Cheers,
Jon

On Tue, Feb 14, 2017 at 9:29 PM, Elizabeth S Chase <eschase@ucdavis.edu> wrote:

Thank you Alison,

Let's confirm the 10:30am/1:30 EST time. I got an out of office response from Jon, will you please confirm with him that he will be able to join as well and that he can make arrangements with the surveillance call.

I will send call information shortly.

Liz

---

**From:** Alison Andre [mailto:andre@ecohealthalliance.org]
**Sent:** Tuesday, February 14, 2017 12:09 PM
**To:** Elizabeth S Chase <eschase@ucdavis.edu>; Tracey Goldstein <tgoldstein@ucdavis.edu>; Jon Epstein <epstein@ecohealthalliance.org>; Peter Daszak <daszak@ecohealthalliance.org>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** Re: Liberia Call for Feb 16

Peter should be able to call in from South Africa for either time but 10:30am PST/1:30 EST is preferable.

Thanks,

Alison

---

**From:** Elizabeth S Chase <eschase@ucdavis.edu>
**Date:** Tuesday, February 14, 2017 at 2:17 PM
**To:** Tracey Goldstein <tgoldstein@ucdavis.edu>, Jon Epstein <epstein@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>
**Cc:** Alison Andre <andre@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** Liberia Call for Feb 16

Greetings all,

We are trying to schedule a 30 minute Liberia call to prepare for the trip and discuss feedback from the mission.

I know the surveillance call is taking place February 16 from 10-11 PST/1-2 EST but we are hoping we could schedule the Liberia call to begin at: 10:30 am PST/1:30 EST. (Jon may have to get permission to drop off the surveillance call) If that is a possibility. Great.

If the above option will not work, another option would be to have the Liberia call start at 12pm PST/3:pm EST.

Either option will work but Joana would really like to have the call scheduled for that day. And if we can confirm today, that would be great.

Thank you so much, Liz

**Liz Chase**

Executive Assistant to Dr. Joana Mazet

One Health Institute

University of California, Davis

530-752-3630

echase@ucdavis.edu

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**Jonathan H. Epstein DVM, MPH**

*Vice President for Science and Outreach*

EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

1.212.380.4467 (direct)
REDACTED (mobile)

web: ecohealthalliance.org

Twitter: @epstein[illegible]

-

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this*

**From:** Elizabeth S Chase <eschase@ucdavis.edu>
**To:** Alison Andre <andre@ecohealthalliance.org>;Amanda Fuchs <fuchs@ecohealthalliance.org>;Elnicki Taylor (telnicki@metabiota.com)" <telnicki@metabiota.com>;Jonna Mazet <jkmazet@ucdavis.edu>
**Sent:** 2/16/2017 2:22:26 PM
**Subject:** RE: PreEB call Feb 22

Just a reminder that the Feb 22 call is cancelled.
Hope your day is going well.
Liz

**From:** William B. Karesh [mailto:karesh@ecohealthalliance.org]
**Sent:** Monday, February 13, 2017 10:39 PM
**To:** Elizabeth S Chase
**Cc:** Peter Daszak ; Eddy Rubin ; Alison Andre ; Amanda Fuchs ; Elnicki Taylor (telnicki@metabiota.com) ; Jonna Mazet
**Subject:** Re: PreEB call Feb 22

It will be nightime for me too in South Africa. I'm okay with cancelling.

BK

On Feb 13, 2017, at 8:40 PM, Elizabeth S Chase <eschase@ucdavis.edu> wrote:

Greetings,
Looking ahead to the Pre EB call scheduled for February 22, I needed to let you know that Jonna will be traveling in Ghana. She most likely will not be able to join the call, based on time difference and connectivity. Looks like the best option would be to cancel.
Best Regards,
Liz Chase

**Liz Chase**
Executive Assistant to Dr. Jonna Mazet
One Health Institute
University of California, Davis

530-752-3630
eschase@ucdavis.edu

**From:** Jim Desmond <desmond@ecohealthalliance.org>
**Sent:** Fri, 17 Feb 2017 17:33:56 -0500
**Subject:** PREDICT Team - Liberia Visit Week of February 20th 2017
**To:** Tara Milani <tmilani@usaid.gov>
**Cc:** Monica Dea <mdea@usaid.gov>, Jon Epstein <epstein@ecohealthalliance.org>, predict@ucdavis.edu, Alisa Pereira <apereira@usaid.gov>, Evelyn Luciano <luciano@ecohealthalliance.org>, "William B. Karesh" <karesh@ecohealthalliance.org>, Mildred Howard <mphoward@usaid.gov>, Andrew Clements <aclements@usaid.gov>, Emma Lane <lane@ecohealthalliance.org>, David J Wolking <djwolking@ucdavis.edu>, "Jonna K. Mazet" <jkmazet@ucdavis.edu>
Liberia Itinerary - Lab Assessment - Feb 20-26 2017.docx

Hi Tara,

Please find next week's itinerary attached for the upcoming visit of the PREDICT management and global laboratory leads. Please let me know if you have any questions or concerns. We're looking forward to a productive visit.

Regards,

Jim

**James S. Desmond, DVM, MS**
**Field Veterinarian**
**Email:** desmond@ecohealthalliance.org
**Phone:** REDACTED (Liberia)
**Phone:** (USA)
**Skype:** jim.desmond

**PREDICT Global Team Site Visit**
**Liberia Schedule and meeting itinerary**

**Sunday Feb 19th**

Departure from NY (Tracey Goldstein, Brian Bird, Simon Anthony and Jon Epstein)

**Monday Feb 20th**

Arrival Simon, Tracey, Jon, and Brian: 14:05 on Kenya Airways Flt #5593 from Accra

Check in to: Grand Royal Hotel
15th St. & Tubman Blvd.
Sinkor, Monrovia
Ph: +231888777888

## Meetings

**Monday Feb 20th**

2:05pm: Team arrives at Roberts Field on Kenya Airways
- 4pm meeting with FDA Deputy Director, Darlington Tuagben, to report results and ask for concurrence on sharing
- 6pm visit to SCNL (implementing partner) with Executive Director, Michael Garbo

**Tuesday Feb 21st**

10-11:30am: Mission meeting (Monica and Tara)
- Will share the goals/direction of the project and how we will report results and satisfy any questions they may have

11:30-8pm: Trip to Phebe Hospital in Gbarnga (NRL lab) – tour lab with Lab Head, Cyrus Kolle
- Meet with NAMRU-3 Director - Andrew Letizia
- Meet with Research Associate & Technical Lead at LIBR - Lawrence Fakoli

**Wednesday Feb 22nd**

9-10am: Meeting with MOH Deputy Director Tolbert Nyenswah and associates to report results and ask for concurrence on sharing

10-11am: EOC Presentation - GDL and other GHSA stakeholders
- EHA is organizing this meeting with assistance from MOH. Jim will M/C and will introduce the team
- Set a 60 min. meeting (30 min. presentation with 30+ for questions).
- Presentation (PREDICT-EHP overview, country specifics, lab testing philosophy)

1-3:30pm: Interagency Health meeting – brief presentation at US Embassy

**Thursday Feb 23rd**

10am-1pm: Visit LIBR campus and tour both the NRL laboratory on site as well as the LIBR lab facilities
- Jon Epstein departs for NYC at 3pm

Afternoon: Potential informal meetings with DoD, ACCEL, CDC, WHO

**Friday Feb 24th**

10-11am: Visit MoA laboratory - tour with Lab head Kamara Varney
Afternoon: Potential informal meetings with DoD, ACCEL, CDC, WHO

**Saturday Feb 25th**

9:30-1pm: Visit Chimpanzee Sanctuary

**Sunday Feb 26th**

3:10pm: Global team departs for Freetown at 15:10 on Kenya Airways
- Brian Bird, Tracey Goldstein, Simon Anthony depart

**From:** David J Wolking <djwolking@ucdavis.edu>
**Sent:** Tue, 21 Feb 2017 13:53:53 -0800
**Subject:** Fwd: [predict] FW: Invitation for Kenya JEE_ 27th February to 3rd March 2017
**To:** Alisa Pereira Emerging Threats Division <apereira@usaid.gov>, "Clements, Andrew (GH/HIDN)" <AClements@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, PREDICTMGT <predictmgt@usaid.gov>
**Cc:** "Prof. Jonna Mazet" <jkmazet@ucdavis.edu>, "predict@ucdavis.edu" <predict@ucdavis.edu>
JEE Mission Agenda Kenya.docx

Hi there,
Just passing along the invitation received by our PREDICT/Kenya country coordinator for the upcoming JEE workshop in Nairobi.

Best,

David

---------- Forwarded message ----------
From: **Zimmerman, Dawn** <ZimmermanD@si.edu>
Date: Tue, Feb 21, 2017 at 9:41 AM
Subject: [predict] FW: Invitation for Kenya JEE_ 27th February to 3rd March 2017
To: "predict@ucdavis.edu" <predict@ucdavis.edu>
Cc: "Murray, Suzan" <MurrayS@si.edu>, "William B. Karesh" <karesh@ecohealthalliance.org>

FYI, please see formal email invite below for our CC Joseph Kamau to the Kenya JEE workshop, as well as attached agenda.

Best,

d.

---------- Forwarded message ----------
From: athman mwatondo [redacted]
Date: Feb 21, 2017 20:08
Subject: Invitation for Kenya JEE_ 27th February to 3rd March 2017
To: Thomas Manyibe Nyariki [redacted] Joseph Kamau <jkamau@primateresearch.org>
Cc:

Dear Drs Nyariki and Kamau,

Kenya volunteered for the World Health Organization's International Health Regulations (IHR) Joint External Evaluation in July 2016 and is scheduled to undertake the evaluation on 27th February to 3rd March, 2017. The JEE process is intended to assess country capacity to Prevent, Detect, and rapidly Respond to public health threats independent of whether they are naturally occurring, deliberate or accidental.

19 technical areas will be evaluated in an open and consultative process between the government officers and the external assessors. The evaluation report will then be shared with the Country and will be used to develop a costed action plan as a tool to advocate for support from governments and partners.

The purpose of this email is to invite your participation as a key stakeholder.

The JEE meeting will take place at the **Radisson Blue Hotel** in Nairobi.

We look forward to your presence and participation.

Attached in this email is the tentative agenda for the week

Kind regards,

Dr. Mwatondo Athman

Zoonotic Disease Unit (ZDU)

Ministry of Health

KNH - NASCOP Grounds

NAIROBI

REDACTED

**IHR/ GHSA Joint External Evaluation**
**Nairobi, Kenya, 27th February - 3rd March 2017**
**Radisson Blue, Nairobi**

| Day 1: Introduction & Coordination<br>27th February 2017 | | | | | | |
|---|---|---|---|---|---|---|
| **Time** | **Place** | **Subject** | **Discussion Lead(s)** | **Participants** | **JEE facilitators** | **Session Chair** |
| 09:00am-09:30am | Intercontinental Hotel | **Registration** | | | | |
| 09:30am-10:30am | | **Opening Ceremony**<br>• Brief formal remarks by leadership<br>• Overview of the Host Country's national health system, public health services and health security system<br>• Overview of JEE Mission Objectives<br>• Q&A/Discussion | FAO Representative<br>CDC Country Director<br>USAID Representative<br>WHO Representative<br><br>CS, PS, DMS, Ministry of Health<br>CS, PS, DVS, Ministry Agriculture, Livestock and Fisheries and Blue Economy | Senior representatives and representatives of all relevant sectors that are related to IHR implementation. | | **Dr Sofi Director, Preventive and Promotive Health** |
| 10:30am-11:00am | | **Coffee/Tea Break** | | | | |
| 11:00am - 12:00pm | | **Technical Area Discussion 1:**<br>• National Legislation, Policy and Financing | Dr Lyndah Makayotto | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 12:00pm-13:00pm | | **Technical Area Discussion 2:**<br>• IHR Coordination, Communication and Advocacy | Dr Lyndah Makayotto | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 13:00pm - 13:45pm | | | | | | |
| 13:45pm-14:45pm | | **Technical Area Discussion 3:**<br>• Antimicrobial Resistance | Dr Evalyn Wesangula | Country Reps and Partners | **Lead:**<br>**Co-Leads:** | **USAID** |
| 14:45pm-16:15pm | | **Technical Area Discussion 4:**<br>• Zoonosis | Dr Mathew Muturi | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 16:15pm-17:15pm | | **Technical Area Discussion 5:**<br>• Food Safety | Ms Brenda Obura | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |



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|---|---|---|---|---|---|---|
| 17:15pm-17:30pm | | **Day 1 Closing**<br>• Summary of Day 1 | | | **JEE Team lead/ Co-Team Lead** | |

| **Day 2: 28th February 2017** | | | | | | |
|---|---|---|---|---|---|---|
| **Time** | **Place** | **Subject** | **Discussion Lead(s)** | **Participants from Host Country** | **JEE facilitators** | **Session Chair** |
| 09:00am-10:00am | **Intercontinental Hotel** | **Technical Area Discussion 6:**<br>• Immunization | Dr Collins Tabu | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | **UNICEF** |
| 10:00am-11:15am | | **Technical Area Discussion 7:**<br>• Biosafety and Biosecurity | Mr. Kennedy Yatich | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 11:15am-11:45am | | ***Coffee/Tea Break*** | | | | |
| 11:45am-13:00pm | | **Technical Area Discussion 8:**<br>• National Laboratory System | Mr. John Mwihia | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 13:00pm-14:15pm | | ***Lunch*** | | | | |
| 14:15pm-15:45pm | | **Technical Area Discussion 9:**<br>• Real Time Surveillance | Dr Lyndah Makayotto | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | **Kenya WCO** |
| 15:45pm-16:00pm | | ***Coffee/Tea Break*** | | | | |
| 16:00pm-17:00pm | | **Technical Area Discussion 10:**<br>• Reporting | Dr Lyndah Makayotto | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 17:00pm-17:15pm | | **Day 2 Wrap Up**<br>• Summary of Day 2<br>• Preview of Day 3 | | | **JEE Team lead/ Co-Team Lead** | |



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| Day 3: 1th March 2017 | | | | | | |
|---|---|---|---|---|---|---|
| **Time** | **Place** | **Subject** | **Discussion Lead(s)** | **Participants from Host Country** | **JEE facilitators** | |
| 09:00am-10:30am | **Intercontinental Hotel** | **Technical Area Discussion 11:**<br>• Workforce Development | Mr. Waqo Boru | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | **FAO Representative** |
| 10:30am-10:45am | | **Coffee/Tea Break** | | | | |
| 10:45am-11:45am | | **Technical Area Discussion 12:**<br>• Preparedness | Dr Joan Karanja | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 11:45am-12:30pm | | **Technical Area Discussion 13:**<br>• Linking Public Health with Securities | Mr. Sammy Makama | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 12:30pm-13:30pm | | **Lunch** | | | | |
| 13:30pm-14:45pm | | **Technical Area Discussion14:**<br>• Emergency Response Operations | Dr Joan Karanja | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | **CDC Kenya** |
| 14:45pm-15:45pm | | **Technical Area Discussion 15:**<br>• Medical Countermeasures and Personnel Deployment | Mr. Waqo Boru | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 15:45pm-15:30pm | | **Coffee/Tea Break** | | | | |
| 15:45pm-17:15pm | | **Technical Area Discussion 16:**<br>• Risk Communication | Mr. Wycliffe Matini | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 17:15pm-17:30pm | | **Day 3 Closing**<br>• Summary of Day 3 | | | **JEE Team Lead/ Co-Team Lead** | |



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| Day 4: Site Visits<br>2nd March 2017 | | | | |
|---|---|---|---|---|
| **Time** | **Place** | **Subject** | **Participants from Host Country** | **JEE Team Members** |
| 07:00am-18.00pm | **Field Visits** | **Group 1**<br>1. National Public Health Laboratories<br>2. Central Veterinary Laboratories<br>3. KEMRI (Arboviral labs) | Each site visit by JEE Team will be accompanied by Kenya Representative and Local partners | JEE Team will be split in 5 teams for site visits. Each team will be comprised of following:<br>1. Site Visit Team Lead<br>2. Relevant Technical area lead and co-lead and others members |
| | | **Group 2**<br>1. Emergency Operations Centre<br>2. Zoonotic Disease Unit<br>3. Kenyatta National Hospital ( Infection prevention, Isolation) | | |
| | | **Group 3**<br>1. Goverment Chemists<br>2. Jomo Kenyatta International Airport | | |
| | | **Group 4**<br>1. Namanga Border Post | | |



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|---|---|---|---|---|
| | | **Group 5**<br><br>1. Mombasa International Airport<br>2. Kilindini Port | | |



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| Day 5: National Responses Capabilities and Closing<br>3rd March 2017 | | | | | | |
|---|---|---|---|---|---|---|
| **Time** | **Place** | **Subject** | **Discussion Lead(s)** | **Participants from Host Country** | **JEE facilitators** | |
| 09:00am-09:30am | **Intercontinental Hotel** | **Overview of Site Visit** | | | Selected Lead from JEE team | WHO Kenya |
| 09:30am-10:45am | | **Technical Area Discussion 17:**<br>• Points of Entry | Ms. Catherine Munyao | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 10:45am-11:45am | | **Technical Area Discussion 18:**<br>• Chemical Events | Mr. Moses Kimani | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 11:45am-12:45pm | | **Technical Area Discussion 19:**<br>• Radiation Emergencies | Ms. Bernadette Waiimu | Country Reps and Partners | **Lead:**<br>**Co-Lead:** | |
| 12:45pm-14:00pm | | **Lunch** | | | | |
| 14:00pm-15:30pm | **Intercontinental Hotel** | **Joint Host Country – External Assessment Team Review of Scores and Priority Actions** | | | | |
| 15:30pm-17:30pm | | **Closing Ceremony**<br>• The Team Lead will provide an overview and summary of findings from the mission<br>• The External Evaluation Team will present a 3 minutes summary of each technical area and priority actions to Government of Host Country<br>• Closing Remarks by<br>• Group Photo | • Team Leads<br>• Technical Area Leads | FAO Representative<br>CDC Country Director<br>WHO Representative | CS, PS, DMS, Ministry of Health<br>Cs,PS, DVS, Ministry Agriculture, Livestock and Fisheries and Blue Economy | |



UCDUSR0005438

**From:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**To:** Evelyn Luciano <luciano@ecohealthalliance.org>
**Cc:** Peter Daszak <daszak@ecohealthalliance.org>, David John Wolking <djwolking@UCDAVIS.EDU>, Jonna Mazet <jkmazet@UCDAVIS.EDU>, Molly Turner <turner@ecohealthalliance.org>, Emma Lane <lane@ecohealthalliance.org>
**Subject:** RE: Workplan etc. for the $200K from PREDICT for "IDEEAL-like activities in Indonesia"
**Sent:** Fri, 24 Feb 2017 22:00:27 +0000
PREDICT 2-IDEEAL Indonesia Budget_el review.xlsx

Hi Evelyn. A slight revision is needed for the budget you sent, as EHA indirects cannot be assessed on the $10,000 that you are planning to add to the Conservation Medicine subaward. As far as I am aware, indirects on the first $25,000 of the CM subaward have already been billed, but please let me know if I am mistaken. The budget attached has corrected the indirect cost calculation error, and there is now a balance of $3,552 that needs to be added to the budget to bring the total up to $200,000. It would also be helpful if you could add some detail regarding how the $10,000 going to CM will be spent.

Thanks,
Liz

Elizabeth Leasure
One Health Institute
University of California, Davis
530-754-9034 (office)
REDACTED (cell)

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**From:** Evelyn Luciano [mailto:luciano@ecohealthalliance.org]
**Sent:** Friday, January 06, 2017 10:39 AM
**To:** Elizabeth Leasure
**Cc:** Peter Daszak; David John Wolking; Jonna Mazet; Molly Turner; Emma Lane
**Subject:** Re: Workplan etc. for the $200K from PREDICT for "IDEEAL-like activities in Indonesia"

HI Liz,

Please find a revised workplan and budget for the IDEEAL work in Indonesia. Apologies for the delay in sending this to you.

If you have any questions, please let me know.

Thanks. And Happy New Year!

Stay well,

Evelyn

**From:** "Kevin Olival, PhD" <olival@ecohealthalliance.org>
**To:** Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>, Damien Joly <djoly@metabiota.com>, Jonna Mazet <jkmazet@UCDAVIS.EDU>, Peter Daszak <daszak@ecohealthalliance.org>
**Cc:** Alison Andre <andre@ecohealthalliance.org>, Liz Chase <eschase@UCDAVIS.EDU>, Anna Willoughby <willoughby@ecohealthalliance.org>
**Subject:** Re: P2-wide M&A Call, Thursday March 2nd
**Sent:** Wed, 1 Mar 2017 22:51:30 +0000

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SOI_Mouiche.pdf
ATT00008.htm
SOI_Takuo.docx
ATT00009.htm

Dear all,
Looking forward to catching up on the P2-wide M&A call tomorrow, Thursday March 2nd at 9 am PST/12 pm EST. The call line is REDACTED password REDACTED.

Please send any additional items for the agenda, but here is a draft for our discussion and some documents to review:

Agenda

1. Review new Emerging Disease Insight drafts (attached word docs)
a. GVP economic model
b. Pteropus genetics and Nipah
c. Understudied Flavis

2. Discuss Metabiota M&A Fellow applicants (3 candidates CV and statements of inquiry attached)
   a. Jean Michel Takuo
b. Mouiche Moctar
c. Pacide Mbala

3. Other items?

# CURRICULUM VITAE

## IDENTITY

| | |
|---|---|
| **Name and Title** | **MOUICHE MOULIOM Mohamed Moctar** ***(DVM, PhD)*** |
| **Sex** | Male |
| **Date and Place of Birth** | REDACTED |
| **Nationality** | |
| **Marital Status** | |
| **Language Proficiency** | Spoken and written English - Good<br>Spoken and written French – Excellent |
| **Contact Addresses** | **Metabiota Cameroon**<br>**Carrefour Intendance**<br>REDACTED |

**SKILLS AND EXPERTISE:** Animal Health, Animal Biotechnology, Risk Analysis, Livestock system analysis, Value Chain Analysis, Qualitative and quantitative data analysis, Geographic Information System, Modelling approaches, Monitoring and Evaluation of research project

## EDUCATIONAL BACKGROUND

- **2013: PhD in Biotechnology and Animal Production,** Cheikh Anta Diop University of Dakar (**SENEGAL**)
- **2013: PhD in Applied Biology and modeling of biological systems,** Polytechnic University of Bobo-Dioulasso (**BURKINA FASO**)
- **2011: Master of Science in Agronomy & Agrifood Sciences: *Specialty*- Systems and Innovative Techniques for Sustainable Agricultural Development, *Trace*: Livestock Production and Farming Systems** International Center for Higher Education in Agricultural Sciences of Montpellier (SupAgro) (**FRANCE**)
- **2010: International Master of Science in Sustainable Development in Agriculture (Management of animal resources),** University of Catania (**ITALY**)
- **2008: Master of science in Tropical Animal Productions,** Inter-States School of Veterinary Sciences and Medicine / Cheikh Anta Diop University of Dakar (**SENEGAL**)
- **2007: Doctor in Veterinary Medicine (DVM),** Inter-State School of Veterinary Sciences and Medicine / Cheikh Anta Diop University of Dakar (**SENEGAL**).
- **2001: Baccalaureat "C"** (Mathematical and Physical sciences) at the Malantouen High School – (**CAMEROON**).

## TRAINING

- January 2015: **Advanced leaderships and Team building:** Africalead, Senegal

December 2009 - March 2010: **Geographic Information System (GIS):** Faculty of Agriculture, University of Catania in Italy

- February 2009: **Valorization of research results:** National Fund for Agricultural research (FNRA), Senegal
- June 2008: **Introduction to Data Analysis with STATA**: Institute of Research for Development (IRD), Senegal



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## ACADEMIC, RESEARCH AND ADMINISTRATIVE EXPERIENCES

• January 2017 – todate: **Cameroon Country Coordinator USAID Predict (Metabiota ):** Planning, implementating and coordinating of the USAID Emerging Pandemic Threats PREDICT 2 project in Cameroon

• June 2016 – December 2016 : **National coordinator of ZELS Brucellosis project** "Establishment of a multi-sectoral strategy for the control of brucellosis in the main peri-urban dairy production zones of West and Central Africa". Project Executed by the Royal Veterinary College of London and supported by a grant awarded by the UK Biotechnology and Biological Sciences Research Council (BBSRC) under the Zoonoses and Emerging Livestock Systems (ZELS) programme.

• November 2014 – February 2015: **Associate Programme Fellows** at West and Central African Council for Agricultural Research and Development (CORAF/WECARD), Capacity strengthening Initiative for a Fellow from National Agricultural Research Systems of West and Central Africa. Associated in African Food Security Initiative (AFSI) Program funded by AusAID,

• February 2013 – todate: **Head of Department of Pharmacology and Toxicology,** School of Veterinary Sciences and Medicine, University of Ngaoundéré (Cameroon)

• November 2011 – todate: **Senior Lecturer and Researcher** at School of Veterinary Sciences and Medicine of University of Ngaoundéré (Cameroon)

• March 2013 - February 2015: **Post-doctoral Researcher in the AMPROLAIT project financed by CORAF/WECARD**. "Support for improving sustainable productivity and competitiveness of the dairy sector in West Africa and Central". Inter-States School of Veterinary Sciences and Medicine (EISMV) of Dakar (Senegal)

• February 2011-November 2011: **Associate Researcher in the ASECC project financed by IRD** "Adaptation of livestock systems to global climate change in West Africa". Research topic: Analysis of the impact of climate change on sub-Saharan Africa farming systems by modeling approach. International Centre for Research and Development on Livestock in sub-humid zone (CIRDES), Burkina Faso

• Novembre 2007 – October 2011: **Associate researcher and part time Lecturer** at Inter-States School of Veterinary Sciences and Medicine (EISMV) of Dakar (Senegal) / Department of Animal production and biological science

• November 2006 -September 2008: **Associate Researcher in Research Project in Artificial Insemination in Senegal, financed by FNRAA/PAPEL** "Development of efficient artificial insemination strategies, based on the natural heat of the cows and greater involvement of farmers". Inter-States School of Veterinary Sciences and Medicine (EISMV) of Dakar

## SCIENTIFIC PUBLICATIONS

- AWAH-NDUKUM J., NGU NGWA V., **MOUICHE M.M.M.**, MINGOAS K.J.P., TEMWA J., IYAWA D. and ZOLI P.A., 2016. Bovine Tuberculosis in Cattle Destined for Human Consumption in Marosa-Cameroon: Prevalence, Economic Losses and Risk Factors to Meat Handlers. *Global Veterinaria*, 17 (3): 271-281.
- AWAH-NDUKUM J., TEMWA J., NGU NGWA V., **MOUICHE M. M. M.**, IYAWA D., ZOLI P.A, **2016**. Interpretation Criteria for Comparative Intradermal Tuberculin Test for Diagnosis of Bovine Tuberculosis in Cattle in Marosa Area of Cameroon. *Veterinary Medicine International*. Article ID 4834851, 8p. http://dx.doi.org/10.1155/2016/4834851
- **MOUICHE M.M.M.**, SOW A., KALANDI M., NYABINWA P., OUEDRAOGO G.A., SAWADOGO G.J., **2016**. Incidence of embryonic mortality using progesterone and bovine pregnancy associated glycoprotein assays following artificial insemination of Gobra Zebu cattle in Senegal. *International Journal of Clinical Biochemistry*,3 (1), 143-150.
- A. SOW, J.N. HAKIZIMANA , M. KALANDI , A. BATHILY , **M.M.M. MOUICHE** , M.Z. ZABRE , J. KOUAMO , G.J. SAWADOGO, 2016. Évolution des paramètres biochimiques chez les vaches laitières supplémentées par le maïs et le tourteau d'arachide dans la région de Kaolack (Sénégal). *Journal of Applied*



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*Biosciences, 100:9515 – 9521*

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## CONFERENCE PRESENTATIONS AND THESIS

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- **MOUICHE M.M.M**, WAFO T, YOUMBA E, MPOUAM S.E, NJAYOU N.A, AWAH NDUKUM J., **2015.** Méthode opérationnelle d'évaluation des résidus d'antibiotiques dans les denrées d'origine animale au Cameroun. *4th Cameroon Society of Toxicological Sciences Conference*, from May 26 to 30, 2015 Yaoundé, Cameroon.
- AWAH NDUKUM J., **MOUICHE M.M.M.**, WAFO T., YOUMBA E., OKAH-NNANE N.H., MPOUAM S.E., NJAYOU N.A., FEUSSOM K.J.M., **2015**. Prevalence and public health significance of antibiotic residues in food products of animal origin in Cameroon.*4th Cameroon Society of Toxicological Sciences Conference*, from May 26 to 30, 2015 Yaoundé, Cameroon.
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génétique Bovine par l'insémination artificielle en élevages traditionnelles au Sénégal . Thèse de Doctorat PhD Biologie appliquée et Modélisation des systèmes biologiques. *Université polytechnique de Bobo-Dioulasso* – BURKINA FASSO

- **MOUICHE M.M.M.**, OUEDRAOGO G.A. et SAWADOGO G.J., **2012**. Elaboration d'outils d'aide à la décision pour optimiser les résultats des biotechnologies de la reproduction au Sénégal. In : *Colloque régional sur les biotechnologies*, du 06 au 09 Novembre 2012 à l'Université de Ouagadougou, Burkina Faso.
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- **MOUICHE M.M.M.**, KOUAMO J., YAMEOGO N. et SAWADOGO G. J. , **2008**. Evaluation des causes de mortalités embryonnaires après insémination artificielle chez les bovins par l'exploration des indicateurs métaboliques de l'équilibre protéo-énergétique et de l'efficacité du système de défense. In : Symposium International de Pathologie Animale et de Biotechnologie en Santé Animale en milieu tropical, du 04 au 06 février 2008 à Université d'Abomey-Calavi, Bénin.
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- **MOUICHE M.M.M., 2007**. Etude de la relation entre le statut nutritionnel des vaches inséminées et leur état physiologique par dosage d'un biomarqueur de gestation : Les Protéines Associées à la Gestation (PAG). *Thèse Médecine Vétérinaire Dakar – SENEGAL*

## FELLOWSHIPS AWARDS

- November 2014 – February 2015: **Associate Programme Fellows**, awarded by CORAF/WECAD and Australian Department of Foreign Affairs and Trade,
- 2013 – 2014: **Postdoctoral Scholarship** awarded by Francophone University Association (AUF) at the Inter-State School of Veterinary Sciences and Medicine, Dakar, Senegal
- 2010 – 2013: **PhD Scholarship** awarded by Francophone University Association (AUF) at Cheikh Anta Diop University of Dakar (Senegal) / Polytechnic University of Bobo-Dioulasso (Burkina Faso)
- February – November 2011: ***International Centre for Research and Development on Livestock in sub-humid zone (CIRDES) fellowship***, Bobodioulasso, Burkina Faso
- 2009 – 2011: ***Erasmus Mundus Scholarship***, awarded by European Union. International Master of science in Sustainable Development in agriculture (AGRISMUNDUS), Montpellier SupAgro (France) / University of Catania (Italy)



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- 2001 – 2007 : ***Cameroon Government Scholarship for Higher Education***; Doctor of Veterinary Medicine degrees at the Inter-State School of Veterinary Sciences and Medicine, Dakar, Senegal

## COMPUTER KNOWLEDGE

- System: Win (Vista, 7, 8), Mac
- Training certificate in **WORD, EXEL, POWERPOINT**
- Training certificate in Database: **ACCESS**
- Statistical software: SPSS, Epi Info, STATA, R, Epi data, Sphinx, Statistica, SPAD
- **Other:** Internet, Web2.0, Paint, Publisher, Quantum GIS,

## LANGUAGES / OTHERS

- **Bamàn**: Excellent speaking and listening
- **French**: Excellent speaking, writing and listening
- **Spanish**: Basic speaking, writing and listening
- **Wolof**: Basic speaking and listering
- **English:** Fluent speaking, writing and listening
- **Italian**: Excellent speaking, writing and listening

•**Hobbies:** Music, Football, Movies, Reading, and Bicycle Riding.

## REFERENCES

**Prof Julius AWAH NDUKUM**, Deputy Director of School of Veterinary Medicine and Sciences, University of Ngaoundere. Email: awahndukum@yahoo.co.uk . Tel: 00 237 677236435

**Dr Hamadé KAGONE**, Livestock, Fisheries and Aquaculture Programme Manager of CORAF/WECARD. Email: hamade.kagone@coraf.org . Tel.: +221 33 869 96 18

**Prof Germain Jérôme SAWADOGO:** Regional Coordinator of AMPROLAIT project financed by CORAF/WECARD. "Support for improving sustainable productivity and competitiveness of the dairy sector in West Africa and Central". Email: swadogo@refer.sn. Tel: +221 776858754



UCDUSR0005446

Dear Internship Recruiting committee,

I am writing to express my interest for the Modeling internship you are offering

I have a degree in Geomatic and Environment, and a master student in the same field, training modules included: Remote sensing, GIS, Algorithm and programming, data base, Cartography, Project Management, Environmental Impact Assessment, business creation, Topography, information processing system.

To date, I have about 15 years of experience in terrestrial wildlife inventories, threatened to species research and management and conservation management planning in Central Africa. I am a Certified bird bander who has been working with Metabiota Cameroon Ltd (MCL) for the last 12 years in Cameroon with action in central (Congo Brazzaville (RoC) and the Democratic Republic of Congo (DRC)) and Western Africa (Sierra Leone) in the surveillance of emerging and re-emerging diseases.

Despite my knowledge in modeling, M and A is an area in which I lack knowledge and be part of such internship will help to fill this gap in my professional career and improve my performance in my current position at MCL, reason why I also got registered in a Master program in a similar field.

I am confident that the new skills acquired during the said internship will be beneficial to:

- Myself in my current position and subsequently in my professional career
- Metabiota as a program
- Predict as a project since a restitution session will be organized at the end of the internship that will involve the local predict staff and other interested Metabiota personnel as well.

I will greatly appreciate if I am offering such a valuable opportunity that will help fill the gap I previously mentioned. Thank you for taking the time to review my application and for your kind consideration.

Yours Sincerely,

Takuo Jean Michel
Tel: REDACTED, email: jmtakuo@metabiota.com

**MOUICHE MOULIOM Mohamed Moctar,** DVM, PhD
Cameroon Country Coordinator (Metabiota - USAID Predict)

REDACTED

Yaounde, 03th Feb. 2017

**Internship position at EcoHealth Alliance**
**PREDICT Modeling & Analytics team**

# Letter of Interest

It is with enthusiasm and high interest that I have been informed about the internship that is being offered by EcoHealth Alliance in June to work with the PREDICT Modeling & Analytics team.

I am a young African researcher and lecturer in animal health related fields. I hold a degree of Doctor of Veterinary Medicine (DVM) from the Veterinary School of Dakar (EISMV) in 2007, Master in Management of animal resources (2010) and I obtained my PhD in Applied Biology and modeling of biological systems in 2013. I have had the opportunity to work for 8 years in various projects in animal health and production in agro-sylvo-pastoral systems in various West and Central African countries (Senegal, Mali, Burkina Faso and Cameroon). Throughout my career, I have gained good experience in designing and implementing animal health research projects in collaboration with different stakeholders.

I have a good experience in data collection and analysis; I have knowledge in the use of statistical software (R, SPSS, XLSAT, SPAD) and GIS software (QGIS). I have had the opportunity to work in the ASECC project "Adaptation of the livestock systems to global climate change in West Africa and in Burkina Faso in particularly". In the framework of this project a simulation model (CLIMEX) was developed to simulate the impact on the agro system on the adaptation strategies of farmers in function of different climate scenarios. This research work allowed me to understand a modeling approaches.

This training will be benefit for Cameroon PREDICT team in the analysis of our data. I am convinced without any doubt that my experience and training are appropriate for this internship. The opportunity offered me this position is an additional challenge in my young career. I hope that my application for this internship position at EcoHealth Alliance will receive a favorable response.

Yours sincerely,

Mouiche Mouliom Mohamed Moctar,

Kinshasa, 30 January 2017

Subject: Letter of Interest

Dear Sir, Madam,

I hereby request a place in the course which will be organized by the modeling and analysis team led by EcoHealth Alliance at its headquarters in Midtown Manhattan, New York City. Indeed, I am a Medical Doctor with 5 years' postgraduate degree in microbiology from the University of Kinshasa in Democratic Republic of Congo (DRC) and I also have a master in public health sciences, orientation Disease Control from the Institute of Tropical Medicine of Antwerp in Belgium.

Since 2007, I worked as a general practitioner in a private clinic (Biomedical Center of Matonge) for a year, then during all my specialization in Microbiology for 5 years I supervised research studies on the viral zoonotic diseases in particular the clinical and biological characterization of infection caused by monkeypox virus in humans in DRC, in collaboration with the National Institute for Biomedical Research in Kinshasa (INRB), the School of Public Health of Kinshasa and the US Army Medical Institute of Infectious Diseases. From 2013, I took charge of the PREDICT laboratory, a USAID project of the EPT program which aims to prevent emerging pandemic zoonotic diseases by early detection and identification of microbes as well as the discovery of new viruses with pandemic potential. And since July 2016, I coordinate the operations, including the field and laboratory activities of the PREDICT project in the DRC.

With the permission of my supervisor, the Country Coordinator of PREDICT in the DRC, we intend to use the data we obtained during the first phase of the PREDICT project to carry out this training.

We also believe that this training will complement our experience in data analysis and above all provide the necessary theoretical and practical knowledge on modeling.

I attach to this letter my CV and I remain at your disposal for more information.

We are available from June to participate in this training.

In the hope of a favorable reply from you, please accept, Sir, Madam, the expression of my distinguished sentiments.

Placide K. Mbala, MD, MPH.

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## PROCESSING ERROR

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**PLACIDE KINGEBENI MBALA, MD, MPH**
**Tel:** REDACTED
**Email address:** REDACTED

## KEY QUALIFICATIONS

Dr. Placide K. Mbala is a physician and clinical biologist with experience of at least 7 years in the molecular diagnosis of emerging diseases such as viral hemorrhagic fever and monkeypox. Since 2013, Dr. Mbala worked as laboratory manager for PREDICT project based at the National Biomedical Research Institute (INRB) in the Democratic Republic of Congo (DRC) where he was actively involved in the monitoring of zoonotic diseases and discovering of new viruses. During the last Ebola outbreak in DRC which took place in August 2014, Dr. Mbala supervised the laboratory of viral hemorrhagic fevers and was able to confirm the cause of the epidemic by polymerase chain reaction and sequencing. Dr. Mbala also participated as a trainer in the training of laboratory staff from the Ministry of Health for the preparation and response to Ebola outbreak in West Africa. In 2015, Dr. Mbala received a grant from the Directorate General for Development Cooperation (Belgium) for ten months MPH program, option/disease control at the Tropical Medicine Institute of Antwerp in Belgium (August 2015 to June 2016). Since July 2016, Dr Mbala is working as the Operation Coordinator of the PREDICT project under the USAID-EPT program in the Democratic Republic of Congo.

## EDUCATION

Master of Science in Public Health – Disease Control at the Institute of Tropical Medicine in Antwerp (Belgium), 2016.

Medical Biologist, University of Kinshasa, DRC, June 2013.

Medical Doctor, University of Kinshasa, DRC, December 2006.

## LANGUAGES

French – native, English – professional proficiency



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**INTERNATIONAL AWARD**

American Society of Tropical Medicine and Hygiene 2014 Annual Meeting Travel Award

**SCHOLARSHIP**

DGDC (Directorate General for Development Cooperation) Scholarship for Master of Science in Public Health - Disease Control at the Institute of Tropical Medicine in Antwerp (Belgium), 2015-2016.

**INTERNATIONAL ORGANIZATION**

Member of the American Society of Microbiology

Member of the American Society of Tropical Medicine and Hygiene (ASTMH)

**INTERNATIONAL MEETING**

- November 2nd to 6th, 2014: Travel award for the 63rd ASTMH Annual Meeting in New Orleans, USA.
- Participation at the ASTMH Annual Meeting, Philadelphia, USA, 4 to 8 December 2011.
- Participation at the XVIII International Poxvirus. Asfivirus and Iridovirus, Sedona, Arizona, USA, 5 to 10 June 2010.
- Participation at the Fifth International Congress of Infectious and Parasitic Disease, Kinshasa, Democratic Republic of Congo, 4 to 6 November 2009.

**ADDITIONAL TRAINING**

- August 18th to 20th, 2014: Participation in Infectious Substance Shipping Training organized by WHO in Brazzaville, Republic of Congo
- January 24th to February 21st, 2014: Completion of the Group Training Program in Laboratory Diagnosis Techniques for Control of Vaccine Preventable Diseases, including Poliomyelitis and Measles, Japan International Cooperation Agency, Tokyo, Japan.
- July 2013: Completion of training course in "Protecting Human Research Participants"
- June 2013: Transportation workshop including the Class 6.2 dangerous Goods Shipping General Awareness and Function Specific training, Albuquerque, New Mexico, USA (June 13th – 14th)



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- June 2013: Introduction to Biorisk Management Training, Albuquerque, New Mexico, USA (June 6th – 14th)
- June 2010: Completion certificate of competency in Microbiology, University of Kinshasa, DRC.
- May 2010: CITI Good Clinical Practice Curriculum Completion Report and Basic/Refresher Course-Human Subjects Research Curriculum Completion Report (online).
- October 2009: Training curriculum about Research Ethics/FHI
- July 2009: Training on Good Clinical Practice/USAMMDA (US Army Medical Materiel Development Activity)
- October 2008:
  - Training on serological diagnostic of Monkeypox by the CDC/Atlanta team, in Kinshasa, DRC.
  - Training on PCR diagnostic of the hemorrhagic fevers (Ebola, Marburg and Sudan) by the USAMRIID's team in Kinshasa, DRC.
- September 2008: Training on PCR diagnostic of the hemorrhagic fevers by the Winnipeg/Canada team, in Kinshasa, DRC.
- August 2008: Training in molecular diagnostic of Mycobacterium tuberculosis, INRB, Kinshasa, DRC.
- July 2008: Training on PCR diagnostic of Influenza virus supported by the KEMRIID (Kenyan Medical Research Institute of Infectious Diseases), in Kinshasa, DRC.
- April 2008: Training on PCR diagnostic of Monkeypox virus and varicella-zona virus by the USAMRIID and the CDC/Atlanta, in Kinshasa, DRC.
- January-May 2008: Training on diagnostic procedures in virology (serology, cell culture and PCR) at the Institut National de Recherche Biomédicale, Kinshasa, DRC.



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**PROFESSIONAL EXPERIENCE**

1. **Metabiota – DRC, July 2016 to present**

   **Operation Coordinator of the PREDICT project – USAID EPT program, Kinshasa, Democratic Republic of Congo**

   - Coordination of field and laboratory activities
   - Data management

2. **Viral Hemorrhagic Fever Laboratory, National Institute of Biomedical Research, August – December 2014**

   **Laboratory Manager, Kinshasa, Democratic Republic of Congo**

   - Serological and molecular diagnosis of viral hemorrhagic fever especially Ebola Virus Disease (EVD)
   - Training of laboratory biologist and technicians on the EVD laboratory diagnosis

3. **Metabiota – PREDICT project, February 2013 to June 2015**

   **Laboratory Manager, Kinshasa, Democratic Republic of Congo**

   - Responsible of human and animal specimen analysis for the discovery of new viral pathogens.
   - Laboratory management.

4. **USAMRIID research study project (Discovery of unknown pathogens at the General Hospital of Kole) November 2011 – December 2012**

   **Senior Study Site Physician, Kole, Kasai-Oriental, Democratic Republic of Congo**

   - Responsible of the overall field study activities, staff (9 staff), finance ($35,000 per 3 months) and equipment.
   - Supervisor of laboratory and clinical data collection

5. **USAMRIID research study project (Clinical characterization of human monkeypox infection at the General Hospital of Kole) November 2008 - September 2011**

   **Study Site Physician, Kole, Kasai-Oriental, Democratic Republic of Congo in Kasai-Oriental, DRC.**

   - Supervisor of laboratory and clinical data collection and analysis

6. **University of Kinshasa, Medical Biology, University Hospital**

   **June 2013 to present**



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**Medical Biologist (specialist in clinical Microbiology), Kinshasa, Democratic Republic of Congo**

- Supervisor of post-graduate student in Microbiology at the University Hospital of Kinshasa

**PUBLICATIONS**

- Alicia Rosello1, Mathias Mossoko3, Stefan Flasche , Albert Jan Van Hoek, **Placide Mbala**, Anton Camacho, Sebastian Funk, Adam Kucharski, Benoit Kebela Ilunga, W John Edmunds, Peter Piot, Marc Baguelin, Jean-Jacques MuyembeTamfum. *Ebola virus disease in the Democratic Republic of the Congo, 1976-2014*.eLife 2015;4:e09015. DOI: 10.7554/eLife.09015
- Yoshinori Nakazawa, Matthew R. Mauldin, Ginny L. Emerson, Mary G. Reynolds, R. Ryan Lash, Jinxin Gao, Hui Zhao, Yu Li, Jean-Jacques Muyembe , **PlacideMbalaKingebeni** , OkitoWemakoy, Jean Malekani , Kevin L. Karem , Inger K. Damon and Darin S. Carroll. *A Phylogeographic Investigation of African Monkeypox*. Viruses 2015, 7, 2168-2184; doi:10.3390/v7042168.
- Alexander L. Greninger, Samia N. Naccache, Scot Federman, Guixia Yu, **PlacideMbala**, Vanessa Bres, Doug Stryke, Jerome Bouquet, SnehaSomasekar, Jeffrey M. Linnen, Roger Dodd, Prime Mulembakani, Bradley S. Schneider, Jean-Jacques Muyembe-Tamfum, Susan L. Stramer and Charles Y. Chiu. *Rapid metagenomic identification of viral pathogens in clinical samples by real-time nanopore sequencing analysis*.Greninger et al. Genome Medicine (2015) 7:99 DOI 10.1186/s13073-015-0220-9
- Jens H. Kuhn, Kristian G. Andersen, Sylvain BAIZE, YtningBáo, SinaBavari, Nicolas Berthet, Olga Blinkova, J. Rodney Brister, Anna N. Clawson, Joseph Fair, Martin Gabriel, Robert F. Garry, Stephen K. Gire, Augustine Goba, Jean-Paul Gonzalez, Stephan Günther, Christian T. Happi, Peter B. Jahrling, Jimmy Kapetshi, Gary Kobinger, Jeffrey R. Kugelman, Eric M. Leroy, Gael Darren Maganga, **Placide K. Mbala**, Lina M. Moses, Jean-Jacques Muyembe-Tamfum, MagassoubaN'Faly, Stuart T. Nichol, Sunday A. Omilabu, Gustavo Palacios, Daniel J. Park, Janusz T. Paweska, Sheli R. Radoshitzky, Cynthia A. Rossi, Pardis C. Sabeti, John C. Schieffelin, Randal J. Schoepp, Rachel



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Sealfon, Robert Swanepoel, Jonathan S. Towner, Jiro Wada, Nadia Wauquier, Nathan L. Yozwiak, Pierre Formenty. *Nomenclature- and database-compatible names for the two Ebola virus variants that emerged in Guinea and the Democratic Republic of the Congo in 2014*Viruses2014, 6, 4760-4799; doi:10.3390/v6114760.

- Gaël D. Maganga, D.V.M., Ph.D., Jimmy Kapetshi, M.D., Nicolas Berthet, Pharm.D., Ph.D., BenoitKebelaIlunga, M.D., Felix Kabange M.D., **PlacideMbalaKingebeni, M.D.**, Vital Mondonge, M.D., Jean-Jacques T. Muyembe, M.D., Ph.D., Eric Bertherat, M.D., Sylvie Briand, M.D., Joseph Cabore, M.D., Alain Epelboin, M.D., Pierre Formenty, D.V.M., M.P.H., Gary Kobinger, M.D., Licé González-Angulo, M.Sc., Ingrid Labouba, Ph.D., Jean-Claude Manuguerra, Ph.D., Jean-Marie Okwo-Bele, M.D., Christopher Dye, D. Phil., and Eric M. Leroy, D.V.M., Ph.D.Ebola Virus Disease in the Democratic Republic of Congo.October 15, 2014DOI: 10.1056/NEJMoa1411099.
- Steve Ahuka-Mundeke, **PlacideMbala-Kingebeni**, Florian Liegeois, AhidjoAyouba, OctavieLunguya-Metila, DidaceDemba, Guy Bilulu, Valentin Mbenzo-Abokome, Bila-IsiaInogwabini, Jean-Jacques Muyembe-Tamfum, Eric Delaporte, Martin Peeters: Identification and Molecular Characterization of New Simian T-cell Lymphotropic Viruses (SLTV) in non-human Primates Bush meat from Democratic Republic of Congo. Mary Ann Liebert, August 9th 2011.
- Ahuka-Mundeke S, AyoubaA, **Mbala-Kingebeni P**, Liegeois F, Esteban A, Lunguya-Metila O, Demba D, Bilulu G, Mbenzo-Abokome V, Inogwabini B, Muyembe-Tamfum J.J, Delaporte E, Peeters M. A novel multiplexed HIV/Simian immunodeficiency Antibody Detection Assay. Emerging infectious diseases, 17(12): 2277-2285 (2011).

**ABSTRACTS**

- **Placide K. Mbala**, Ipos L. Ngay, Joseph L. Atibu, Damien Joly, Bradley S. Schneider, CorinaMonagin, Prime M. Mulembakani, Maria Makuwa, Jean-Jacques Muyembe. Prompt Diagnosis and First Characterization of the Virus Responsible for the 2014 Ebola Virus Outbreak in the Democratic Republic of Congo. Targeting Ebola 2015, May 28-29, Paris, France.



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- **PlacideMbalaKingebeni**, James W. Martin, John W. Huggins, Cesar KabeyaMutambay, Bryony Soltis, Fernando B. Guerena, Lawrence Korman, Anne W. Rimoin, Prime Mulembakani, Phillip Pittman, Jean Jacques Muyembe and the Kole Clinical Studies Group: Common Clinical Complications of Human Monkeypox Infection at the General Hospital of Kole, in Democratic Republic of Congo, ASTMH Annual Meeting, New Orleans, USA, 2 to 6 November 2014.
- Mark R. Withers, M.D., M.P.H., Kerry B. Patterson, M.D., M.P.H., F.C.A.P. Paul Hollier, D.V.M., Gaston Mwema, M.D., Donnat Mbale, M.D.,DidaceDemba, M.D.Therese Riu-Rovira, M.D,**PlacideMbalaKingebeni M.D.**, Jean-Jacques TamfumMuyembe, M.D., Ph.D., and John W. Huggins, Ph.D., James W. Martin, M.D; Fetal Demise due to Maternal Monkeypox Infection, Fifth International Congress of Infectious and Parasitic Disease, Kinshasa, Democratic Republic of Congo, 4 to 6 November 2009 and XVIII International Poxvirus, Asfivirus and Iridovirus, Sedona, Arizona, USA, 5 to 10 June 2010.
- Martin, JW; **Mbala, P**; Muyembe, JJ; Huggins, JW: Relapse of Manifestation in a Patient with Monkeypox Infection and Subsequent Varicella Infection Resulting in Mixed-appearance Exanthema Consistent with Coinfection, XVIII International Poxvirus, Asfivirus and Iridovirus, Sedona, Arizona, USA, 5 to 10 June 2010.
- **PlacideMbala**, FreedericBesomba, Steve Ahuka, Guy Bilula, DidaceDemba, Therese Riu, Jean M. Muderhwa and Jean-Jacques Muyembe: Profile of intestinal Parasitic Infections Among Children (aged 6months-5years) at the General Hospital of Kole, Fifth International Congress of Infectious and Parasitic Disease, Kinshasa, Democratic Republic of Congo, 4 to 6 November 2009.

**POSTERS**

- **Placide K. Mbala**, Ipos L. Ngay, Joseph L. Atibu, Damien Joly, Bradley S. Schneider, CorinaMonagin, Prime M. Mulembakani, Maria Makuwa, Jean-Jacques Muyembe. Prompt Diagnosis and First Characterization of the Virus Responsible for the 2014 Ebola Virus Outbreak in the Democratic Republic of Congo, Targeting Ebola 2015, May 28-29, Paris, France.



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- **PlacideMbalaKingebeni**, James W. Martin, John W. Huggins, Cesar KabeyaMutambay, Bryony Soltis, Fernando B. Guerena, Lawrence Korman, Anne W. Rimoin, Prime Mulembakani, Phillip Pittman, Jean Jacques Muyembe and the Kole Clinical Studies Group: Common Clinical Complications of Human Monkeypox Infection at the General Hospital of Kole, in Democratic Republic of Congo, ASTMH Annual Meeting, New Orleans, USA, 2 to 6 November 2014.
- Mark R. Withers, **Placide M. Kingebeni**, Jean-Jacques T. Muyembe, James Martin, Therese Riu-Rovira, John Huggins, Fernando B. Guerena, Phillip R. Pittman: Outcome of Four Pregnancies in Congolese Women with Monkeypox Infection, ASTMH Annual Meeting, Philadelphia, USA, 4 to 8 December 2011.
- James Martin, Mark Withers, John Huggins, Jean-Jacques Muyembe, **MbalaKingebeniPlacide**, Cesar L. Cesar, Bryony Soltis, Fernando B. Guerena, Phillip R. Pittman: Clinical Observation of Human Monkeypox Infections in the Democratic Republic of Congo, ASTMH annual conference, Philadelphia, USA, 4 to 8 December 2011.
- Mark R. Withers, M.D., M.P.H., Kerry B. Patterson, M.D., M.P.H., F.C.A.P. Paul Hollier, D.V.M., Gaston Mwema, M.D., DonnatMbale, M.D., DidaceDemba, M.D. Therese Riu-Rovira, M.D, **PlacideMbalaKingebeni M.D.**, Jean-Jacques TamfumMuyembe, M.D., Ph.D., and John W. Huggins, Ph.D., James W. Martin, M.D: Fetal Demise due to Maternal Monkeypox Infection, XVIII International Poxvirus, Asfivirus and iridovirus, Sedona, Arizona, USA, 5 to 10 June 2010.
- Martin, JW; **Mbala, P**; Muyembe, JJ; Huggins, JW; Relapse of Manifestation in a Patient with Monkeypox Infection and Subsequent Varicella infection resulting in Mixed-appearance Exanthem Consistent with Coinfection, XVIII International Poxvirus, Asfivirus and Iridovirus, Sedona, Arizona, USA, 5 to 10 June 2010.

Kinshasa, January 29th 2017



UCDUSR0005459

EMERGING DISEASE **INSIGHTS**

Research from the PREDICT Modeling & Analytics team

# Global Costs of Emerging Infectious Diseases: Forecasting Return on Investment for the Global Virome Project.

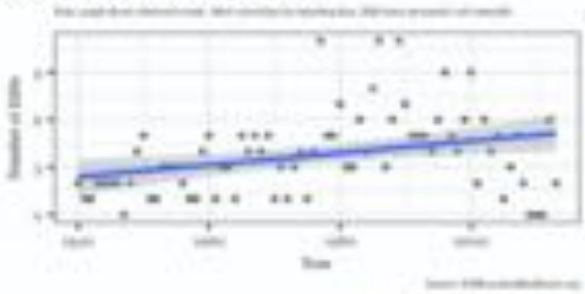
A single emerging infectious disease epidemic such as the SARS pandemic in 2003 can cost the global economy up to $50 billion [1], but investments in prevention and research are often insufficient. To make the economic case for investing in large-scale research programs, it is important to model and quantify the future economic impacts of EIDs and pandemics.

The Global Virome Project (GVP) is a proposed 10-year global effort to discover 99% of all viruses with likely zoonotic potential residing in mammals and waterfowl. This project could reduce the burden of emerging infectious diseases by creating a viral sequence and metadata atlas that will lower response times, speed technological advancements, and provide a starting point for therapeutic discovery and development. Based on current projected lab and field costs, this project is estimated to cost $3.44 billion over the next ten years ($344M annually). Given our estimations of EID frequency, mortality rates, and impacts on the global economy (demand shocks), we project the costs of all potential zoonotic emerging disease events over the next 50 years and calculate projected Return on Investment (ROI) from the Global Virome Project.

## COSTS OF EMERGING INFECTIOUS DISEASES

The incidence of emerging infectious disease events is on the rise [1]. A majority of these diseases, including SARS, MERS, Avian Influenza, and Ebola, are zoonoses caused by spillover from wildlife into human populations. To project future annual rates of zoonotic EID events, we calculate the average number and variance of EID events per year and the rate of change over time, based on methods detailed in [1]. To calculate the number of deaths per event, we fit case fatality data in our Emerging Infectious Diseases Repository (EIDR) to a power law distribution. To calculate morbidity, we assume that illness length follows a Poisson distribution with mean 2 - most infections are cleared quickly, but a small number of severe infections can last for several weeks [2].

**Figure 1: Annual frequency of Emerging Infectious Diseases from 1940 to 2012.**




## ESTIMATING GLOBAL DAMAGES FROM EID EVENTS

Global damages, or economic costs, from emerging infectious diseases (EID) depend on the annual number of EID events and the average cost of each event. Damages of one event are the sum costs from mortality $M(t)$, morbidity $A(t)$, and economic shocks $G(t)$. To find the total present value of global damages ($PVGD$), we use a standard 5 percent rate ($\delta$=0.05) to discount future savings to their current value.

$$PVGD = \int_{t=0}^{t=50} (M(t) + A(t) + G(t))\, e^{-\delta t}$$

We use methods from [3] to calculate the value of a statistical life and from [2] to calculate the value of one day of work lost. We assume that economic shock costs of a disease event are

December 12, 2016

For details on methods or analysis contact: PREDICTmodeling@ecohealthalliance.org

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directly correlated with fatality rates, and fit a linear regression using economic data in EIDR.

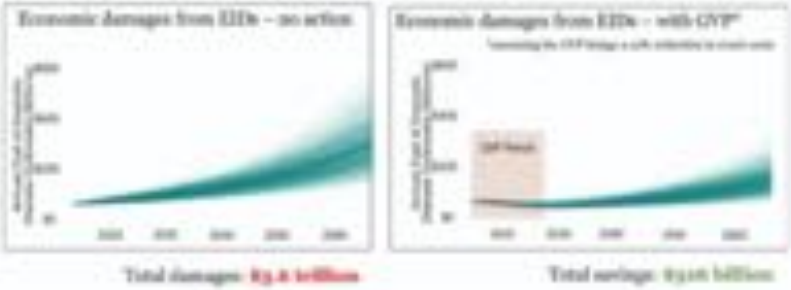
We parameterized our model using these assumptions, the forecasted number of annual EID events, the current global GDP growth rate of 2.4%, and the 2015 global GDP of $73.4 trillion. **Averaged over 5000 simulations, we find the discounted cost of emerging infectious diseases to be US83.5 trillion over the next 50 years.**

## COSTS AND ROI OF A GLOBAL VIROME PROJECT

To determine how much it would cost to discover all viral diversity in mammals, mark-recapture ecological techniques were used to estimate the sampling effort required to discover all viruses present in one species [4]. A viral discovery curve was generated from this estimation. Extrapolating this curve to all 5,486 known mammal species gives an estimated 1,330,208 undiscovered viruses likely to reside in mammal hosts, but the tail of the viral discovery curve is long. The costs of sampling 100% of the 58 viruses in *P. Giganteus* were estimated at $1.2 million, including all capture and laboratory costs, but finding 99% of these viruses costs roughly half that amount. Assuming that all mammal species would have equivalent lab and field costs, discovering 99% of all mammalian viruses would cost $3.44 billion, or $344 million per year over 10 years.

Having a baseline of identified viral sequences would lead to earlier detection and quicker response times, lowering both epidemic frequency and impact. We assume that these improvements would be implemented two years after viral sequence collection and collectively lead to a conservative 10% in savings from damages in all events in the next 50 years ($326 billion). As such, the $3.4 billion GVP project would *return* **895 dollars for each dollar invested in it.**

**Figure 2: Cost savings from a 10% reduction in damages from the GVP.**




Even if the GVP only reduces the likelihood and impact of EIDs by a small fraction, this project generates large returns on investment due to the high and rising costs of pandemics. The premature loss of lives accounts for the greatest percentage of economic damages from EID events, but a significant portion is also attributable to economic shocks. A $344 million annual budget for a 10-year Global Virome Project is a small investment that could produce tremendous returns.

### References

[1] Jones, K. E. et al. Global trends in emerging infectious diseases. *Nat. Lett.* 451, 990–994 (2008). [2] Molinari, N. A. M. et al. The annual impact of seasonal influenza in the US: Measuring disease burden and costs. *Vaccine* 25, 5086–5096 (2007). [3] Fan, V. Y., Jamison, D. T. & Summers, L. H. The Inclusive Cost of Pandemic Influenza Risk. *NBER Work. Pap. Ser.* 22137, 24 (2015). [4] Anthony, S. J. et al. A strategy to estimate unknown viral diversity in mammals. *MBio* 4, (2013).

# CURRICULUM VITAE

**Takuo Jean Michel**
Date of birth: REDACTED
Nationality: REDACTED
Marital status: REDACTED
Address: REDACTED
Email: REDACTED
Cell: REDACTED

## EDUCATIONAL BACKGROUND

2016: Master Student in HERMES, ISMASA INSTITUTE Yaoundé. Option geomatics and environment, training modules includes (Remote sensing, GIS, Algorithm and programming, data base, Cartography, Project Management, Environmental Impact Assessment, business creation, Topography, information processing system).

2015: BSC in Environment and Geomatic, HERMES, ISMASA INSTITUTE Yaoundé.

2001: Diploma in Forestry, Forestry School Mbalmayo.

1996: General certificate of Education Advance level (GCE A/L) "Baccalaureat D" in Biological sciences, Lele High School Nkongsamba.

1993: "Probatoire", Lele High School Nkongsamba.

1990: General Certificate of Education Ordinary Level (GCE O/L) "BEPC", Elie Allegret College of Mbo, Bafoussam.

1985: First School Leaving Certificate, "CEPE" Government School Ndengso, Bafoussam.

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Field ecology-Cameroon with 15 years' experience in with terrestrial wildlife inventories, threatened species research and management and conservation management planning in Central Africa. Certified bird bander.

## PROFESSIONAL EXPERIENCE

**April 2016- to date predict** field ecologist with Metabiota

Key achievement:

- **February 2006 – 30 April 2016, Ecology/Wildlife Researcher (Bird and bats specialist) with GVFI-Cameroon**. Duties: In charge of bird flu surveillance activities through field collection of biological samples (Blood, fecal, tracheal) of wild birds. Emerging disease control through bats, rodents and shrews live captures using mist-net pitfall-trap and harp trap and Sherman trap and biological sampling.

- **Ebola outbreak**

- Sierra Leone post Ebola host project: A two weeks training was held in Makeni, Northern Sierra Leone for field and lab staff of the Predict EHP project. The training was mainly to introduce the Predict protocols to the team and as well as have practical sessions to apply classroom work. The 30 Participants came from Bombali district and Western Area sites plus the Metabiota ecology and laboratory staff from Kenema.

- **Participated in the intervention over the EBOLA outbreak in Isiro DRC (Democratic Republic of Congo).**

Activities included: Captured, identified, biological sample from collected from bats, rodents and shrews. Refreshment training on safety and Personnel protection equipments and on samples processing, conservation and transportation.

- **15-22 September, 2013: Field work with DRC (Democratic Republic of Congo) predicts team.**

Activities included: captured, identified and biological sample from collected from bats, rodents and shrews for opportunistic virus search

- **Monkey Pox**

- **November, 2010: Member of the training of Field staff of GVFI-DRC on the safe methods of sampling wildlife in kole in kasai Oriental.**

The duties was to organized 4 days class training on personnel protective equipment (PPE), safe handling of bats and rodent for sample collection, report writing, sample preservation and conservation, samples transportation, sample collected will be tested for monkey pox.

- **Bird -Flu**

- **2006 to 2009: Team Member of active Bird-flu surveillance in Cameroon GVFI-MINRESI** supervised by Dr Tanya Vincent and sponsored by UNDP Common fund.

Duties: In charge of site selection, travel all over the country for birds capture using mist net, oral, rectal swab, fecal and blood sample collection for H1N5 testing.

- **2001 - 2005: Volunteer at the Cameroon Biodiversity Conservation Society (CBCS), Yaoundé Birdlife International Affiliate in Cameroon.**

Duties: In charge of organizing and conducting field works, Data entry, Report Writing, and organizing education and sensitization in project sites. I was also a member of the editorial board of the Magazine Club "Cameroon Birdline"

- **2003-2005: Research Assistant with Earthwatch Institute on "Saving the Cameroon's Rockfowl" project.**

Duties: In charge of Bird census (using point count method), Vegetation survey, Measuring geological and soil parameters, Assessing food supply using quadrat sampling, Malaise trap and pitfall trap.

**- 30 September 2013- to 2014: Consultant at Global Viral- Cameroon**

**23 January - 06 March, 2014: Field work with Republic of Congo (ROC) predicts team as GV-Cameroon Consultant.**

- Field work with ROC team in charge of capture and identification of rodents and shrew, and samples collection.

- Training of the local predicts team activities on bat, rodent and shrew capture, identification, and biological samples collection. Training on safety and Personnel protection equipments, samples processing, conservation and transportation.

**June - October 2013: Cameroon African Grey Parrot (AGP) project coordinator (project host by Cameroon Biodiversity Conservation Society Birdlife International Cameroon partner).**

- Duties: In charge of testing the distance sampling and encounter rate method, advocacy, communication/visibility, conduct field works studies on the African grey Parrot population size and Project reporting and Evaluation.

**TRAININGS, SEMINARS AND WORKSHOPS**

**22-27 September, 2013: African Grey Parrot (AGP) workshop in Monrovia, organized** by Birdlife International in partnership with CITES.

**2-24 May 2012**: Biorisk Management workshop organized by UCLA Institute of the Environment and Sustainability Center for Tropical Research in Yaoundé-Cameroon.

**21 July 2011– 2 August 2011:** A field Research on carnivores of Madagascar sponsor by EarthWatch.

**17 - 20 November 2009:** Global consultation on public Health research Agenda for Influenza, Geneva Switzerland. Sponsored by World health Organization (WHO).

**21 - 25 April 2008:** Multinational Influenza seasonal Mortality Study Meeting, Dakar Senegal. Sponsored by Forgarty International the aims of this was the share the results and experiences from different countries.

**20 - 28 October 2006**: Training on West African Waterbird ringing Accra, Ghana. Modules included: Bird capture technique, biometric data collection (weight, tail, wing, Bill from nostril) and birds banding techniques

**September 2005**: A field Research Training on Lemurs and Forest of Madagascar (habitat requirement, Lemurs behavioral study). Manombo Special reserve, Madagascar. Organized by Earthwatch Institute and Durell Madagascar.

**26 February - March 03 2003**: Workshop on the training and conception of a National strategy for Development of ecotourism in Cameroon. Organized by GTZ and Ministry of Tourism.

**03 - 04, April 2003**: Workshop on the project planning "Support to the development of ecotourism in Cameroon"

**27 - 28 November 2003**: Participation at the National Species Action Plan Stakeholder workshop on the Grey-necked Picathartes (*Picathartes Oreas*) Organized by GTZ and Ministry of Tourism.

**6-10 September 2002**: Participation at the Regional Workshop on Action Plan for the Conservation of Grey Necked Picathartes *Picathartes oreas* (Globally Threatened bird species). Organized by RSPB, Yaoundé – Cameroon.

**April 2002**: Attended the National Seminar on Prioritization of Important Bird Areas (IBAs) of Cameroon, Yaoundé. Organized by RSPB and Birdlife international.

**November 2001**: Participation at the International Workshop on Action plan for The Conservation of Grey Necked Picathartes, *Picathartes oreas* organised by RSPB and BirdLife International.

## ONLINE TRAINING

- Human Subject Research Education (Feb 2006 and months? 2012), by The Johns Hopkins Bloomberg School of Public Health (USA)
- Animal Care and Use, the Compliance Training (Sept 2011), by The Johns Hopkins Bloomberg School of Public Health (USA)
- Introduction to epidemiology (November 2011) by University of Minnesota Centers for Public's health Education and Outreach (USA).
- Environmental health: water supply and water waste (October 2011) by University of Minnesota Centers for public's health Education and Outreach (USA).
- Zoonoses: Public health Emergency Training series (October 2011) University of Minnesota Centers for public's health Education and Outreach (USA).
- Origin of the 2009 H1N1 influenza virus by Minnesota Center of excellence of Influenza Research and surveillance (MEIRS) September 2010 (USA).

## REPORTS AND PUBLICATIONS

**Takuo jean Michel**, 2001: Contribution à l'étude de la bio-ecologie du *Picathartes oreas* dans les Monts Mbam-Minkom. Cameroon Biodiversity conservation society (CBCS) 30 p.

Riwom G., **Takuo J. M.**, 2002: Cartographie des sentiers et identification des sites potentiels pour l'écotourisme dans le massif forestier de Yaoundé pour le compte Cameroon Biodiversity conservation society (CBCS) 15p.

ANNYE, N., D. Mbah Mbian, **Takuo J. M.**, 2002: Ornithological Surveys of Bakossi, Nkwende Mawne, Edjagham Rumpi Forest Reserve. Technical Report. CBCS/ Birdlife International, Yaoundé, Cameroon, 56p.

Matthew LeBreton, Dr. Tom Dietsch, Dr. Guillaume Dzikouk, **Jean Michel Takuo**, Hong Cai, Jun Chen, David Fox, Xiaoyun Lu, Heungbok Kim, Col. Mpoudi Ngole, Dr Nathan Wolfe and Dr Tom Smith. 2006. Summary Report on Bird Flu research in Cameroon, February – May 2006.

Denis Anye Ndeh; Thomas V, Dietsch; Francis A. Forzi; **Jean Michel Takuo** and Seraphin-Blaise Menzepoh 2007. Surveillance of Avian Influenza (H5N1) in wild and domestic birds in the far North Province of Cameroon. Summary report submitted to the Cameroon Ministry of Scientific Research and Innovation.

Gonwouo N. L. & **Takuo Jean Michel** (2008). Migratory Birds flyway project in Cameroon. Report to

BirdLife International Pp19

**Takuo J. M,** Jean Bernard Dongmo. **2009.** Assessment of the avifaunal potential of the Mbini Wara region in view of the construction of a dam on the Bini River. *Report for Poyry Environment (France).*

Matthew LeBreton[1,2], Eric Moise Bakwo Fils[1]; **Jean Michel Takuo[2]** and Joseph Diffo LeDoux[2]
The first record of the African Sheath-tailed Bat *Coleura afra* (Peters, 1852) in Cameroon (Mammalia, Chiroptera).

Eric Moise Bakwo Fils[1]; **Jean Michel Takuo[2]**; Joseph Ledoux Diffo[2] Preliminary notes on the bats fauna of the floodplain of the far north region of Cameroon (in prep)

**Jean Michel Takuo1**[1]; Guy Alain TAGNE TIAM; Aimé KAMGA FOGUE[2]; Marie-Laure MPECK NYEMECK[2]. 2014, Implication of young primary school children to fight against climate change and global warming through the slogan "growth with your personal tree"

Stuart J. Marsden[1], Emmanuel Loqueh[2], **Jean Michel Takuo[3]**, John A. Hart[4], Robert Abani[5], Dibié[3] Bernard Ahon[6], Nathaniel N. D. Annorbah[7], Robin Johnson[7] & Simon Valle[1] 2014 Using encounter rates as surrogates for density estimates makes monitoring of the heavily-traded grey parrots achievable across Africa (in prep)

Guy Alain TAGNE TIAM, **JEAN MICHELTAKUO** ; Aimé KAMGA FOGUE[2]; Marie-Laure MPECK NYEMECK[2]. 2015 « Opération grandir avec son arbre » : une perspective d'initiative des élèves a la lutte contre les effets de changement climatique à Garoua III (XIVe Congres Forestier Mondial : Durban, Afrique du sud 7-11septembre 2015)

## LANGUAGE

French: Read, written and spoken fluently

English: Read, written and spoken good

## REFERENCES

*Ubald TAMOUFE, Msc, MPH, CRA Director General METABIOTA Cameroon Cell:* REDACTED
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**Dr Roger C. FOTSO,** Director, Cameroon Country Program, Wildlife Conservation Society/Cameroon Biodiversity Program, REDACTED Tel/Fax: REDACTED Tel: REDACTED
REDACTED Email: REDACTED

Dr. Paul Alain NANA *Ph.D / Biologist, Lecturer at ISMASA -HERMES INSTITUT Yaoundé*
Tel: REDACTED
E-mail: REDACTED

Yaoundé, 1st Februatry 2016

**Takuo Jean Michel**

**From:** Kevin Olival, PhD <olival@ecohealthalliance.org>
**To:** Chris Johnson <ckjohnson@ucdavis.edu>;Damien Joly <djoly@metabiota.com>;Jonna Mazet <jkmazet@ucdavis.edu>;Peter Daszak <daszak@ecohealthalliance.org>
**CC:** Anna Willoughby <willoughby@ecohealthalliance.org>
**Sent:** 3/2/2017 8:53:24 AM
**Subject:** Updated P1 viral accumulation curve document

Dear all,

Didn't want to overwhelm you with docs for our call today, but if there's time after we discuss the EDIs and MB fellow applications, we can go through the attached updated .html file from the global P1 viral curve analyses. We updated this based on your comments from out last call. I think most useful are the 1) viral family specific plots; 2) the searchable table that allows you to sort by the predicted number of viruses per species, and see how many specimens we've tested or not for each species x country combo.

Cheers,
Kevin

**Sent:** Fri, 31 Mar 2017 07:52:51 -0700
**Subject:** Re: [predict] Invitation: Call with Guinea to discuss PREDICT responses @ Wed Apr 5, 2017 11am - 12pm (EDT) (predict@ucdavis.edu)
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** KChittenden <kchittenden@usaid.gov>
**Cc:** "predict@ucdavis.edu" <predict@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, "AOTR/Grant Manager Andrew Clements" <aclements@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Karen Saylors <ksaylors@metabiota.com>, Frantz Jean Louis <fjeanlouis@metabiota.com>

Hi Kendra,
I'm not great with calendar invites, but I don't see anybody from CDC on here? I think the point was to meet with Lise. We can join if that is the case. Otherwise, I'm not sure we need a call. Please advise. I'm also adding Karen and Frantz to this chain, so they can join if we have a call.
Thanks,
Jonna

On Fri, Mar 31, 2017 at 6:44 AM, <kchittenden@usaid.gov> wrote:

more details »
**Call with Guinea to discuss PREDICT responses**
ETD conf call #:
REDACTED
Access code: REDACTED
Host pin: REDACTED
When: Wed Apr 5, 2017 11am – 12pm Eastern Time

Calendar: predict@ucdavis.edu

Who:
- kchittenden@usaid.gov - organizer
- bhbird@ucdavis.edu
- tgoldstein@ucdavis.edu
- aclements@usaid.gov
- tbeh@usaid.gov
- jkmazet@ucdavis.edu
- apereira@usaid.gov
- predict@ucdavis.edu
- cchaspell@usaid.gov
- jmbaoazi@usaid.gov

Attachments: PREDICT-CDC Guinea responses to USAID 31 March 2017.docx

Going? **Yes** - **Maybe** - **No** more options »

Invitation from Google Calendar

You are receiving this courtesy email at the account predict@ucdavis.edu because you are an attendee of this event.

To stop receiving future updates for this event, decline this event. Alternatively you can sign up for a Google account at https://www.google.com/calendar/ and control your notification settings for your entire calendar.

Forwarding this invitation could allow any recipient to modify your RSVP response. Learn More.

**From:** Kevin Olival, PhD <olival@ecohealthalliance.org>
**To:** Peter Daszak <daszak@ecohealthalliance.org>;Dr. Jonna Mazet" <jkmazet@ucdavis.edu>;Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Damien Joly <djoly@metabiota.com>
**CC:** Anna Willoughby <willoughby@ecohealthalliance.org>;Noam Ross <ross@ecohealthalliance.org>
**Sent:** 4/4/2017 12:00:35 PM
**Subject:** Notes from today's P2-wide M&A call

Thank you for your time today for another productive P2-wide M&A call.

Attached are the notes, with action items in **bold**.

Cheers,
Kevin

P2-wide M&A call
KJO, PD, JM, CKJ, DJ, (+Noam Ross for item 2)
**Action items in bold**

- Viral Risk Ranking update (Jonna)
  - **KJO to correspond with [redacted] about host breadth per virus data.**
  - **[redacted] to send out survey to 150 experts this week**
  - High ranking variables that lack data will be re-visited, e.g. habitat specificity
  - UCD students to build app
    - Potential for EHA tech team collaboration
    - Speedometer of risk
    - Desktop app with local ability to analyze or upload virus to online database
    - Skeleton of app can be made without expert opinion
  - Will use app for virus ranking of PREDICT
- P2 API (Noam/Kevin)
  - P2 data are not government released, yet
    - Can work with access for just EHA countries, or subset e.g. Thailand
    - Currently Noam/EHA do not have full access to EHA countries in P2 EIDITH, i.e. to fully view data structure
  - Access to core system vs exports (API) from the system
    - Exports are specific queries, rather than new queries
    - Utility for the team to view core system: Develop more flexible platform for future and current analyses
  - ***Follow up call with Noam, Tammie, and Damien***
    - **Noam/Damien to draft 1-2 page proposal for access to EHA P2 structure and why valuable**
    - Make clear long term goals of developing tools for analysis
    - Also value of checking of our own data quality
    - Explain level of ease to do this
- Request projects from Fellowship candidates? (Kevin)
  - Placide to propose project, will move forward with offer
  - **Damien will forward response from Placide and EHA will review and reply ASAP**
- EDI approval process (Kevin)
  - Agreed review/approval process for EDIs: *EHA internal review; review on P2-wide M&A call; then to P2 internal EB group (not USAID); final check by Jonna, PD to circulate to USAID; then to all PREDICT and EPT partners and public (online).*
  - **PD needs to update the GVP EDI with new numbers, then circulate to EB**

**From:** Tracey Goldstein <tgoldstein@ucdavis.edu>
**To:** Karen Saylors <ksaylors@metabiota.com>
**CC:** Jonna Mazet <jkmazet@ucdavis.edu>;Eddy Rubin <erubin@metabiota.com>
**Sent:** 4/11/2017 12:57:15 PM
**Subject:** Re: Bat communication material

Hi Karen,

As we discussed on the call, please do not share any documents with the in country team - we are not ready for that, we need a comprehensive plan. Please send your thoughts to me and Jonna and we can go from there.

Thank you, Tracey

On Tue, Apr 11, 2017 at 10:49 AM, Karen Saylors <ksaylors@metabiota.com> wrote:
Good morning.
Based on your request on Friday, I'm working on bat communication material for Sierra Leone. I'll share a draft with Aiah and James tonight for them to flesh out, as they are out of town today for James' father's funeral. (He died this weekend.)
I have a question for you about this document:
—who is the target audience? Is it village-level communities where we are doing animal sampling or are we aiming for wider national media coverage? In following up on questions from Dennis and Jonna, Eddy asked me yesterday whether Prof is prepping recommendations intended for a SL major newspaper piece to be released simultaneously or immediately after the country's press release, so I assume we are aiming for a national audience, but please confirm. I know that on Friday, Aiah was talking specifically about how to frame these findings to the communities PREDICT is working in, so I want to orient the draft correctly so that he differentiates between local and national messages.

I'll work with Aiah to get you a document by early Thursday morning unless you tell me you need it more urgently.
Thanks,
Karen

--

(530) 752-0422
(530) 752-3308
tgoldstein@ucdavis.edu

**From:** Kevin Olival, PhD <olival@ecohealthalliance.org>
**To:** Dr. Jonna Mazet <jkmazet@ucdavis.edu>
**CC:** Peter Daszak <daszak@ecohealthalliance.org>;Alison Andre <andre@ecohealthalliance.org>;Anna Willoughby <willoughby@ecohealthalliance.org>
**Sent:** 4/12/2017 1:23:48 PM
**Subject:** GVP Emerging Disease Insights

Hi Jonna,

Just wanted to move this forward, as Peter is out of the office this week. We circulated the attached EID on GVP Return on Investment to the PREDICT EB group, and no one has replied with any comments.

Are you okay if we now send this to USAID for review? As agreed, after we give USAID a week or two to review, we would finally circulate to PREDICT and EPT partners and post publicly on the website?

Attaching as word doc for your final review and PDF for circulation.

Cheers,
Kevin

EMERGING DISEASE **INSIGHTS**

Research from the PREDICT Modeling & Analytics team

# Global Costs of Emerging Infectious Diseases: Forecasting Return on Investment for the Global Virome Project.

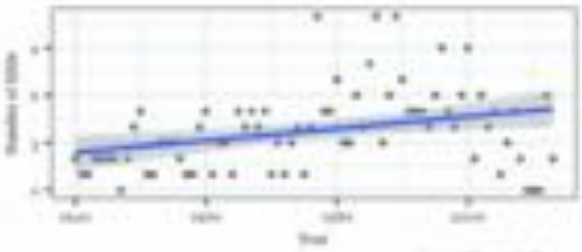
A single emerging infectious disease epidemic such as the SARS pandemic in 2003 cost the global economy an estimated $30-50 billion [1], but investments in prevention and research are often insufficient. To make the economic case for investing in large-scale research programs, it is important to model and quantify the future economic impacts of EIDs and pandemics.

The Global Virome Project (GVP) is a proposed 10-year global effort to discover the global majority of viruses with likely zoonotic potential residing in mammals and waterfowl. This project could reduce the burden of emerging infectious diseases by creating a viral sequence and metadata atlas that will lower response times, speed technological advancements, and provide a starting point for therapeutic discovery and development. Based on current projected lab and field costs, this project is estimated to cost $1.69 billion over the next ten years ($169M annually). Given our estimations of EID frequency, mortality rates, and impacts on the global economy (demand shocks), we project the costs of all potential zoonotic emerging disease events over the next 50 years and calculate projected Return on Investment (ROI) from the Global Virome Project.

## COSTS OF EMERGING INFECTIOUS DISEASES

The incidence of emerging infectious disease events is on the rise [1]. A majority of these diseases, including SARS, MERS, Avian Influenza, and Ebola, are zoonoses caused by spillover from wildlife into human populations. To project future annual rates of zoonotic EID events, we calculate the average number and variance of EID events per year and the rate of change over time, based on methods detailed in [1]. To calculate the number of deaths per event, we fit case fatality data in our Emerging Infectious Diseases Repository (EIDR) to a power law distribution. To calculate morbidity, we assume that illness length follows a Poisson distribution with mean 2 - most infections are cleared quickly, but a small number of severe infections can last for several weeks [2].

**Figure 1: Annual frequency of Emerging Infectious Diseases from 1920 to 2012.**



April 5, 2017

For details on methods or analysis contact: PREDICTmodeling@ecohealthalliance.org

## ESTIMATING GLOBAL DAMAGES FROM EID EVENTS

Global damages, or economic costs, from emerging infectious diseases (EID) depend on the annual number of EID events and the average cost of each event. Damages of one event are the sum costs from mortality $M(t)$, morbidity $A(t)$, and economic shocks $G(t)$. To find the total present value of global damages ($PVGD$), we use a standard 5 percent rate ($\delta$=0.05) to discount future savings to their current value.

$$PVGD = \int_{t=0}^{t=50} (M(t) + A(t) + G(t))\, e^{-\delta t}$$

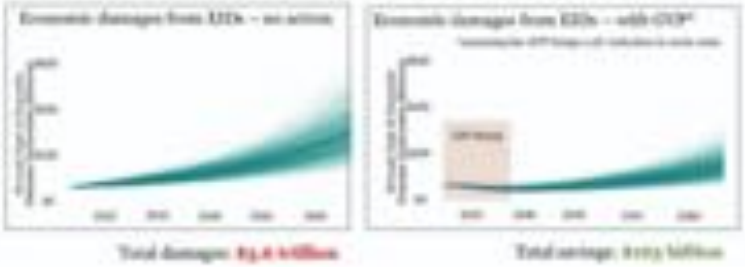
We use methods from [3] to calculate the value of a statistical life and from [2] to calculate the value of one day of work lost. We assume that economic shock costs of a disease event are a non-linear function of fatality rates.

We parameterized our model using the forecasted number of annual EID events, the historical global GDP growth rate of 2.4%, and the 2015 global GDP of $73.4 trillion. **Averaged over 5000 simulations, we find the discounted cost of emerging infectious diseases to be US$3.6 trillion over the next 50 years.**

## COSTS AND ROI OF A GLOBAL VIROME PROJECT

To determine how much it would cost to discover all viral diversity in mammals, mark-recapture ecological techniques were used to estimate the sampling effort required to discover all viruses present in one species [4]. We estimate that there are 1,607,837 (672,015 - 2,543,659) undiscovered viruses likely to reside in mammal and waterbird hosts. However, only 31.9-43.7% (512,900-702,625) of these are likely to be zoonotic, and the ones that are more costly to find are less likely to spillover. Assuming that all mammal species would have equivalent lab and field costs, discovering 85% of all mammalian viruses and waterbird influenzas would cost $1.69 billion, or $169 million per year over 10 years.

**Figure 2: Cost savings from a 5% reduction in damages caused by the GVP.**




Having a baseline of identified viral sequences would lead to earlier detection and quicker response times, lowering both epidemic frequency and impact. We assume that these improvements would be implemented two years after viral sequence collection and collectively lead to a conservative 5% in savings from damages in all events in the next 50 years ($163 billion). As such, the $3.4 billion GVP project would *return* **896 dollars for each dollar invested in it.**

Even if the GVP only reduces the likelihood and impact of EIDs by a small fraction, this project generates large returns on investment due to the high and rising costs of pandemics. The premature loss of lives and economic shocks account for the largest proportion of economic damages from EID events. A $169 million annual budget for a 10-year Global Virome Project is an investment that could produce exceptionally high returns.

### References

[1] Jones, K. E. et al. Global trends in emerging infectious diseases. *Nat. Lett.* 451, 990–994 (2008). [2] Molinari, N. A. M. et al. The annual impact of seasonal influenza in the US: Measuring disease burden and costs. *Vaccine* 25, 5086–5096 (2007). [3] Fan, V. Y., Jamison, D. T. & Summers, L. H. The Inclusive Cost of Pandemic Influenza Risk. *NBER Work. Pap. Ser.* 22137, 24 (2015). [4] Anthony, S. J. et al. A strategy to estimate unknown viral diversity in mammals. *MBio* 4, (2013).

EMERGING DISEASE **INSIGHTS**

Research from the PREDICT Modeling & Analytics team

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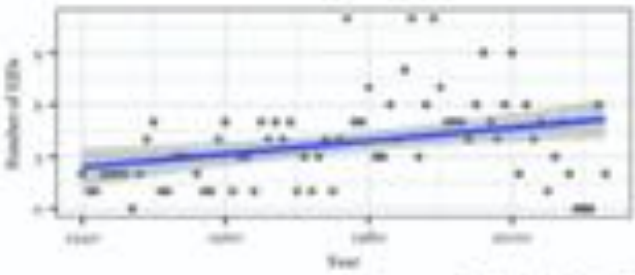
**Figure 1: Annual frequency of Emerging Infectious Diseases from 1940 to 2012.**

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April 5, 2017

For details on methods or analysis contact: PREDICTmodeling@ecohealthalliance.org

$$PVGD = \int_{t=0}^{t+50} (M(t) + A(t) + G(t))\, e^{-dt}$$

We use methods from [3] to calculate the value of a statistical life and from [2] to calculate the value of one day of work lost. We assume that economic shock costs of a disease event are a non-linear function of fatality rates.

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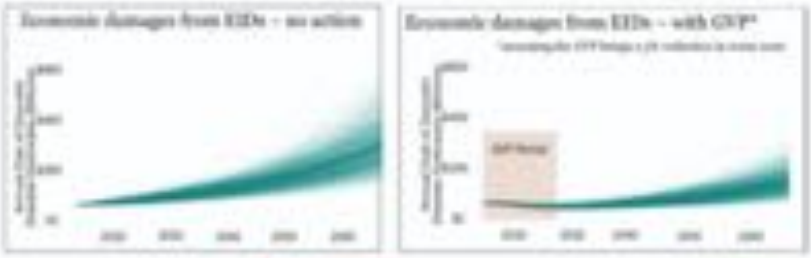


Having a baseline of identified viral sequences would lead to earlier detection and quicker response times, lowering both epidemic frequency and impact. We assume that these improvements would be implemented two years after viral sequence collection and collectively lead to a conservative 5% in savings from damages in all events in the next 50 years ($163 billion). As such, the $3.4 billion GVP project would *return* **$96 dollars for each dollar invested in it.**

Even if the GVP only reduces the likelihood and impact of EIDs by a small fraction, this project generates large returns on investment due to the high and rising costs of pandemics. The premature loss of lives and economic shocks account for the largest proportion of economic damages from EID events. A $169 million annual budget for a 10-year Global Virome Project is an investment that could produce exceptionally high returns.

### References

[1] Jones, K. E. et al. Global trends in emerging infectious diseases. *Nat. Lett.* 451, 990–994 (2008). [2] Molinari, N. A. M. et al. The annual impact of seasonal influenza in the US: Measuring disease burden and costs. *Vaccine* 25, 5086–5096 (2007). [3] Fan, V. Y., Jamison, D. T. & Summers, L. H. The Inclusive Cost of Pandemic Influenza Risk. *NBER Work. Pap. Ser.* 22137, 24 (2015). [4] Anthony, S. J. et al. A strategy to estimate unknown viral diversity in mammals. *MBio* 4, (2013).

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Fri, 21 Apr 2017 22:35:10 +0200
**Subject:** Fwd: Sierra Leone field operations budget
**To:** djwolking@ucdavis.edu
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, Alisa Pereira <apereira@usaid.gov>

Hi David,

Can you clarify what the "among others" refers to in Liz's email below. If makes it sound as though there are non-financial issues at play. My impression is that 100% of the shut down is due to the lack of money.

Thanks

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** Elizabeth Leasure <calcasure@ucdavis.edu>
**Date:** April 19, 2017 at 11:33:32 PM GMT+2
**To:** Andrew Clements <aclements@usaid.gov>, Alisa Pereira <apereira@usaid.gov>
**Cc:** Shana Gillette <sgillette@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, "predict@ucdavis.edu" <predict@ucdavis.edu>
**Subject: Sierra Leone field operations budget**

Hi Andrew and Alisa. As discussed on our last Management Team call, the budget for field operations in Sierra Leone has been fully expended. For this reason (among others), field work in Sierra Leone has been suspended pending resolution of this matter.

Thanks,
Liz

Elizabeth Leasure
One Health Institute
University of California, Davis
530-754-9034 (office)
[redacted] (cell)

**Sent:** Tue, 23 May 2017 20:16:28 -0700
**Subject:** Re: [predict] PLGHA & PREDICT-2
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Cara Chrisman <cchrisman@usaid.gov>
**Cc:** "predict@ucdavis.edu" <predict@ucdavis.edu>, PREDICTMGT <predictmgt@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>

Thanks, Cara,
Invite was received.
Have a good night,
Jonna

On Tue, May 23, 2017 at 9:49 AM, Cara Chrisman <cchrisman@usaid.gov> wrote:

Hi Jonna & Team,
We wanted to reach out and provide an update to your team around the Protecting Life in Global Health Assistance Policy (PLGHA - formerly known as Mexico City Policy).

The policy is now official and has been signed by the Secretary of State. As a result, our current partners will have this policy included in the standard provisions when their next funding action occurs (aka when funds are added to the agreement).

As this will be coming up soon for PREDICT-2, we wanted to share with you two updates to provide further context and background:

1. The new Standard Provisions which you will be presented with, have been posted publicly. They can be found in the Series 300 References section of the ADS and the relevant language is in the 303maa section (you can scroll down to the highlighted section at the bottom (RAA28)). The US-based NGO section can be found in section II on page 80.
2. Later today, Jonna will receive an invitation for a partners meeting which will come from our Office Director, Paul Maharaa. The meeting is in-person only and each project is invited to send one representative. It will be held June 2nd at 12:30. The invitation will include RSVP information, but you may want to begin think about who you will send. This session will provide additional background information and allow for Q&A from partners.

I'll be serving as the main ID & ETD POC for this effort and I'm happy to answer any questions that you may have, together with the rest of the management team. Please don't hesitate to reach out with questions and we look forward to seeing your team represented at the upcoming meeting.

Best,
Cara

Cara J. Chrisman, PhD
Senior Infectious Diseases Technical Advisor
Emerging Threats Division
Office of Infectious Disease
Bureau for Global Health
U.S. Agency for International Development (USAID)

Desk: (202) 712-1161
Cell: REDACTED
E-mail: cchrisman@usaid.gov

**From:** Cara Chrisman <cchrisman@usaid.gov>
**Sent:** Tue, 30 May 2017 16:50:36 -0400
**Subject:** Re: [predict] PLGHA & PREDICT-2
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**Cc:** "predict@ucdavis.edu" <predict@ucdavis.edu>, PREDICTMGT <predictmgt@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, Matthew Blake <mblake@ucdavis.edu>

Hi Liz,

Thanks following up on this and agreeing to participate.

Apologies for the mixed information around attendance. We had been under the understanding that people would all be encouraged to participate in person, as long as they were not based internationally, and then received an internal update to the contrary following some additional discussions. I very much appreciate your flexibility as this has evolved.

Thanks again,
Cara

Sent from my iPhone

On May 30, 2017, at 1:55 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

> Hi Cara. Based on your email from this morning (which states that we are not to use program funds to travel to DC for the briefing), I will not be attending the briefing in-person and will need to call in by phone. Calling in for the briefing rather than attending in-person (which requires 1.5 days of travel time roundtrip from CA) would have been my preference had remote participation been an option in your initial email or the invitation that was received. Unfortunately, travel arrangements have already been made and will now need to be cancelled.
>
> I will follow up with Brittany Carlsen to make sure she is aware that I will be participating remotely.
>
> Thanks,
> Liz
>
> Elizabeth Leasure
> One Health Institute
> University of California, Davis
> 530-754-9034 (office)
> REDACTED (cell)
>
> **From:** Elizabeth Leasure
> **Sent:** Friday, May 26, 2017 9:13 AM
> **To:** 'Cara Chrisman'; predict@ucdavis.edu
> **Cc:** PREDICTMGT; Dennis Carroll; Jonna Mazet
> **Subject:** RE: [predict] PLGHA & PREDICT-2
>
> Hi Cara. I will attend the meeting on behalf of PREDICT. I have already RSVP'd to Brittany Carlsen per the invitation Jonna received from Paul Mahanna. We should be all set.
>
> Thanks,
> Liz
>
> Elizabeth Leasure
> One Health Institute
> University of California, Davis
> 530-754-9034 (office)
> REDACTED (cell)
>
> **From:** predict-request@ucdavis.edu [mailto:predict-request@ucdavis.edu] **On Behalf Of** Cara Chrisman
> **Sent:** Tuesday, May 23, 2017 9:49 AM

**To:** predict@ucdavis.edu
**Cc:** PREDICTMGT; Dennis Carroll
**Subject:** [predict] PLGHA & PREDICT-2

Hi Jonna & Team,

We wanted to reach out and provide an update to your team around the Protecting Life in Global Health Assistance Policy (PLGHA - formerly known as Mexico City Policy).

The policy is now official and has been signed by the Secretary of State. As a result, our current partners will have this policy included in the standard provisions when their next funding action occurs (aka when funds are added to the agreement).

As this will be coming up soon for PREDICT-2, we wanted to share with you two updates to provide further context and background:

1. The new Standard Provisions which you will be presented with, have been posted publicly. They can be found in the Series 300 References section of the ADS and the relevant language is in the 303maa section (you can scroll down to the highlighted section at the bottom (RAA28)). The US-based NGO section can be found in section II on page 80.
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Best,
Cara

Cara J. Chrisman, PhD
Senior Infectious Diseases Technical Advisor
Emerging Threats Division
Office of Infectious Disease
Bureau for Global Health
U.S. Agency for International Development (USAID)

Desk: (202) 712-1161
Cell: REDACTED
E-mail: cchrisman@usaid.gov

**From:** Alisa Pereira <apereira@usaid.gov>
**Sent:** Wed, 31 May 2017 18:18:51 -0400
**Subject:** Re: [predict] Re: PREDICT-2 Behavioral Risk Meeting First Follow-up First Piece
**To:** Andrew Clements <aclements@usaid.gov>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, Shana Gillette <sgillette@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>, Peter Daszak <daszak@ecohealthalliance.org>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Cassandra Louis Duthil <clouisduthil@usaid.gov>, Leilani Francisco <francisco@ecohealthalliance.org>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Billy Karesh <karesh@ecohealthalliance.org>, "predict@ucdavis.edu" <predict@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>

Yes . Will do

Sent from my iPhone

On May 31, 2017, at 4:25 PM, Andrew Clements <aclements@usaid.gov> wrote:

Thanks, Jonna.

Alisa: can you check in with Kama to see where things stand regarding the work to be done at the end of HC3?

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On May 31, 2017, at 9:25 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Thanks, Andrew,
My slight edits on your version attached for your final review. We really need to sort the communication partner ASAP. Any guidance or info on progress on that would help us with planning and team anxiety (as well as staffing plans if no partner is forthcoming).
Talk to you tomorrow,
Jonna

On Fri, May 26, 2017 at 9:14 AM, Andrew Clements <aclements@usaid.gov> wrote:

Hi Jonna,

My re-write is attached.

I thought is was important to show the roles of the various partners so the Mission can clearly see the proposed timing and sequencing. (I went back to March for the timeline so those not familiar with the history could have a better sense of the timing.) I also wanted to create a firewall so that it's clear that Predict (and it's money) is only doing a limited segment of the work.

If we are on the same page, then the next step would be to share this document with the mission to get their thoughts and see if it lines up with their expectations.

Thanks!

Andrew

On Fri, May 26, 2017 at 5:42 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

That is the piece needed to smooth the transition with SL re your other email. Transition has begun, but clarity on timeline for next steps is the hold up on Mission and Ministry communications.

J

On Thu, May 25, 2017 at 9:41 PM, Andrew Clements <aclements@usaid.gov> wrote:

Hi Jonna,

Been distracted with lots of other things flying around. Will send today.

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On May 26, 2017, at 4:37 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Hi Andrew,
Do you have those comments? We'd like to respond to the Ministries and Mission. Another piece we'll need for that res[ponse is info on where you are with the discussions with the USAID communication partners, as well as that introduction if it is forthcoming.
Our SL team has informed us that we must be well underway, if not done, with the community engagement and potential assistance to the Ministries by August. Once the election season begins (they're saying end of August), we will not be allowed to proceed.
They are pushing quite hard to get going and to use our existing team if another mechanism/partnership is likely to draw out the timeline.
Appreciate your advice,
Jonna

On Mon, May 22, 2017 at 7:30 AM, Andrew Clements <aclements@usaid.gov> wrote:

I'm writing up some suggestions. will send them later....

On Sat, May 20, 2017 at 4:18 PM, Alisa Pereira <apereira@usaid.gov> wrote:

Thank you, Jonna. I will wait for others to chime in as well, but at first read, I think this submission is in line with what we discussed at our meeting, and appropriately positions PREDICT.

thanks

Alisa Pereira
Deputy Director
Emerging Threats Division
Global Health Bureau, USAID/Washington
Telephone: 202-712-5221
Cell: REDACTED
e-mail: apereira@usaid.gov

On Fri, May 19, 2017 at 8:03 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Dear Team,
In order to fulfill the request we discussed from the Mission in Sierra Leone/Guinea for a communications strategy timeline, as well as to follow-up on items we promised from the meeting last week, I have attached a confidential draft of the timeline.

We would greatly appreciate your feedback on this document before we provide it to the Mission or the GoSL MOH. It reads a bit strangely because almost all of it is dependent on interactions you are managing with partners to whom we have not yet been introduced. So sorry if it reads strangely. We could fix that in a version next week if those introductions are imminent.

We are also running this by our core team in Sierra Leone for their inputs.

Thanks in advance for your initial and confidential review & have a nice weekend,
Jonna

---

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-345-4253
E-mail: [redacted]

*For more information on USAID's Emerging Pandemic Threats program, see:* http://www.usaid.gov/ept2

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Andrew Clements, Ph.D.
Senior Scientific Advisor
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U.S. Agency for International Development
Mobile phone: 1-571-345-4253
E-mail: [redacted]

*For more information on USAID's Emerging Pandemic Threats program, see:* http://www.usaid.gov/ept2

<SL Communication Campaign_timeline_2017-05-22 (AC version) JM AG.docx>

**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Brian Bird <bhbird@ucdavis.edu>
**CC:** Tracey Goldstein <tgoldstein@ucdavis.edu>;David J Wolking <djwolking@ucdavis.edu>;Brooke Genovese <bgenovese@ucdavis.edu>
**Sent:** 6/11/2017 7:17:09 AM
**Subject:** Timeline for developing risk reduction messages for SL

You are correct -- I think you should say exactly that (in a diplomatic way, if you can) and turn the question to him. We have the technical details, just no one to work with to craft the messages. If introductions are not forthcoming, we will reach out to others and start to make a separate plan. Unless something happened while I have been on the road, we are currently waiting on USAID/DC for guidance/introductions or green light to go ahead on our own. Since Andrew always asks Alisa about HC3, copy her on the response.
Oh my, very frustrating,
J

PS -- last email I can find on quick search is 10 days ago with Alisa saying she would check on status of introduction.

On Friday, June 9, 2017, Brian Bird <bhbird@ucdavis.edu> wrote:

What should we say to this? I'm not sure what exactly he's really asking for. Are we making the comms plans or is HC3? It's a bit hard to nail down exact content without talking with the comms experts to see what may or may not work in SL. I can probably tell them in 10 minutes the main technical messages, but how those are translated into useful and informative graphics/signs/messaging/flyers/what-have-you isn't what I thought we were going to be doing....

Or am I just confused here are reading too much into this? Maybe you guys have the secret decoder ring for this one? If you do, can I borrow it! ☺

-b

**From:** Andrew Clements <aclements@usaid.gov>
**Date:** Friday, June 9, 2017 at 5:37 AM
**To:** Brian Bird <bhbird@ucdavis.edu>
**Cc:** Alisa Pereira <apereira@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, Kendra Chittenden <kchittenden@usaid.gov>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** Timeline for developing risk reduction messages for SL

Hi Brian,

I forgot to ask on our call the other day if you have a plan/timeline for developing the risk reduction content for SL that will be discussed with our communications project.

Thanks

Andrew

*Andrew P. Clements, Ph.D.*

*Senior Scientific Adviser*

*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*

*U.S. Agency for International Development*

*Mobile phone: 1-571-345-4253*

*Email: aclements@usaid.gov*

**From:** Molly Turner <turner@ecohealthalliance.org>
**Sent:** Tue, 1 Aug 2017 14:54:55 -0400
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**Cc:** Evelyn Luciano <luciano@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>, Predict inbox <predict@ucdavis.edu>
**Subject:** [predict] Re: Confirmation needed regarding IDEEAL-like activity in Indonesia (PREDICT)

Hi Liz,
I think the IDEEAL group did think that the funds would expire and had planned to request an extension. Thanks for the update, I'll let them know.

Molly

On Fri, Jul 28, 2017 at 1:30 PM, Elizabeth Leasure <calcasure@ucdavis.edu> wrote:

> Hi Molly. USAID just asked us to confirm that the IDEEAL-like activity in Indonesia will continue until all funds for that activity are expended, even if it goes beyond September 2017 (meaning the funds are not all spent before the end of September and would need to carry over into Y4). I confirmed that this is the case (per my understanding of the situation), but please clarify if I misspoke so I can correct any misunderstandings. Apparently there was a perception in the field that the funds for this activity will expire at the end of September (which isn't the case), which is why this question has come up.
>
> Thanks,
>
> Liz


Elizabeth Leasure

One Health Institute

University of California, Davis

530-754-9034 (office)

REDACTED (cell)



--
**Molly Turner**
*Federal Grants Coordinator*

EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

1.212.380.4461 (direct)
REDACTED (cell)
www.ecohealthalliance.org


*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

**From:** Brooke Genovese <bgenovese@ucdavis.edu>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>;David John Wolking <djwolking@ucdavis.edu>;Brian Bird <bhbird@ucdavis.edu>;Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Leilani Francisco <francisco@ecohealthalliance.org>;Tracey Goldstein <tgoldstein@ucdavis.edu>;Jon Epstein <epstein@ecohealthalliance.org>;Anthony, Simon J." <sja2127@cumc.columbia.edu>;Karen Saylors <ksaylors@metabiota.com>;Corina Grigorescu Monagin <cgmonagin@ucdavis.edu>
**Sent:** 9/6/2017 2:52:51 PM
**Subject:** EHP Call Notes/Action Items - Sept.5

Hi everyone,

Attached are the notes and items for follow-up from yesterday's EHP call. Please let me know if anything was missed or misrepresented!

Thanks!

Brooke Genovese
Project Manager
Executive Analyst
One Health Institute
School of Veterinary Medicine
Tel: 530-752-6459
bgenovese@ucdavis.edu

**PREDICT Sierra Leone, Guinea, Liberia**
"EBOLA HOST PROJECT"
COORDINATION CALL
Tuesday September 5th: 11AM Pacific, 2PM Eastern, 6PM GMT.

On call:
UCD: Brian, David, Brooke, Chris, Tracey, Corina
EHA: Jon, Leilani, Simon
MB: Karen

**Action Items/Follow-up:**
**Leilani & Karen**: will discuss numbers for ethnographic interviews/BR work and have a comprehensive discussion next week at Semi-Annual
**Simon/Tracey**: Re: the Semi-Annual mtg, can provide 1-2 slides for EHP work to Brian if they want to include that in the EHP presentation; alternatively they can hold all of that back for their lab presentation etc.
**All**: review & track changes on Leilani's bat-flipbook; comment on what you thought worked well (positive feedback for illustrators); need suggestions by *as soon as possible*
**Jonna/Leilani/Brian/David**: discuss feasibility and possible budget/IRB (if needed) for trial running the household micro-bat risk intervention methods; the idea is to tryout our recommendations on a small scale and see if they work first before rolling them out in the communications materials. Should we weave this into feasibility discussions on 1st day of Semi-Annual (internal only, before meeting with USAID)

**AGENDA Sept 1, 2017:**

1. **USAID HQ communications**
    a. General budget or other HQ updates/overview (Jonna):
        1. David: nothing new from last EB call, still waiting on core budget
        2. GHSA: WP/budgets (incl. EHP) hopefully done by tomorrow (Liz L)
    b. Updates/reminders on Yr4 work plans and Country Briefs (David)
        1. EHP Human behavior work plans discussion
            1. SL: kept both behavioral specialists but w/ limited scope (ethnographic interviews or questionnaires?)
            2. Guinea: did not budget for ethnographic interviews
            3. Liberia: also kept behavioral specialists, only planning for questionnaires
            4. All agree that we should be consistent across all EHP countries, will keep small scale questionnaires in all three countries.
            5. Karen/Leilani to investigate minimum numbers needed.

2. **NYC semiannual meeting (EHP discussion is 2nd day with USAID)**
    a. Presentation for USAID

1. EHP sampling map and overview (Yr3 and proposed Yr4)
    1. Where we are and where we're going, teams, summary of sampling efforts etc.
2. Key successes to highlight
    1. Field sampling, testing in SL underway, transitions underway and near completion, development of communications materials, etc?
3. Key challenges?? Others??
4. Suggestions: Address the shifting course of work (biggest challenge being the ambitious sample target numbers)
    1. i.e. explaining the shift away from reservoir hosts & EBV case gradients, but still answering the important Q's and incorporating PREDICT
    2. Simon/Tracey: we should not ignore "the finding", but perhaps we're not ready to talk openly about it; could be a good opportunity for us to demonstrate to USAID how these findings help us modify our surveillance activities in other countries
        1. Will investigate if the meeting could be conducive to team wide discussion about this.

3. **Communications Strategies in Sierra Leone related to finding and risk reduction (Leilani)**
    a. Update on flipbook preparations (see previous attachment)
        1. Gold standard vs Realistic illustrations (i.e. concern over showcasing heavy gloves vs an inverted plastic bag)
            1. Feedback: wording is too advanced and we should ask local teams (West Africa, SE Asia, etc) to translate & give feedback
            2. Revisit netting materials and ideas for microbats (make the ceiling less habitable for hierarchal roosting)
                1. Chris: Rodent co-habitation/destruction as an issue?
            3. Conduct a field pilot test/evaluation in SL for the netting prototypes??; buildings at UNIMAK could be used as a controlled environment
                1. Will this require an IRB?
    b. Breakthrough Action call scheduling
        1. Anticipate a several-month delay in BA operations as they are just inquiring about the SLA process
4. **Country Specific Communications, Updates, and Challenges**
    a. Sierra Leone (Brian)
        1. Misson comms good, vehicle transfers in process with OFDA-Dakar
        2. Field training planned (Sept ~29-Oct 6) – SL/Guinea/Senegal teams
        3. SL lab team testing update – troubleshooting RNA extraction problems
            1. SLA and shipment documents expected this week.

b. Guinea (Corina) – Guinea teams participating in SL trainings
    1. GoG and Mission comms – Mandy's concerns re: shipping samples to AOR; communicated that requests for work plans should also go to AOR – call with mission scheduled this week
    2. VHF lab Partner updates
c. Liberia (Jon) – continued sampling; will confirm how many animals are being caught

5. **Laboratory updates (Tracey, Simon, Manju) – no updates**
6. **Other partner updates (Billy) – no updates**

**From:** William B. Karesh <karesh@ecohealthalliance.org>
**To:** Andrew Clements <AClements@usaid.gov>;Predict inbox <predict@ucdavis.edu>
**CC:** Catherine Machalaba <machalaba@ecohealthalliance.org>
**Sent:** 9/20/2017 3:43:56 AM
**Subject:** [predict] Tripartite Zoonoses Guide - Planning and Preparedness Working Group

Hi Andrew,

Not sure if you have been hearing about this in Geneva or if USAID is funding the work, but WHO is leading the development of a Tripartite Zoonoses Guide (Sara Babo Martins from the WHO One Health team, which I think is Liz and Stephane). They contacted Catherine and me a while back to see if we had any good examples that they could us and we provided the PREDICT case studies booklets.

They've asked Catherine to be a part of their planning and preparedness working group and I've encouraged her to help them as time allows.

BK

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

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President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

***EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.***

| | |
|---|---|
| **From:** | Andrew Clements <aclements@usaid.gov> |
| **To:** | Katherine Leasure <kaleasure@ucdavis.edu> |
| **CC:** | PREDICTMGT <predictmgt@usaid.gov>;Predict inbox <predict@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu> |
| **Sent:** | 11/8/2017 11:39:57 AM |
| **Subject:** | Re: PREDICT International Travel Request - Group ITA for All-Country Meeting |

Received. I'm getting some more information.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Nov 8, 2017, at 2:06 AM, Katherine Leasure <kaleasure@ucdavis.edu> wrote:

Hi Andrew. Please find below a group international travel request for the PREDICT-2 All Country meeting for your review and approval. Some participants may have additional PREDICT-related travel either immediately prior to or immediately following the All Country meeting. Detailed ITA requests for this additional travel will be submitted for approval in separate emails. Please note that only those travelers whose travel costs will be paid from PREDICT funds are listed below. Please let me know if you have any questions or require clarification. Thanks!

**"Estimated Travel Costs"**
*See individuals listed on the attached spreadsheet*

*Meals & Incidentals, Lodging:*
The per diem maximum established by the Department of State for Brussels, Belgium is $309 ($181 lodging, $142 M&IE). However, UC Davis has negotiated a special rate of $175 USD per person per night (inclusive of all applicable service charges & fees, breakfast, and wireless internet access) for meeting participants. UC Davis was also able to negotiate a daily meeting package rate of $105 USD per person per day, which includes morning and afternoon refreshments and lunch provided as part of the meeting, as well as meeting room rental and setup, projection equipment, and Wi-Fi for the meeting space.

*Travel Request:*
PREDICT-2 requests approval for the individuals listed in the attached spreadsheet to travel from their respective departure locations to Brussels, Belgium to participate in the PREDICT-2 All Country Meeting from January 9-11, 2018.

**Trip purpose**: The 3-day meeting will bring together global and in-country project staff for presentations and workshops covering a number of topics, including best practices for implementation, field sampling and behavioral surveillance, as well as brining the project to conclusion in each country. This will enable PREDICT-2 to coordinate global planning and project implementation for the upcoming years, and will provide the unique opportunity to bring all of our Country Coordinators and key personnel from around the world to one location, and network with our US partner leads and several regional coordinators who will also be attending. This meeting is key to completing the project successfully.

**Katherine Leasure**
HR/Payroll/Financial Assistant
One Health Institute
University of California, Davis
530-752-7526
530-752-3318 FAX
kaleasure@ucdavis.edu

--

You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
To unsubscribe from this group and stop receiving emails from it, send an email to predictmgt+unsubscribe@usaid.gov.
To post to this group, send email to predictmgt@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/04d101d3582c%2442140550%24c63c0ff0%24%40ucdavis.edu.

**From:** Evelyn Luciano <luciano@ecohealthalliance.org>
**To:** David J Wolking <djwolking@ucdavis.edu>
**Cc:** Molly Turner <turner@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>, "William B. Karesh" <karesh@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>, Alison Andre <andre@ecohealthalliance.org>, Amanda Andre <amanda.andre@ecohealthalliance.org>, Matt Blake <mblake@ucdavis.edu>, "predict@ucdavis.edu" <predict@ucdavis.edu>
**Sent:** Tue, 28 Nov 2017 21:27:50 +0000
**Subject:** [predict] Re: Urgent: PREDICT ceiling increase questions from USAID

Hi David,
No worries. We'll get working on these right away.

Stay well,

Evelyn

On Nov 28, 2017, at 4:05 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hey Molly, Evelyn, and team,

We finally received feedback from USAID's AO today about the ceiling increase. The bad news is they asked for a one day turnaround on their questions. Jonna, Matt, and I are pulling together all that we can to prepare for a call tomorrow afternoon.

**There are a few questions related to EHA and your subs that we need feedback on ASAP, by OOB tomorrow** (west coast) at the latest. Hopefully these are not that difficult and please just call me on my cell REDACTED if you have any questions.

Apologies for the tight turnaround but considering how long it has taken to get this far, we think it's in our best interest to work with them while they are focused on our award.

Thanks for understanding,

David

**EHA-related feedback from the AO (David's comments in blue):**

8. No detail is provided for the large $52,473.00 lump sum cost for "field disposables" under the EHA subagreement "supplies" line item. Please provide a description of items to be purchased, number, and unit cost. In addition, there is an inconsistency between the figure stated in the budget ($52,473) and the figure in the budget narratives ($152,473). Please confirm the correct figure and adjust either the budget or narratives as appropriate.

This is referring to "field disposables" for Liberia. We made an error the narrative where we state "...field disposables (for 2,500 animals/year) $152,473" so apparently an extra "1" was added to the $52,473 that is actually in the budget. If you can get us some breakdown of this $52,473 and how it relates to the 2,500 animals that would be super!

9. EHA proposed a 35.4% indirect cost rate. Please provide a copy of the most current NICRA so that the rate and bases of application may be verified.

Can you just share your latest PDF of the NICRA? Liz says it was in the original packet from 7/24/17 but we should just attach it again (and I don't have it on hand) for quick reference.

10. Please provide a justification for NPHIL's 60% indirect cost rate. Please provide audited financials, a current NICRA or other appropriate justification.

This has to be an error (unless NPHIL has a NICRA or other documentation for that high rate). In our Y4 budget for Liberia (the recently approved one) it's listed as 10% (deminimus rate for a foreign sub without a NICRA per the uniform guidance), so we just need a confirmation here.

11. No fringe is proposed for NPHIL Liberia staff. Please confirm that this is in accordance with local law or adjust your budget accordingly.

Did you build the fringe or benefits rates into their salaries (Lab technicians 1-4 at $6,800, $7000, $7200, and $7,400)? Any insight here appreciated.

12. EHA proposed a total of $325,000.00 for Dr. Desmond, a consultant who will serve as Country Coordinator for their Liberia program (lump sum amounts: $125,000 Year 3, $125,000 Year 4, and $62,500 Year 5). Please provide Dr. Desmond's proposed daily rate, number of days EHA proposes him to work per program year, and information regarding whether he is an expatriate or local hire.

In the budget narrative we have Jim at a $125,000 rate for Y3 and 4 and then $62,500 in Y5. This breaks down to about $520/day at a 20 day per month rate (what UCD uses for consultants). That would be 1,120 days/year. He's a US citizen correct so expat? How do we explain the Y5 reduction in LOE and that rate? Any insight here appreciated as well in addition to corrections to my crude calculations above :-)

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Fri, 8 Dec 2017 09:08:07 -0800
**Subject:** Re: request for Sierra Leone Mission Meeting with PREDICT next week
**To:** Jonna Mazet <jkmazet@ucdavis.edu>

8:00 PM my time is good. Can you call me at 1-571-345-4253? Thanks

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Dec 8, 2017, at 4:01 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> Did you want to talk in either of the times that I suggested in the other chain?

J

On Fri, Dec 8, 2017 at 3:07 AM, Andrew Clements <aclements@usaid.gov> wrote:

> Can we chat today so I can get a sense of how urgent it is to update the mission? They don't seem to think this could possibly be time-sensitive. However, the wording of your note made me wonder.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

> **From:** Dorothy Peprah <dpeprah@usaid.gov>
> **Date:** December 8, 2017 at 10:59:58 AM GMT+1
> **To:** Andrew Clements <aclements@usaid.gov>
> **Cc:** "Chittenden, Kendra (Jakarta/Health)" <kchittenden@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, "Carroll, Dennis(GH/HIDN)" <DCarroll@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, "Pereira, Alisa (GH/HIDN)" <apereira@usaid.gov>, Khadijat Mojidi <kmojidi@usaid.gov>, Richard Greene <rgreene@usaid.gov>
> **Subject: Re: request for Sierra Leone Mission Meeting with PREDICT next week**
>
> Andrew,
> Next week is not good for the Mission given our upcountry travels and the Central Veterinary Laboratory inauguration.

Given the nature of previous communication around this issue, we would prefer to have this discussion when Kendra and Khadijat are both able to join in January.

Thanks!

On Thu, Dec 7, 2017 at 9:33 PM, Andrew Clements <aclements@usaid.gov> wrote:



UCDUSR0005497

Dorothy

PREDICT would like to
set up a meeting with the Mission and the P
REDICT
team (Global & SL) for next week to make sure we are all on the same page on the way forward with
the
process
of
preparing to communicate PREDICT findings, in particular the one finding that has been the previous point of discussions.

The PREDICT team has an update and would like to provide it to the Mission, as well as to clarify the path forward and its continued commitment to the March timeline. The PREDICT in-country leads, Aish and James can be available by phone on Tuesday the 12th from Makeni or in person on Thursday the 14th at the Mission. (If Tuesday, early or late in the day would be best to allow Prof to use a more confidential location [e.g. hotel], as he will be working at the university during the day.)

Please
let us know what your preference is

Thanks
!

Andrew

--

Andrew Clements, Ph.D.
Senior Scientific Advisor
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Mobile phone: 1-571-345-4253
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see* http://www.usaid.gov/ept2

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Dorothy Peprah, *Ph.D. MPH*
Global Health Security Agenda Advisor
U.S. Agency for International Development (USAID)-Sierra Leone
American Embassy South Ridge | Freetown, Sierra Leone
(W) REDACTED (M) REDACTED Email: dpeprah@usaid.gov

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Katherine Leasure <kaleasure@ucdavis.edu>
**CC:** Jonna Mazet <jkmazet@ucdavis.edu>;djwolking@ucdavis.edu <djwolking@ucdavis.edu>
**Sent:** 1/5/2018 9:11:09 AM
**Subject:** Re: Additional participant for P2 global meeting

Thanks

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Jan 5, 2018, at 5:47 PM, Katherine Leasure <kaleasure@ucdavis.edu> wrote:

Hi Andrew,

Thank you for the update. I've made note of the additional attendee.

Best,
Katie

**From:** Andrew Clements [mailto:aclements@usaid.gov]
**Sent:** Friday, January 05, 2018 8:05 AM
**To:** kaleasure@ucdavis.edu
**Cc:** Jonna Mazet; djwolking@ucdavis.edu
**Subject:** Additional participant for P2 global meeting

Hi Katie,

The following person is interested in attending the Tuesday afternoon session:

Marc Ellingstad
USAID Representative to the EU
U.S. Mission to the European Union
Email: MEllingstad@state.gov

I've shared the agenda with him so he knows where the event is being held.

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** Brian Bird <bhbird@ucdavis.edu>
**Sent:** Fri, 2 Feb 2018 09:52:39 -0800
**To:** James Desmond [redacted] Jim Desmond <desmond@ecohealthalliance.org>, Jon Epstein <epstein@ecohealthalliance.org>, PREDICT-outbreak <PREDICT-Outbreak@ucdavis.edu>
**Subject:** [predict] [predict-outbreak] Re: monkeypox in Liberia

Hey Jim,
Can you please go ahead a fill out a health-event form for this one? It would be nice to capture the details of what's going on, and have written down somewhere your contributions at the EOC meetings etc. You can grab the latest form version off of EIDITH. Even though we might not be directly involved in animal sampling it seems, we will be providing technical advice that will hopefully lead to some meaningful impacts with the government. Also will be good to have any insights into how the Liberia EOC is working now that the government has changed hands, and if there are/will be any changes to the main POCs in the health system.

Thanks!

-Brian

On Fri, Feb 2, 2018 at 9:15 AM, James Desmond [redacted] wrote:

Hi All,
I attended the emergency meeting today. There were no requests for us to conduct rodent sampling specifically related to these cases. The discussion centered on developing a national action plan and improvement on human case recognition, training health care workers on the case definition, proper sample collection and improved diagnostics. I did suggest this was a good opportunity to utilize a One Health approach by incorporating rodent sampling into the national plan. The suggestion was received positively and going forward, as the plan develops, they will incorporate the other sectors (Ag, Forestry) which will rely heavily on PREDICT's input.

Cheers,

Jim

**Email:** desmond@ecohealthalliance.org
**Phone:** [redacted] (Kenya)
**Phone:** [redacted] (Liberia)
**Phone:** [redacted] (USA)
**Skype:** jim.desmond

On Feb 2, 2018, at 4:53 PM, Andrew Clements <aclements@usaid.gov> wrote:

FYI

---------- Forwarded message ----------
From: **Kendra Chittenden** <kchittenden@usaid.gov>
Date: Fri, Feb 2, 2018 at 4:39 PM
Subject: monkeypox in Liberia
To: "GHSD Unit Mail List (USAID)" <ghsdunitmaillistusaid@usaid.gov>, Richard Greene <rgreene@usaid.gov>

All
2 cases of Monkeypox were confirmed (at CDC Atlanta). The Gov't is submitting the IHR report.

The last reported monkeypox's cases were in 1917. The gov't convened an emergency meeting to discuss. A vector may be rodent so PREDICT *may be* asked by Gov't to assist as they are doing rodent sample collection for EHP. I wanted to give the heads up to the PREDICT AOR team.

More information to follow. The National Public Health Institute of Liberia (NPHIL) is also going to update IDSR to include monkeypox.

Kendra

—

**Kendra Chittenden, Ph.D. | Senior Infectious Disease Advisor| USAID** | mobile (703-209-5424) KChittenden@usaid.gov

—

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-345-4293
E-mail: aclements@usaid.gov

For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2

5.7/5.0
This incoming message has been identified by the UCD central filters as possible spam. This attachment is provided so that you can review the reasons the message was tagged, and to assist with additional filtering if you wish to supplement the central filters with your own local rules.

If you have further questions please email ithelp@ucdavis.edu for assistance.

Content analysis details: (5.7 points, 5.0 required)

```
 pts rule name              description
---- ---------------------- --------------------------------------------------
 0.0 FREEMAIL_FROM          Sender email is commonly abused enduser mail provider
                            (jdesmo01[at]gmail.com)
 1.5 RCVD_IN_SORBS_WEB      RBL: SORBS: sender is an abusable web server
                            [41.191.107.208 listed in dnsbl.sorbs.net]
 0.0 DKIM_ADSP_CUSTOM_MED   No valid author signature, adsp_override is
                            CUSTOM_MED
 1.0 SPF_SOFTFAIL           SPF: sender does not match SPF record (softfail)
 0.2 FREEMAIL_ENVFROM_END_DIGIT Envelope-from freemail username ends in
                            digit (jdesmo01[at]gmail.com)
 0.1 HTML_MESSAGE           BODY: HTML included in message
 0.5 DCC_CHECK              Detected as bulk mail by DCC (dcc-servers.net)
 0.1 DCC_REPUT_70_89        DCC reputation between 70 and 89 %
 0.1 DKIM_SIGNED            Message has a DKIM or DK signature, not necessarily valid
 1.0 RDNS_NONE              Delivered to internal network by a host with no rDNS
 0.0 FSL_BULK_SIG           Bulk signature with no Unsubscribe
 0.0 T_DKIM_INVALID         DKIM-Signature header exists but is not valid
 1.2 NML_ADSP_CUSTOM_MED    ADSP custom_med hit, and not from a mailing list
```

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Brian H. Bird, DVM, MSPH, PhD
One Health Institute
University of California, Davis School of Veterinary Medicine
bhbird@ucdavis.edu

**From:** Mario Mondele <mmondele@usaid.gov>
**Sent:** Wed, 21 Feb 2018 09:48:49 +0100
**To:** "William B. Karesh" <karesh@ecohealthalliance.org>
**Cc:** Andrew Clements <AClements@usaid.gov>, Amanda Andre <amanda.andre@ecohealthalliance.org>, "GeeEA@state.gov" <GeeEA@state.gov>, Predict inbox <predict@ucdavis.edu>, Anne Laudisoit <laudisoit@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>
**Subject:** [predict] Re: RoC PREDICT-2 update - good news

Hi Billy,
Thank you for informing, although it is not an encouraging piece of news. I will convey it to the Embassy Front Office.

Let's arrange the phone call for Monday 26 at 4pm ROC time, if this is fine with you: REDACTED

Thank you again,

Mario

**Mario MONDELE**
Program Management Specialist
USAID/Congo - American Embassy Brazzaville
Off.: REDACTED / Cell.: REDACTED
E-mails: mmondele@usaid.gov / mondelemf@state.gov

"Where there is a will, there is always a way"

On Tue, Feb 20, 2018 at 4:29 PM, William B. Karesh <karesh@ecohealthalliance.org> wrote:

Dear Mario,
We are have not been able to agree with the PREDICT partners in ROC regarding the visit to ROC next week, nor the opening or a visit to the laboratory at the National Public Health Laboratory.

Could you please notify relevant staff at the Embassy that at this time, we will have to postpone our visit to ROC next week to a future date when agreements can be put in place.

If you are available, it would be advantageous if we could arrange a phone call with you and Andrew Clements in the near future.

Apologies for the late notice but we were just informed this morning of the situation.

Billy

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

EcoHealth Alliance
460 West 34th Street - 17th Floor
New York, NY 10001 USA

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President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

On Feb 6, 2018, at 6:26 AM, Mario Mondele <mmondele@usaid.gov> wrote:

Dear Billy,
Following our last communication, I am writing to let you know that Ambassador Haskell is fine with your date proposals (Feb 28 or March 1) for the official event. Thursday, March 1 would be a better bet, thus allowing you ample prep. time before the event.

Thanks,

Mario

---

**Mario MONDELE**
Program Management Specialist
USAID/Congo - American Embassy Brazzaville
Off.: REDACTED / Cell.: REDACTED
E-mails: mmondele@usaid.gov / mondelemf@state.gov

*"Where there is a will, there is always a way"*

---

On Tue, Jan 23, 2018 at 12:22 PM, Mario Mondele <mmondele@usaid.gov> wrote:

Dear Billy,
Thank you for your proposals. We will work them out internally and come back to you later.

Thanks again,

Mario

---

**Mario MONDELE**
Program Management Specialist
USAID/Congo - American Embassy Brazzaville
Off.: REDACTED Cell.: REDACTED
E-mails: mmondele@usaid.gov / mondelemf@state.gov

*"Where there is a will, there is always a way"*

---

On Mon, Jan 22, 2018 at 8:56 PM, William B. Karesh <karesh@ecohealthalliance.org> wrote:

Thanks so much Mario!!
As we wait for travel approval, maybe we should begin to think about a date that will work best for you for some type of event during that week.

Could you speak with your colleagues at the Embassy and see if February 28 or March 1st would be possible for you? We can then follow up with people at the Public Health Laboratory to seek their agreement.

I am thinking that the Wednesday or Thursday of that week would be good since it would give us a couple of days before (Monday and Tuesday) to be on site, help with final preparations, and work out any last minute details.

Look forward to next steps.

Billy

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

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On Jan 19, 2018, at 4:31 AM, Mario Mondele <mmondele@usaid.gov> wrote:

Dear Billy,
Thank you for the warm New Year wishes. Same to you all.

Indeed, this is really good news about PREDICT 2. The official opening of the project laboratory would be welcome as this will contribute to amplify USG's endeavor in the ROC. Looking forward to seeing you all in Brazzaville.

Thanks again and see you soon!

Mario

---

**Mario MONDELE**
Program Management Specialist
USAID/Congo - American Embassy Brazzaville
Off.: REDACTED / Cell.: REDACTED
E-mails: mmondele@usaid.gov / mondelemf@state.gov

"Where there is a will, there is always a way"

==========

On Wed, Jan 17, 2018 at 7:46 PM, William B. Karesh <karesh@ecohealthalliance.org> wrote:

Dear Mario,
Best wishes on the New Year and I hope this finds you and your family all doing well.

Just a few days ago, we were finally notified by USAID/W that they have approved EcoHealth Alliance to sub-award agreements with the Laboratoire National de Santé Publique (LNSP) Brazzaville and the Laboratoire de Diagnostic Vétérinaire Brazzaville (LNVB) for work on the PREDICT-2 Project in the Republic of Congo. With these approvals, we will be able to move forward with more detailed agreements. We do not have permission to sub-award with Direction de la Santé Militaire Congo (DCSS).

Thus, we will be selecting a new Country Coordinator for the project, most likely this will be Prof. Parra from the LNSP.

We would like to plan a trip for myself, Dr. Anne Laudisoit, and Dr. Leticia Gutierrez-Jimenez for the last week of February to meet with you, finalize agreements with LNSP if possible, and work in the laboratory for a few days to run through the testing procedures. We are submitting an ITA request today, so that should come across your desk in the next week or two.

Ambassador Haskell mentioned when we last met with him that he would like to see some local public awareness of USG investments. One opportunity might be to do some type of event with the official opening of the project laboratory at LNSP during our visit in late February. Please let us know if you think this is something we should begin to plan.

We are looking forward to finally getting the project running at full speed again. At a PREDICT-2 meeting last week, we were asked to complete all animal sampling by October 2018 and complete all testing by the end of the calendar year. A priority will be to ensure that testing capabilities at the LNSP laboratory are up and running smoothly. We do not plan to conduct sampling or testing of people, but wish to continue to work on behavior studies. The remaining project time in 2019 will be used to refine the final test results, conduct analysis of the results, and write reports.

Again, thank you all for your support and patience during this long period of waiting for USAID approval. We all look forward to working with you and a successful year.

All the Best,

Billy

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

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*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

**From:** Dennis Carroll <dcarroll@usaid.gov>
**Sent:** Thu, 22 Feb 2018 10:45:02 -0500
**Subject:** Re: GVP EIDITH GisAID and
**To:** Eddy Rubin <erubin@metabiota.com>
**Cc:** [redacted], Brooke Watson <watson@ecohealthalliance.org>, "Sacchetti, Ben" <Sacchetti.Ben@bcg.com>, Peter Daszak <daszak@ecohealthalliance.org>, Nathan Wolfe <nwolfe@metabiota.com>, "Harris.Samuel@bcg.com" <Harris.Samuel@bcg.com>, Jonna Mazet <jkmazet@ucdavis.edu>

eddy, this is really helpful. I like the "open access" but only to those "registered" to GISAID. The question about metadata is a big one; could GISAID be modified to host this data? Thanks for pulling this comparison together

d

On Wed, Feb 21, 2018 at 8:28 PM, Eddy Rubin <erubin@metabiota.com> wrote:

> Attached is a high level comparison and summary of the data submission data access, data types, IP for the GISAID (EpiFlu database) and the PREDICT (EIDITH Database). In addition how GVP might be figured in

--
Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

**From:** David De Pooter <d.depooter@onehealthplatform.com>
**Subject:** 5th International One Health Congress: Scientific Programme Committee telephone conference: summary
**Sent:** Fri, 9 Mar 2018 18:51:15 +0100
**Cc:** Ab Osterhaus <Albert.Osterhaus@tiho-hannover.de>, John MacKenzie [redacted], Chris Vanlangendonck <c.vanlangendonck@onehealthplatform.com>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>, Martyn Jeggo <[redacted], Amadou Sall <asall@pasteur.sn>, MARK RWEYEMAMU <mark.rweyemamu@btinternet.com>, Wang Linfa <linfa.wang@duke-nus.edu.sg>, "William B. Karesh" <karesh@ecohealthalliance.org>, "Dr. Ottorino Cosivi" <cosivio@paho.org>, Casey Barton Behravesh <dlx9@cdc.gov>, malik <[redacted] Baljit Singh <baljit.singh1@ucalgary.ca>, "Gerdts, Volker" <volker.gerdts@usask.ca>, Marietjie Venter [redacted], Penina Munywa <pkn2@cdc.gov>, Lorne Babiuk <[redacted] Sarah Cleaveland [redacted], Patrick Leighton [redacted], "Iverson, Samuel (EC)" [redacted], Craig Stephen [redacted], Rita Colwell <[redacted] "Rushton, Jonathan" [redacted]
[ICHC19_parallel sessions-CHS.pdf](#)

Dear all,

Many thanks to the Programme Committee members for their time on the phone just now, and many thanks for the hard work done!

I'm attaching an updated program for your information. We have decided to select 5 speakers per session (15 min lecture time + 5 minutes for Q&A following each lecture). All chairs and co-chairs are therefore asked to revisit the papers that had been submitted for their session and to suggest one more speaker (Mark has already done so). As a general remark, it is advised to look out for papers that relate to underserved communities or South America.

Marietjie and Malik agreed to consult and come up with two more speakers for both 'Pathogenesis' sessions, Volker and Lorne will do the same for the "Vaccines" sessions, as will Jonna, Patrick and Craig for the "ecohealth perspective" sessions.

There were some concerns about the One Health relevance of several papers. I have marked these titles in yellow in the attached program. May I ask the respective chairs and co-chairs to comment and confirm that the papers do have a One Health perspective?

Looking forward to receiving your input and feedback on the short term.

Kindest regards,

David De Pooter
management
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d.depooter@onehealthplatform.com
www.onehealthplatform.com
ONE HEALTH PLATFORM
NEW ADDRESS!
[redacted]

Dear all,

Many thanks to the Programme Committee members for their time on the phone just now, and many thanks for the hard work done!

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There were some concerns about the One Health relevance of several papers. I have marked these titles in yellow in the attached program. May I ask the respective chairs and co-chairs to comment and confirm that the papers do have a One Health perspective?

Looking forward to receiving your input and feedback on the short term.

Kindest regards,

David De Poster
management
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d.deposter@onehealthplatform.com
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ONE HEALTH PLATFORM
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REDACTED

# DRAFT PROGRAMME
# ONE HEALTH SCIENCE SESSIONS

**1A-PATHOGEN DISCOVERY**
Chair: Linfa Wang
Co-chair: Peng Zhou

Plagiorchis sp. in small mammals of Senegal: an emerging food-borne trematodiasis?
*Stefano Catalano, Royal Veterinary College, University of London*

Zika Virus Exposure In Malaysia: A Preliminary Study On Seroprevalence Among Local Population
*Wan Nabilatul Huda Wan Ghazali, Institute For Medical Research, Malaysia*

A new concept for de-novo detection of viral pathogens with adaptive diagnostics and integrated data analysis approaches results in the recent discovery of two novel viruses
*Leonie Franziska Forth, Friedrich-Loeffler-Institut, Germany*

Discovery of Ecologically Distinct Clades within Pathogenic and Non-pathogenic Bacterial Taxa
*Frederick Cohan, Wesleyan University, USA*

**1B-SURVEILLANCE AND EARLY DETECTION**
Chair: Ab Osterhaus
Co-chair: Nistara Randhawa

*To be rated*



UCDUSR0005511

2A-**DIAGNOSTICS**
Chair: Martyn Jeggo
*Co-chair:* Dang Xuan Sinh

Recombinant techniques to address the challenges in development of assays for diagnosis and surveillance of emerging zoonotic diseases
*Felicity Jane Burt, University of the Free State, South Africa*

Comparison of two RdRp PCR assays for the detection of MERS related Coronaviruses
*Supaporn Wacharapluesadee, King Chulalongkorn Memorial Hospital, Thailand*

The accuracy of pre-vaccination screening for Q fever and the extent of exposure – Bayesian latent class analysis
*Solomon Meseret Woldeyohannes, University of Queensland, Australia*

Reproducibility of results and performance of TB diagnostics in East Africa Public Health Laboratory Networking Project sites in Kenya: Implication on Policy Resolution for Strategic TB Diagnosis
*Willie Abela Githui, Kenya Medical Research Institute*

2B-**INTERVENTION STRATEGIES**
Chair: Sarah Cleaveland
*Co-chair:* Rachel Hopper

Adapting the determinants of health perspectives to developing and implementing integrated priorities to address social and ecological expectations for fisheries and community health
*Craig Stephen, University of Saskatchewan, Canada*

Control versus elimination of Taenia solium in eastern Zambia: Preliminary assessment of a two-year interventional program in the Katete and Sinda districts in the Eastern Province of Zambia
*Emma Clare Hobbs, Institute of Tropical Medicine, Antwerp, Belgium*

An integrated human-animal health approach to reduce the disease burden of psittacosis
*Lenny Hogerwerf, National Institute for Public Health and the Environment, The Netherlands*

Factors associated with improved uptake of Johne's Disease control mechanisms on Australian dairy farms: Regulatory insights from evolving control strategies
*Paul Douglas Burden, University of Calgary, Canada*



UCDUSR0005512

**3A-SOCIAL SCIENCE AND POLITICS**
Chair: Jonathan Rushton
*Co-chair:* Meghan Bruce

Antimicrobials In Society: A One Health Approach in Kampala, Uganda
*Laurie Denyer Willis, London School of Hygiene and Tropical Medicine, UK*

(Re)Claiming Water Stewardship in a Changing Climate – Learning from the Margins
*Corinne J Schuster-Wallace, McMaster University, Canada*

MAN-IMAL: An experimental One Health degree program around animal-man-food
*Francois Meurens, Oniris - Nantes Atlantic National College of Veterinary Medicine, France*

Characterizing High-Risk Behaviors of Bushmeat Workers in Cameroon (USAID PREDICT-2)
*Catherine Clary, Metabiota, USA*

**3B-PATHOGENESIS 1**
Chair: Marietjie Venter
*Co-chair:* Felicity Burt

Cytokine patterns in Hemorrhagic Fever with Renal syndrome and Crimean-Congo Hemorrhagic Fever
*Katerina Tsergouli, Aristotle University of Thessaloniki, Greece*

Replication of naturally occurring MERS-CoV protein 4a deletion variants in vitro and in vivo
*Mart Matthias Lamers, Erasmus MC, The Netherlands*

The effect of antiretroviral naive HIV-1 infection on the ability of Natural Killer cells to produce IFN-γ upon exposure to Plasmodium falciparum- infected Erythrocytes
*Carole Stephanie Sale Ngane, University of Yaoundé I, CIRCB, Cameroon*

Chronic ethion exposures and endotoxin interaction induce pulmonary damage and genotoxicity in mice
*Ram Saran Sethi, Guru Angad Dev Vety and Animal Sciences University, Ludhiana, India*



UCDUSR0005513

**4A-DRIVERS FOR EMERGING DISEASES 1**
Chair: Rita Colwell
*Co-chair: Antar Jutla*

*To be rated*

**4B-ONE HEALTH IN UNDERPRIVILIGED COMMUNITIES**
Chair: Mark Rweyemamu
Co-chair: Rafael Maciel de Freitas

Molecular detection and characterization of Anaplasma phagocytophilum strains associated with different hosts in Bushbuckridge, Mpumalanga, South Africa
*Agatha Onyemowo Kolo, University of Pretoria, South Africa*

Assessment of aerosolization of Avian Influenza A associated with market hygiene and practices and potential occupational exposure of live bird market workers in Bangladesh
*Mahbubur Rahman, Institute of Epidemiology, Disease Control and Research, Bangladesh*

Transformation within Indigenous Lived Experiences and the Journey from a Pedagogy of Oppression to a Pedagogy of Hope and Freedom
*Anne Poelina, the University of Notre Dame, Australia*

Tackling the second deadliest Neglected Tropical Disease: Predicting and reducing the impact of snakebite on human and animal health through One Health analyses of hotspots and access to care
*Rafael Ruiz de Castaneda, Institute of Global Health, Faculty of Medicine, University of Geneva, Switzerland*

What will it take to eliminate rabies in Africa?
*S Mwangi Thumbi, Washington State University, Kenia*



UCDUSR0005514

**5A-DRIVERS FOR EMERGING DISEASES 2**
Chair: Peter Daszak
*Co-chair:*

*To be rated*

**5B-PATHOGENESIS 2**
Chair: Malik Peiris
Co-chair: Wendy Karen Jo Lei

Species specific binding of the MERS-coronavirus S1A protein
*W Widagdo, Erasmus MC, The Netherlands*

Using Bioluminescent Salmonella Strains to Study Host - Pathogen Interaction in Chicken will Allow One-Health-Approach
*Dinesh Hiranthe Weilawa, Vaccine and Infectious Disease Organization, Canada*

Influenza A viruses activate host PI3K/Akt survival pathway for pro-viral advantage in chicken but not in duck cells
*Sanjeeva Kumar, University of Nottingham, UK*

Environmental CO2 Modification of Innate Immune responses to LPS and Organic Dust
*David Schneberger, University of Saskatchewan, Canada*



UCDUSR0005515

**6A-VACCINES 1**
Chair: George Gao (tbc)
Co-chair: Volker Gerdts

Portfolio Approach, Development and Stockpile of MERS-CoV Vaccines: A Case Study
*Simone Blayer, CEPI, UK*

Protective non-specific effect of rabies vaccine in humans, dogs and cattle: One Health implications
*Anne Conan, Ross University School of Veterinary Medicine, Saint Kitts and Nevis*

Brucellosis in the changing peri-urban dairy systems of West Africa
*Laura Ann Craighead, RVC, UK*

A Cimaza Case Study – Highlighting Effectiveness of Comics/Animations in Enhancing Science Literacy and in Particular the Science Behind Vaccines and Viral Diseases
*Susan Obeid, CIMAZA, Belgium*

**6B-INFECTIOUS DISEASES FROM AN ECOHEALTH PERSPECTIVE 1**
Chair: Craig Stephen
Co-chair: Patrick Leighton

Integrating Ecosystem Approaches to Health: A One Health Investigation of Rift Valley Fever Virus
*Melinda K Rostal, EcoHealth Alliance, USA*

Environmental Change Increases Human-Macaque Interactions and the Risk of Zoonotic Disease Spillover
*Ariful Islam, Institute of Epidemiology, Disease Control and Research, Bangladesh*

Building collaborative capacity to evaluate zoonotic viral sharing among bats, primates, and people in Tanzania
*Elizabeth VanWormer, University of Nebraska, Lincoln, USA*

A model of inter-market livestock movement in northern Tanzania: exploiting routinely collected data to investigate infectious disease transmission
*Paul Christopher Duncan Johnson, University of Glasgow, UK*



UCDUSR0005518

**7A-VACCINES 2**
Chair: Lorne Babiuk
Co-chair: Teresa Maina

Development of a highly pathogenic avian H7N9 influenza disease model in mouse
*Shelby Layne Landreth, University of Saskatchewan, Canada*

A trial to assess the thermotolerance of an inactivated rabies vaccine
*Felix John Lankester, Washington State University, Tanzania*

Development & characterization of oral combination vaccine against Hepatitis B and Anthrax
*Mani Bhargava, GTB Hospital, India*

Identifying Genomic Predictors of Vaccine Response in Swine
*Peris Mumbi Munyaka, University of Alberta, Canada*

**7B- INFECTIOUS DISEASES FROM AN ECOHEALTH PERSPECTIVE 2**
Chair: Jonna Mazet
Co-chair: Enkhtuvshin Shilegdamba

Nematode co-infections, environmental factors and weather impact infection with the zoonotic bacterium, Bartonella tribocorum, in urban Norway rats (Rattus norvegicus)
*Jamie Lee Rothenburger, University of Calgary Faculty of Veterinary Medicine, Canada*

Infectious Disease Transmission at the Wild Dog – Domestic Dog Interface in Remote Indigenous Communities in Northern Australia
*Vanessa Gabriele-Rivet, University of Sydney, Australia*

"Whenever I see a fruit bat, I think Hendra" – Attitudes and risk perception of Australian horse owners towards flying foxes in relation to Hendra virus
*Anke Wiethoelter, University of Melbourne, Australia*

The Other Side of One Health: A Brucellosis story
*Barbara Akorfa Glover, University of Pretoria, South Africa*



UCDUSR0005517

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Brian Bird <bhbird@ucdavis.edu>
**CC:** PREDICTMGT <predictmgt@usaid.gov>,PREDICT-outbreak <predict-outbreak@ucdavis.edu>
**Sent:** 3/12/2018 10:48:30 AM
**Subject:** [predict] [predict-outbreak] Re: PREDICT Ghana Lassa fever event update 09Mar2018

Brian,

Am I correct in thinking that you are waiting for the GoG to submit a written proposal that you will then forward to me for approval?

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Mar 10, 2018, at 7:27 AM, Brian Bird <bhbird@ucdavis.edu> wrote:

Hi all,

As expected, the team has received an official request to support rodent field sampling activities near the home of the recent Lassa fever case in Tema district in Ghana.

A written copy of the request is pending, but verbally the GoG has requested that the PREDICT team conduct field sampling at three-sites in Tema district. The team estimates that the time required would be approximately 12 days at a cost of approximately $11k (transportation, personnel time/per diems, and supplies/PPE). The team is working with the government and other partners involved (CDC and NAMRU) to coordinate any potential field activities. It is expected that a coordination meeting will occur with the various partners on Monday (Mar 12) to discuss and make plans.

Details on the single human case and travel history in the attached report, as well as a proposed budget for your consideration and discussion.

Have a good evening/weekend,

-Brian

Brian H. Bird DVM, MSPH, PhD
Global Lead Sierra Leone and
Multi-Country Ebola operations
PREDICT-USAID

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School of Veterinary Medicine
University of California, Davis
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http://www.vetmed.ucdavis.edu/ohi/predict/index.cfm

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You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
To unsubscribe from this group and stop receiving emails from it, send an email to predictmgt+unsubscribe@usaid.gov.
To post to this group, send email to predictmgt@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/07136043-2002-498C-8CC5-44482C1BEFC5%40ucdavis.edu.

**From:** Megan M Doyle <mmdoyle@UCDAVIS.EDU>
**To:** "predict-surveillance@ucdavis.edu" <predict-surveillance@ucdavis.edu>
**Cc:** Catherine Machalaba <machalaba@ecohealthalliance.org>, "William B. Karesh" <karesh@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** Surveillance et al. call this Thurs, May 10th @ 10am PT/1pm ET
**Sent:** Tue, 8 May 2018 23:49:53 +0000
4.24.2018 surveillance call notes.docx

Hi PREDICT Surveillance Team,
Our next joint surveillance, behavior, & pathogen detection call is this Thurs, May 10th at 10am PT/1pm ET. Call info and agenda are below. Notes from our last call are also attached.

**Join from PC, Mac, Linux, iOS or Android:** https://onehealth.zoom.us/j/609126985

**Or iPhone one-tap :**
US: +16699006833,, REDACTED or +14086380968,, REDACTED
**Or Telephone:**
Dial(for higher quality, dial a number based on your current location):
US: +1 669 900 6833 or +1 408 638 0968 or +1 646 876 9923
**Meeting ID:** REDACTED
**International numbers available:** https://onehealth.zoom.us/zoomconference?m=-383Ya1HeIwI42A5q23N7yRP5ox98fD0

Draft agenda

- Testing progress updates (Tracey/All)
  - Please be prepared to give a verbal update on testing progress. The Lab indicator report by country report is helpful for global leads and country teams to start monitoring progress on a regular basis.

- EIDITH updates (Tammie)
  - Human questionnaire Q23
  - Adding seasons to EIDITH – see REDACTED
- Behavior team updates (Kevin)
  - Bat book updates
  - Interim Data Review (IDR) reports
- Others?

Action Items from last call

1. Global leads, please coordinate with Catherine to join a regularly scheduled call with country teams to discuss capturing engagement with health security policies.
2. Global leads, if your country appears on the rodent age classification spreadsheet and you have not yet done so, please communicate with IM team if you approve the change in rodent age class from juvenile to sub adult.
3. Please be prepared to give a verbal update on testing progress on next call. See notes for April's progress slide.

Thank you!
Megan

**Megan Doyle**
Research Associate
Emerging Pandemic Threats PREDICT Project
EpiCenter for Disease Dynamics
One Health Institute

UC Davis School of Veterinary Medicine
530-564-2133
mmdoyle@ucdavis.edu
skype: megan.m.doyle

# April 26th, 2018 Surveillance Team Call

Action Items and Reminders for next call

1. Our next call is on May 10th **this will be the joint call with surveillance, behavior, and pathogen detection teams**
2. Global leads, please coordinate with Catherine to join a regularly scheduled call with country teams to discuss capturing engagement with health security policies.
3. Global leads, if your country appears on the rodent age classification spreadsheet and you have not yet done so, please communicate with IM team if you approve the change in rodent age class from juvenile to sub-adult.
4. Please be prepared to give a verbal update on testing progress on next call. See notes for April's progress slide and links to a useful report in EIDITH to help with tracking.

**Participants:** Matt LeBreton, Karen Saylors, Dave McIver, Jennie Lane, Christian Lange, Mindy Rostal, Denise Grieg, Corina Monagin, Kirsten Gilardi, Lucy Keatts, Tammie O'Rourke, Sarah Olson, Emily Hagan, Catherine Machalaba, Allison White, Stephanie Martinez, Ava Sullivan, Leilani Francisco, Leti Gutierriez, Jaber Belkhiria, David Wolking, Dawn Zimmerman, Megan Doyle, Chris K Johnson

**Other livelihoods in HQ**

- We are starting to go through individual country data and will provide feedback for global leads to discuss use of other livelihoods and ensuring all relevant modules are filled out with country teams.
- As a reminder, interviewers should ask participants whether they do any activities on the side or part time that could trigger filling out one of the modules. For example, many entries for livelihood include things like "student" or "homemaker" and no modules are filled out. It is likely that some of these individuals help with activities like tending livestock or anything that might bring them into contact with animals that can be captured through the modules.
- Additionally, every individual should have a module filled out when it maps to a livelihood, which unfortunately has not been happening each and every time.

**Deep dive – markets & guano data collection**

- In Napa, we discussed data availability and additional data needs to guide specific interventions at several interfaces (markets, guano collection, and land use). The flipchart pictures from this session are provided on beginning on page 5 of these notes.
- Markets update:
    - Karen, David, and Matt have started developing a market data collection template as prototype for Cameroon, Indonesia, DRC, and RoC. The plan is to implement additional data collection, including count, value, and diversity of animals present in the market as soon as possible alongside current fieldwork.
- Guano collection update
    - Priority sites include Cambodia (guano farms and nearby orchards), Thailand (are we still sampling in caves?), and Myanmar (caves). The goal is to determine baseline species diversity at these sites using barcoding and determining population size via observation. Thus far, it seems that: species diversity is low (1-2 species) in the guano farms, orchards



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have a medium amount of species diversity, and caves are likely the most diverse. If the diversity is as hypothesized, we would have a nice species diversity gradient to analyze how diversity relates to the viruses we find. We would also like to collect additional data on guano sanitation techniques in order to assign risk to the different processing methods.

- Land use policy:
  - We will discuss this on an upcoming call.

**Capturing intervention successes**

- We are starting to monitor success stories and PREDICT's impact on communities, and would like to find a mechanism for collecting success stories with different kinds of media (videos, stories, etc) in order to showcase these in reports and on the web. Natural successes that we would target would come out of things like working with bat hunters who cease hunting activities or working with markets who implement safer animal handling practices.
- The main question is how to involve country teams in gaining this information? One idea is creating a content library which would be managed by a partner-wide working group. One person would be assigned in each country to participate in content creation to capture compelling stories and activities. This content can then be used to report out to Missions and to DC ultimately as we start engaging them to garner excitement around PREDICT work.
- Similarly, Catherine and Billy will be starting to capture quantitative case studies and mapping country team engagement in health security policy processes. To do so, they propose meeting with each country team for 15-minutes over teleconference sometime within the next 2-3 months. For ease of scheduling, let Catherine know when regular calls with country teams are happening so she can jump on a call to discuss.

**Rodent age classification – attached**

- IM team needs input on changing the rodent age classification from juvenile → subadult. Global leads should communicate with IM team if they have not yet done so.

**Testing progress**

- The chart below was discussed at the semi-annual consortium meeting in Napa. It shows the proportion of ***number of individuals test completed/the number of individuals sampled to date*** to show testing progress in each country. We discussed tracking progress monthly on our joint calls to assess each country's ability to complete the testing by March 30, 2019, and to strategize and help labs that are behind.
- Next call, please be prepared to give a verbal update on testing progress. The Lab indicator report by country report is helpful for global leads and country teams to start monitoring progress on a regular basis.



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**EIDITH R package**

- Noam gave a brief overview of the EIDITH r package which was just released as a way to access the database for data analysis, cleaning, or modeling work.
- ITIS/IUCN-based species list – we will need to come to a consensus on defining species that are not in the current mechanism for defining species.

**Asia country updates**

**Mongolia** – 2018 field surveillance planned for May. Tested 300 guano samples.
**Viet Nam** – Exporting samples to Davis for sequencing soon.
**Myanmar** – Dry season sampling completed in January. Out sampling now. LVBD lab is up and running.
**Cambodia** – Completing last dry season in bat guano farming community.
**Laos PDR** – Getting ethical clearances up to date. Lab testing has slowed as having problems getting reagents and kits, which will hopefully be resolved soon. Field team going back out to finish off dry season sampling. Hospital surveillance ongoing but is slow.
**Indonesia** –Tested 400 bats for year 3, finished CytB from rodents. Sampled in April. Enrolled 50 community based participants.
**Thailand** –Laboratory testing underway and is being entered into EIDITH. Event data and barcoding results from rodents will be in EIDITH soon. Testing complete and uploaded for 45 humans. Govt released a batch of results in March.
**Malaysia** –Deep forest sampling was conducted in March and April. Tested 133 samples and analyzed over 200 barcoding sequences.



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**Bangladesh** –Participated in encephalitis outbreak assistance in February. Sampled 100 humans across 3 concurrent sites.
**China** – Paused field work for contract issues. Surveillance trip planned fo May. Tested 900 swabs from bats. Held meeting with USAID mission in April.
**India** – Conducted 65 hospital interviews and collected biological samples. Recruiting more staff for field team.
**Nepal** – Completed sampling humans in the community and rodents in rural site in March. Continuing to test Y4 samples. Conducting final dry season sampling of NHPs at urban temples in Kathmandu.



UCDUSR00005525

Flip chart pictures from intervention session at semi-annual consortium meeting in Napa

UCDUSR00005526

# GUANO

## Data Needs At Each Site

- Species Observation
  - Count by Order
  - Estimate by Species
- Environmental Sampling
  - include dried & fresh



UCDUSR0005527

- Land Use Policy
  (Focus on Extractives ?)
  - Improved Surveillance around certain interfaces
    → IDEEAL Data
    → Deep Forest
    → Test Data
    → Site Characterization & Interface Data
    → Qualitative Data

⟹ & Sampling, Testing, Infrastructure Improvements

* ⇑ Desireability
- Data rich: Tanzania, Malaysia, Thailand for Extracting



UCDUSR00005528

**Sent:** Fri, 25 May 2018 11:02:38 -0700
**Subject:** Re: Shuttle Follow Up
**From:** Brian Bird <bhbird@ucdavis.edu>
**To:** "William B. Karesh" <karesh@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>, Chris Johnson <ckjohnson@ucdavis.edu>, Jon Epstein <epstein@ecohealthalliance.org>
**Cc:** Anne Laudisoit <laudisoit@ecohealthalliance.org>
CA Univ of Davis_VWRQuotation_8030481417.PDF

Wow, I like that price (about $700 bucks cheaper) if you can get it. In my quotation from yesterday from VWR they are $5,695.

Anne, are we talking about the same freezer here?

-b

---

**From:** "William B. Karesh, D.V.M" <karesh@ecohealthalliance.org>
**Date:** Friday, May 25, 2018 at 9:53 AM
**To:** Jonna Mazet <jkmazet@ucdavis.edu>, Chris Johnson <ckjohnson@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Jon Epstein <epstein@ecohealthalliance.org>
**Cc:** Anne Laudisoit <laudisoit@ecohealthalliance.org>
**Subject:** Fwd: Shuttle Follow Up

This is the company that Anne has been talking to and is offering reduced pricing, etc. May be of interest for current projects or if we proceed with more field work in DRC

BK

Sent from my iPhone

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

EcoHealth Alliance
460 West 34th Street - 17th Floor
New York, NY 10001 USA

+1.212.380.4463 (direct)
+1.212.380.4465 (fax)
www.ecohealthalliance.org

President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

***EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.***

Begin forwarded message:

**From:** Anne Laudisoit <laudisoit@ecohealthalliance.org>
**Date:** May 25, 2018 at 12:32:46 PM EDT
**To:** "William B. Karesh" <karesh@ecohealthalliance.org>
**Subject: Fwd: Shuttle Follow Up**

Check below
Please transfer to PREDICT DRC .
They have portable ULT that can be charged on car batteries , I suggested them to adapt them with solar panel and they liked to idea.

---------- Forwarded message ---------
From: **Heather Shaffer** <hshaffer@stirlingultracold.com>
Date: Tue, May 22, 2018 at 2:04 PM
Subject: Shuttle Follow Up
To: Anne Laudisoit <laudisoit@ecohealthalliance.org>

Hi Anne-

Just checking in to see if the VWR rep was able to get the price point down to $5,000 for you?

I just saw today in the New York Times about an Ebola outbreak in the African Congo. Are you supporting that effort?

Heather Shaffer
Inside Sales Manager

STIRLING ULTRACOLD A Division of Global Cooling, Inc.
6000 Poston Road Athens, OH 45701, USA
Office: +1.740.274.7963
Mobile: REDACTED
www.stirlingultracold.com

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**Laudisoit Anne (phD)**
Senior Scientist - PREDICT Country Liaison for Ivory Coast and Republic of Congo

EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

Office : 646-868-4715

USA : REDACTED (mobile)

www.ecohealthalliance.org

*EcoHealth Alliance leads cutting-edge scientific research into the critical connections between human and wildlife health and delicate ecosystems. With this science, we develop solutions that prevent pandemics and promote conservation.*

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# EXPORT QUOTATION

| Quote Number | Valid From | Valid To | Page |
|---|---|---|---|
| 803408417 | 09/06/2017 | 06/30/2018 | 1 of 2 |

| Currency | Sales Representative | Customer Reference |
|---|---|---|
| USD | Sakire Malehsa | 05207581 |

| To Place an Order | |
|---|---|
| Phone : | 1-847-463-1233 |
| Fax : | 1-847-463-1240 |
| Web : | www.vwr.com |
| Email : | usa_global_exports@vwr.com |

When placing your order, please include your quotation number and account number to ensure you receive the correct price.

**THANK YOU FOR THE OPPORTUNITY TO EARN YOUR BUSINESS.**

| Quote Prepared For | Contact Phone / Fax / E-Mail |
|---|---|
| Brian Bird | (530) 304-9126<br>bbbird@ucdavis.edu |
| **Ship To : 80457449** | **Sold To : 80457449** |
| CA UNIV OF DAVIS IN<br>ONE HEALTH INSTITUTE<br>1089 VETERINARY MEDICINE DR<br>DAVIS CA 95616 | CA UNIV OF DAVIS IN<br>ONE HEALTH INSTITUTE<br>1089 VETERINARY MEDICINE DR<br>DAVIS CA 95616 |

**Additional Information :**

Freight Forwarder DHL AE-PHL-025593
Method of shipment : AIR
Customer's Responsibility
"*Transshipment Arrangements at Destination Port
*Trade and Customs Clearance in Destination Country
*Import Charges in Destination Country
*Destination Country Inland Freight
*Unloading at Final Destination
*Other Costs not regulated in Inco Term"

Total Gross Weight : 110.000 LB
Total Volume : 18.458 FT3
Terms of Delivery : CPT FREETOWN SL

| Row | VWR Catalog Number | Product Description | Qty | UOM | Unit Price | Extended Price |
|---|---|---|---|---|---|---|
| 10 | 75045-816 | SHUTTLE ULT FREEZER 120V ULT25NE | 2 | EA | 5,695.00 | 11,390.00 |
| | | Model ULT 25NE Ultra Low Temperature Shuttle™ Freezer, Sterling Ultracold<br>Product Link : https://us.vwr.com/store/catalog/product.jsp?catalog_number=75045-816<br>Dimensions (L*W*H) : 36.000*19.000*21.000 IN<br>Weight : 106.000 LB Volume : 18.208 FT3<br>UOM Component Info : EA(1items)<br>Vendor Part # : ULT25NE-120<br>HTS Code : 8418.40.8000<br>Country of Origin : US<br>ECCN : EAR99 | | | | |
| 20 | 76077-210 | ENGLAND POWER CORD W/FUSE | 2 | EA | 25.00 | 50.00 |
| | | England # Electrical Cord With Fuse (Bel Ord Ukit To Inc-46528-C15)<br>Product Link : https://us.vwr.com/store/catalog/product.jsp?catalog_number=76077-210<br>Dimensions (L*W*H) : 4.000*5.000*5.000 IN<br>Weight : 4.000 LB Volume : 0.250 FT3<br>UOM Component Info : EA(1items)<br>Vendor Part # : SU-020000<br>HTS Code : 8418.99.8000<br>Country of Origin : US | | | | |

VWR TRADE SECRET/CONFIDENTIAL/PROPRIETARY INFORMATION

# EXPORT QUOTATION

| Quote Number | Valid From | Valid To | Page |
|---|---|---|---|
| 803048147 | 09/06/2017 | 06/30/2018 | 2 of 2 |

| Currency | Sales Representative | Customer Reference |
|---|---|---|
| USD | [illegible] | 05207581 |

| | |
|---|---|
| **Item Total :** | **11,440.00** |
| Export Packing Charg | 147.73 |
| Freight Charges | 1,160.60 |
| **Quote Total :** | **12,748.33** |

Banking Information:

VWR INTERNATIONAL, LLC
PNC BANK FIRSTMDE CTR
LOCKBOX 640349
500 FIRST AVENUE
PITTSBURGH, PA 15219

ACCOUNT : [illegible]
ABA NUMBER: [illegible]
SWIFT CODE: PNCCUS33

Terms and Conditions

VWR's terms and conditions of sale apply. Please visit our website at https://us.vwr.com/store/content/contentPage.jsp?pageId=us_US/about_vwr_terms_conditions_export_product_sales.jsp for additional information regarding our return policy, product warranty information and other details of our terms and conditions.

All orders are subject to shipping and handling charges and fuel surcharges. Freight terms may vary. Hazardous items are subject to additional transportation charges.

Identified stock status is based on product availability at time of the quote and may change at time of order. Delivery dates are based on standard lead times from suppliers.

Any images used are not necessarily representative of any product offering from VWR International and do not constitute the basis for purchase decisions.

Installation not included unless otherwise noted. Customer is responsible for unloading and providing standard receiving facilities for large and/or heavy shipments. Special unloading or delivery can be arranged provided VWR International is notified at the time of order placement. Please note that additional charges may apply to the above. For such arrangements please contact VWR International for a quotation.

It is the customer's responsibility to inspect the shipment upon receipt. If any external damage is noticed, the customer must accept the shipment only after the driver has noted the damage on the customer's delivery receipt and requested an inspection by the carrier. If the shipment arrives with internal/concealed damage, the customer must contact VWR within 24 hours to initiate the right to claim for "concealed damage". VWR reserves the right to repair a damaged product, where applicable, before replacement or credit is determined.

All quotes for installations assume that services related to the equipment are in place at the customer site (including, but not limited to, gas, plumbing, electrical, and ventilation) as per the equipment manufacturer's specifications prior to installation of the equipment. VWR's quote does not include the installation of the aforementioned services.

Items prefixed with "MISC/" are subject to regulatory approval once VWR International receives acceptance from the customer. They are special order, and as such may not be returnable. Please allow 6-8 weeks delivery from the time of your first order or acceptance of this quotation.

VWR TRADE SECRET/CONFIDENTIAL/PROPRIETARY INFORMATION

**From:** William B. Karesh <karesh@ecohealthalliance.org>
**To:** Andrew Clements <AClements@usaid.gov>;Jonna Mazet <jkmazet@ucdavis.edu>;Kirsten Gilardi <kvgilardi@ucdavis.edu>;Suzan Murray <MurrayS@si.edu>;David Wolking <djwolking@ucdavis.edu>;Prof. Woutrina Smith <wasmith@ucdavis.edu>
**Sent:** 6/13/2018 3:21:15 AM
**Subject:** RVF and Rainfall projection maps

Just in case you're interested. These are rainfall projections for the month of June with reported cases of Rift marked.

BK

**From:** David J Wolking <djwolking@ucdavis.edu>
**To:** Corina Grigorescu Monagin <cgmonagin@ucdavis.edu>;Jaber Belkhiria <jabelkhiria@ucdavis.edu>;Brian Bird <bhbird@ucdavis.edu>;Brooke Genovese <bgenovese@ucdavis.edu>;Anne Laudisoit <laudisoit@ecohealthalliance.org>;Karen Saylors <ksaylors@metabiota.com>;Jon Epstein <epstein@ecohealthalliance.org>;James Desmond <desmond@ecohealthalliance.org>;Emma Lane <lane@ecohealthalliance.org>;Matthew Leibler <mleibler@mosaic.cm>
**CC:** William Karesh <karesh@ecohealthalliance.org>;predict@ucdavis.edu <predict@ucdavis.edu>
**Sent:** 6/29/2018 1:23:57 PM
**Subject:** [predict] OIE Ebo-Sursy information

Dear Global Leads,

Please find attached for your information documents on the OIE-led EBO-SURSY project with country level for plans and partner activities in the West and Central Africa region. Please share with your country coordinators and teams, and if they have the opportunity, encourage them to interact with EBO-SURSY colleagues working at the country level to see if there are ways in which they may be able to help each other.

If you have any questions feel free to share them with predict@ucdavis.edu or Dr. Billy Karesh, our senior liaison with OIE, FAO, WHO, and EPT-2 partners.

Many thanks,

David

# RENFORCEMENT DES CAPACITÉS ET SURVEILLANCE DE LA MALADIE À VIRUS EBOLA

## LE PROJET EBO-SURSY

Le projet EBO-SURSY est financé par l'Union Européenne (UE) pc

### Bénéficiaires

Services Vétérinaires, Services de santé humaine, Techniciens de Centres de recherches et de formation, Points focaux O

**IMPACT**

Amélioration des systèmes de surveillance d'Af précoce de la maladie à virus Ebola (MVE) et d « Une seu

**RÉSULTATS**

- RENFORCEMENT DES CAPACITÉS
- SENSIBILIS COMMUN

**ACTIVITÉS**

- Formations pour les Points focaux OIE
- Production de commun
- Formations pour les étudiants et les professionnels du secteur de la santé et de l'environnement
- Conduite de sensibilisation et pour les con
- Jumelage entre laboratoires
- Communication
- Ateliers de sensibilisation au concept « Une seule santé » pour les Services de santé humaine et animale

UCDUSR0005537

UCDUSR00005538

## Pays partic

ur 5 ans (2017-2021) dans 10 pays prioritaires.

laboratoires, Techniciens de la faune sauvage, IE, Etudiants, Communautés locales, etc…

rique de l'Ouest et Centrale pour une détection 'autres maladies zoonotiques par une approche e santé ».

ATION DES NAUTÉS

- matériel de ication
- réunion de d'information mmunautés
- Scientifique

RENFORCEMENT DES PROTOCOLES DE SURVEILLANCE

- Prélèvement d'échantillons sur le terrain
- Réalisation de tests, analyses et études en laboratoires
- Conduite d'enquêtes épidémiologiques, socio-économiques, écologiques, ethnologiques…
- Elaboration d'une base de données
- Evaluation de la Performance des Services Vétérinaires (PVS)

L'OIE (Organisation m projet, participe au r Vétérinaires à travers Vétérinaires (PVS), de de ses Points focaux.

Le CIRAD (Centre c Agronomique pour le formateur de niveau u caractérisation des rés approche sciences soc risques et l'amélioratio

L'Institut Pasteur technique et universit des échantillons en lab pour contribuer à l'am à l'interface homme / a

L'IRD (Institut de Re son approche sur la prélèvements de terrai et continuera de me moléculaires applicabl dans des échantillons transfert de technologi

UCDUSR0005539

UCDUSR00055-40

## cipants et partenaires du projet

Source : OIE

ondiale de la santé animale), chef de file du
enforcement des capacités des Services
ses missions d'évaluation des Services
jumelage entre laboratoires, et de formation

le coopération International en Recherche
Développement) apporte son expertise de
iversitaire, une approche écologique de la
ervoirs de la maladie à virus Ebola, et une
iales et Humaines pour l'identification des
n des protocoles de surveillance.

(IP) focalise son approche sur la formation
aire, les prélèvements de terrain, l'analyse
oratoire et le développement de diagnostics
élioration des connaissances du cycle viral
animal / environnement.

cherche pour le Développement) focalise
formation technique et universitaire, les
n, l'analyse des échantillons en laboratoire
ttre au point des tests sérologiques et
es au dépistage de la maladie à virus Ebola
prélevés sur la faune sauvage avec un
e dans les pays.

UCDUSR0005541

UCDUSR0005542

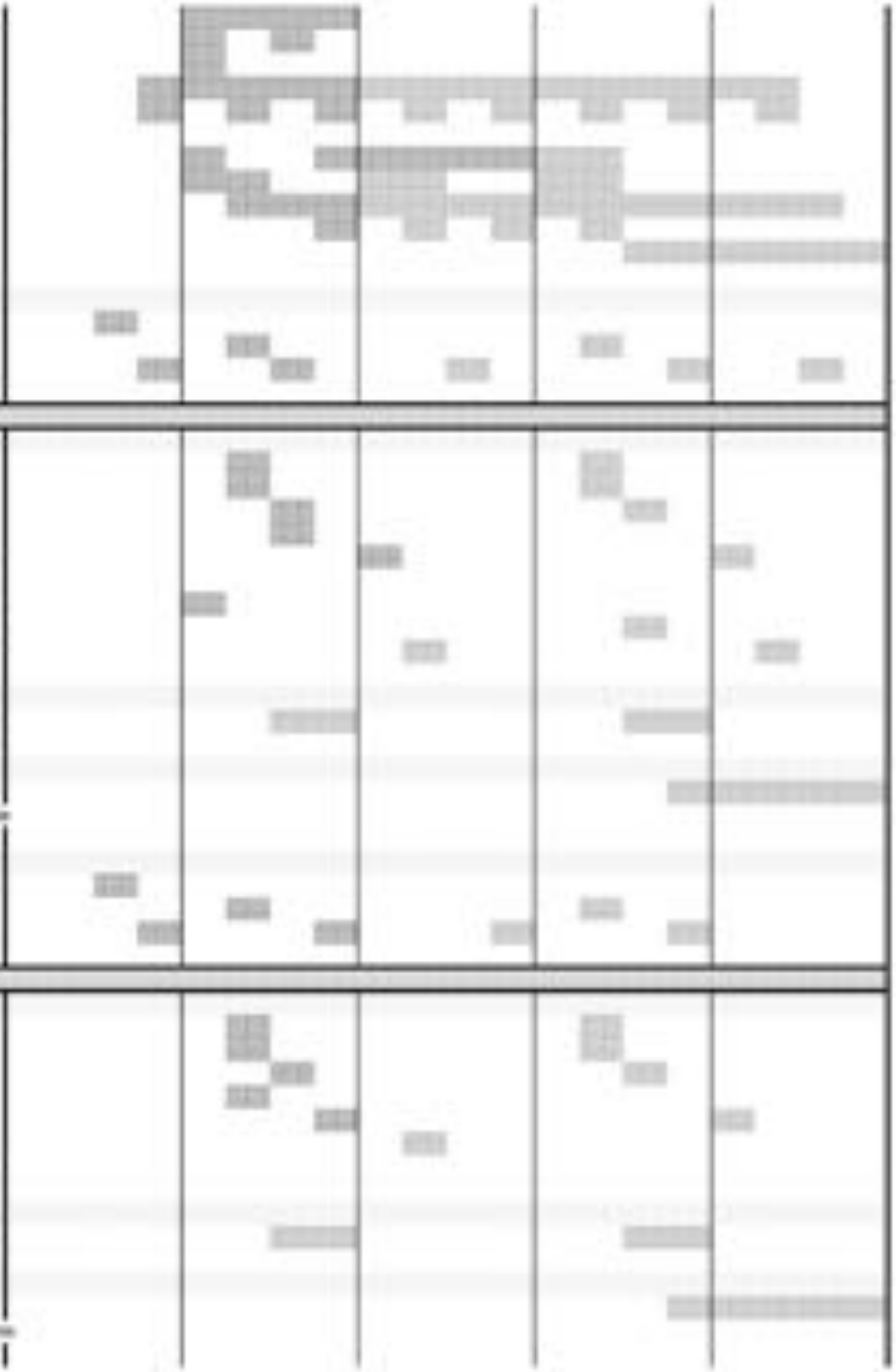
15-May-18

Dates arrêtées | Dates prévues à confirmer

Projet EBO-SURSV: Calendrier prévisionnel de mise en œuvre

| | Responsable | Lieu | Commentaire | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|---|
| | | | | 01 02 03 04 | 01 02 03 04 | 01 02 03 04 | 01 02 03 04 | 01 02 03 04 |
| **SENEGAL** | | | | | | | | |
| Volet 1: Renforcement des capacités | | | | | | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | | | | | | |
| Formation Point focaux OIE Communication | OIE | Tunisie | | | | | | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | | | | | | |
| Formation PVS - Afrique francophone | OIE | Sénégal | | | | | | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | TBD | | | | | | |
| Jumelage Laboratoire LNDVR/Cirad | OIE | Sénégal/France | Dates TBD | | | | | |
| Atelier National RSI-PVS | OIE | Sénégal | | | | | | |
| Formation courte au sein du Master Faune Sauvage SSMV Dakar, avec participants autres pays (i | Cirad | Sénégal | | | | | | |
| Formation commune aux 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | Dates TBD | | | | | |
| Volet 2: Communication et sensibilisation des communautés | | | | | | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaut | OIE | Sénégal | Dates TBD | | | | | |
| Volet 3: Renforcement des Protocoles de surveillance | | | | | | | | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | Sénégal | | | | | | |
| Mission PVS Analyse des Gaps | OIE | Sénégal | Requête acceptée | | | | | |
| Mission PVS Laboratoire | OIE | Sénégal | Requête en attente | | | | | |
| Volet 4: Administration, Monitoring | | | | | | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | | | | | | |
| Réunions du Comité Consell | OIE | France | | | | | | |
| Missions de terrain | OIE | Sénégal | | | | | | |
| **GUINEE** | | | | | | | | |
| Volet 1: Renforcement des capacités | | | | | | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | | | | | | |
| Formation Point focaux OIE Communication | OIE | Tunisie | | | | | | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | | | | | | |
| Formation PVS - Afrique francophone | OIE | Sénégal | | | | | | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | TBD | | | | | | |
| Atelier National RSI-PVS | OIE | Guinée | Dates TBD | | | | | |
| Formation laboratoire 1 (10 jours) | Institut Pasteur | Guinée | | | | | | |
| Formation laboratoire 2 (10 jours) | Institut Pasteur | Guinée | | | | | | |
| Formation gestion des laboratoires 1 (10 jours) | Institut Pasteur | Guinée | | | | | | |
| Formation gestion des laboratoires 2 (10 jours) | Institut Pasteur | Guinée | | | | | | |
| Formation continue du personnel de l'INSP | IRD | Guinée | | | | | | |
| Un DIU (Diplôme Inter-universitaire entre les universités de Conakry et Montpellier) sera initié sur la | IRD | Guinée | | | | | | |
| Etablir un Master sur « l'étude socio-économique des pratiques des communautés vivant à l'intérieur | [illegible] | Guinée | | | | | | |
| Formation continue d'agents sur le terrain aux collectes de données faune et études socio-économ | Cirad | Guinée | | | | | | |
| Formation commune aux 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | | | | | | |
| Volet 2: Communication et sensibilisation des communautés | | | | | | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaut | OIE | Guinée | Dates TBD | | | | | |
| Sensibilisation des communautés pendant les enquêtes de terrain | Cirad | Guinée | | | | | | |
| Deux séminaires d'information et de sensibilisation | Cirad | Guinée | | | | | | |
| Feedback auprès des communautés pour enquêtes socio-économiques | Cirad | Guinée | | | | | | |
| Sensibilisation pendant campagne de prélèvements. (01/12/2018 | IRD | Guinée | | | | | | |
| Feedback auprès des communautés (24 sites) quand les équipes retournent faire les études de la | IRD | Guinée | | | | | | |
| « Conférences des 4 instituts » | [illegible] | Guinée | | | | | | |
| Organisation des « cafés scientifiques » | Institut Pasteur | Guinée | | | | | | |
| Volet 3: Renforcement des Protocoles de surveillance | | | | | | | | |
| Obtention des autorisations officielles et permis de recherche | IRD/Cirad/IP | Guinée | | | | | | |

| | | | |
|---|---|---|---|
| Identification des zones d'échantillonnages | IP | Guinée | |
| Identification des sites de collecte et formation d'équipes | Cirad | Guinée | |
| Mission conjointe pour pose des balises sur les chauves-souris | Cirad/RCI | Guinée | |
| 10 missions de prélèvements faune sauvage (chauves-souris, grands singes, viande de brousse et | RCI | Guinée | |
| 3 ou 4 missions de prélèvements non invasifs ou mini sur animaux sauvages (chauves souris, sing | IP | Guinée | |
| Collecte d'échantillons humains obtenus avec consentement et après avall du comité d'éthique Guin | IP | Guinée | Dates TBD |
| Missions marquées d'études d'écologique et prélèvements de chiroptères | Cirad | Guinée | |
| Enquêtes socio-économiques sur caractérisation des pratiques, perceptions et comportements hum | Cirad | Guinée | |
| Analyses des échantillons | IP/RCI | Guinée/France | |
| 2 ou 3 enquêtes de terrain dans des groupes à risque de personnes en contact avec la faune sauv | IP | Guinée | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | Guinée | |
| **Volet 4: Administration, Monitoring** | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | |
| Réunions du Comité-Conseil | OIE | France | |
| Missions de terrain | OIE | Guinée | |
| **COTE D'IVOIRE** | | | |
| **Volet 1: Renforcement des capacités** | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | |
| Formation Point focaux OIE Communication | OIE | Tunisie | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | |
| Formation PVS : Afrique francophone | OIE | Sénégal | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | TBD | |
| Atelier national RSI-PVS | OIE/OMS | Côte d'Ivoire | Dates TBD |
| Mission Côte d'Ivoire pour évaluation des besoins en formation | Cirad | Côte d'Ivoire | |
| Formation courte au sein du Master Environnement de Dauta, avec participants autres pays cibles | Cirad | Côte d'Ivoire | Dates TBD |
| Formation commune sur 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | |
| **Volet 2: Communication et sensibilisation des communautés** | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaux | OIE | Côte d'Ivoire | Dates TBD |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | Côte d'Ivoire | |
| Mission PVS | OIE | Côte d'Ivoire | Requête en attente |
| **Volet 4: Administration, Monitoring** | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | |
| Réunions du Comité-Conseil | OIE | France | |
| Missions de terrain | OIE | Côte d'Ivoire | |
| **LIBERIA** | | | |
| **Volet 1: Renforcement des capacités** | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | |
| Formation Point focaux OIE Communication | OIE | Tunisie | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | |
| Formation PVS - Afrique anglophone | OIE | Afrique du Sud | |
| Formation Point focaux OIE Faune sauvage Afrique anglophone | OIE | Botswana | |
| Formation commune sur 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | |
| Atelier national RSI-PVS | OIE/OMS | Libéria | Dates TBD |
| **Volet 2: Communication et sensibilisation des communautés** | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaux | OIE | Libéria | Dates TBD |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | Libéria | |
| Mission PVS | OIE | Libéria | Requête en attente |



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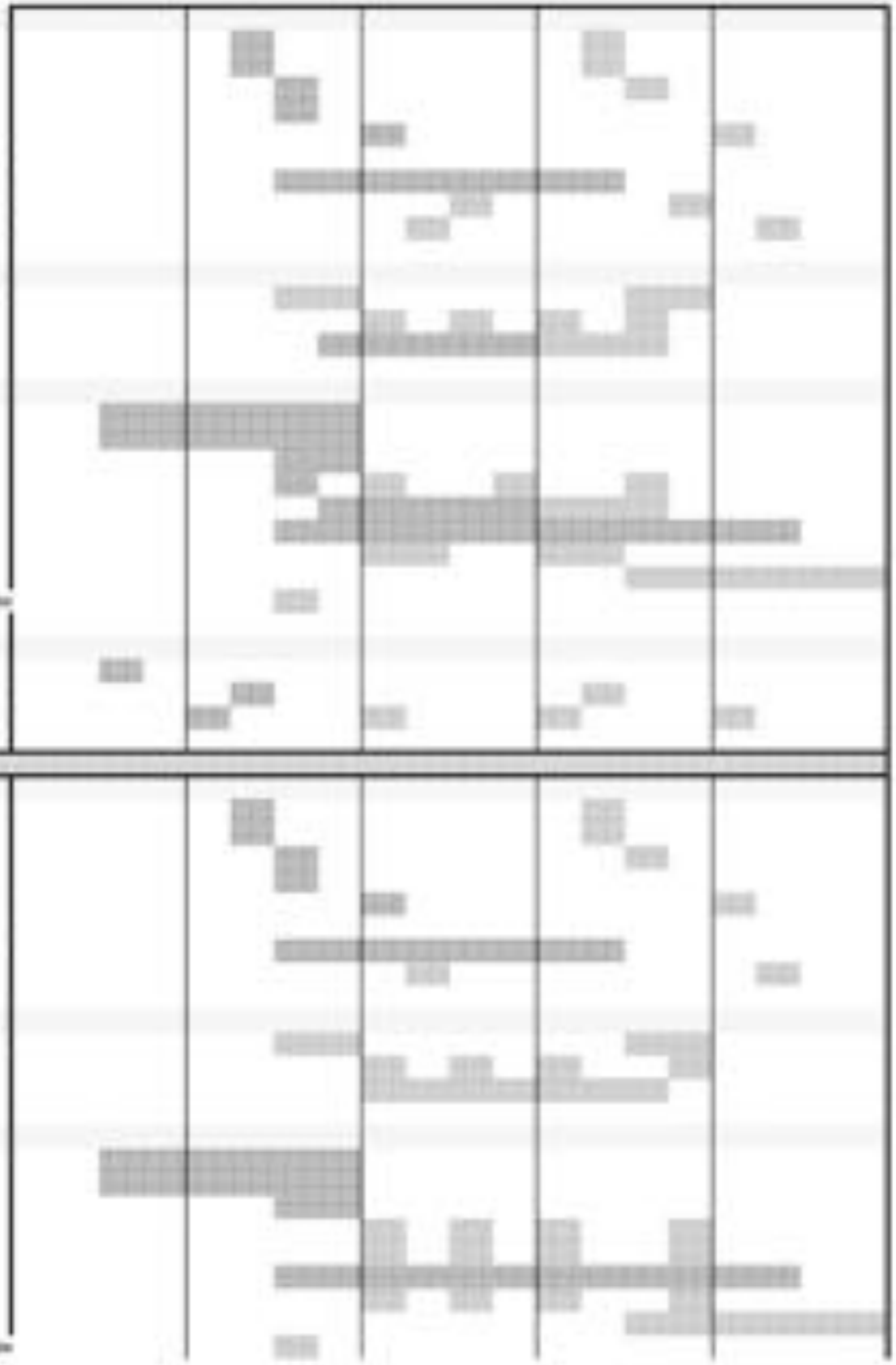
|---|---|---|---|---|---|---|---|
| **Volet 4: Administration, Monitoring** | | | | | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | | | | | |
| Réunions du Comité Conseil | OIE | France | | | | | |
| Missions de terrain | OIE | Liberia | | | | | |
| **SIERRA LEONE** | | | | | | | |
| **Volet 1: Renforcement des capacités** | | | | | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | | | | | |
| Formation Point focaux OIE Communication | OIE | Tunisie | | | | | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | | | | | |
| Formation PVS - Afrique anglophone | OIE | Afrique du Sud | | | | | |
| Formation Point focaux OIE Faune sauvage Afrique anglophone | OIE | Botswana | | | | | |
| Atelier National RSI-PVS | OIE/OMS | Sierra Leone | | | | | |
| Formation commune aux 6 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | | | | | |
| **Volet 2: Contenunication et sensibilisation des communautés** | | | | | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaut | OIE | Sierra Leone | Dates TBD | | | | |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | | | | | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | Sierra Leone | | | | | |
| **Volet 4: Administration, Monitoring** | | | | | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | | | | | |
| Réunions du Comité Conseil | OIE | France | | | | | |
| Missions de terrain | OIE | Sierra Leone | | | | | |
| **MALI/GUINEE** | | | | | | | |
| **Volet 1: Renforcement des capacités** | | | | | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | | | | | |
| Formation Point focaux OIE Communication | OIE | Tunisie | | | | | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | | | | | |
| Formation PVS - Afrique francophone | OIE | Senegal | | | | | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | Togo | | | | | |
| Jumelage Laboratoire LANAVET/FU | OIE | Cameroun | | | | | |
| Atelier national RSI-PVS | OIE/OMS | Cameroun | Dates TBD | | | | |
| Formation continue du personnel des laboratoires CREMER | IRD | Cameroun | | | | | |
| Formation commune aux 6 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | | | | | |
| **Volet 2: Contenunication et sensibilisation des communautés** | | | | | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaut | OIE | Cameroun | Dates TBD | | | | |
| Feedback auprès des communautés quand les équipes retournent faire les études de terrain. 2 à 4 | IRD | Cameroun | | | | | |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | | | | | |
| Obtention des autorisations officielles et permis de recherche | [illegible] | Cameroun | | | | | |
| 10 missions de prélèvements faune sauvage (chauves-souris, grands singes, viande de brousse et | IRD | Cameroun | | | | | |
| 2 ou 3 missions de terrain et prélèvements humains | IP | Cameroun | | | | | |
| 2 ou 3 Enquêtes de terrain dans des groupes à risque de personnes en contact avec la faune sauv | IP | Cameroun | | | | | |
| Enquêtes sociologiques envisagées | IRD | Cameroun | Dates TBD | | | | |
| Analyse des échantillons | [illegible] | Cameroun/France | | | | | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | Cameroun | | | | | |
| Mission PVS de suivi | OIE | Cameroun | Dates TBD | | | | |
| **Volet 4: Administration, Monitoring** | | | | | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | | | | | |
| Réunions du Comité Conseil | OIE | France | | | | | |
| Missions de terrain | OIE | Cameroun | Dates TBD | | | | |
| **GABON** | | | | | | | |

| | | | |
|---|---|---|---|
| **Volet 1: Renforcement des capacités** | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | |
| Formation Point focaux OIE Communication | OIE | Tunisie | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | |
| Formation PVS - Afrique francophone | OIE | Senegal | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | TBD | |
| Atelier national RSI-PVS | OIE/OMS | Gabon | Dates TBD |
| Recrutement de deux étudiants Gabonais en thèse (vétérinaire+sciences) | IRD | Gabon | |
| Formation courte au sein du Master Epidémiologie Tropicale CDR | Cirad | Gabon | Dates TBD |
| Formation commune aux 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | Dates TBD |
| **Volet 2: Communication et sensibilisation des communautés** | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaux | OIE | Gabon | Dates TBD |
| Deux séminaires d'information et de sensibilisation | Cirad | Gabon | |
| Sensibilisation pendant les enquêtes de terrain | Cirad | Gabon | |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | |
| Obtention des autorisations officielles et permis de recherche | [illegible] | Cameroun | |
| Mise en place des activités (partenaires, permis, équipes...) | Cirad | | |
| Identification des sites de collecte et formation d'équipes Gabon/République du Congo | Cirad/IRD | Gabon | |
| 1 ou 2 missions de prélèvements faune sauvage et domestique (chauves-souris, grands singes, etc | IRD | Gabon | |
| Missions d'études chirologique et prélèvements de chiroptères | Cirad | Gabon | |
| Analyses des échantillons | IRD | Gabon | |
| Enquêtes socio-économiques sur caractérisation des pratiques, perceptions et comportements hum | Cirad | Gabon | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | Gabon | |
| Mission PVS de suivi | OIE | Gabon | Requêtes acceptée |
| **Volet 4: Administration, Monitoring** | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | |
| Réunions du Comité Conseil | OIE | France | |
| Missions de terrain | OIE | Gabon | Dates TBD |
| **REPUBLIQUE DU CONGO** | | | |
| **Volet 1: Renforcement des capacités** | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | |
| Formation Point focaux OIE Communication | OIE | Tunisie | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | |
| Formation PVS - Afrique francophone | OIE | Senegal | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | TBD | |
| Atelier national RSI-PVS | OIE/OMS | RC | Dates TBD |
| Recrutement de deux étudiants Congolais en thèse (vétérinaire+sciences) | IRD | RC | |
| Formation commune aux 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | |
| **Volet 2: Communication et sensibilisation des communautés** | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaux | OIE | RC | Dates TBD |
| Deux séminaires d'information et de sensibilisation | Cirad | RC | |
| Sensibilisation pendant les enquêtes de terrain | Cirad | RC | |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | |
| Obtention des autorisations officielles et permis de recherche | [illegible] | Cameroun | |
| Mise en place des activités (partenaires, permis, équipes...) | Cirad | | |
| Identification des sites de collecte et formation d'équipes Gabon/République du Congo | Cirad/IRD | RC | |
| 1 ou 2 missions de prélèvements 2017/2018 faune sauvage et domestique (chauves-souris, grands | IRD | RC | |
| Missions d'études chirologique et prélèvements de chiroptères | Cirad | RC | |
| Analyses des échantillons | IRD | RC/France | |
| Enquêtes socio-économiques sur caractérisation des pratiques, perceptions et comportements hum | Cirad | RC | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | RC | |
| Mission PVS | OIE | RC | Requêtes acceptée |



| | | | |
|---|---|---|---|
| **Volet 4: Administration, Monitoring** | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | |
| Réunions du Comité-Conseil | OIE | France | |
| Missions de terrain | OIE | RC | Dates TBD |
| **REPUBLIQUE DEMOCRATIQUE DU CONGO** | | | |
| **Volet 1: Renforcement des capacités** | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | |
| Formation Point focaux OIE Communication | OIE | Tunisie | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | |
| Formation PVS - Afrique francophone | OIE | Senegal | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | TBD | |
| Atelier national RSI-PVS | OIE/OMS | RDC | Dates TBD |
| Formation commune aux 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | |
| Formation continue du personnel des laboratoires de l'INRB | IRD | RDC | |
| **Volet 2: Communication et sensibilisation des communautés** | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaut | OIE | RDC | Dates TBD |
| Sensibilisation pendant campagne de prélèvements, 2017/2018 | IRD | RDC | |
| Feedback auprès des communautés quand les équipes retournent faire les alluées du terrain (1 ou | IRD | RDC | |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | |
| Obtention des autorisations officielles et permis de recherche | IRD | RDC | |
| 4 missions de prélèvements faune sauvage (chauves-souris, grands singes, viande de brousse etc | IRD | RDC | |
| Deux enquêtes chez les populations humaines vivant en contact avec la faune sauvage dans les p | IRD | RDC | |
| Analyses des échantillons | IRD | RDC/France | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | RDC | |
| Mission PVS de suivi | OIE | RDC | Enquête accepté |
| **Volet 4: Administration, Monitoring** | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | |
| Réunions du Comité-Conseil | OIE | France | |
| Missions de terrain | OIE | RDC | Dates TBD |
| **REPUBLIQUE CENTRAFRICAINE** | | | |
| **Volet 1: Renforcement des capacités** | | | |
| Formation Point focaux OIE Notification des maladies | OIE | Burkina Faso | |
| Formation Point focaux OIE Communication | OIE | Tunisie | |
| Formation Point focaux OIE Laboratoire | OIE | Tunisie | |
| Formation PVS - Afrique francophone | OIE | Senegal | |
| Formation Point focaux OIE Faune sauvage Afrique francophone | OIE | TBD | |
| Atelier National RSI-PVS | OIE | TBD | Dates TBD |
| Formation commune aux 4 partenaires sur la thématique une seule santé | Institut Pasteur | TBD | Dates TBD |
| **Volet 2: Communication et sensibilisation des communautés** | | | |
| Support des Services vétérinaires dans la production des outils de communication aux communaux | OIE | RCA | Dates TBD |
| **Volet 3: Renforcement des Protocoles de surveillance** | | | |
| Propositions pour renforcer les protocoles de surveillance sur la base des résultats de recherche | Cirad | RCA | |
| Mission PVS de suivi | OIE | RCA | Dates TBD |
| **Volet 4: Administration, Monitoring** | | | |
| Présentation du Projet en marge de la session générale de l'OIE | OIE | France | |
| Réunions du Comité-Conseil | OIE | France | |
| Missions de terrain | OIE | RCA | Dates TBD |

# GÉNÉRALITÉS SUR LA MALADIE À VIRUS EBOLA (MVE)

- La maladie à virus Ebola est une maladie zoonotique.
- Plus de 26 foyers de maladie à virus Ebola ont été signalés en Afrique depuis le premier foyer déclaré en République Démocratique du Congo en 1976.
- Le virus Ebola affecte les humains, les primates non-humains tels que les chimpanzés ou les gorilles, les singes et les antilopes.
- Plusieurs espèces de chauve-souris sont considérées comme étant des hôtes naturels de la maladie.
- Le porc est, à ce jour, le seul animal d'élevage susceptible d'attraper le virus Ebola.
- Les épidémies de maladie à virus Ebola chez les humains ont été associées à des contacts avec des carcasses de grands singes, de chauves-souris, d'antilopes ou d'autres animaux sauvages lors de la chasse ou de la consommation de viande de brousse.
- Le virus se propage ensuite d'une personne à l'autre via les fluides corporels.

## Circulation du virus Ebola

Source : CIRAD

UICDUSR0005548

› projet EBO-SURSY est financé par
l'Union Européenne

## CONTACTS OIE

Sophie Muset (Paris)
s.muset@oie.int

Brice Lafia (Bamako)
b.lafia@oie.int

Demande presse :

Unité de communication de l'OIE
media@oie.int

## LIEN UTILE

www.oie.int/EBOSURSY/fr/

## CONTACTS PARTENAIRES

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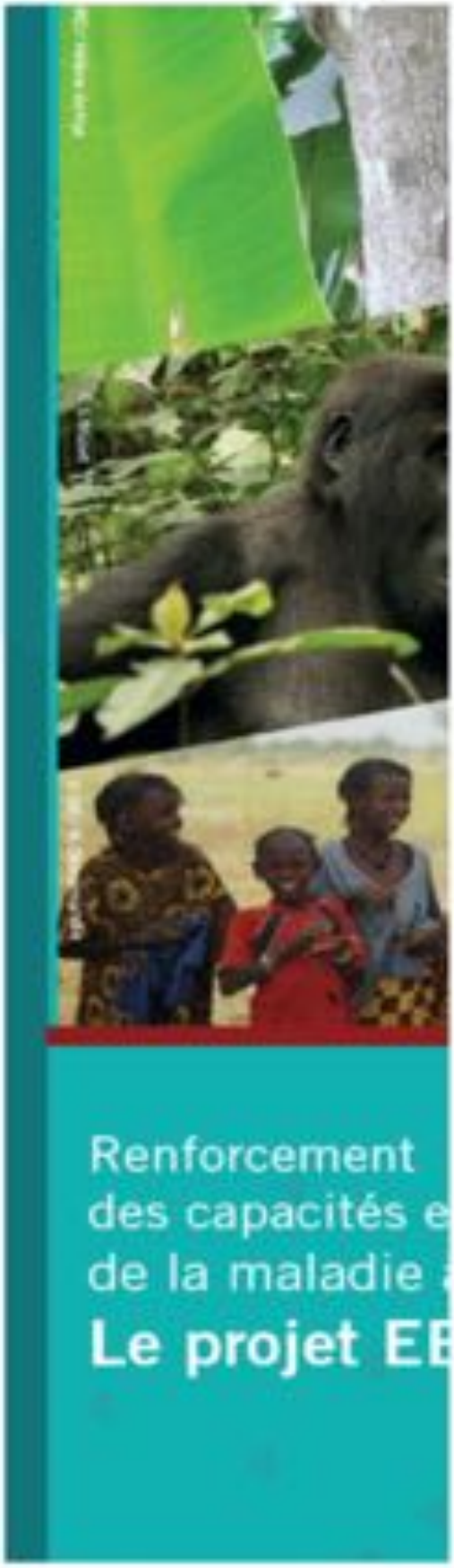
Institut Pasteur
Noël Tordo
ntordo@pasteur.fr

IRD
Eric Delaporte
eric.delaporte@ird.fr

ORGANISATION MONDIALE DE LA SANTÉ ANIMALE
*Protéger les animaux, préserver notre avenir*



# Renforcement des capacités e de la maladie : Le projet EB

UCDUSR0005549

t surveillance
à virus Ebola
BO-SURSY

UICDUSR0005550

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Predict inbox <predict@ucdavis.edu>;PREDICTMGT <predictmgt@usaid.gov>;Carroll, Dennis(GH/HIDN) <DCarroll@usaid.gov>
**Sent:** 7/2/2018 6:48:07 AM
**Subject:** [predict] Fwd: Abstract deadline for IMED 2018 extended to July 8

FYI

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-345-4213
E-mail: aclements@usaid.gov

For more information on USAID's Emerging Pandemic Threats program, see http://www.usaid.gov/ept2

---------- Forwarded message ----------
From: **Kendra Chittenden** <kchittenden@usaid.gov>
Date: Mon, Jul 2, 2018 at 6:24 AM
Subject: Fwd: Abstract deadline for IMED 2018 extended to July 8
To: bbbird@ucdavis.edu, Andrew Clements <aclements@usaid.gov>

Andrew & Brian-

It would be terrific to submit an abstract for the Ebola Host Project for IMED .

The sampling will be done and IMED should happen after the EHP meeting with all countries to review all data. Plus new finding will be out.

The deadline is extended.

Brain - once the findings are out then we'll work with ICEID in Atlanta in late August to see if we can get a late late breaking abstract submitted.

Dorothy, Tamar and Monica will all be going plus Dennis, me and some of our DC team.

Kendra

Sent from my iPhone

Begin forwarded message:

**From:** Britta Lassmann <membership@isid.org>
**Date:** July 2, 2018 at 7:07:46 AM GMT+3
**To:** kchittenden@usaid.gov
**Subject: Abstract deadline for IMED 2018 extended to July 8**
**Reply-To:** membership@isid.org

# 7th International Meeting on Emerging Diseases and Surveillance - Nov. 9-12, Vienna

Dear Colleague,

The deadline for abstract submissions for the **International Meeting on Infectious Diseases and Surveillance (IMED 2018)** has been **EXTENDED to July 8**. You can still submit your abstracts by visiting the IMED 2018 on-line abstract submission website: http://esociety.netkey.at/isid/imed/abstractsubmission.

We hope you will join us at IMED 2018 - a true One Health forum where those working in diverse specialties and diverse regions can meet, discuss, present and challenge one another with findings and new ideas. http://imed.isid.org/

Questions? Contact info@isid.org about IMED 2018 or abstract submissions.

Sincerely,
Britta Lassmann, MD
*ISID Program Director*
*Co-chair, Scientific Program Committee*

P.S. Also note: On-line Registration is available at http://imed.isid.org/Registration.shtml. Register now before rates increase on September 30, 2018.

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| | |
|---|---|
| **From:** | Andrew Clements <aclements@usaid.gov> |
| **To:** | Katherine Leasure <kaleasure@ucdavis.edu> |
| **CC:** | PREDICTMGT <predictmgt@usaid.gov>;Predict inbox <predict@ucdavis.edu>;Jonna Mazet <Jkmazet@ucdavis.edu> |
| **Sent:** | 7/5/2018 12:58:40 AM |
| **Subject:** | Re: Change to Approved ITA - Sagno/Marry/Koivogui to Sierra Leone |

Thanks. I will let the Mission know

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Jul 4, 2018, at 1:35 AM, Katherine Leasure <kaleasure@ucdavis.edu> wrote:

Hi Andrew. The previously approved travel for Mathias Sango, Marie Louise Marry, and Marian Koly Koivogui (below for reference) has been postponed due to ongoing activities in Sierra Leone. We hope to reschedule this training for August; a new ITA will be submitted once dates have been identified. Please let me know if you have any questions. Thanks!

UC Davis would like to request travel approval for Mathias Sango, Marie Louise Marry and Marian Koly Koivogui to travel from Conakry, Guinea to Makeni, Sierra Leone from July 18-28, 2018 for a behavioral training related to the PREDICT Ebola Host Project.

**Trip purpose:** This training will focus on the Ebola Host Project Behavioral study objectives and how to administer the human questionnaire. Topics will include ethical conduct, questionnaire administration, data entry, community engagement, and data analysis. The Sierra Leone behavioral team has over one year of experience working with this study and is well equipped to train the Guinea team in appropriate conduct and study design.

**Katherine Leasure**
HR/Payroll/Financial Assistant
One Health Institute
University of California, Davis
530-752-7526
530-752-3318 FAX
kaleasure@ucdavis.edu

--

You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
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To post to this group, send email to predictmgt@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/040001d41326%2494e35b40%24beaa11c0%24%40ucdavis.edu.

**From:** David J Wolking <djwolking@ucdavis.edu>
**To:** Karen Saylors <ksaylors@metabiota.com>
**CC:** Wolking David <djwolking@ucdavis.edu>;predict@ucdavis.edu <predict@ucdavis.edu>;David McIver <dmciver@metabiota.com>;Beth Edison <bedison@metabiota.com>
**Sent:** 7/20/2018 10:03:43 AM
**Subject:** [predict] Re: Year 5 GHSA Work Plan

Thanks!! You're the only one on time ;-)

On Thu, Jul 19, 2018 at 11:58 PM Karen Saylors <ksaylors@metabiota.com> wrote:
Hi David.
Please find our Yr 5 GHSA Work Plan attached.

best, Karen

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Christine Kreuder Johnson <ckjohnson@ucdavis.edu>
**CC:** Alisa Pereira <apereira@usaid.gov>;predictmgt@usaid.gov <predictmgt@usaid.gov>;Jonna Mazet <jkmazet@ucdavis.edu>;Leilani Francisco <francisco@ecohealthalliance.org>;Peter Daszak <daszak@ecohealthalliance.org>;Tracey Goldstein <tgoldstein@ucdavis.edu>;William B. Karesh <karesh@ecohealthalliance.org>;Megan M Doyle <mmdoyle@ucdavis.edu>;predict@ucdavis.edu <predict@ucdavis.edu>
**Sent:** 7/21/2018 1:58:13 PM
**Subject:** Re: Quarterly surveillance activities summary June 2018

Thanks, Chris.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Jul 20, 2018, at 8:46 PM, Christine Kreuder Johnson <ckjohnson@ucdavis.edu> wrote:

Hi everyone,
Sharing updated PREDICT surveillance activities by country to indicate our field, lab, and reporting progress. All counts are cumulative and reflect data entered into EIDITH through June 2018.
Please let us know if you have any questions.
It was really great to see some of you while here in DC. Hope you all are enjoying summer.
Chris

Christine Kreuder Johnson, VMD, PhD
Professor of Epidemiology and Ecosystem Health
Senior Biological and Ecological Surveillance Coordinator, Emerging Pandemic Threats PREDICT Project
One Health Institute
School of Veterinary Medicine
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Davis, California 95618
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**From:** David J Wolking <djwolking@ucdavis.edu>
**To:** Ava Sullivan <sullivan@ecohealthalliance.org>;Evelyn Luciano <luciano@ecohealthalliance.org>;Peter Daszak <daszak@ecohealthalliance.org>;William Karesh <karesh@ecohealthalliance.org>;Jon Epstein <epstein@ecohealthalliance.org>;Kevin Olival <Olival@ecohealthalliance.org>;Melinda Rostal <rostal@ecohealthalliance.org>
**CC:** predict@ucdavis.edu <predict@ucdavis.edu>
**Sent:** 8/28/2018 11:17:18 AM
**Subject:** [predict] PREDICT Country Coordinators in US Sept 12 for Castle Briefing?

Hi EHA team,

We're wondering (potential moon shot here) if by any chance any of your Country Coordinators or team members might be in the US at the time of the September 12th briefing at Smithsonian? If so, we'd love to invite them to be a speaker and share stories about implementing the project similar to our approach in Brussels.

If stars don't align then we'll move ahead with our usual format, just thought it was worth a shot and checking in.

Thanks!

David

**From:** "Ogawa, V. Ayano" <VOgawa@nas.edu>
**To:** 'Jonna Mazet' <jkmazet@ucdavis.edu>, "daszak@ecohealthalliance.org" <'daszak@ecohealthalliance.org'>, "dmrizzo@ucdavis.edu" <'dmrizzo@ucdavis.edu'>, "george.poste@asu.edu" <'george.poste@asu.edu'>, "jeff.duchin@kingcounty.gov" <'jeff.duchin@kingcounty.gov'>, "mary_wilson@harvard.edu" <'mary_wilson@harvard.edu'>, "Jennifer.gardy@bccdc.ca" <'Jennifer.gardy@bccdc.ca'>, "Hughes, James M" <jmhughe@emory.edu>, 'Gail Hansen' [redacted] "Barton Behravesh, Casey (CDC/OID/NCEZID)" <dlx9@cdc.gov>, "King, Lonnie" <king.1518@osu.edu>, "Anderson, Kevin" <Kevin.Anderson@HQ.DHS.GOV>, "Hermsen, Elizabeth D" <elizabeth.hermsen@merck.com>, "Miller, Sally" <miller.769@osu.edu>, "MUMFORD, Elizabeth" [redacted]
**Cc:** "Shah, Cecilia" <cshah@nas.edu>, "Tran, Thu Anh" <TTran@nas.edu>, [redacted] 'Stephanie Calderone' <Stephanie.Calderone@asu.edu>, 'Brooke Genovese' <bgenovese@ucdavis.edu>, 'Alison Andre' <andre@ecohealthalliance.org>
**Subject:** OHAC call #12 - Oct 9, 2pm ET
**Sent:** Fri, 5 Oct 2018 20:28:55 +0000

1. OHAC Mtg 12 Agenda.pdf
2. OHAC Deliv #2 High Level Timeline .pdf
3. OHAC Deliv #2 Survey Dissemination 10.5.docx
4. OHAC Brainstorm on Food Security & Safety paper.pdf

One Health panel.pdf

Dear One Health Action Collaborative,

As a reminder, the next OHAC call will take place next **Tuesday, Oct 9 at 2-3pm (Eastern Time)**. Please review the attached the call materials, which include the following:

1. *Meeting agenda*
2. *Deliverable #2 on workforce: Timeline* – This will give you a sense of the progress made in the survey development and next steps.
3. *Deliverable #2 on workforce: Survey dissemination* – We plan to disseminate the survey to the organizations listed in the document. Please let me know if you have suggestions for additional organizations or if you can help fill in some of the missing contact information.
4. *Food safety/security and One Health background document* – Please review the background document that contains initial ideas for a possible paper and relevant resources. We will discuss if OHAC would like its next deliverable to be on this topic.
5. *One Health poster* – The Forum's pre-workshop event (November 26) will display various panels on pandemic preparedness. Please look over this initial draft on One Health and be ready to provide feedback.

**Call-in information:**
Toll-free number: 1-888-537-7715
International: 1-334-323-9858
Passcode: [redacted]

I look forward to discussing these items with you on the call next week. As always, please feel free to contact me if you have any questions. Have a wonderful weekend!

Best,
Ayano

**V. Ayano Ogawa, S.M.**
Program Officer
Board on Global Health | Health and Medicine Division
The National Academies of Sciences, Engineering, and Medicine
500 Fifth Street NW, Office 852
Washington, DC 20001
Phone: 202.334.1349

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## ONE HEALTH ACTION COLLABORATIVE (OHAC)

### OHAC Deliverable #2 on One Health Workforce:
### *Dissemination Channels for Workforce Survey*

*We would like to disseminate the workforce survey to the following groups. Please feel free to suggest additional organizations or fill in missing information indicated by "?".*

| # | Group Name | Contact | Email |
|---|---|---|---|
| | **ONE HEALTH NETWORKS** | | |
| 1. | International Student One Health Alliance | General Email | [redacted] |
| 2. | OHCEA (One Health Central and East Africa) | Katey Pelican | pelicank@umn.edu |
| 3. | One Health Academy | Will Sander | [redacted] |
| 4. | One Health Commission | Cheryl Stroud | cstroud@onehealthcommission.org |
| 5. | One Health Initiative | General Email | kkm@onehealthinitiative.com |
| 6. | One Health Platform | David De Pooter | d.depooter@onehealthplatform.com |
| 7. | Planetary Health Alliance | Erika Veidis | erikaveidis@fas.harvard.edu |
| 8. | SEAOHUN (South East Asia One Health University Network) | Katey Pelican | pelicank@umn.edu |
| | **US Government (Local, State, and Federal)** | | |
| 9. | (Local) Orange County Health Care Agency | Matt Zahn | MZahn@ochca.com |
| 10. | (Local) Seattle King County Public Health | Jeff Duchin | jeff.duchin@kingcounty.gov |
| 11. | (State) Florida Dept of Agriculture | Lisa Conti | [redacted] |
| 12. | CDC - One Health Office | Casey Barton Behravesh | dx9@cdc.gov |
| 13. | DHS - Science and Technology | Kevin Anderson | Kevin.Anderson@HQ.DHS.GOV |
| 14. | DoD | ? | ? |
| 15. | DOI - National Park Systems | ? | ? |
| 16. | DOI - National Wildlife Health Center | ? | ? |
| 17. | DOI - United States Fish and Wildlife Service | ? | ? |
| 18. | DOI - USGS | Jonathan Sleeman | jsleeman@usgs.gov |
| 19. | EPA | Laura Boczek | Boczek.Laura@epa.gov |
| 20. | FDA | Michael Mair | Michael.Mair@fda.hhs.gov |
| 21. | NIH | Emily Erbelding | emily.erbelding@nih.gov |
| 22. | NOAA | ? | ? |
| 23. | US Public Health Service | Casey Barton Behravesh | dx9@cdc.gov |



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| | | | |
|---|---|---|---|
| 24. | USAID - One Health Workforce | Marilyn Crane | mcrane@usaid.gov |
| 25. | USDA - ARS | Jeff Silverstein | Jeff.Silverstein@ARS.USDA.GOV |
| 26. | USDA - One Health Coordination Center | Tracey Dutcher | Tracey.V.Dutcher@aphis.usda.gov |
| | **Academia** | | |
| 27. | Arizona State University – Life Sciences | George Poste | george.poste@asu.edu |
| 28. | Colorado State University – MS & PhD program in Environmental Health | Jennifer Peel | jennifer.peel@colostate.edu |
| 29. | Duke Global Health Institute | Gregory Gray | gregory.gray@duke.edu |
| 30. | Emory University – Public Health | Jim Hughes | jmhughe@emory.edu |
| 31. | Georgetown University | Rebecca Katz | Rebecca.Katz@georgetown.edu |
| 32. | George Washington University – School of Public Health | Lance Price | lprice@gwu.edu |
| 33. | Massey University | Cord Heuer | c.heuer@massey.ac.nz |
| 34. | Ohio State University | Sally Miller | miller.769@osu.edu |
| 35. | Purdue University College of Health and Human Sciences - MPH Environmental Health | Shauna Stapleton | sstaplet@purdue.edu |
| 36. | Royal Veterinary College | Stuart Reid | swjreid@rvc.ac.uk |
| 37. | Stanford University – Global Health | Michele Barry<br>Stephen Luby | michele.barry@stanford.edu,<br>sluby@stanford.edu |
| 38. | Texas A&M University - College of Vet Med | Dean Eleanor Green | EGreen@cvm.tamu.edu |
| 39. | Tufts University One Health program | Lisa Freeman | lisa.freeman@tufts.edu |
| 40. | University College Dublin | Stephen Gordon | Stephen.gordon@ucd.ie |
| 41. | University of British Columbia | Jenn Gardy | jennifer.gardy@bccdc.ca |
| 42. | University of California, Berkeley | Eva Harris | eharris@berkeley.edu |
| 43. | University of California, Davis – MPH program | Leah Galasso | lgalasso@ucdavis.edu |
| 44. | University of California, Davis – MPVM program | Coty Duncan | svmadmissions@ucdavis.edu |
| 45. | University of California, Davis – Plant Pathology | Dave Rizzo | dmrizzo@ucdavis.edu |
| 46. | University of California, Davis – Vet Med | Michael Lairmore | mdlairmore@ucdavis.edu |
| 47. | University of California, San Francisco | Mary Wilson | mary_wilson@harvard.edu |
| 48. | University of Florida - One Health Program and Emerging Pathogens Institute | Ilaria Capua | icapua@UFL.edu |
| 49. | University of Hong Kong – Public Health | Keiji Fukuda | kfukuda@hku.hk |
| 50. | University of Illinois at Urbana-Champaign – Woese Institute | Gene Robinson | generobi@illinois.edu |
| 51. | University of Illinois at Urbana-Champaign – Vet Med | Will Sander | REDACTED |



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| | | | |
|---|---|---|---|
| 52. | University of Vermont | Lynn Blevins | REDACTED |
| 53. | University of Washington | Peter Rabinowitz<br>Carrie Harwood | peterr7@uw.edu<br>csh5@uw.edu |
| 54. | Yale School of Public Health | Jamie Childs | james.childs@yale.edu |
| 55. | Ross University School of Veterinary Medicine | Lee Willingham | awillingham@rossvet.edu.kn |
| 56. | Hokkaido University School of Veterinary Medicine | Hiroshi Kida | kida@vetmed.hokudai.ac.jp |
| | **NGOs and Foundations** | | |
| 57. | Bill & Melinda Gates Foundation | David Blazes<br>Christina Owen | David.Blazes@gatesfoundation.org<br>Christina.Owen@gatesfoundation.org |
| 58. | Carnegie Institution for Science | ? | ? |
| 59. | Center for Science in the Public Interest | ? | ? |
| 60. | Commonwealth Fund | ? | ? |
| 61. | Conservation Biology Institute | ? | ? |
| 62. | EcoHealth Alliance | Peter Daszak<br>Catherine Machalaba | daszak@ecohealthalliance.org;<br>machalaba@ecohealthalliance.org |
| 63. | Heritage Foundation | ? | ? |
| 64. | International Livestock Research Institute Kenya | ? | ? |
| 65. | Kaiser Family Foundation | Joshua Michaud | joshuaM@kff.org |
| 66. | Mayo Clinic | ? | ? |
| 67. | National Academies | Ayano Ogawa | Listservs and colleagues |
| 68. | National Geographic Society | ? | ? |
| 69. | National Resources Defense Council | ? | ? |
| 70. | National Wildlife Federation | ? | ? |
| 71. | Rand Corporation | ? | ? |
| 72. | Sierra Club | ? | ? |
| 73. | The Brookings Institute | ? | ? |
| 74. | The Cato Institute | ? | ? |
| 75. | The Pew Charitable Trusts | Kathy Talkington | ktalkington@pewtrusts.org |
| 76. | Wilson Center | ? | ? |
| 77. | World Wildlife Fund | ? | ? |
| | **ASSOCIATIONS** | | |
| 78. | American Academy of Pediatrics | ? | ? |
| 79. | American Association for the Advancement of Science | Peggy Hamburg | peggy@hbfam.net |



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| | | | |
|---|---|---|---|
| 80. | American Association of Veterinary Medical Colleges | Andrew Maccabe | Amaccabe@aavmc.org |
| 81. | American Farm Bureau | ? | ? |
| 82. | American Medical Association | ? | ? |
| 83. | American Public Health Association | Catherine Machalaba | machalaba@ecohealthalliance.org |
| 84. | American Veterinary Medical Association | Patricia Wohlferth-Bethke | PWohlferth@avma.org |
| 85. | Animal Health Institute | ? | ? |
| 86. | Association of Schools & Programs of Public Health | Kate Dart | kdart@aspph.org |
| 87. | American Association of Food Safety and Public Health Veterinarians | Katie Steneroden | REDACTED |
| 88. | Association of American Medical Colleges | ? | ? |
| 89. | Association of Environmental Professionals | ? | ? |
| 90. | Consortium of Universities of Global Health | Keith Martin | executivedirector@cugh.org |
| 91. | Council of State and Territorial Epidemiologists | ? | ? |
| 92. | Ecological Society of America | ? | ? |
| 93. | National Association of State Animal Health Officials | ? | ? |
| 94. | National Association of State Public Health Veterinarians | ? | ? |
| 95. | The Association of Zoos and Aquariums | ? | ? |
| 96. | US Animal Health Association/AAVLD | ? | ? |
| 97. | US Public Interest Research Group | ? | ? |
| | **MULTILATERALS** | | |
| 98. | FAO | Katinka de Balogh | Katinka.DeBalogh@fao.org |
| 99. | OIE | Julie Sinclair | J.sinclair@oie.int |
| 100. | WHO | Elizabeth Mumford | mumforde@who.int |
| 101. | World Bank | Francois le Gall<br>Franck Berthe | flegall@worldbank.org<br>fberthe1@worldbank.org |
| | **PRIVATE** | | |
| 102. | Batelle | ? | ? |
| 103. | Deloitte | ? | ? |
| 104. | Merck & Co. | Elizabeth Hermsen | elizabeth.hermsen@merck.com |
| 105. | Sanofi Pasteur | Kent Kester | Kent.Kester@sanofi.com |



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**ONE HEALTH ACTION COLLABORATIVE (OHAC)**

**OHAC Deliverable #2 on One Health Workforce:**
***Potential Timeline***

| Tentative dates | Task | Person Responsible |
|---|---|---|
| | 2018 | |
| **Sept 20-27** | Provide final approval of survey and input on dissemination channels | Subcommittee |
| **Oct 3** | Submit survey to IRB | Eri/Ionna |
| **Oct 9** | **OHAC call # 12, 2-3pm ET**<br>o Provide additional input on dissemination channels | All OHAC members |
| TBD | Receive IRB approval | Eri/Ionna |
| After IRB approval | Disseminate survey | OHAC staff, subcommittee members, and OHAC members |
| Nov 12? (could move up depending on IRB approval) | Send first reminder to fill out survey | OHAC staff |
| Nov 19? (could move up depending on IRB approval) | Send second reminder to fill out survey | OHAC staff |
| **Nov 28** | **OHAC meeting #13, 4:30-5:00pm ET (during in-person closed session of Forum on Microbial Threats meeting)**<br>o Discuss initial observations about survey results<br>o Discuss possible publication venues | Eri/Ionna lead the discussion on initial survey results and publication target<br><br>Subcommittee and OHAC members provide feedback and guidance |
| TBD (30 to 60 days post survey dissemination?) | Close survey and begin data analysis | Eri/Ionna |
| | 2019 | |
| Winter- Spring | Draft manuscript outline with findings<br><br>Provide feedback on outline | Eri/Ionna<br><br>Subcommittee |
| Spring | Complete first draft of manuscript | Eri/Ionna and subcommittee |

*Dates in **bold** have been confirmed. Dates not bolded are subject to change and are contingent on IRB approval process.

## ONE HEALTH ACTION COLLABORATIVE (OHAC)

## Background Material for Possible Deliverable on One Health and Food Safety & Food Security– October 2018

*During the past few OHAC calls, members have discussed the importance of highlighting the role of One Health in food safety and security. This document lays out preliminary notes and resources for a possible paper on linking plants, animals and people to enhance food safety and/or food security.*

**Preliminary Ideas**

The Forum on Microbial Threats workshop "Improving Food Safety Through a One Health Approach" conducted in 2011 called for proactive, transdisciplinary, systems-based approaches to food safety in a food system that is highly globalized. The application of the One Health paradigm to food safety and security entails a shift from isolated, single-domain analysis of specific issues to an understanding of complex systems through collaboration across disciplines and domains and including wide-ranging partnerships.

Through this lens, OHAC could develop a paper that focuses on one of the following topics:

a. Explore the roles of emerging and re-emerging animal and plant diseases and their direct and indirect consequences on agriculture, environment, public health (e.g., mainutrition from mycotoxins and AMR), economy (both macro and micro), and society, and recommend strategies to combat these threats

b. Assess progress on One Health approaches to food safety and food security in the last decade, identify the greatest threats to the global food supply and safety today, and recommend ways to enhance positive impact by 2030

c. Identify the leading surveillance technologies of foodborne pathogens and evaluate the extent to which they can be utilized and integrated across human, animal, plant and environmental systems for upstream identification of plant and foodborne pathogens and risk factors

d. Highlight the evolving role of plant agriculture in development of antimicrobial resistance in human and animal pathogens and impact on food safety

e. Suggest strategies for how multisectoral players such as the plant production and processing industries could be incentivized to increase participation in a One Health approach

f. Other ideas?

**Running List of Relevant Literature**

*Recent National Academies Reports*

"Science Breakthroughs to Advance Food and Agricultural Research by 2030"
(National Academies, 2018)
https://www.nap.edu/read/25059/chapter/1



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This report concludes that stresses on the U.S. food and agricultural enterprise will not be resolved if business as usual prevails. Innovation is needed to make the U.S. food and agricultural system more efficient, resilient, and sustainable. Using input from the broad scientific community, the report identifies five scientific breakthrough areas that could have the greatest positive impact on food and agriculture:

1. Transdisciplinary Research and Systems Approach
2. Sensing Technologies
3. Data Science and Agri-Food Informatics
4. Genomics and Precision Breeding
5. Microbiome

The report also recommends investing in physical and cyber infrastructures, engaging non-agricultural professionals, and recruiting talented individuals into food and agriculture research.

"Improving Food Safety Through a One Health Approach - Workshop Summary"
(National Academies, 2012)
https://www.nap.edu/read/13423/chapter/1#iv
The Forum on Microbial Threats hosted a public workshop in 2011 that examined issues critical to the protection of the nation's food supply. Participants discussed the globalization of the U.S. food supply and the burden of illness associated with foodborne threats to health; considered the spectrum of food-borne threats as well as illustrative case studies; reviewed existing research, policies, and practices to prevent and mitigate foodborne threats; and, identified opportunities to reduce future threats to the nation's food supply through the use of a One Health approach to food safety.

"A Sustainability Challenge: Food Security for All – Report of Two Workshops"
(National Academies, 2012)
https://www.nap.edu/read/13378/chapter/1
The National Research Council's Science and Technology for Sustainability Program hosted two workshops in 2011 addressing the sustainability challenges associated with food security for all. The first workshop explored the availability and quality of commonly used indicators for food security and malnutrition; poverty; and natural resources and agricultural productivity. It was organized around the three broad dimensions of sustainable food security: (1) availability, (2) access, and (3) utilization. The workshop reviewed the existing data to encourage action and identify knowledge gaps. The second workshop focused specifically on assuring the availability of adequate food supplies. How can food production be increased to meet the needs of a population expected to reach over 9 billion by 2050? Workshop objectives included identifying the major challenges and opportunities associated with achieving sustainable food security and identifying needed policy, science, and governance interventions. Workshop participants discussed long term natural resource constraints, specifically water, land and forests, soils, biodiversity and fisheries. They also examined the role of knowledge, technology, modern production practices, and infrastructure in supporting expanded agricultural production and the significant risks to future productivity posed by climate change.

*Other Articles*

"Food Safety Challenges and One Health within Europe"
(Boqvist S et al., 2018)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5751857/
This review discusses food safety aspects of importance from a One Health perspective, focusing on Europe. Using examples of food pathogen/food commodity combinations, spread of antimicrobial



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resistance in the food web and the risk of transmission of zoonotic pathogens in a circular system, it demonstrates how different perspectives are interconnected. The authors argue that food safety resources should be allocated where they contribute most One Health benefits. Data on occurrence and disease burden and knowledge of source attribution are crucial in assessing costs and benefits of control measures. Future achievements in food safety, public health and welfare will largely be based on how well politicians, researchers, industry, national agencies and other stakeholders manage to collaborate using the One Health approach. The authors conclude that closer cooperation between different disciplines is necessary to avoid silo thinking when addressing important food safety challenges.

"Understanding the Complexities of Food Safety Using a One Health Approach"
(Kniel KE et al., 2018)
https://www.tmelab.org/pdf/2018-ASM-PH-One-Health.pdf
This article provides an overview of using a One Health approach to preharvest food safety issues. It reviews using One Health for integrated surveillance of AMR in foodborne bacteria and for understanding and curbing the threats of *Salmonella*.

"Defense of Animal Agriculture"
(Blue Ribbon Study Panel on Biodefense, 2017)
https://www.biodefensestudy.org/defense-of-animal-agriculture
The Panel views protection of agriculture – the cultivation and breeding of animals and plants for food, fiber, and other products used to sustain human life – as a critical part of the overall biodefense mission space. The panel provides recommendations for the executive branch and congress in areas of leadership, coordination, collaboration, and innovation. However, this report does not directly assess threats to food (including food safety issues) or to plant agriculture, two areas of great import that rightfully deserve their own substantive analyses. Neither does it address food security (access to food).

"Animal Pathogens and Their Impact on Animal Health, the Economy, Food Security, Food Safety and Public Health"
(McElwain TF and Thumbi SM, 2017)
http://boutique.oie.int/extrait/04mcelwain423433.pdf
The authors review the impact of high-risk pathogens on animal health, the economy, food security and safety, and public health, using highly pathogenic avian influenza, foot and mouth disease and brucellosis as examples. They focus on the impact of these diseases in the context of high-income countries and low- and middle-income countries, comparing and contrasting their impact at the national and individual household levels.

"Strengthening Surveillance of and Response to Foodborne Diseases"
(WHO, 2017)
http://www.who.int/foodsafety/publications/foodborne_disease/surveillancemanual/en/
This manual describes how countries can strengthen their current surveillance and response activities for foodborne diseases, and integrate them in an existing national surveillance and response system. All aspects of surveillance, rapid risk assessment, response, investigation, and multisectoral collaboration related to foodborne hazards (microbial, chemical and radiological) that can affect human health are included in this manual.

"AMR, Food Safety, and One Health: The Need for Convergence"
(Lammie S and Hughes JM, 2016)



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https://www.annualreviews.org/doi/abs/10.1146/annurev-food-041715033251?rfr_dat=cr_pub%3Dpubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&journalCode=food
This article summarizes drug-resistant foodborne pathogens of greatest concern, various surveillance systems of foodborne infections, consumer and food industry perspectives, and research gaps and priorities, including improved surveillance and shared data, further development and application of molecular epidemiologic tools, whole genome sequence and other novel approaches to strengthen surveillance programs, and new and improved vaccines to target resistant organisms.

"One Health and Food-Borne Disease: *Salmonella* Transmission between Humans, Animals, and Plants"
(Silva C, et al., 2014)
http://www.asmscience.org/docserver/fulltext/microbiolspec/2/1/OH-0020-2013.pdf?expires=1538156027&id=id&accname=guest&checksum=1E14A88B3E9CDCE5C2008C05774FB229
Many of *Salmonella* serovars have a broad host range and can infect a wide variety of animals. In addition, *Salmonella* can grow in plants and can survive in protozoa, soil, and water. Hence, broad-host-range *Salmonella* can be transmitted via feces from wild animals, farm animals, and pets or by consumption of a wide variety of common foods: poultry, beef, pork, eggs, milk, fruit, vegetables, spices, and nuts. Broad-host-range *Salmonella* pathogens typically cause gastroenteritis in humans. Some *Salmonella* serovars have a more restricted host range that is associated with changes in the virulence plasmid pSV, accumulation of pseudogenes, and chromosome rearrangements. These changes in host-restricted *Salmonella* alter pathogen-host interactions such that host-restricted *Salmonella* organisms commonly cause systemic infections and are transmitted between host populations by asymptomatic carriers. The secondary consequences of efforts to eliminate host-restricted *Salmonella* serovars demonstrate that basic ecological principles govern the environmental niches occupied by these pathogens, making it impossible to thwart *Salmonella* infections without a clear understanding of the human, animal, and environmental reservoirs of these pathogens. Thus, transmission of *Salmonella enterica* provides a compelling example of the One Health paradigm because reducing human infections will require the reduction of *Salmonella* in animals and limitation of transmission from the environment.

"Human Pathogens on Plants: Designing a Multidisciplinary Strategy for Research"
(Fletcher J et al., 2013)
https://apsjournals.apsnet.org/doi/pdf/10.1094/PHYTO-09-12-0236-IA
Recent efforts to address concerns about microbial contamination of food plants and resulting foodborne illness have prompted new collaboration and interactions between the scientific communities of plant pathology and food safety. This article provides perspectives from scientists of both disciplines and presents selected research results and concepts that highlight existing and possible future synergisms for audiences of both disciplines. The authors recommend that continued interactions and communication among the plant pathology and food safety communities is essential and can be achieved by the creation of an interdisciplinary research coordination network.

"Infectious Diseases of Animals and Plants: An Interdisciplinary Approach"
(Wilkinson K et al., 2011)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3130394/
The authors argue that reframing the key issues of infectious animal and plant disease management through incorporating both social, political, and natural science research can provide a holistic understanding of disease and increase the policy relevance and impact of research.



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FORUM ON MICROBIAL THREATS

**ONE HEALTH ACTION COLLABORATIVE (OHAC) CALL #12**

Tuesday, October 9, 2018

2-3pm (ET)

**PARTICIPANTS**

MEMBERS:
Jonna Mazet, Kevin Anderson, Casey Barton Behravesh, Peter Daszak, Jeff Duchin, Jennifer Gardy, Gail Hansen, Sally Miller, Liz Mumford, and Mary Wilson (*Tentative/Absent:* Elizabeth Hemmsen, Jim Hughes, Lonnie King, George Poste, and Dave Rizzo)

STAFF: Ayano Ogawa, Ceci Mundaca Shah, and Anh Tran (National Academies); [redacted] (UC Davis)

**ATTACHMENTS**

- Dissemination channels and proposed timeline for deliverable #2 on workforce
- Food safety/security and One Health background document
- Draft pop-up poster on One Health for the Forum pre-workshop event

**AGENDA ITEMS**

1. Welcome (Ayano)
   - Introduction of new members and brief background on respective efforts or connections to One Health: Kevin Anderson and Liz Mumford
2. Workforce deliverable (Jonna and [redacted]
   - Updates on survey development and proposed timeline (see attached doc)
   - Discussion on additional dissemination channels (see attached list)
3. U.S. and One Health (Casey)
   - Updates on activities to advance One Health within the U.S. gov't
4. Food safety/security and One Health (Sally)
   - Brainstorm possible deliverable #3 (see attached background doc)
5. Other brief updates (Ceci)
   - NAM and Forum half day pre-workshop event, "A Century After the 1918 Influenza Pandemic – Why Are We Still Concerned Today?", with pop-up display and reception (see attached poster on One Health)
     - November 26, 2018 at National Academy of Sciences Building in DC
   - Forum 1.5 day workshop, "Readiness for Microbial Threats 2030: Exploring Lessons Learned Since the 1918 Influenza Pandemic"
     - November 27-28, 2018 at the National Academies Keck Center in DC
6. Next steps and action items (Ayano)
   - Meeting #13: Wednesday, November 28 at 4:30-5:00pm ET (during Forum closed session)



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# ONE VISION FOR ONE HEALTH

## Health for All

**One Health** is a collaborative, **multisectoral,** and transdisciplinary approach – working at the local, regional, national, and global levels – with the goal of achieving **optimal health** outcomes recognizing the **interconnection among people, animals, plants, and their shared environment**.

As the rate of emerging infectious diseases increases, countering the next outbreak will require **coordination and strong partnerships** across human, animal, and environmental health communities to **maximize the benefits** of shared knowledge and expertise and available resources.

## On Our Radar

The danger of zoonotic diseases is increasing and zoonotic influenza is a top threat. **860 human cases** of **avian influenza A (H5N1)** have been reported to the World Health Organization since 2003. (Source: WHO)

Some **surveillance systems** track diseases in animals and plants that affect human health.

For example, **ProMED-mail,** is an informal surveillance program that **engages with global citizens** who submit case reports. It also tracks animal diseases of agricultural importance in livestock, among others. It identified early cases of swine flu. (IOM 2010)

## The Rise of One Health

**Integrating human, animal, and environmental efforts** in disease surveillance and response is critical to countering outbreaks. (IOM 2009)

USAID PREDICT **detects and discovers** zoonotic diseases at the wildlife-human interface through multiple mechanisms, such as **optimizing models** for predicting disease emergence and using this information to improve surveillance. (NASEM 2016)

Countries like **Liberia** have a **National One Health Coordination Platform** for agencies to coordinate outbreak preparedness and response. (NASEM 2018)

As the use of the One Health approach grows, **training professionals** in One Health is crucial. A consistent **core competency based education** among One Health programs will enable trainees to better address global health challenges. (NAM Perspectives 2018)

The National Academies of SCIENCES ENGINEERING MEDICINE

UCDUSR0005570

**From:** Leilani Francisco <francisco@ecohealthalliance.org>
**Sent:** Sat, 20 Oct 2018 11:52:10 -0300
**Subject:** Re: PPFST slides
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** Peter Daszak <daszak@ecohealthalliance.org>, Aleksei Chmura <chmura@ecohealthalliance.org>, Stephanie Martinez <martinez@ecohealthalliance.org>

Thanks Jonna.
You're right about Slide 4 and 5 being based on a literature review. I can strengthen this. All else sounds good and can be taken care of.

I'm thinking it would be good to include a slide on the Bombali finding. Maybe a screen shot of the article and media pieces, with a voice track. What do you think?
Best,
Leilani

On Oct 20, 2018, at 10:39 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Hi Leilani,

Thanks for sharing, and I like very much of what you have here.

A few specific points:

- Slide 4: I don't believe that we have done any randomized controlled trials. If you are referring to others (n=7) in the literature that show effectiveness, fine. But I don't think we have done any or have the time to do any.
- Slide 5: We've discussed that USAID has commented to us on their concerns about the effectiveness and wisdom of investing in educational interventions. I don't think that means that they're not plausible, but I do think it means that we have to do our homework and gather the evidence on the effectiveness of educational interventions before we advocate for them among USAID's peers in this realm. We talked about this as recently as my review of your 4-pager. Because I have not seen the literature review from you on this topic, I don't think it is prudent to include that strategy in your key takeaways for this presentation (contradictory to their comments & not yet settled by our providing a contrary argument).
- Slide 25: your circle is being cut off at the bottom.
- Slide 29/30: just a style issue, but the text in the box from the attribution part of the book on the right is unreadable, so it doesn't look very professional on the slide. Might be nice to show the two sides of a later page to show how (& describe in your spoken words) how the book is delivered, as you kind of do on slide 30. Maybe better to move the words on slide 30 next to the cover on slide 29 and then show bigger and more readably the two sides of the pages on slide 30.
- Slide 31 is calling out for an illustration or photo.
- Slide 32 should probably be cut, as you can't go through the whole book & the images are too small to really see. Audience will be squinting to decipher, rather than listening to you.
- Slide 33: capitalize "West"

Have a great meeting,
Jonna

On Sat, Oct 20, 2018 at 5:32 AM Leilani Francisco <francisco@ecohealthalliance.org> wrote:

Thanks Jonna.
Safe journey,
Leilani

On Oct 19, 2018, at 11:35 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Thank you, Leilani,
I'll review on my way to Bangkok,
Have a nice weekend,
Jonna

On Fri, Oct 19, 2018 at 5:40 PM Leilani Francisco <francisco@ecohealthalliance.org> wrote:

Hi Jonna,
Please find my PPFST slides attached.
Best,
Leilani

Francisco_PPFST_beh risk mod_2018-10-19_v6.pptx

--

**Leilani Francisco, PhD, MA, PMP**
*Senior Scientist | PREDICT-2 Senior Behavioral Risk Surveillance Coordinator*

EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

1.212.380.4493 (direct)
[redacted] (mobile)
1.212.380.4465 (fax)
www.ecohealthalliance.org

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Tue, 23 Oct 2018 21:13:03 +0200
**Subject:** Fwd: Andrew AL+TDY (Oct 24 through Nov 9)
**To:** Jonna Mazet <jkmazet@ucdavis.edu>, David J Wolking <djwolking@ucdavis.edu>
**Cc:** predictmgt@usaid.gov

Should be available for the next PREDICT SM meeting.

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-345-4253
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see:* http://www.usaid.gov/ept2

---------- Forwarded message ---------
From: **Andrew Clements** <aclements@usaid.gov>
Date: Tue, Oct 23, 2018 at 9:12 PM
Subject: Andrew AL+TDY (Oct 24 through Nov 9)
To: <ghsdunitmaillistusaid@usaid.gov>, Lisa Kramer (Nairobi/EA/RHH) <lkramer@usaid.gov>, Schar, Daniel (RDMA/OPH) <dSchar@usaid.gov>, Zandra Andre <zandre@usaid.gov>, David J Wolking <djwolking@ucdavis.edu>, Elizabeth Leasure <ealeasure@ucdavis.edu>, Katherine Leasure <kaleasure@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>

Hi all,

I'll be out of the office the rest of this week (AL) and then on TDY to Jordan and Italy from Oct 28-Nov 9. Will check e-mail periodically for anything urgent.

Andrew

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-345-4253
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see:* http://www.usaid.gov/ept2

**From:** Brooke Genovese <bgenovese@ucdavis.edu>
**To:** Andrew Clements <aclements@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** Brian H Bird <bhbird@ucdavis.edu>, Jon Epstein <epstein@ecohealthalliance.org>, James Desmond <[redacted] Tracey Goldstein <tgoldstein@ucdavis.edu>, "Anthony, Simon J." <sja2127@cumc.columbia.edu>
**Subject:** Re: ACTION NEEDED: Liberia Call
**Sent:** Mon, 17 Dec 2018 18:50:55 +0000

Hi everyone,

**Friday, December 21st at 8:00am PT / 11:00am ET/ 4:00pm GMT** is the slot that worked for everyone (excluding Jim, as he's not had the opportunity to weigh in). Andrew, do you think this is too late in the day for the Mission with the upcoming holiday?

-Brooke

---

**From:** Andrew Clements <aclements@usaid.gov>
**Date:** Monday, December 17, 2018 at 8:35 AM
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** Brooke Genovese <bgenovese@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Jon Epstein <epstein@ecohealthalliance.org>, James Desmond [redacted] Tracey Goldstein <tgoldstein@ucdavis.edu>, "Anthony, Simon J." <sja2127@cumc.columbia.edu>
**Subject:** Re: ACTION NEEDED: Liberia Call

thought so, but wanted to confirm. thanks.

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1 571 345-4253
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2*

On Mon, Dec 17, 2018 at 5:29 PM Jonna Mazet <jkmazet@ucdavis.edu> wrote:
Mission -- in response to your request to poll our people for a good times to give the Mission.
Have a good day,
Jonna

On Mon, Dec 17, 2018 at 8:28 AM Andrew Clements <aclements@usaid.gov> wrote:
Is this for the discussion with the mission or just internal to P-2?

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1 571-345-4253
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2*

On Fri, Dec 14, 2018 at 7:49 PM Brooke Genovese <bgenovese@ucdavis.edu> wrote:
Hi everyone,

On Jonna's behalf, I'd like to schedule a call to discuss PREDICT-Libera. Please see the link below for a Doodle Poll:

https://doodle.com/poll/fqiwvkcp23zibafh

Thanks very much,
Brooke

Brooke Genovese
PREDICT Project Support

Executive Analyst
One Health Institute
School of Veterinary Medicine
bgencovese@ucdavis.edu
o: 530-752-3630

**From:** Katherine Leasure <kaleasure@ucdavis.edu>
**To:** Andrew Clements <aclements@usaid.gov>
**CC:** PREDICTMGT <predictmgt@usaid.gov>;Predict inbox <predict@ucdavis.edu>;Jonna Mazet <Jkmazet@ucdavis.edu>;Daniel Schar <dschar@usaid.gov>;Sudarat Damrongwatanapokin <sdamrongwatanapokin@usaid.gov>
**Sent:** 1/31/2019 1:21:32 PM
**Subject:** Re: Change to Approved ITA - P. Daszak (Add Malaysia)

Thanks!

Adding Dan and Sudarat per Andrew's email below.

On Tue, Jan 29, 2019 at 8:06 AM Andrew Clements <aclements@usaid.gov> wrote:
Hi Katie,

I'm back. Travel approved subject to mission approval.

Dan/Sudarat: see addition of Malaysia to Peter's trip to China.

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Jan 29, 2019, at 1:45 AM, Katherine Leasure <kaleasure@ucdavis.edu> wrote:

Hi Lindsay. Please find below a change to Peter Daszak's approved travel to China, adding travel to Malaysia. His previously approved ITA is below for reference with changes highlighted in yellow. Please let me know if you have any questions. Thanks!

EcoHealth Alliance would like to request travel approval for Dr. Peter Daszak to travel from Newark, New Jersey, USA to Beijing, China from February 14-17 18, 2019 for GVP planning. From Beijing, China he will travel to Kota Kinabalu, Malaysia from February 17-19, 2019 for meetings with the Malaysia Country Coordinator and PREDICT team members.

**Trip purpose**: China – Dr. Daszak will meet with staff from China CDC, Chinese Academy of Sciences, and National Natural Science Foundation of China for GVP work planning in China on February 16 and 17. Malaysia – On February 18 and 19, Dr. Daszak will meet with the PREDICT Country Coordinator and team members to discuss Y5 plans for data analysis and results sharing, meet with key PREDICT Malaysia stakeholders in Sabah, and plan for Deep Forest analysis. **While in Malaysia, Dr. Daszak will attend the close-out meeting for USAID IDEEAL program and the cost will be shared with IDEEAL. [$5829 airfare *business class required due to medical need/$346 (Beijing), $247 (Kota Kinabalu) max daily per diems].*

--
**Katherine Leasure**
HR/Payroll/Financial Assistant
One Health Institute
530-752-7526

--
You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.

To unsubscribe from this group and stop receiving emails from it, send an email to predictmgt+unsubscribe@usaid.gov.
To post to this group, send email to predictmgt@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/CAD6-xM%2B7AcMOgoAKv7qLsk0AArmNOjhudL5Q3s8sKcaeLg8vQ%40mail.gmail.com.

--
**Katherine Leasure**
HR/Payroll/Financial Assistant
One Health Institute
530-752-7526

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>;ealeasure@ucdavis.edu <ealeasure@ucdavis.edu>;djwolking@ucdavis.edu <djwolking@ucdavis.edu>
**CC:** predictmgt@usaid.gov <predictmgt@usaid.gov>
**Sent:** 2/12/2019 12:18:30 PM
**Subject:** Fwd: AID-OAA-A-14-00102 - PREDICT-2 - Request

Let's set up a time to discuss your recommendations on a controlled slowdown.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** Jose Nunez Grullon <jnunezgrullon@usaid.gov>
**Date:** February 12, 2019 at 7:19:55 PM GMT+1
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**Cc:** Patricia Bradley <pbradley@usaid.gov>, Andrew Clements <aclements@usaid.gov>, Lindsay Parish <lparish@usaid.gov>, PREDICTMGT <predictmgt@usaid.gov>
**Subject: AID-OAA-A-14-00102 - PREDICT-2 - Request**

Dear Ms. Leasure,

Please find attached correspondence from the Agreement Officer in relation to subject award.

Please kindly acknowledge as indicated in the letter.

Sincerely,

**JOSE L. NUNEZ**
Acquisition and Assistance Specialist, M/OAA/GR
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
SA-44, Rm 469-G
1300 Pennsylvania Ave., NW
Washington, DC, 20523-7900
T 202 567-4123
**(Contractor Jefferson Solutions, LLC)**

February 12, 2019

Elizabeth Leasure
One Health Institute
University of California
Davis
ealeasure@ucdavis.edu

Subject: Cooperative Agreement No. AID-OAA-A-14-00102, PREDICT-2. Request to slow down project activities

Dear Ms. Leasure:

The purpose of this letter is to notify you that due to a lapse in appropriation, the FY2018 incremental funding in the amount of $13,637,604 for the PREDICT 2 project, approved for the work plan period October 2018 to September 2019, has been delayed. We are unsure of the duration of the delay, and as such, are advising our partners to consider reducing their monthly expenditure rates and corresponding activities to mitigate disruption in project implementation.

In this regard, please to coordinate closely with your AOR, Andrew Clements, to devise a plan for managing continued operations with the funds that have been obligated into the award to date.

Should you have any questions, please do not hesitate to contact me at pbradley@usaid.gov or the AOR, Mr. Andrew Clements, at aclements@usaid.gov. Please kindly acknowledge receipt of this letter by signing below.

Sincerely,

Patricia Bradley

Patricia Bradley
Agreement Officer

cc: Andrew Clements, AOR
Lindsay Parish, Alternate AOR

Received by (Name): _____ Date: _____

Signature: _____

U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, DC 20523
www.usaid.gov

**From:** Andrew Clements <aclements@usaid.gov>
**To:** ealeasure@ucdavis.edu <ealeasure@ucdavis.edu>
**CC:** Jonna Mazet <jkmazet@ucdavis.edu>;djwolking@ucdavis.edu <djwolking@ucdavis.edu>
**Sent:** 5/6/2019 12:11:58 PM
**Subject:** Re: Remaining budget for TVPA countries

In addition, if we have to stop activities as soon as the existing funds for these countries is exhausted, could you estimate the total cost of severance packages based on the country requirements. This will help us budget for that scenario.

Thanks

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On May 3, 2019, at 8:49 PM, Andrew Clements <aclements@usaid.gov> wrote:

Hi Liz,

According to our calculations, the total planned FY18 funding for the 5 TVPA countries is $3.61 million. Is that correct?

Our assumption is that if we cannot program in these countries, then this amount is not needed in the upcoming obligation.

Thanks!

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** "William B. Karesh" <karesh@ecohealthalliance.org>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>, Elizabeth Leasure <ealeasure@ucdavis.edu>
**Cc:** Amanda Andre <amanda.andre@ecohealthalliance.org>, Evelyn Luciano <lluciano@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>, predict Sympa List <predict@ucdavis.edu>, Molly Turner <turner@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>
**Subject:** Re: PREDICT Jordan
**Sent:** Mon, 8 Jul 2019 14:03:43 +0000

Great. Thanks.
Do you have a form or a template that you would like us to use?

BK

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

EcoHealth Alliance
460 West 34th Street - 17th Floor
New York, NY 10001 USA

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www.ecohealthalliance.org

President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

***EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.***

On Jul 7, 2019, at 12:08 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Yes, that is my understanding, as well. We will allow all equipment to vest (stay) with the in-country partner, unless the global lead consortium partner recommends otherwise. Exceptions have happened in the past when Mission or USAID/DC indicates that another partner or new USAID contractor will continue the same or similar work in-country and they request a shift of equipment to that partner.

Thanks,
J

On Mon, Jun 24, 2019 at 11:31 AM Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

Hi everyone. Just following up regarding the equipment transfer agreement requested by the Mission. My understanding is that title to all equipment purchased under our cooperative agreement (including those items purchased with USAID/Jordan funds) vests with UCD upon acquisition (or temporarily with the subrecipient making the purchase until the subaward ends, at which point title technically reverts to UCD). As part of our closeout process, subrecipients will submit a request to UC Davis for the disposition of all equipment purchased with PREDICT funds. Jonna will then review and approve as UCD PI. As far as I'm aware, documentation of that request and UCD PI approval is all that is needed in terms of equipment transfer paperwork. Now, whether or not you choose to proceed

with an equipment transfer MOU-type document to keep the Mission happy is up to you all, but I just wanted to make you aware that such an agreement is not technically required per the terms of our CoAg.

Thanks,

Liz

*Elizabeth Leasure*

*Financial Operations Manager*

*One Health Institute*

REDACTED *(cell)*

*530-754-9054 (office)*

*Skype: ealeasure*

**From:** Maysa Al-Khateeb <malkhateeb@usaid.gov>
**Sent:** Sunday, June 23, 2019 4:58 AM
**To:** William B. Karesh <karesh@ecohealthalliance.org>
**Cc:** Amanda Andre <amanda.andre@ecohealthalliance.org>; Andrew Clements <AClements@usaid.gov>; Jonna Mazet <jkmazet@ucdavis.edu>; Evelyn Luciano <luciano@ecohealthalliance.org>; Elizabeth Leasure <ealeasure@UCDAVIS.EDU>; Ehab Abu-Basha <abubasha@just.edu.jo>; Peter Daszak <daszak@ecohealthalliance.org>
**Subject:** Re: PREDICT Jordan

Thanks Billy for your email,

Andrew confirmed that the money is available now, so I believe everything will go as planned.

For equipment donation relevant to labs opening, USAID want to request a copy of an agreement as this is often done through a simple transfer agreement or even an MOU. Normally there would be a document that outlines the transfer by the USAID partner and acknowledgement of receipt by the govt'l entity. I sent Dr.Ehab a sample of such a document a while ago and USAID mission will clear before the final signature.I'm bringing this up because it might affect your days of travel if this agreement not signed before, also if you already have your SOW for your travel during July I would appreciate sharing it with me for review.

Thanks a lot for your continuous collaboration

Maysa

Maysa Al-Khateeb,

Population and Family Health

Management Specialist /USAID

Tel: REDACTED

Mobile: REDACTED

On Thu, Jun 20, 2019 at 3:47 PM William B. Karesh <karesh@ecohealthalliance.org> wrote:

Hi Maysa,

Out of professional curtesy and respect for all of the help you have given the project, I wanted to update you on why we've been a bit slow on responding to plans for the official opening of the two labs in July that were funded with USAID/J Mission funds, and our planning of project close out activities under the main project budget.

As you may know, the Jordan Mission funds transferred in July of 2018 have not been provided to UC Davis and hence to EHA. In addition, no agreements with USAID/W have been signed for any activities for Year 5 (Oct. 1st, 2018) though we have been working under the assumption that this would occur. USAID/W has been flexible in allowing the use of some other funds from other work streams of the project to be used for our Year 5 work until final approvals could be made. Those funds are now exhausted, as have creative financing ideas, so we may not be able to continue any work.

If approvals come soon, we would very much like to officially open the labs with government partners and hold a project close-out meeting in mid-July as originally hoped, and then provide you with final reports on activities, findings and recommendations at the end of the project. At this point in time, it is unclear what will happen and there may be no funding for any of that work.

Of course, we are still holding out hope that funding will be made available. And, I would be honored to attend the lab and close out meetings if funds become available and Andrew is able to help expedite an ITA.

It's been such a professional pleasure to have worked with you and I can't thank you enough. I hope we can find ways in the future to keep supporting the great efforts being made in Jordan.

All the Best,

Billy

**William B. Karesh, D.V.M**

*Executive Vice President for Health and Policy*

EcoHealth Alliance

460 West 34th Street - 17th Floor

New York, NY 10001 USA

+1.212.380.4463 (direct)

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President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

**From:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**To:** Andrew Clements <aclements@usaid.gov>
**Cc:** "predictmgt@usaid.gov" <predictmgt@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, predict Sympa List <predict@ucdavis.edu>, Kevin N Gonzalez <kngonzalez@ucdavis.edu>, Hannah R Chale <hrchale@ucdavis.edu>
**Sent:** Tue, 20 Aug 2019 20:33:54 +0000
**Subject:** [predict] RE: PREDICT Year 5 Equipment Purchase Request #7

Thanks!

*Elizabeth Leasure*
*Financial Operations Manager*
*One Health Institute*
REDACTED *(cell)*
*530-754-9034 (office)*
*Skype: ealeasure*

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Tuesday, August 20, 2019 1:33 PM
**To:** Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
**Cc:** predictmgt@usaid.gov; Jonna Mazet <jkmazet@ucdavis.edu>; David John Wolking <djwolking@ucdavis.edu>; predict Sympa List <predict@ucdavis.edu>; Kevin N Gonzalez <kngonzalez@ucdavis.edu>; Hannah R Chale <hrchale@UCDAVIS.EDU>
**Subject:** Re: PREDICT Year 5 Equipment Purchase Request #7

Approved

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email:* aclements@usaid.gov
On Aug 20, 2019, at 10:05 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

> Hi Andrew. Please find attached a request for authorization to purchase an ultra-low freezer for UC Davis to store samples collected in Guinea. Please let me know if you have any questions or require any additional information to proceed.
>
> Thanks!
> Liz
>
> Elizabeth Leasure
> One Health Institute
> University of California, Davis
> 530-754-9034 (office)
> REDACTED (cell)
>
> <PREDICT-Equipment Request_Year 5_No.7_8.20.19.pdf>

**From:** Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>
**To:** "William B. Karesh" <karesh@ecohealthalliance.org>, Andrew Clements <aclements@usaid.gov>, PREDICTMGT <predictmgt@usaid.gov>, predict Sympa List <predict@ucdavis.edu>
**Cc:** Alisa Pereira <apereira@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, Peter Daszak <daszak@ecohealthalliance.org>, Cara Chrisman <cchrisman@usaid.gov>, Alison Andre <andre@ecohealthalliance.org>, Catherine Machalaba <machalaba@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>, David John Wolking <djwolking@ucdavis.edu>
**Subject:** Re: WAHO One Health - update
**Sent:** Wed, 16 Oct 2019 17:17:33 +0000

That's great news, thanks to you and Catherine.
/ckj

---

**From:** Billy Karesh <karesh@ecohealthalliance.org>
**Date:** Wednesday, October 16, 2019 at 9:00 AM
**To:** Andrew Clements <aclements@usaid.gov>, PREDICTMGT <predictmgt@usaid.gov>, predict Sympa List <predict@ucdavis.edu>
**Cc:** Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>, Alisa Pereira <apereira@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, Peter Daszak <daszak@ecohealthalliance.org>, Cara Chrisman <cchrisman@usaid.gov>, Alison Andre <andre@ecohealthalliance.org>, Catherine Machalaba <machalaba@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>, David John Wolking <djwolking@ucdavis.edu>
**Subject:** WAHO One Health - update

Thanks again for offering to support Catherine's participation in the WAHO One Health meeting in Lomé.

Late in the afternoon we received concurrence from the READY project to cover the expenses, so we can save the P-2 funds and still have an impact there.

Will keep you posted on the meeting outcomes.

Billy

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

EcoHealth Alliance
460 West 34th Street - 17th Floor
New York, NY 10001 USA

+1.212.380.4463 (direct)
+1.212.380.4465 (fax)
www.ecohealthalliance.org

President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

***EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.***

On Sep 30, 2019, at 5:26 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi there,

Below is the agenda for tomorrow's MT call.

Talk soon,

David

**PREDICT Management Team Meeting Agenda**
Tuesday,October 1, 2019
8:30-9:30AM PST/11:30-12:30pm EST
Zoom link: https://onehealth.zoom.us/ REDACTED
*Additional Zoom info below agenda*

**USAID Updates**

**1. Administrative items**

- 
- Extension
- period funding updates
- 
- 
- Leadership
- transition
- 
- 
- Bali
- feedback and next steps
- 

**2. On close-out - standing item**

- 
- Review/discussion
- of USAID close-out
- tracker & Predict tracking tools
- 
  - 
  - 
  - Samples

- 
- 
- Data
- 
- 
- Equipment
- and supplies
- 
- 
- Close-out
- meetings
- 
- 
- Country
- reports
- 
- 

3. **Extension plans and discussion**
   - 
   - Estimated
   - timing for testing and various analyses (e.g., A/H interfaces, etc.)
   - 
   - 
   - Final
   - report plans
   - 

4. **Mission, partner communications & country roundup essentials**

5. **Publication, media, and conference updates**
   - 
   - Lancet
   - commentary "Do we need a Global Virome Project"
   - 
   - 
   - Le
   - Figaro article on PREDICT and EBO-SURSY released last week
   - 

- 
- ID
- week 2019, Infectious Disease Society of America, Washington DC (October 2-6, 2019)
- 
- 
- DTRA Monkeypox
- Networking event, Dakar Senegal (November 18-20, 2019)
- 
- 
- 19th
- International Congress on Infectious Diseases, Kuala Lumpur (February 20-23, 2020)
- 

**6. AOB**

**Zoom Call-in info**
**Zoom link:** https://onehealth.zoom.us/ REDACTED
**Or iPhone one-tap :**
US: +16468769923, REDACTED or +16699006833, REDACTED
**Or Telephone:**
Dial(for higher quality, dial a number based on your current location):
US: +1 646 876 9923 or +1 669 900 6833
**Meeting ID:** REDACTED

On Wed, Sep 25, 2019 at 12:30 PM David I Wolking <dwolking@ucdavis.edu> wrote:
Got it, thanks Andrew.

David

On Wed, Sep 25, 2019 at 12:19 PM Andrew Clements <aclements@usaid.gov> wrote:
Plus, an update on the status of country close-outs.

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-345-4253
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see* http://www.usaid.gov/epidemic

On Wed, Sep 25, 2019 at 9:18 PM Andrew Clements <aclements@usaid.gov> wrote:
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Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1 571 345-4213
E-mail: [illegible]

*For more information on USAID's Emerging Pandemic Threats program, see:* http://www.usaid.gov/ept2

On Wed, Sep 25, 2019 at 8:48 PM David J Wolking <dlwolking@ucdavis.edu> wrote:

Hi there,

Just a reminder about next week's management team call. Please let me know if you have any pertinent items for discussion and I'll incorporate them into the agenda (to be shared Friday or Monday next week).

Best,

David

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Wed, 16 Oct 2019 13:02:05 -0700
**Subject:** Re: WAHO One Health - update
**To:** "William B. Karesh" <karesh@ecohealthalliance.org>
**Cc:** PREDICTMGT <predictmgt@usaid.gov>, "predict@ucdavis.edu" <predict@ucdavis.edu>, Chris Johnson <ckjohnson@ucdavis.edu>, Alisa Pereira <apereira@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, Peter Daszak <daszak@ecohealthalliance.org>, Cara Chrisman <cchrisman@usaid.gov>, Alison Andre <andre@ecohealthalliance.org>, Catherine Machalaba <machalaba@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>, David Wolking <djwolking@ucdavis.edu>

Thanks

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Oct 16, 2019, at 6:00 PM, William B. Karesh <karesh@ecohealthalliance.org> wrote:

> Thanks again for offering to support Catherine's participation in the WAHO One Health meeting in Lomé. Late in the afternoon we received concurrence from the READY project to cover the expenses, so we can save the P-2 funds and still have an impact there.

Will keep you posted on the meeting outcomes.

Billy

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

EcoHealth Alliance
460 West 34th Street - 17th Floor
New York, NY 10001 USA

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Best,

David

**Sent:** Mon, 21 Oct 2019 00:13:35 -0400
**Subject:** Re: Monday - GVP Convening
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Cara Chrisman <cchrisman@usaid.gov>
**Cc:** REDACTED, Dennis Carroll REDACTED, Eddy Rubin REDACTED, Peter Daszak <daszak@ecohealthalliance.org>, Samtha Maher <maher@ecohealthalliance.org>
GVP_operational_models_Oct2019.pptx

Hi all,
I couldn't get into the Google Doc because of my gmail alias.
That said, I think the ideas in Dennis Word document were great for thought organization and further discussion tomorrow.
Zoe and I developed the attached slides from our (really her) research on structural options and for weighing pros and cons.
Happy to go over these tomorrow if you all think useful.
See you in the morning,
Jonna

On Fri, Oct 18, 2019 at 1:51 PM Cara Chrisman <cchrisman@usaid.gov> wrote:

Hi All,
Just a reminder to please take a moment to feed into the google doc prior to our Monday convening. It can be found here (and includes some additions from Dennis): REDACTED REDACTED

Please note that I will note have access to a printer prior to our meeting, so won't be able to bring printouts - sorry!

Nathan - please let us know if there is a time to call you into the meeting or if that will not be possible.

Best,
Cara

Cara J. Chrisman, PhD
Senior Infectious Diseases Technical Advisor
U.S. Agency for International Development (USAID) Contractor
Bureau for Global Health, Office of Infectious Disease, Emerging Threats Division
2100 Crystal Drive, CP3-8091A, Arlington, VA 22202
Desk: (571) 551-7413

Cell: REDACTED
E-mail: cchrisman@usaid.gov

*GHSI-III - Social Solutions International, Inc. prime contractor*

On Fri, Oct 18, 2019 at 12:36 PM REDACTED > wrote:

Dennis, thank you for the information and looking forward to seeing you soon!

Best,

Eri

**From:** Dennis Carroll [mailto REDACTED
**Sent:** Friday, October 18, 2019 8:38 AM
**To:** Cara Chrisman <cchrisman@usaid.gov>; Eddy Rubin < REDACTED >; Eri Togami <etogami@ucdavis.edu>; Jonna Mazet <jkmazet@ucdavis.edu>; Nathan Wolfe <nwolfe@metabiota.com>; Peter Daszak <daszak@ecohealthalliance.org>;

Samtha Maher <maher@ecohealthalliance.org>
**Subject:** Dinner at MVS Liberty Oct 20

Looking forward to seeing you all Sunday.

Time: 6:00

Where: 600 Water Street SW Washington DC

Directions:

By Uber/taxi - Just tell them 600 Water St SW. you will see a small parking lot leading to the docks. The dock is secure so call me when you arrive and I will come up and meet you

By Metro - take the Green Line to Waterfront Station You will come out of the metro at 4th and M SW. Cross M St, turn rights for go to the next corner - 6th and M. Turn left on 6th st. A short walk maybe a hundred yards takes you right to 600 Water st. Call when you arrive

my number is + REDACTED

--

Dr Dennis Carroll
Senior Fellow, Scowcroft Institute of International Affairs at the Bush School of Government and Public Service, Texas A&M University
Counselor and Advisor to the Faculty of Tropical Medicine at Mahidol University

mobile: REDACTED
email: REDACTED

Operational Models

# Informal network

A loose network of organizations agreeing to collaborate

**PROS**

- Members retain total independence and control/manage their own projects/contracts
- Different organizations may lead on different projects and subcontract to others, thereby spreading the risk
- Often a first step to a formally constituted consortium

**CONS**

- No legal entity for funders to contract with, so cannot hold contracts or receive donations
- Does not allow for coordinated project and consistent data

# Merger (not likely or appropriate in Indiana for complainant)

If there were appropriate groups contributing parts of the service country level projects in full-form, organizations could undertake a full legal merger and become a single entity or group structure.

## PROS

- Is in the best interests of your charitable purposes and beneficiaries
- Enables a service to continue if an organization becomes unsustainable
- Prevents duplication of services and creates efficiencies
- Creates an organization with a larger turnover, therefore access to larger contracts
- Potentially greater profile and reach

## CONS

- Volunteers, staff, or financial supporters might not progress into the merged organization
- Highly disruptive to day-to-day business
- Significant differences in culture or ways of working could prevent effective integration and may undermine the financial or other affairs
- Depending on the proposed new structure the process can be very complex, time consuming and (costly) professional advice required

# Lead Agency

A partnership with a non-related organization taking the lead for contracting purposes

**PROS**

- Able to bid for contracts
- Existing organization with track record
- Infrastructure already exists

**CONS**

- Lead partner has sole legal accountability for contracts and bears all risk
- Lead partner could solely take over project (a risk for the partners & subcontractors)

## Informal network with formal hub

A loose network of organizations agreeing to collaborate & a hub for core activities only

**PROS**

- Members retain total independence and control/manage their own projects/contracts
- Hub provides structure for some quality & continuity
- Less expensive than fully formed consortium
- Different organizations may lead on different projects and subcontract to others, thereby spreading the risk & funding needs
- Provides for evidence of a quick start-up

**CONS**

- Requires funding for the hub
- Legal entity for contracts is hub, but that may not be attractive/acceptable to partners if they aren't appreciating hub value to their work that they are funding independently
- Does not allow for true quality control, as consortium is voluntary and no funding to be held back from projects if not in compliance (i.e., no stick)
- May be awkward if partner needs to be "fired"

## Constituted consortium with hub

A new legal entity is set up, with a membership of suitors ensuring that the members control it.

**PROS**

- Owned and run by members
- Protects members from risk
- Single 'front door'
- Collective bargaining power

**CONS**

- Difficult to prove track record at early stages
- Significant funding and time required at start-up and development stages
- Vulnerable to fluctuations in funding pathways
- Some potential partners may not be willing to give up credit or control to the hub organisation

# CONSORTIUM OPERATING MODELS

## Super provider

- Most common form that is chosen by consortia
- Organizations that come together to:
  - set up a separate legal entity
  - collective ownership and control
  - providers become members of the entity
- Many separate providers effectively become one large provider

# Hub and Spokes

- Central support unit or 'hub', leaving the providers (the 'spokes') to deliver frontline services through sub-contract
- Social partnerships
  - Owned and controlled by the members (providers)
  - 2 tier governance
    - Council of members
    - Board
- The main roles of the central hub are:
  - scoping for and leading for contracts
  - influencing funders and developing strategic relationships
  - recruiting and managing the membership
  - establishing of the operational policies and procedures
  - managing contracts
  - exploring and using funding where appropriate, such as development grants or recyclable finance
  - supporting the board of directors

Example: EBP Organizational Model

- Hub and Spokes model
- Global network of communities
  - Participating institutions with member representatives
  - Affiliate organizations

- The outer ring shows a global network of interacting nodes involved in DNA sequencing and informatics.
- The geographical locations are some of participating countries or continental entities.
- The communities in the inner ring are taxon-related communities and organizations supporting the goals of the EBP.
- The EBP Coordinating Council have representation from all participating nodes, communities, and organizations as well as representation from the public and private sectors.

## Example: Structural Genomics Consortium

- Not-for-profit, public-private partnership with the directive to carry out basic science of relevance to drug discovery
- In its third phase, the SGC is funded by 17 separate organizations
- Consortium member donation buy-in of 8 Million US dollars
  - Nominate targets to the Target List
  - Nominate a member to the Scientific Committee and the Board of Directors
  - Place scientists to work within the SGC laboratories, under a confidentiality agreement

SGC

# Example: CEPI

- CEPI is an innovative partnership between public, private, philanthropic, and civil organizations launched to develop vaccines to stop future epidemics
- Headquarters are in Oslo, Norway, and offices in London, UK, and Washington DC, USA
- Self-sustaining organization
- CEPI was founded in Davos by the governments of Norway and India, the Bill & Melinda Gates Foundation, the Wellcome Trust, and the World Economic Forum
- To date, CEPI has secured over $ 140 million toward its $1 billion funding target, with financial support provided by the Bill & Melinda Gates Foundation, the Wellcome Trust, the European Commission, and the governments of Australia, Belgium, Canada, Germany, Japan, Norway
- Structure:
  - Leadership team
  - Board
  - Advisory council
  - Scientific Advisory Committee
  - Joint coordination group (i.e. organizations with varied mission in successive WHO, DAH, IMBI, PAH, NIH, JANCO, etc)

CEPI

## Example: Wellcome Trust

- Politically and financially independent global charitable foundation
- Created in 1936 by the will of Sir Henry Wellcome
- For the next 50 years, dividends from the the pharmaceutical company founded by Sir Henry funded the charitable grants we make for research
- Since then, Wellcome's funding has come from a wide range of financial assets around the world
  - publicly listed stocks and shares
  - private equity
  - venture capital
  - property
  - hedge funds and other investments
  - Wellcome generally does not receive donations or government grants.

- Work is funded from an investment portfolio that currently stands at £25.9billion

## Nine major areas for design of research consortiums (RC)

| Major design criteria | Definition |
|---|---|
| 1. Mission | [illegible] |
| 2. Form (Affiliate) | [illegible] |
| 3. Form (Legal) | [illegible] |
| 4. Investment (Fee, etc.) | [illegible] |
| 5. Governance (Rules) | [illegible] |
| 6. Governance | [illegible] |
| 7. Intellectual Prop. | [illegible] |
| 8. Financial Support (Gov/RC, Gov/Affiliate) | [illegible] |
| 9. Recruiting (Gov/RC, Gov/Affiliate, RC/Affiliate) | [illegible] |

[illegible]

Domain 1
Design decisions and examples of choices made by research consortia in global health

Domain 2
Organizational
Structure

## Domain 3
## Funding
decisions

### Design decisions and examples of choices made by research consortia

| Funding source for the new infrastructure | Funding sources mentioned in the research |
|---|---|
| [illegible] | [illegible] |
| [illegible] | [illegible] |
| [illegible] | [illegible] |
| [illegible] | [illegible] |
| [illegible] | [illegible] |

[illegible]

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Wed, 6 Nov 2019 02:43:00 -0800
**To:** Katherine Leasure <kaleasure@ucdavis.edu>
**Cc:** PREDICTMGT <predictmgt@usaid.gov>, Predict inbox <predict@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>
**Subject:** [predict] Re: PREDICT International Travel Request

Approved subject to availability of funds. If funds are ultimately not made available, USAID will not be responsible for covering any costs incurred for this travel.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Nov 6, 2019, at 2:10 AM, Katherine Leasure <kaleasure@ucdavis.edu> wrote:

> Hi Andrew. We are still unclear of the funding outlook, but in the event funds are available, we are seeking approval for this closeout activity. Thank you!
>
> 1. Karesh (France): $7500 airfare **business class required due to* [redacted] $560 (Paris) max daily per diem
>
> Travel Request –
>
> 1. EcoHealth Alliance would like to request travel approval for Dr. William Karesh to travel from New York City, NY, USA to Paris, France from December 2-7, 2019 to speak at the World Organisation for Animal Health's (OIE) Working Group on Wildlife Meeting.
>
> **Trip purpose:** Dr. Karesh is to participate in the World Organisation for Animal Health's (OIE) Working Group on Wildlife Meeting, for which he serves as Chairman. The OIE Working Group on Wildlife advises the OIE on all health problems relating to wild animals, including emerging disease events and reporting guidelines. Dr. Karesh will present a summary of PREDICT findings to OIE senior staff, discuss ebola PREDICT findings with the OIE lead of EBO-SURSY (EU Ebola Surveillance System Project) and project directors as well as discuss EBO-SURSY activities in the follow-up to PREDICT. The meeting will allow Dr. Karesh to share PREDICT-2 findings, discuss the revision of the official OIE Disease Card on filoviruses to include PREDICT-2 findings, and discuss OIE activities in regards to previous and future activities in PREDICT countries. **As an invited speaker, OIE will provide funds for Dr. Karesh's economy fare and per diem expenses for this meeting.*

--
**Katherine Leasure**
HR/Payroll/Financial Assistant
One Health Institute
530-752-7526

--
You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
To unsubscribe from this group and stop receiving emails from it, send an email to predictmgt+unsubscribe@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/CAD6-xMJ8LEZoEm6N7yZv9Vqwr-e%2BEfmy19-%3D_q8qcwg@ti0Q%40mail.gmail.com.

**From:** Woutrina A Smith <wasmith@ucdavis.edu>
**To:** Peter Daszak <daszak@ecohealthalliance.org>;Kevin Olival <olival@ecohealthalliance.org>
**CC:** Jonna Mazet <jkmazet@ucdavis.edu>
**Sent:** 11/19/2019 12:07:27 PM
**Subject:** Re: Malaysia, Indonesia, Thailand

Hi Peter and Kevin,

The meetings in Bangkok with SEAOHUN last week went quite well to set things in motion, but we do have our work cut out for us going forward. It would be good to debrief and strategize with you on a call sometime soon, beyond what we can do on EB call tomorrow, to decide on the country management approach with your country liaison roles on tap for Malaysia, Thailand, and Indonesia. Workplan templates have been issued (attached) and the countries are now working on assimilating their ideas for Year 1 that strike a balance between previous successes and new opportunities associated with our global consortium. Are you guys around over the next couple of weeks, in which case we can coordinate with Evelyn or others to schedule a call to plan in more detail?

Best wishes, Woutrina

---

> On Nov 10, 2019, at 9:34 AM, Peter Daszak wrote:
>
> Definitely want to take the lead and help ensure a smooth transition.
>
> Agree re. immediate leads, for now, Tom for Malaysia, but just let folks know that Kevin and myself will be closely involved with all, incl. Thailand and Indonesia, and that we'll nominate a specific person once we're a few more weeks in..
>
>
>
>
>
> Cheers,
>
> Peter
>
>
>
> Peter Daszak
> President
>
> EcoHealth Alliance
> 460 West 34th Street – 17th Floor
> New York, NY 10001
>
> Tel. +1 212-380-4474
> Website: www.ecohealthalliance.org
> Twitter: @PeterDaszak
>
> EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.
>
>
> ----Original Message----
> From: Woutrina A Smith [mailto:wasmith@ucdavis.edu]
> Sent: Sunday, November 10, 2019 2:43 AM
> To: Peter Daszak; Kevin Olival

> Subject: Malaysia, Indonesia, Thailand
>
> Hi Peter and Kevin,
>
> We'll be meeting with SEAOHUN and country OHUNs briefly this week as you know. I will mention that there will be a country liaison from our global consortium for each country as part of our management approach. I assume you are still interested in leading that for Malaysia, Indonesia, and Thailand, correct? I assume that will be Tom for Malaysia and do you know who you want to name for Thailand and Indonesia or shall I leave that vague for now? Cheers, Woutrina

# OHW-NG YEAR 1 WORK PLAN

***Instructions:*** *Each Secretariat and country One Health University Network (OHUN) must complete the One Health Workforce – Next Generation (OHW-NG) Year 1 Work Plan template provided. All draft work plans and budgets are due to the Secretariat and prime on* ***Monday, November 25, 2019*** *for first review, so that initial feedback can be provided by November 27, and workplans with budgets and budget narratives can be revised for next review by* ***December 11, 2019****. Final workplans will be packaged by mid-January, 2020 for submission to USAID.*

*The OHW-NG Work Plan is framed with three objectives: 1) Training and Empowerment, 2) Assessment and Tracking, and 3) Organizational Sustainability. Activities highlighted in the work plan template below in green are global/regional activities that all countries will participate in and benefit from as part of the regional networks. The prime and Secretariat will provide the detailed work plan descriptions and budget information for the green activities, so no information needs to be provided by country OHUNs at this time.* ***Each OHUN should dedicate 1 person (or parts of multiple people) to be available for the global/regional planning and reporting activities.***

*Activities highlighted in gray are a menu of optional activities that countries may select from based on country priorities and anticipated funding available. Additional activities beyond those listed may be proposed as long as they are consistent with the Year 1 objectives and strategies; all newly proposed activities will be considered during work plan review. Please reflect on what the best activities were from the past that you want to continue, as well as proposing new activities that you think will be highly beneficial.*

*For each activity you want to propose, provide an activity description paragraph and then complete the associated activity details and budget details sections for the activity to the extent possible based on your current thinking and information available. Activities must be completed by* ***September 30, 2020*** *for OHW-NG Year 1 Work Plan.*

*Work plan strategies are meant to align with Joint External Evaluation Second Edition (JEE 2.0) Technical Areas and Indicators and existing Global Health Security Agenda (GHSA) Action Packages. The JEE 2.0 tool can be accessed at this link. The prime can assist with completing JEE, GHSA, and MEL information as needed for work plan activities in Year 1.*

# OHW-NG YEAR 1 WORK PLAN TEMPLATE TO COMPLETE

**NETWORK AND/OR COUNTRY:**

## OBJECTIVE 1: ONE HEALTH TRAINING AND EMPOWERMENT

*JEE 2.0 Technical Area: Human Resources*

*GHSA 2019 Action Package: Workforce Development*

***STRATEGY 1.1 One Health Content Curation and Development.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

**Activity 1.1.1 Curate and update existing One Health competencies, learning objectives, evaluation tools, and training materials.**

**Activity 1.1.2 Develop new prioritized One Health curricula content to complement existing offerings.**

***STRATEGY 1.2 One Health Academy.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

**Activity 1.2.1 Establish an open One Health Academy online structure to house existing and new One Health curricula.**

**Activity 1.2.2 Launch a regional community of practice for One Health faculty.**

**Activity 1.2.3 Support student One Health clubs to innovate and participate in the open One Health Academy.**

Activity Description:

Activity Details:

**Estimated Activity Date(s):**

**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable)*:
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

**Activity 1.2.4 Conduct a competitive small grants program to support One Health research and training.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable)*:
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

***STRATEGY 1.3 One Health Empowerment and Career Development.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

Justification:

**Activity 1.3.1 Create a One Health certificate program to set standards for knowledge and skills that One Health practitioners need to have.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable):*
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

**Activity 1.3.2 Work with public and private partners to create training and job opportunities for One Health practitioners.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable):*
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

***STRATEGY 1.4 One Health Experiential Learning.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

Justification:

**Activity 1.4.1 Conduct tabletop simulation exercises using One Health scenarios.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable** – *with assistance from prime in Y1)*:
**Expected output and MEL indicator** (*with assistance from prime in Y1)*:
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1)*:
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable)*:
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

**Activity 1.4.2 Support workshop and short course opportunities for One Health experiential learning activities that are linked to core One Health competencies.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable** – *with assistance from prime in Y1)*:
**Expected output and MEL indicator** (*with assistance from prime in Y1)*:
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1)*:
**Products/Deliverables (if applicable):**

Budget Details:

**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days *(if applicable)*:**
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

***STRATEGY 1.5 One Health Policy Engagement.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program e in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

Justification:

**Activity 1.5.1 Provide training on advocacy and writing policy briefs to empower One Health practitioners in leadership roles.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable** – *with assistance from prime in Y1)*:
**Expected output and MEL indicator** (*with assistance from prime in Y1)*:
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1)*:
**Products/Deliverables** (**if applicable**):

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days *(if applicable)*:**
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

**Activity 1.5.2 Support One Health fellows for internships with government and international policy-making organizations.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**

**Lead & Participating Institutions:**
**Direct Beneficiaries (and MEL target #, if applicable –** *with assistance from prime in Y1*)**:**
**Expected output and MEL indicator** (*with assistance from prime in Y1*)**:**
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*)**:**
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable)*:
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

## OBJECTIVE 2: ONE HEALTH WORKFORCE ASSESSMENT AND TRACKING

*JEE 2.0 Technical Area: Human Resources*
*GHSA 2019 Action Package: Workforce Development*

***STRATEGY 2.1: Establish a regional network Knowledge Management System (KMS).***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

**Activity 2.1.1 Conduct a Knowledge Management (KMS) needs assessment, evaluate existing OHUN websites, review existing KMS, and develop recommendations for design and development of a regional KMS for each network inclusive of its member countries.**

**Activity 2.1.2 Pilot the regional KMS.**

***STRATEGY 2.2: Develop a standardized OH competency assessment toolkit using a capability maturity model***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

**Activity 2.2.1 Conduct an in-depth review of existing competencies, learning objectives and assessment tools: identify gaps and/or inconsistencies; add/develop learning objectives where they are missing; match existing evaluation strategies to each learning objective; design evaluation strategies and tools where gaps exist; and develop a OH evaluation toolkit for trainees at the basic, proficient and advanced levels.**

**Activity 2.2.2 Pilot elements of the OH evaluation toolkit in one or more network countries**

Activity Description:

Activity Details:

**Estimated Activity Date(s):**

**Lead & Participating Institutions:**

**Direct Beneficiaries (and Monitoring, Evaluation, and Learning (MEL) target #, if applicable** – *with assistance from prime in Y1*):

**Expected output and MEL indicator** (*with assistance from prime in Y1*):

**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):

**Products/Deliverables (if applicable):**

Budget Details:

**Cost:**

**Location:** *(Venue, City, Country)*

**Total Number of Participants & Attendees (if applicable):** *(including support staff)*

**Duration/Number of Days** ***(if applicable):***

**Travel and hosting needs:** *(e.g. flights, lodging, meals)*

**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

***STRATEGY 2.3: Engage One Health coordinating bodies to support workforce assessment and tracking, including inclusion of OH competencies in national Continuing Professional Development certification requirements***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP or other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

**Activity 2.3.1 Review existing data and fill gaps to map national and regional One Health coordinating bodies, with a special focus on: mapping coordination of OH workforce activities; identifying countries/regions with the strongest multisectoral partnerships for OHW planning and management and distilling best practices; and identifying countries/regions with opportunities to enhance OHW coordination.**

**Activity 2.3.2 Engage with One Health coordinating bodies to identify regions/countries in which university network needs and priorities align with the need to enhance OHW**

**coordination; support interested networks/universities to conduct a situational analysis and determine how best to support their local OHW coordinating bodies; share relevant best practices and tools.**

**Activity 2.3.3 In a country/countries with existing Continuous Professional Development (CPD) systems and policies, support the national University Network or a member university to: scan CPD policies/guidelines for existing OH competencies; identify opportunities to include basic OH competencies in CPD training, licensure and re-certification requirements.**

Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and Monitoring, Evaluation, and Learning (MEL) target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** ***(if applicable):***
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

## OBJECTIVE 3: ORGANIZATIONAL SUSTAINABILITY

*JEE 2.0 Technical Area: Human Resources*
*GHSA 2019 Action Package: Workforce Development*

***STRATEGY 3.1: Assessment, benchmarking, and strategic planning.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

**Activity 3.1.1 Evaluate existing assessments, audit performance, and strategic plans to benchmark the previous status and the process for meeting NUPAS criteria.**

**Activity 3.1.2 Conduct workshops and activities to establish new benchmarks and update existing business plans with a five-year vision.**

***STRATEGY 3.2: Build network organizational capacities.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

**Activity 3.2.1 Create an organizational sustainability community of practice to share best practices, discuss challenges, and build competencies across the university networks.**

**Activity 3.2.2 Conduct site visits and other technical assistance and/or support to build organizational capability in a stepwise nature following the OCA domains and business plan**

***STRATEGY 3.3: Develop new and diversified partnerships with a five-year vision.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement IHR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement IHR core capacity requirements |

Justification:

**Activity 3.3.1 Identify and secure new public and private partners that can work closely with the university networks to train and foster One Health workforce opportunities.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and Monitoring, Evaluation, and Learning (MEL) target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** ***(if applicable):***
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

**Activity 3.3.2 Build partnership development capabilities within the university networks.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and Monitoring, Evaluation, and Learning (MEL) target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** ***(if applicable):***
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

***STRATEGY 3.4: Pilot and scale revenue-generating mechanisms for the university networks.***

| | |
|---|---|
| JEE 2.0 Indicators: | D.4.1 An up to date multisectoral workforce strategy is in place<br>D.4.2 Human resources are available to effectively implement HR<br>D.4.3 In-service trainings are available<br>D.4.4 FETP of other applied epidemiology training program is in place |
| GHSA Action Package: | D.4.1 Human resources are available to implement HR core capacity requirements |

Justification:

**Activity 3.4.1 Institutionalize One Health training into university as well as continuing professional development (CPD) programs of member countries.**
Activity Description:

Activity Details:

**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and Monitoring, Evaluation, and Learning (MEL) target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable)*:
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

**Activity 3.4.2 Evaluate and pilot revenue-generating models such as fee-based training opportunities, digital attestation app, and member services business model.**
Activity Description:

Activity Details:
**Estimated Activity Date(s):**
**Lead & Participating Institutions:**
**Direct Beneficiaries (and Monitoring, Evaluation, and Learning (MEL) target #, if applicable** – *with assistance from prime in Y1*):
**Expected output and MEL indicator** (*with assistance from prime in Y1*):
**Long-term outcome/impact and MEL indicator** (*with assistance from prime in Y1*):
**Products/Deliverables (if applicable):**

Budget Details:
**Cost:**
**Location:** *(Venue, City, Country)*
**Total Number of Participants & Attendees (if applicable):** *(including support staff)*
**Duration/Number of Days** *(if applicable)*:
**Travel and hosting needs:** *(e.g. flights, lodging, meals)*
**Supply and/or Service Needs:** *(e.g. translation services, supplies)*

**From:** Carolyn Forlee <cforlee@ucdavis.edu>
**To:** Woutrina A Smith <wasmith@ucdavis.edu>;Alison Andre <andre@ecohealthalliance.org>
**CC:** Peter Daszak <daszak@ecohealthalliance.org>;Kevin Olival <olival@ecohealthalliance.org>;Jonna Mazet <jkmazet@ucdavis.edu>;Mary Radford <maradford@ucdavis.edu>
**Sent:** 12/3/2019 12:16:06 PM
**Subject:** RE: Malaysia, Indonesia, Thailand

Good afternoon All,

I have the following times available for this call on 12/13:

9am PT/ 12pm ET
10am PT/ 1pm ET
1pm PT/ 4pm ET
2pm PT/ 5pm ET
3pm PT/ 6pm ET

Please let me know if any of these times work.

Kind regards,
Carolyn

**Carolyn Forlee**
Administrative Assistant
One Health Institute | Office for Global Programs
School of Veterinary Medicine
University of California, Davis
530-752-4859 TEL
cforlee@ucdavis.edu

**From:** Woutrina Smith
**Sent:** Tuesday, December 3, 2019 10:02 AM
**To:** Alison Andre
**Cc:** Peter Daszak ; Kevin Olival ; Jonna Mazet ; Carolyn Forlee ; Mary Radford
**Subject:** Re: Malaysia, Indonesia, Thailand

Hi Peter,

I'm glad you and a Jonna could touch base on the approach for OHW-NG. Yes we can chat on Dec 13, copying Carolyn who can help with calendaring for me considering our East coast/west coast time zones, and Mary who has Jonna's calendar in case she is able to join the call. I'll share some ideas by email before our call to keep things moving, and most urgently I'd like to introduce an EcoHealth rep this week as the initial global country liaison for Malaysia, Indonesia, and Thailand so they can participate in work planning with the countries now that we've gotten the ball rolling. This could be someone high level like Kevin if you want that, or we can get your regional folks Tom or others up to speed now and get them connected to the three country teams. How would you like to proceed? Woutrina

On Dec 3, 2019, at 7:44 PM, Alison Andre <andre@ecohealthalliance.org> wrote:

Dear Woutrina,

Could you please suggest a couple of times for Friday, December 13th? Peter's traveling until the end of next week but has plenty of availability that day.

Best,
Alison

**Alison Andre**
*Executive Assistant to the President*

EcoHealth Alliance
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New York, NY 10001

1.212.380.4462 (direct)
1.212.380.4465 (fax)
www.ecohealthalliance.org

*EcoHealth Alliance leads cutting-edge scientific research into the critical connections between human and wildlife health and delicate ecosystems. With this science, we develop solutions that prevent pandemics and promote conservation.*

**From:** Peter Daszak <daszak@ecohealthalliance.org>
**Date:** Tuesday, December 3, 2019 at 12:35 PM
**To:** Woutrina A Smith <wasmith@ucdavis.edu>, Kevin Olival <olival@ecohealthalliance.org>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, Alison Andre <andre@ecohealthalliance.org>, Aleksei Chmura <chmura@ecohealthalliance.org>, Catherine Machalaba <machalaba@ecohealthalliance.org>, Emily Hagan <hagan@ecohealthalliance.org>, Jon Epstein <epstein@ecohealthalliance.org>, "William B. Karesh" <karesh@ecohealthalliance.org>
**Subject:** RE: Malaysia, Indonesia, Thailand

Hi Wout,

Look forward to talking about these plans in detail with you. Alison – can you set up a time that works for Woutrina, Kevin and me?
I spoke with Jonna yesterday about the country liaisons, and I think the basic plan is to make use of our in-region people (Tom, Jimmy, Anne Laudisoit, Arif) at a regional, multi-country scale. Tom knows most of the SEAOHUN people across multiple countries, for example, and would be super-useful in dealing with some of the politics there.

As per my conversation with Jonna, we're looking at staff here at EHA as more focused on work within the three objectives, rather than acting as country-liaisons like we did in PREDICT. Right now, we're on every Objective phone call, chiming in with ideas and helping to work out what the exact work will be. Jon is EHA lead for Obj. 1, Catherine for Obj. 2 and me for Obj. 3. We meet here after each call to spread the word about what happens on each call, and to get make sure we're ready once the real work begins.

Anyway – look forward to talking with you and Kevin re. SEAOHUN

Cheers,

Peter

**Peter Daszak**
*President*

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Website: www.ecohealthalliance.org
Twitter: @PeterDaszak

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.*

**From:** Woutrina A Smith [mailto:wasmith@ucdavis.edu]
**Sent:** Tuesday, November 19, 2019 3:07 PM
**To:** Peter Daszak; Kevin Olival
**Cc:** Jonna Mazet
**Subject:** Re: Malaysia, Indonesia, Thailand

Hi Peter and Kevin,

The meetings in Bangkok with SEAOHUN last week went quite well to set things in motion, but we do have our work cut out for us going forward. It would be good to debrief and strategize with you on a call sometime soon, beyond what we can do on EB call tomorrow, to decide on the country management approach with your country liaison roles on tap for Malaysia, Thailand, and Indonesia. Workplan templates have been issued (attached) and the countries are now working on assimilating their ideas for Year 1 that strike a balance between previous successes and new opportunities associated with our global consortium. Are you guys around over the next couple of weeks, in which case we can coordinate with Evelyn or others to schedule a call to plan in more detail?

Best wishes, Woutrina

---

> On Nov 10, 2019, at 9:34 AM, Peter Daszak <daszak@ecohealthalliance.org> wrote:
>
> Definitely want to take the lead and help ensure a smooth transition.
>
> Agree re. immediate leads, for now, Tom for Malaysia, but just let folks know that Kevin and myself will be closely involved with all, incl. Thailand and Indonesia, and that we'll nominate a specific person once we're a few more weeks in..
>
>
>
>
>
> Cheers,
>
> Peter
>
>
>
> Peter Daszak
> President
>
> EcoHealth Alliance
> 460 West 34th Street – 17th Floor
> New York, NY 10001
>
> Tel. +1 212-380-4474
> Website: www.ecohealthalliance.org
> Twitter: @PeterDaszak

>
> EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.
>
>
> -----Original Message-----
> From: Woutrina A Smith [mailto:wasmith@ucdavis.edu]
> Sent: Sunday, November 10, 2019 2:43 AM
> To: Peter Daszak; Kevin Olival
> Subject: Malaysia, Indonesia, Thailand
>
> Hi Peter and Kevin,
>
> We'll be meeting with SEAOHUN and country OHUNs briefly this week as you know. I will mention that there will be a country liaison from our global consortium for each country as part of our management approach, I assume you are still interested in leading that for Malaysia, Indonesia, and Thailand, correct? I assume that will be Tom for Malaysia and do you know who you want to name for Thailand and Indonesia or shall I leave that vague for now? Cheers, Woutrina

**From:** Kevin Olival <olival@ecohealthalliance.org>
**To:** Peter Daszak <daszak@ecohealthalliance.org>;Woutrina Miller <wasmith@ucdavis.edu>
**CC:** Alison Andre <andre@ecohealthalliance.org>;Jonna Mazet <jkmazet@ucdavis.edu>;Carolyn Forlee <cforlee@ucdavis.edu>;Mary Radford <maradford@ucdavis.edu>
**Sent:** 12/4/2019 6:33:19 AM
**Subject:** Re: Malaysia, Indonesia, Thailand

Thanks Peter.

Wout, happy to serve in this role, please let me know what you need most immediately otherwise on standby until you make the introductions.

Cheers,
Kevin

On Dec 3, 2019, at 7:35 PM, Peter Daszak <daszak@ecohealthalliance.org> wrote:

For now, this should be Kevin, but I'd like to keep Tom Hughes active and engaged as the back up to this role – he's v. well connected in the region with the universities in the networks, as well as with the USAID Mission staff and other USG people who might be very influential for us.

Cheers,

Peter

**Peter Daszak**
*President*

EcoHealth Alliance
460 West 34th Street – 17th Floor
New York, NY 10001

Tel. +1 212-380-4474
Website: www.ecohealthalliance.org
Twitter: @PeterDaszak

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.*

**From:** Woutrina Smith [mailto:wasmith@ucdavis.edu]
**Sent:** Tuesday, December 3, 2019 1:02 PM
**To:** Alison Andre
**Cc:** Peter Daszak; Kevin Olival; Jonna Mazet; Carolyn Forlee; Mary Radford
**Subject:** Re: Malaysia, Indonesia, Thailand

Hi Peter,

I'm glad you and a Jonna could touch base on the approach for OHW-NG. Yes we can chat on Dec

13, copying Carolyn who can help with calendaring for me considering our East coast/west coast time zones, and Mary who has Jonna's calendar in case she is able to join the call. I'll share some ideas by email before our call to keep things moving, and most urgently I'd like to introduce an EcoHealth rep this week as the initial global country liaison for Malaysia, Indonesia, and Thailand so they can participate in work planning with the countries now that we've gotten the ball rolling. This could be someone high level like Kevin if you want that, or we can get your regional folks Tom or others up to speed now and get them connected to the three country teams. How would you like to proceed? Woutrina

On Dec 3, 2019, at 7:44 PM, Alison Andre <andre@ecohealthalliance.org> wrote:

Dear Woutrina,

Could you please suggest a couple of times for Friday, December 13th? Peter's traveling until the end of next week but has plenty of availability that day.

Best,
Alison

**Alison Andre**
*Executive Assistant to the President*

EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

1.212.380.4462 (direct)
1.212.380.4465 (fax)
www.ecohealthalliance.org

*EcoHealth Alliance leads cutting-edge scientific research into the critical connections between human and wildlife health and delicate ecosystems. With this science, we develop solutions that prevent pandemics and promote conservation.*

**From:** Peter Daszak <daszak@ecohealthalliance.org>
**Date:** Tuesday, December 3, 2019 at 12:35 PM
**To:** Woutrina A Smith <wasmith@ucdavis.edu>, Kevin Olival <olival@ecohealthalliance.org>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, Alison Andre <andre@ecohealthalliance.org>, Aleksei Chmura <chmura@ecohealthalliance.org>, Catherine Machalaba <machalaba@ecohealthalliance.org>, Emily Hagan <hagan@ecohealthalliance.org>, Jon Epstein <epstein@ecohealthalliance.org>, "William B. Karesh" <karesh@ecohealthalliance.org>
**Subject:** RE: Malaysia, Indonesia, Thailand

Hi Wout,

Look forward to talking about these plans in detail with you. Alison – can you set up a time that works for Woutrina, Kevin and me?
I spoke with Jonna yesterday about the country liaisons, and I think the basic plan is to make use of our in-region people (Tom, Jimmy, Anne Laudisoit, Arif) at a regional, multi-country scale. Tom knows most of the SEAOHUN people across multiple countries, for example, and would be super-useful in dealing with some of the politics there.

As per my conversation with Jonna, we're looking at staff here at EHA as more focused on work within the three objectives, rather than acting as country-liaisons like we did in PREDICT. Right now, we're on every

Objective phone call, chiming in with ideas and helping to work out what the exact work will be. Jon is EHA lead for Obj. 1, Catherine for Obj. 2 and me for Obj. 3. We meet here after each call to spread the word about what happens on each call, and to get make sure we're ready once the real work begins.

Anyway – look forward to talking with you and Kevin re. SEAOHUN

Cheers,

Peter

**Peter Daszak**
*President*

EcoHealth Alliance
460 West 34th Street – 17th Floor
New York, NY 10001

Tel. +1 212-380-4474
Website: www.ecohealthalliance.org
Twitter: @PeterDaszak

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.*

**From:** Woutrina A Smith [mailto:wasmith@ucdavis.edu]
**Sent:** Tuesday, November 19, 2019 3:07 PM
**To:** Peter Daszak; Kevin Olival
**Cc:** Jonna Mazet
**Subject:** Re: Malaysia, Indonesia, Thailand

Hi Peter and Kevin,

The meetings in Bangkok with SEAOHUN last week went quite well to set things in motion, but we do have our work cut out for us going forward. It would be good to debrief and strategize with you on a call sometime soon, beyond what we can do on EB call tomorrow, to decide on the country management approach with your country liaison roles on tap for Malaysia, Thailand, and Indonesia. Workplan templates have been issued (attached) and the countries are now working on assimilating their ideas for Year 1 that strike a balance between previous successes and new opportunities associated with our global consortium. Are you guys around over the next couple of weeks, in which case we can coordinate with Evelyn or others to schedule a call to plan in more detail?

Best wishes, Woutrina

---

> On Nov 10, 2019, at 9:34 AM, Peter Daszak <daszak@ecohealthalliance.org> wrote:
>
> Definitely want to take the lead and help ensure a smooth transition.
>
> Agree re. immediate leads, for now, Tom for Malaysia, but just let folks know that Kevin and myself will be closely involved with all, incl. Thailand and Indonesia, and that we'll nominate a specific person once we're a few more weeks in..
>
>

>
>
>
> Cheers,
>
> Peter
>
>
>
> Peter Daszak
> President
>
> EcoHealth Alliance
> 460 West 34th Street – 17th Floor
> New York, NY 10001
>
> Tel. +1 212-380-4474
> Website: www.ecohealthalliance.org
> Twitter: @PeterDaszak
>
> EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that prevent pandemics and promote conservation.
>
>
> -----Original Message-----
> From: Woutrina A Smith [mailto:wasmith@ucdavis.edu]
> Sent: Sunday, November 10, 2019 2:43 AM
> To: Peter Daszak; Kevin Olival
> Subject: Malaysia, Indonesia, Thailand
>
> Hi Peter and Kevin,
>
> We'll be meeting with SEAOHUN and country OHUNs briefly this week as you know. I will mention that there will be a country liaison from our global consortium for each country as part of our management approach. I assume you are still interested in leading that for Malaysia, Indoenesia, and Thailand, correct? I assume that will be Tom for Malaysia and do you know who you want to name for Thailand and Indonesia or shall I leave that vague for now? Cheers, Woutrina

**From:** Andrew Clements <aclements@usaid.gov>
**To:** David J Wolking <djwolking@ucdavis.edu>
**CC:** Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;PREDICTMGT <predictmgt@usaid.gov>
**Sent:** 12/13/2019 1:01:44 AM
**Subject:** Re: Updated numbers requested for GHSA results report

Thanks!

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Dec 13, 2019, at 12:57 AM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi Andrew,

Received. We will redraft and get this back to you after consulting internally on the final numbers now that we have them.

David

On Thu, Dec 12, 2019 at 10:39 AM Andrew Clements <aclements@usaid.gov> wrote:
Hi Chris and David,

Richard Greene is beginning to prepare the 2019 GHSA Results Report. We've been asked to update (NLT noon EST on 1/3/20) the following language from the 2018. (Note that this appears to only apply to the GHSA phase 1 countries. So there is no confusion, please include a footnote mentioning which specific countries you are including).

***Detection of Emerging Threats***: *Through the PREDICT project, USAID is supporting the most comprehensive effort to date to strengthen capacities for improved detection, identification, and characterization of priority zoonotic diseases and spillover risk for emerging threats in the world's most vulnerable hotspots for disease emergence. In 12 African and four Asian countries, the PREDICT project has tested samples from 15,118 animals and 2,316 humans for high priority viral families, such as corona-, filo-, flavi-, influenza-, and paramyxoviruses, which are associated with high consequence outbreaks, such as Ebola, Marburg, influenza, and Middle East Respiratory Syndrome coronavirus. Results from Africa in 2018 include the identification of 17 new viruses and 26 existing viruses in new geographic areas or species, which will be prioritized to determine which viruses to characterize to understand if they may pose risks to humans. In addition, PREDICT conducted in-depth behavioral interviews with more than 1,584 individuals to help identify the enabling behaviors and practices associated with transmission of priority zoonotic diseases and other emerging threats.*

Thanks!

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** Andrew Clements <aclements@usaid.gov>
**To:** David J Wolking <djwolking@ucdavis.edu>
**CC:** Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;PREDICTMGT <predictmgt@usaid.gov>
**Sent:** 12/18/2019 10:15:39 AM
**Subject:** Re: Updated numbers requested for GHSA results report

Yes, just P2 and just GHSA

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Dec 18, 2019, at 6:51 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi Andrew,

This refers to just P2 numbers correct? Focusing on the GHSA investment over the past 5 years? just wanted to confirm before we finalize.

Thanks!

David

On Thu, Dec 12, 2019 at 3:57 PM David J Wolking <djwolking@ucdavis.edu> wrote:
Hi Andrew,

Received. We will redraft and get this back to you after consulting internally on the final numbers now that we have them.

David

On Thu, Dec 12, 2019 at 10:39 AM Andrew Clements <aclements@usaid.gov> wrote:
Hi Chris and David,

Richard Greene is beginning to prepare the 2019 GHSA Results Report. We've been asked to update (NLT noon EST on 1/3/20) the following language from the 2018. (Note that this appears to only apply to the GHSA phase 1 countries. So there is no confusion, please include a footnote mentioning which specific countries you are including).

***Detection of Emerging Threats**: Through the PREDICT project, USAID is supporting the most comprehensive effort to date to strengthen capacities for improved detection, identification, and characterization of priority zoonotic diseases and spillover risk for emerging threats in the world's most vulnerable hotspots for disease emergence. In 12 African and four Asian countries, the PREDICT project has tested samples from 15,118 animals and 2,316 humans for high priority viral families, such as corona-, filo-, flavi-, influenza-, and paramyxoviruses, which are associated with high consequence outbreaks, such as Ebola, Marburg, influenza, and Middle East Respiratory Syndrome coronavirus. Results from Africa in 2018 include the identification of 17 new viruses and 26 existing viruses in new geographic areas or species, which*

*will be prioritized to determine which viruses to characterize to understand if they may pose risks to humans. In addition, PREDICT conducted in-depth behavioral interviews with more than 1,584 individuals to help identify the enabling behaviors and practices associated with transmission of priority zoonotic diseases and other emerging threats.*

Thanks!

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** Andrew Clements <aclements@usaid.gov>
**To:** David J Wolking <djwolking@ucdavis.edu>
**CC:** PREDICTMGT <predictmgt@usaid.gov>;Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;Tracey Goldstein <tgoldstein@ucdavis.edu>
**Sent:** 12/20/2019 2:57:46 AM
**Subject:** Re: Updated numbers requested for GHSA results report

Thanks!

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-243-4233
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see http://www.usaid.gov/ept2*

On Fri, Dec 20, 2019 at 1:56 AM David J Wolking <djwolking@ucdavis.edu> wrote:
Hi Andrew,

Here's some updated language to use for the report. Happy to address any questions or provide further details if needed...

Best,

David

In 10 African and four Asian countries*, the PREDICT project tested samples from 35,694 animals and 6,573 humans for high priority viral families (e.g., corona-, filo-, flavi-, influenza-, and paramyxoviruses), which are associated with high consequence outbreaks, such as Ebola, Marburg, influenza, and Middle East Respiratory Syndrome coronavirus. In addition, PREDICT conducted in-depth behavioral interviews with >8,960 individuals to help identify the enabling behaviors and practices associated with transmission of priority zoonotic diseases and other emerging threats. The project identified 99 new viruses and 64 existing viruses (41 new viruses and 38 existing viruses in Africa), including Marburg virus, Zaire ebolavirus, and Bombali ebolavirus (a newly detected member of the *Ebolavirus* genus) in the West Africa region. Newly identified viruses are undergoing analyses to understand if they may pose risks to humans.

***Phase 1 GHSA Countries**
Africa: Cameroon, Cote d'Ivoire, Ethiopia, Guinea, Kenya, Liberia, Senegal, Sierra Leone, Tanzania, Uganda
Asia: Bangladesh, India, Indonesia, Vietnam

On Fri, Dec 13, 2019 at 1:01 AM Andrew Clements <aclements@usaid.gov> wrote:
Thanks!

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*

*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Dec 13, 2019, at 12:57 AM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi Andrew,

Received. We will redraft and get this back to you after consulting internally on the final numbers now that we have them.

David

On Thu, Dec 12, 2019 at 10:39 AM Andrew Clements <aclements@usaid.gov> wrote:
Hi Chris and David,

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Thanks!

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** Woutrina A Smith <wasmith@ucdavis.edu>
**To:** Corina Grigorescu Monagin <cgmonagin@UCDAVIS.EDU>
**Cc:** Oladele Ogunseitan <oladele.ogunseitan@uci.edu>, Peter Daszak <daszak@ecohealthalliance.org>, "William B. Karesh" <Karesh@ecohealthalliance.org>, "mr84@columbia.edu" <mr84@columbia.edu>, alexandra zuber <alexandrazuber@atahealthstrategies.com>, Matthew Blake <mblake@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Terra Kelly <trkelly@ucdavis.edu>, Jaber Amine Belkhiria <jabelkhiria@ucdavis.edu>, Elizabeth Leasure <ealeasure@UCDAVIS.EDU>, Jonna Mazet <jkmazet@ucdavis.edu>, "McNeil, Carrie S." <csmcnei@sandia.gov>, Jutta Lehmer <JLehmer@salud.unm.edu>, Omar Romero-hernandez <oromero@haas.berkeley.edu>, Bruce Baird Struminger <BStruminger@salud.unm.edu>, Federico Castillo <f.castillo@berkeley.edu>, Ndola PRATA <nrdola@berkeley.edu>, "Tiffany Harris, PhD, MS" <trh2604@columbia.edu>, "Costa, Cristiane" <co123@cumc.columbia.edu>, "Amaya, Idalia M." <ima2107@cumc.columbia.edu>, Sam Halabi <sfh9@georgetown.edu>, onehealthnextgen Sympa List <onehealthnextgen@ucdavis.edu>
**Subject:** OHW-NG Executive Board Call February 26th, 11am PST/2pm EST
**Sent:** Tue, 25 Feb 2020 23:02:11 +0000

Thanks Corina. I won't be on OHW calls Wednesday so Jonna will be running the show. The revised USAID work plan did go into Marilyn last week and we are hoping for green light feedback on MT call tomorrow.
One request from me for the group, to see if we can streamline the email inbox overload situation:
- It's very helpful to include onehealthnextgen@ucdavis.edu in the various OHW-NG emails, but please do also include the direct email address of the folks you are most directly talking to. That way we can set up an email filter to keep the onehealthnextgen emails on file but not have them all show in all the inboxes unless your individual email address is also included.
- For group emails, no need to respond to all if just saying thanks to the sender.

Much appreciated! Woutrina

---

Dear all,

Please see attached and below for this week's OHW-NG EB call agenda. Talk to you all tomorrow.

Regards,
Corina

OHW-NG EB Zoom Meeting
February 26th, 2020 11-12 AM US/Pacific
VM38 room 1001 (UC Davis)

Join Zoom Meeting

https://onehealth.zoom. REDACTED

Meeting ID: REDACTED

**1. Administrative items**
- UCD updates from USAID
- UCD Admin updates

**2. Workplan updates**

**3. Objective Team/Network Updates**

**4. Conference updates**

- Consortium of Universities for Global Health, Washington DC, (April 18-20) https://cugh2020.org -**OHW-NG meet up on Sat, April 18 afternoon/evening?**
- One Health World Congress, Edinburgh June 14-18, 2020)https://onehealthplatform.com/cnt/article/edinburgh-2020 - **Thurs/Fri, June 11&12 proposed as OHW-NG semi-annual meeting in Edinburgh linked to WOHC**

**5. AOB**

Join Zoom Meeting

https://onehealth.zoom REDACTED

Meeting ID: REDACTED

One tap mobile

+16699006833 REDACTED US (San Jose)

+16468769923 REDACTED US (New York)

Dial by your location

+1 669 9006833 US (San Jose)

+1 646 8769923 US (New York)

Meeting ID: REDACTED

Find your local number: https://onehealth.zoom.us/u/ac52euoqvw

**From:** Andrew Clements <aclements@usaid.gov>
**To:** David J Wolking <djwolking@ucdavis.edu>
**CC:** Alisa Pereira Emerging Threats Division <apereira@usaid.gov>;Amalhin Shek <ashek@usaid.gov>;predict@ucdavis.edu <predict@ucdavis.edu>
**Sent:** 4/1/2020 12:25:05 PM
**Subject:** [predict] Re: [ohi-covid-coms] FW: UC Davis News: PREDICT receives extension for COVID-19 pandemic emergency response

Thanks, David.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Apr 1, 2020, at 8:40 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi Andrew and team,

Pretty sure you received this from me yesterday morning but I had a draft stuck in my outbox to you so sending again.

The UCD release was posted after our management team call and is now online (below). The PREDICT news brief also went out and I'm sure you received it directly from the PREDICT consortium. The press release was also linked there.

We are starting to receive messages from collaborating partners around the world (Senegal, Guinea, Indonesia, and beyond) and all are eager to get started with us in the extension!

David

---------- Forwarded message ---------
From: **Kristin Burns** <kburns@ucdavis.edu>
Date: Tue, Mar 31, 2020 at 10:41 AM
Subject: [ohi-covid-coms] FW: UC Davis News: PREDICT receives extension for COVID-19 pandemic emergency response
To: ohi-covid-coms@ucdavis.edu <ohi-covid-coms@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>, Brian H Bird <bhbird@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>
Cc: Brandon Minto <bjminto@ucdavis.edu>

The release just went out. Kat is pitching to NYT, WaPo, STAT News and others.

kb

--

Kristin Burns

Content Marketing Manager

One Health Institute

UC Davis

530-752-0590

onehealth.institute

**From:** <newstips-request@ucdavis.edu> on behalf of UC Davis News and Media Relations <news@ucdavis.edu>
**Date:** Tuesday, March 31, 2020 at 10:37 AM
**To:** newstips Sympa List <newstips@ucdavis.edu>, getnews Sympa List <getnews@ucdavis.edu>
**Subject:** UC Davis News: PREDICT receives extension for COVID-19 pandemic emergency response

UC DAVIS
UNIVERSITY OF CALIFORNIA

# PREDICT Receives Extension for COVID-19 Pandemic Emergency Response

## Early Laboratory Detection of SARS CoV-2, Tracking Animal Source Among Priorities

*By Kristin Burns on March 31, 2020, in Human & Animal Health*

PREDICT will provide emergency support to other countries for outbreak response including technical support for early detection of SARS CoV-2, the virus that causes the disease COVID-19, through a six-month extension from the U.S. Agency for International Development, or USAID, effective April 1.

The 10-year PREDICT Project, part of USAID's Emerging Pandemic Threats Program, was initiated in 2009 to strengthen health security and global capacity for the detection and discovery of viruses of pandemic potential that can move between animals and people.

Led by the **One Health Institute in the UC Davis School of Veterinary Medicine** with consortium partners around the world, the project has worked in more than 30 countries throughout Africa, Asia and Latin America to enable zoonotic disease detection capabilities in more than 60 laboratories and train a One Health workforce of nearly 7,000 cross-trained professionals.

## Strengthening global lab capacity for detection

Previously scheduled to conclude in March 2020, the PREDICT project had been supporting partners in Asia and Africa providing technical assistance for laboratory response during the COVID-19 outbreak, **including laboratories in Thailand, Cambodia and Nepal**.

By using PREDICT's detection protocols before the virus sequence and specific assays were available, these labs were able to detect the new SARS CoV-2 virus in some of the first patients that traveled outside China.

With the $2.26 million extension, the PREDICT project will continue to provide technical expertise to support detection of SARS CoV-2 cases in Africa, Asia and the Middle East to inform the public health response. The project will also investigate the animal source or sources of SARS CoV-2 using data and samples collected over the past 10 years in Asia and Southeast Asia.

"The PREDICT-trained labs and networks have been key for detection of initial cases in their countries," said Professor Tracey Goldstein, pathogen detection lead for PREDICT and an associate director of the UC Davis One Health Institute. "They are a trusted resource in their countries, are assisting with coronavirus detection and included on government taskforces to support the response."

## Investigating the animal source of SARS CoV-2

Over the past 10 years, surveillance teams in Asia and Southeast Asia collected more than 57,000 animal and human samples and identified bat families that are likely to carry viruses in the SARS group. They have provided insight into potential animal host or hosts of SARS CoV-2.

The PREDICT project's collaborating laboratories will conduct SARS CoV-2-specific testing on samples collected from the region including from markets.

Existing project data will be analyzed to investigate the risks for virus spillover and spread at these markets and other high-risk animal-human interfaces, including human behaviors, types of animals present, value chains and networks.

"The current COVID-19 pandemic reminds us that none of us are immune to viruses that emerge from animals to infect people," said Christine K. Johnson, professor of epidemiology at UC Davis and director of the PREDICT project. "Early detection of imported COVID-19 cases by the PREDICT network of One Health professionals, and their ability to contribute to characterization of the original source of this pandemic, highlights the need for continued work in support of collaborating countries."

## Media contact(s)

**Kat Kerlin**, UC Davis News and Media Relations, 530-752-7704, kekerlin@ucdavis.edu

## Media Resources

***Press kit: Photo and fact sheets***

To see more UC Davis news, visit our online newsroom: https://www.ucdavis.edu/news

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unsubscribe from getnews | unsubscribe from newstips

**From:** Dennis Carroll [redacted]
**Sent:** Fri, 24 Apr 2020 19:07:46 -0700
**Subject:** FDA
**To:** jkmazet@ucdavis.edu, daszak@ecohealthalliance.org

https://www.avma.org/javma-news/2020-02-15/jones-promoted-rear-admiral-public-health-service

This is one of the FDA people I talked with today.

**From:** Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
**To:** Patricia Bradley <pbradley@usaid.gov>
**Cc:** Jose Nunez Grullon <jnunezgrullon@usaid.gov>, Andrew Clements <aclements@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>, predict Sympa List <predict@ucdavis.edu>, Ashna Kibria <akibria@usaid.gov>
**Subject:** RE: PREDICT-2 ATF approval request for WCS payments to RAHO6
**Sent:** Thu, 10 Sep 2020 02:51:26 +0000

Hi Patricia. I'm following up regarding this ATF request. Please provide a status update at your earliest convenience.

Many thanks,
Liz

*Elizabeth Leasure*
*Financial Operations Manager*
*One Health Institute*
REDACTED *(cell)*
*530-754-9034 (office)*
*Skype: ealeasure*

---

**From:** Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
**Sent:** Tuesday, August 18, 2020 5:23 PM
**To:** Elizabeth Leasure <ealeasure@UCDAVIS.EDU>; Patricia Bradley <pbradley@usaid.gov>
**Cc:** Jose Nunez Grullon <jnunezgrullon@usaid.gov>; Andrew Clements <aclements@usaid.gov>; Jonna Mazet <jkmazet@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>; predict Sympa List <predict@ucdavis.edu>; Ashna Kibria <akibria@usaid.gov>
**Subject:** RE: PREDICT-2 ATF approval request for WCS payments to RAHO6

Hi Patricia. I'm following up regarding this ATF request. Please provide a status update at your earliest convenience.

Many thanks,
Liz

*Elizabeth Leasure*
*Financial Operations Manager*
*One Health Institute*
REDACTED *(cell)*
*530-754-9034 (office)*
*Skype: ealeasure*

---

**From:** Elizabeth Leasure
**Sent:** Monday, July 20, 2020 12:06 PM
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>; Patricia Bradley <pbradley@usaid.gov>
**Cc:** Jose Nunez Grullon <jnunezgrullon@usaid.gov>; Andrew Clements <aclements@usaid.gov>; Jonna Mazet <jkmazet@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>; predict Sympa List <predict@ucdavis.edu>; Ashna Kibria <akibria@usaid.gov>
**Subject:** RE: PREDICT-2 ATF approval request for WCS payments to RAHO6

Hi Patricia. I'm following up regarding this ATF request. Any status updates you can provide are most appreciated.

Thank you,
Liz

*Elizabeth Leasure*
*Financial Operations Manager*
*One Health Institute*

REDACTED (cell)
530-754-9034 (office)
Skype: ealeasure

**From:** predict-request@ucdavis.edu <predict-request@ucdavis.edu> **On Behalf Of** Elizabeth Leasure
**Sent:** Wednesday, June 17, 2020 5:24 PM
**To:** Patricia Bradley <pbradley@usaid.gov>
**Cc:** Jose Nunez Grullon <jnunezgrullon@usaid.gov>; Andrew Clements <aclements@usaid.gov>; Jonna Mazet <jkmazet@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>; predict Sympa List <predict@ucdavis.edu>; Ashna Kibria <akibria@usaid.gov>
**Subject:** [predict] PREDICT-2 ATF approval request for WCS payments to RAHO6

Hi Patricia. Apologies for the delay in getting this to you. Please find attached the required documents for an After-The-Fact approval request for laboratory services purchased without prior approval from **RAHO 6**. I've included a summary of the situation below to refresh your memory. If you have any questions or need anything else, please let me know.

Documents provided:
1) Determinations & Findings document; 2) AOR checklist; 3) Basis of Selection memo; 4) Negotiation memo; and 5) a copy of the subcontract documents.

Thank you,
Liz

*Elizabeth Leasure*
*Financial Operations Manager*
*One Health Institute*
REDACTED (cell)
530-754-9034 (office)
Skype: ealeasure

**Subject:** [predict] PREDICT-2 ATF approval request for WCS payments to National Laboratories

Hi Ryland and Andrew. By way of this email, we are requesting after-the-fact approval for costs incurred by our subrecipient, Wildlife Conservation Society (WCS). In the course of executing their role as primary implementing partner for PREDICT-2 activities in Mongolia and Viet Nam, WCS paid **$70,328.11** to national laboratories (including Viet Nam National University of Agriculture, Regional Animal Health Office No. 6 in Viet Nam, and State Central Veterinary Laboratory in Mongolia) for PREDICT sample testing services. While the services procured are necessary for completion of project objectives in Viet Nam and Mongolia and are otherwise allowable, allocable, and reasonable, prior approval to establish new subcontracts with these foreign governmental entities was not obtained in advance of initial payments being made. As such, we are now seeking AO approval to use available PREDICT-2 funds already obligated to cover these costs, as these labs are the most appropriate contractors in these countries. Details regarding the facts and circumstances of these expenditures are included below.

We became aware of this issue during the intensive budgeting process required for the PREDICT cooperative agreement ceiling increase when certain comments made by a WCS staff member caused us to solicit further details above and beyond normal subrecipient monitoring required for federal compliance and our own extended best practices. Once we became aware of the payments made, we instructed WCS that they may no longer invoice UC Davis for reimbursement of costs associated with services provided by the laboratories in question until USAID approval was obtained. We also notified you both by email on 10/17/2017 and requested further guidance regarding how best to address and resolve this issue. To date, no such guidance has been received, so we are suggesting and requesting retroactive approval of these costs as the best course of action to satisfactorily remedy the situation. Now that contracts with the laboratories in question have been approved, only these outstanding costs are pending resolution.

Upon review, it appears that the WCS analyst responsible (who is no longer employed by WCS) believed that fee-for-service activities were exempt from AO review/prior approval requirements and that AOR approval of the annual program budget constituted approval of all costs identified in that budget, which is not the case. Unfortunately, this misunderstanding occurred despite many discussions regarding prior approval requirements and our continual stressing that we (as prime) should be made aware in advance of all new subcontracts and subawards (especially those involving foreign governmental entities and parastatals) in order to ensure the necessary approvals were obtained. We do not believe WCS intended to circumvent USAID prior approval requirements, nor do we believe their actions are the result of gross negligence but rather the result of a misinformed former employee.

Given the circumstances described above, we believe it is in the best interest of the project for these costs to be approved. If you require any additional information, please let me know. Thank you for your continued efforts on behalf of PREDICT-2 and your consideration of this request.

Sincerely,

Liz

**From:** Jon Epstein <epstein@ecohealthalliance.org>
**Sent:** Mon, 21 Sep 2020 15:45:25 -0400
**To:** Oladele Ogunseitan <oladele.ogunseitan@uci.edu>
**Cc:** Irene Naigaga <inaigaga@afrohun.org>, Winnie Bikaako <wbikaako@afrohun.org>, Woutrina A Smith <wasmith@ucdavis.edu>, Terra Kelly <trkelly@ucdavis.edu>, onehealthnextgen Sympa List <onehealthnextgen@ucdavis.edu>
**Subject:** [onehealthnextgen] Re: Urgent Action Require: AFROHUN OHW Academy TAC Meeting today (Monday 21st Sept.) at 4:00pm UG Time

Ok, great. Thanks.
-Jon

On Mon, Sep 21, 2020 at 3:44 PM Oladele Ogunseitan <oladele.ogunseitan@uci.edu> wrote:

Thanks, Jon.
Yes, I was able to attend the meeting to discuss the certificate in One Health within the context of the Academy.

- Dele

On Sep 21, 2020, at 12:15 PM, Jon Epstein <epstein@ecohealthalliance.org> wrote:

Irene and Dele,
Apologies, I just saw this email. Were either of you able to discuss the academy during the TAC meeting?
Cheers,
Jon

On Mon, Sep 21, 2020 at 9:08 AM Oladele Ogunseitan <oladele.ogunseitan@uci.edu> wrote:

Greetings, Irene.
Thanks, Irene.

Right now, I am serving as a judge for the Kenya One Health Global Case Competition. If I understand the schedule of the TAC meeting, this is exactly the same time. The competition is starting now at 4pm East Africa Time (6am California Time). I am not sure if I will have some time to make the presentation to TAC, but I will ask Sam Wanjohi.

Through this email, I am notifying Jon to see if he is available to attend the TAC meeting.

Best wishes.

- Dele

Dele Ogunseitan
University of California Presidential Chair
Professor of Population Health & Disease Prevention
Irvine CA 92697

www.linkedin.com/in/deleogunseitan
https://zoom.us/my/deleogunseitan

On Sep 21, 2020, at 2:18 AM, Irene Naigaga <inaigaga@afrohun.org> wrote:

Dear Dele,

I apologize for this abnormally short turnaround time. We have received confirmation from all the TAC members to have the committee's inaugural meeting today at 4:00pm Uganda time. Again I apologize for the short notice on your part. Winnie and I are trying to put together a brief agenda for the

meeting. Can you make a brief presentation about the certification which is the main focus of the academy under the OHW-NG project. I will be sharing a zoom link and draft agenda in the next email.

Thank you very and looking forward to your positive response.

<image001.png>

Dr. Irene Naigaga

**Program Manager | AFROHUN**
**Africa One Health University Network**

M: [redacted]

P: +256-392-001-642

E: inaigaga@afrohun.org

A: Plot 16A Elizabeth Avenue Kololo

afrohun.org

<image002.png> <image003.png>

**AFRICA ONE HEALTH UNIVERSITY NETWORK (AFROHUN)** formerly **ONE HEALTH CENTRAL AND EASTERN AFRICA (OHCEA).**

UCDUSR0005654

Stay safe. Stay home. Stay alive.

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**AFROHUN**

--

**Jonathan H. Epstein DVM, MPH, PhD**

*Vice President for Science and Outreach*

EcoHealth Alliance
520 Eighth Avenue, Ste. 1200

New York, NY 10018
1.212.380.4467 (direct)
REDACTED mobile)

web: ecohealthalliance.org

Twitter: @epsteinjon

*EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation*

--

**Jonathan H. Epstein DVM, MPH, PhD**

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Twitter: @epsteinjon

*EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation*

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Tue, 29 Sep 2020 09:40:41 -0700
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**Cc:** PREDICTMGT <predictmgt@usaid.gov>, Angela Wang <awang@usaid.gov>, Umesh Alavadi <ualavadi@usaid.gov>, David John Wolking <djwolking@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, predict Sympa List <predict@ucdavis.edu>
**Subject:** [predict] Re: Urgent Request

Thank you, Liz!

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Sep 29, 2020, at 6:38 PM, 'Elizabeth Leasure' via PREDICTMGT <predictmgt@usaid.gov> wrote:

Hi Andrew. Total anticipated expenditures for India are $2,639,646.

Thanks,
Liz

*Elizabeth Leasure*
*Financial Operations Manager*
*One Health Institute*
[redacted] *(cell)*
*530-754-9034 (office)*
*Skype: ealeasure*

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Monday, September 28, 2020 9:54 AM
**To:** Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
**Cc:** PREDICTMGT <predictmgt@usaid.gov>; Angela Wang <awang@usaid.gov>; Umesh Alavadi <ualavadi@usaid.gov>; David John Wolking <djwolking@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>
**Subject:** Re: Urgent Request

Hi Liz,

Can you provide a fully-loaded estimate for the total India expenditure under the PREDICT-2 cooperative agreement (between Oct 2014 and Sep 2020)? The Mission has requested this information.

Thanks!

Andrew

--

You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
To unsubscribe from this group and stop receiving emails from it, send an email to
predictmgt+unsubscribe@usaid.gov.
To view this discussion on the web visit

https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/BYAPR08MB5590D7DCAB47F652079C71C2A2320%40BYAPR08MB5590.namprd08.prod.outlook.com.

**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Towner, Jonathan (Jon) (CDC/OID/NCEZID) <jtt8@cdc.gov>
**CC:** ckjohnson@ucdavis.edu <ckjohnson@ucdavis.edu>;Tracey Goldstein <tgoldstein@ucdavis.edu>;epstein@ecohealthalliance.org <epstein@ecohealthalliance.org>;Brian Bird <bhbird@ucdavis.edu>;Klena, John D. (CDC/OID/NCEZID) <jro4@cdc.gov>;Nichol, Stuart T. (CDC/OID/NCEZID) <stn1@cdc.gov>
**Sent:** 1/10/2017 4:22:51 PM
**Subject:** Re: That was fun

Dear Jon, John & Stuart,
Thank you so very much for the great meeting. We also really appreciated the open conversations and brainstorming, almost as much as the good company. Very fun! The introductions were great and likely super useful. I'm looking forward to following up and working more substantively together. Stuart and I have become very close over text messages, as he kept my spirits up on the odyssey home :) My respect for weather, or at least the dramatic response of humans to it, is definitely intensified.
Have our own impressive weather going here now.
More soon,
Jonna

UCDUSR0005650

On Tue, Jan 10, 2017 at 4:00 PM, Towner, Jonathan (Jon) (CDC/OID/NCEZID) <jt8@cdc.gov> wrote:

Hi Folks,

Before we get any further from our visit last week I just wanted to reach out and say thanks again for making your way to Atlanta, we really enjoyed the visit, particularly the productive and open conversations. We definitely want to keep the lines of direct communication going! I trust that you all got back safely despite the threats of nasty weather here, and that for those of you out west, you're keeping dry!

Cheers,

Jon

**From:** Tom Hughes <tom.hughes@ecohealthalliance.org>
**To:** Daniel Schar <dschar@usaid.gov>, Sudarat <sdamrongwatanapokin@usaid.gov>
**Cc:** "PREDICT@ucdavis.edu" <PREDICT@ucdavis.edu>, "apereira@usaid.gov" <apereira@usaid.gov>, "aclements@usaid.gov" <aclements@usaid.gov>
**Sent:** Wed, 8 Feb 2017 20:02:04 +0000
**Subject:** [predict] Partner Update.
PREDICT Malaysia Y2Q3 and Y2Q4 Partner Update.pdf

Hi Dan and Sudarat,

I hope this email finds you both well.

Attached is Malaysia partner update for Y2Q3&4.

Please let me know if you have any questions.

Thanks.

Tom

**Tom Hughes**

*Senior Scientist*
*Project Coordinator - Malaysia*

EcoHealth Alliance
460 West 34th Street - 17th floor
New York, NY 10001

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0060 (0)3 6157 6035 (fax)
www.ecohealthalliance.org

*EcoHealth Alliance integrates innovative science-based solutions and partnerships that increase capacity to achieve two interrelated goals: protecting global health by preventing the outbreak of emerging diseases and safeguarding ecosystems by promoting conservation.*

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September 30, 2016

Dear Partner,

The PREDICT project, part of USAID's Emerging Pandemic Threats program (EPT), is developing a global early warning system to detect, track, and predict the emergence of new zoonotic pathogens from wildlife that could pose a threat to human health. In Malaysia, PREDICT is implemented by EcoHealth Alliance in partnership with Department of Veterinary Services (Ministry of Agriculture), Ministry of Health and the National Public Health Laboratory, Department of Wildlife and National Parks (PERHILITAN), Sabah State Health Department and the Public Health Laboratory in Kota Kinabalu, Sabah Wildlife Department, Danau Girang Field Center, Universiti Putra Malaysia and in cooperation with local stakeholders and communities.

Below is the summary of PREDICT achievements and progress during the second 6 months of Year two activities from March to September, 2016. The report includes an overview of PREDICT at the global level, followed by the summary of activities and progress in Malaysia.

Please direct all correspondence to the PREDICT Malaysia Country Coordinator:

Tom Hughes
PREDICT Malaysia Country Coordinator
Email: tom.hughes@ecohealthalliance.org
Phone: REDACTED Mobile: REDACTED
Address: REDACTED

**PREDICT-2 Malaysia: Continuing Plans**

- Prioritize epizones and pathways in Malaysia along an urban-rural gradient, at transboundary animal value chains and animal production pathways for disease emergence, evolution, amplification, and spread to identify opportunities for targeted monitoring of zoonotic viruses in wildlife and human populations.
- Conduct concurrent sampling of wildlife, livestock and at-risk human populations with high levels of contact with animals at Orang Asli villages on Peninsular Malaysia. Continue to conduct systematic and intensive wildlife sampling along a deforestation gradient and compare viral diversity in bats, rodents and non-human primates from each zone in Sabah.
- Initiate training of MOH District Health Office field teams for behavioral and biological human surveillance activities, and investigate human behaviors that may influence zoonotic disease risk.
- Strengthen capacity and conduct laboratory diagnostic testing on collected biological samples according to established PREDICT protocols.
- Continue to develop laboratory and surveillance capacity for human, wildlife and livestock surveillance.
- Coordinate with EPT partners in capacity strengthening and operationalizing the One Health approach at the country and regional levels.
- Identify and monitor behaviors, attitudes, practices, and socio-cultural norms that create risk for disease emergence.

**PREDICT Malaysia Summary of Activities and Progress March 2016 to September 2016**
**Surveillance and Field Activities - Highlights and Success Stories**

**Peninsular Malaysia**

- Completed first 3 rounds of human, wildlife and livestock sampling in Orang Asli communities. These are remote rural communities with high level of wildlife contact including subsistence hunting.
- On June 2nd, PREDICT Country Coordinator gave talk at Asia-Pacific Biosafety Association's 11th Annual Biosafety Conference on "One Health Networks and Zoonotic Surveillance: The PREDICT Project in Malaysia" in Siem Reap, Cambodia.

**Sabah**

- PREDICT Country Coordinator Lab Manager and Field Manager interviewed by RTM 1 (Radio Televisyen Malaysia) about PREDICT, DEEP FOREST (DF) and collaboration with Malaysian Government to build capacity for zoonotic disease surveillance. Program to be aired late 2016 or early 2017.
- Second round of Human Animal Contact survey carried in Telupid District in communities near to new DF sites; 450 people surveyed.

**Summary of Surveillance and Field Activities for the Period March 2016 to September 2016:**

**Peninsular Malaysia**

- Held meetings and training with District Health Offices to prepare for Orang Asli community sampling. PREDICT training on lab safety and biosafety, proper use of PPE and doffing and donning full PPE demonstration and accompanying quizzes. The eligibility criteria, enrollment, pre-test counseling, how to consent participants, how to administer questionnaire, how to fill-

in appropriate forms for the study, collection of nasal and oropharyngeal swabs. Total trainees: 34.

- Held meeting with Department of Orang Asli Development (JAKOA) and Orang Asli village leaders from Kuala Lipis, Gua Musang and Kuala Kangsar. Informed village leaders of plans for sampling and agreed on date for community meetings. Village leaders reiterated their support for the project and for PREDICT team to conduct human, wildlife and livestock sampling.
- Held community meetings at Pos Lenjang, Gua Musang and Kuala Kangsar. Informed the communities of the aims of the PREDICT project and the human, wildlife and livestock sampling. Provided information on zoonosis, carcass disposal, safe hunting and disease prevention to the community. Approximately 220 participants attended.
- Conducted PREDICT training for biosafety, PPE usage, safety for wildlife and domestic animal handling, specimen collection, cold chain maintenance, setting up small mammal and bat traps according to PREDICT protocols for 4 PERHILITAN staff and 3 WHU staff for sampling in Orang Asli communities.
- Conducted a total of 4 PREDICT sampling events in Peninsular Malaysia: 227 animals (20 bats; 15 rodents; 27 non-human primates (1 pet); 1 carnivore (pet); 87 dogs; and 77 chickens) were sampled and 2,454 samples were collected for PREDICT.
- 171 people were enrolled, surveyed and sampled. Total number of samples collected: 1,302.

**Sabah**

- In April 2016, RTM 1 filming of DF sampling at Semi-disturbed (SD) Site 2. PREDICT Country Coordinator and Field Manager interviewed about PREDICT. Program to be aired late 2016 or early 2017.
- In July 2016, Human Animal Contact Survey (HACS) started in communities near DF sites in Telupid (Kampungs Buis, Ansuan, Baba) and staff on the Wilmar Ribubonus plantation; community meetings were held in Kampungs Buis, Ansuan, Baba and staff on the Wilmar Ribubonus plantation in Telupid to inform community about PREDICT and HACS; 76 participants were in attendance.
- In August 2016, HACS completed; 450 people interviewed.
- In September 2016, bush meat sampling done at Wildlife Health, Genetic and Forensic Laboratory (WHGFL) for wild boar meat collected from a restaurant located in Penampang, Kota Kinabalu; animal sampled: 1. Total number of samples collected: 3.
- Conducted a total of 9 PREDICT sampling events: 40 animals (1 wild boar, 11 non-human primates, 24 pangolins, 3 elephants) were sampled, and 401 samples were collected for PREDICT.
- DEEP FOREST sampling conducted at 4 sampling sites Sem-disturbed Site 1, SD2, SD3 and Pristine 2. A total of 129 animals (36 rodents and tree shrews; 2 other mammals; 6 carnivores; and 85 bats) were sampled and 1,064 samples collected.

**Summary of Laboratory Development/Testing for the Period March 2016 to September 2016:**

**Peninsular Malaysia**

- In July 2016, EasyMag, other equipment, consumables and wildlife samples were moved from Veterinary Research Institute (VRI) to PERHILITAN and Faculty of Veterinary Medicine at UPM.
- Held regular meetings with MoH and National Public Health Laboratory (NPHL) preparing to start testing Orang Asli samples at NPHL in October 2016.

- In September 2016, Dr. Stuart Blacksell visits PERHILITAN National Wildlife Forensic Laboratory to review progress and provide feedback on final steps needed for BSL2 certification.

**Sabah**

- From August to September 2016, tested 188 DF2 samples (100 animals) for filo, corona, paramyxo, influenza and herpes protocols. These are broken down to Y1: 94 samples (50 animals); Y2: 94 samples (50 animals). PCR positives: 4 paramyxo, 2 filo and 33 herpes. Cloning and plasmid preps completed. Sequencing results: 13 herpes positive.
- In March 2016, RTM 1 filming PREDICT testing at WHGFL. PREDICT Laboratory Manager interviewed about PREDICT. Program to be aired late 2016 or early 2017.
- Trained new WHGFL lab manager on general management tasks and lab operations, PREDICT lab safety, PPE, sample collection and storage, introduction to PREDICT and DEEP FOREST, PREDICT testing and molecular techniques.
- From April to July 2016, extracted 697 DF1 samples lysis buffer versions of VTM samples sent to CII in 2013, so the same protocols can be conducted as at CII (corona, filo, paramyxo, arena, hanta and herpes) for comparison.
- In May 2016, WHGFL is recertified by Dr. Stuart Blacksell: lab inspection, discussion on how to improve lab management and safety, lab drills, training for lab staff and Wildlife Health Unit (WHU) rangers on biosafety, PPE and glow-germ test. Total trained: 9 participants.
- In June 2016, conducted PREDICT herpes and EEHV (Elephant Endotheliotropic Herpesvirus) testing of whole blood and serum samples of 7 Sepilok elephants after 3 of them died. No PREDICT herpes PCR positive. 13 PCR positive of which 4 samples were sequencing positive for EEHV1.
- In July 2016, extracted total nucleic acid of 116 pangolin samples (39 animals).
- In Y2Q4, trained a Masters' student on molecular techniques and PREDICT protocols from Biotechnology Research Institute, UMS. Student joined PREDICT team as laboratory technician at end of September 2016.
- In July 2016, PREDICT Country Coordinator visited Kota Kinabalu Public Health Lab (KKPHL) to evaluate capacity as part of preparation to begin testing undiagnosed clinical cases of encephalitis and respiratory problems. Held first meeting to start training KKPHL and hospital lab staff to use PREDICT protocols, and develop a plan on how to obtain samples from hospitals and transfer to KKPHL.
- From August to September 2016, the PREDICT Lab tested 143 DF2 samples (59 animals) [to date: 331 samples (159 animals)] for filo, corona, paramyxo, influenza and herpes protocols. PCR positives: 10 corona; 6 paramyxo; 2 herpes; 11 hanta. Awaiting sequencing results for confirmation.
- From August to September 2016, the PREDICT Lab tested 697 DF1 samples (411 animals) for filo, corona, paramyxo, influenza, herpes, hanta and arena. PCR positives: 11 corona; 4 paramyxo; 1 influenza; 40 herpes; 39 hanta; and 2 arena. Awaiting sequencing results for confirmation.
- In September 2016, 7 KKPHL lab staff were trained on PREDICT protocols from MiniMag extraction system to sequencing, as preparations for Y3 syndromic surveillance in Sabah.

**Summary of Stakeholder Engagement and Partner Coordination for the Period March 2016 to September 2016:**

**Peninsular Malaysia**

- Held regular meetings with all partners to discuss project progress.

- Ongoing planning with Ministry of Health and PERHILITAN for human, wildlife and domestic animal sampling in Orang Asli villages.
- In April 2016, PREDICT Country Coordinator gave a talk "The Emerging Pandemic Threat PREDICT Program and Implications for Risk Analysis" at One Health Workforce - One Health Risk Analysis Training.
- In May 2016, PREDICT Country Coordinator met with Dato Dr Kamaruddin Director General DVS. Agreed to move lab equipment from VRI to Faculty of Veterinary Medicine UPM and PERHILITAN. Livestock testing will now be conducted at Faculty of Veterinary Medicine (FVM) Virology and Bacteria lab.
- Ongoing planning with Faculty of Veterinary Medicine, UPM to start PREDICT testing of domestic animal and livestock samples. This will strengthen PREDICT collaboration with OHW through MyHOUN.
- In September 2016, PREDICT Country Coordinator gave talk to students at Faculty of Applied Sciences on "Conservation through One Health and Zoonotic Disease Surveillance: The PREDICT and IDEEAL Projects in Malaysia" at UCSI University, Kuala Lumpur.

**Sabah**

- Held regular meetings with all partners to discuss project progress.
- In April 2016, the PREDICT Lab Manager presented on PREDICT work at the MyOHUN colloquium, in Kuching, Sarawak.
- In May 2016, PREDICT Country Coordinator met with District Office Telupid to discuss PREDICT sampling and HACS.
- In June 2016, received approval from all parties to conduct Human Animal Contact Survey in Telupid District. Also met with the District Officers and Chief of the villages at Telupid to discuss HACS.
- Also in June 2016, the PREDICT Country Coordinator met with Sabah State Health Department to discuss potential for starting human syndromic surveillance.
- In July 2016, met with Sabah State Health Department (SSHD) to start planning with staff from KKPHL and Queen Elizabeth and Likas Hospitals to begin syndromic surveillance in 2017 and training with SSHD staff.
- In September 2016, PREDICT was invited to attend semi-annual Sabah Zoonotic Diseases Committee meeting hosted by Sabah State Health Department. PREDICT also invited to join the committee and provide report on PREDICT virus findings and first round of Human Animal Contact Survey.

**Sent:** Wed, 22 Feb 2017 15:53:08 -0800
**Subject:** Re: [predict] FW: Invitation for Kenya JEE_ 27th February to 3rd March 2017
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** PREDICTMGT <predictmgt@usaid.gov>
**Cc:** "predict@ucdavis.edu" <predict@ucdavis.edu>, David J Wolking <djwolking@ucdavis.edu>

Also a follow-up that here in Ghana, the Mission apologized for the oversight in not inviting our country coordinator to the JEE (said she is new and knows that she missed the appropriate opportunity for involving us in the process).
Rest of mission and ministry stuff going well here in Ghana,
J

On Tue, Feb 21, 2017 at 1:53 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi there,
Just passing along the invitation received by our PREDICT/Kenya country coordinator for the upcoming JEE workshop in Nairobi.

Best,

David

---------- Forwarded message ----------
From: **Zimmerman, Dawn** <ZimmermanD@si.edu>
Date: Tue, Feb 21, 2017 at 9:41 AM
Subject: [predict] FW: Invitation for Kenya JEE_ 27th February to 3rd March 2017
To: "predict@ucdavis.edu" <predict@ucdavis.edu>
Cc: "Murray, Suzan" <MurrayS@si.edu>, "William B. Karesh" <karesh@ecohealthalliance.org>

FYI, please see formal email invite below for our CC Joseph Kamau to the Kenya JEE workshop, as well as attached agenda.

Best,

d.

---------- Forwarded message ----------
From: athman mwatondo [redacted]
Date: Feb 21, 2017 20:08
Subject: Invitation for Kenya JEE_ 27th February to 3rd March 2017
To: Thomas Manyibe Nyariki [redacted], Joseph Kamau <jkamau@primateresearch.org>
Cc:

Dear Drs Nyariki and Kamau,

Kenya volunteered for the World Health Organization's International Health Regulations (IHR) Joint External Evaluation in July 2016 and is scheduled to undertake the evaluation on 27th February to 3rd March, 2017. The JEE process is intended to assess country capacity to Prevent, Detect, and rapidly Respond to public health threats independent of whether they are naturally occurring, deliberate or accidental.

19 technical areas will be evaluated in an open and consultative process between the government officers and the external assessors. The evaluation report will then be shared with the Country and will be used to develop a costed action plan as a tool to advocate for support from governments and partners.

The purpose of this email is to invite your participation as a key stakeholder.

The JEE meeting will take place at the **Radisson Blue Hotel** in Nairobi.

We look forward to your presence and participation.

Attached in this email is the tentative agenda for the week

Kind regards,

Dr. Mwatondo Athman

Zoonotic Disease Unit (ZDU)

Ministry of Health

KNH - NASCOP Grounds

NAIROBI

REDACTED

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Thu, 23 Feb 2017 11:08:39 +0100
**Subject:** Re: [predict] FW: Invitation for Kenya JEE_ 27th February to 3rd March 2017
**To:** Jonna Mazet <jkmazet@ucdavis.edu>

Thanks

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email:* aclements@usaid.gov

On Feb 23, 2017, at 12:53 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

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David

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From: **Zimmerman, Dawn** <ZimmermanD@si.edu>
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To: "predict@ucdavis.edu" <predict@ucdavis.edu>
Cc: "Murray, Suzan" <MurrayS@si.edu>, "William B. Karesh" <karesh@ecohealthalliance.org>

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Best,

d.

---------- Forwarded message ----------
From: athman mwatondo [redacted]
Date: Feb 21, 2017 20:08

Subject: Invitation for Kenya JEE_ 27th February to 3rd March 2017
To: Thomas Manyibe Nyariki [redacted] Joseph Kamau <jkamau@primateresearch.org>
Cc:

Dear Drs Nyariki and Kamau,

Kenya volunteered for the World Health Organization's International Health Regulations (IHR) Joint External Evaluation in July 2016 and is scheduled to undertake the evaluation on 27th February to 3rd March, 2017. The JEE process is intended to assess country capacity to Prevent, Detect, and rapidly Respond to public health threats independent of whether they are naturally occurring, deliberate or accidental.

19 technical areas will be evaluated in an open and consultative process between the government officers and the external assessors. The evaluation report will then be shared with the Country and will be used to develop a costed action plan as a tool to advocate for support from governments and partners.

The purpose of this email is to invite your participation as a key stakeholder.

The JEE meeting will take place at the **Radisson Blue Hotel** in Nairobi.

We look forward to your presence and participation.

Attached in this email is the tentative agenda for the week

Kind regards,

Dr. Mwatondo Athman

Zoonotic Disease Unit (ZDU)

Ministry of Health

KNH - NASCOP Grounds

NAIROBI

REDACTED

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**Sent:** Wed, 12 Apr 2017 22:22:39 -0700
**Subject:** Re: [predict] Re: SL finding communication process
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Kendra Chittenden <kchittenden@usaid.gov>
**Cc:** Shana Gillette <sgillette@usaid.gov>, Andrew Clements <aclements@usaid.gov>, PREDICTMGT <predictmgt@usaid.gov>, Kendra Chittenden REDACTED, "predict@ucdavis.edu" <predict@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>

Super helpful -- thanks,
Jonna

On Wed, Apr 12, 2017 at 10:18 AM, Kendra Chittenden <kchittenden@usaid.gov> wrote:

Also, it's important to rope Saad and Dorothy into the discussions because they have a lot of relevant insight to add and managed the communication project (HC3- JHUCCP) in country so they know local individuals & best contacts.

Saad managed the HC3 activities and has spent a lot of time with the Chief of Party, Chime, and her team in the communities where HC3 was working. He worked with them during the emergency on the DART. HC3 was supported during the emergency (OFDA) through health system recovery (GH). The project is ending and closing down their activities now. The project used a lot of local staff on the project who will still be there and they certainly have a lot of lessons learned.

Helping PREDICT to leverage HC3's experts, networks is something that Dorothy & Saad has discussed and are very interested to do.

On Tue, Apr 11, 2017 at 10:02 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Thanks, Shana.
J

On Tue, Apr 11, 2017 at 10:20 AM, Shana Gillette <sgillette@usaid.gov> wrote:

Hi Jonna,
You may already have the contact information for Elizabeth Fox and Kama Garrison. They are the two people who would have the latest information on the groups/individuals who would be the most relevant to your SL communication needs.

Kama Garrison: kgarrison@usaid.gov
Sr. Public Health Advisor
Ph: 571.551.7379
M: REDACTED

Elizabeth Fox: efox@usaid.gov
Deputy Coordinator Child and Maternal Survival
Director Office of Infectious Diseases (she recently transitioned from serving as the Interim Director of ID)
Please note new Office Phone Number 571.551.7366
Cell REDACTED
For any correspondence:
1300 Pennsylvania Ave. NW
CPS, [illegible]
Washington, DC 20523

On Tue, Apr 11, 2017 at 9:11 AM, Shana Gillette <sgillette@usaid.gov> wrote:

When ready, it probably would help to have direct contact with people who have been conducting communication outreach and research in SL--they may have the best insight on what strategy will work best...let me know if you would like some names of people to contact...
Best,

Shana

On Fri, Apr 7, 2017 at 12:10 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Not yet because that will start another cascade. We should first figure out how to bring the community leaders together to address their concerns and solicit their input in moving forward with risk mitigation. Lessons learned from human outbreak.
J

On Friday, April 7, 2017, Andrew Clements <aclements@usaid.gov> wrote:

Sounds logical to me.

Should we alter the communications materials to include something about having people try to minimize the chances that bats will roost in their houses?

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Apr 7, 2017, at 4:22 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Please see the prudent & preferred plan for communications suggested by Professor Gbakima and endorsed by Predict.
Look forward to your comments,
Jonna

---------- Forwarded message ----------
From: **Aiah Gbakima** <REDACTED>
Date: Friday, April 7, 2017
Subject:
To: Tracey Goldstein <tgoldstein@ucdavis.edu>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>

Dear Tracey,

Please find attached some minor edits. It will also be very important if we deal with the issues in this sequence.

First, the President must be informed and that is what the Ambassador is preparing to do by taking these short briefs to him directly instead of going through the Ministry of Foreign Affairs to limit information leak out.

After that, there should be a meeting between key personel Prefict, USAID, Ministries of Health, Agriculture, EPA and Office of National Security (ONS) to map out information to the local communities, who may not fully understand the press release, the importance of the discovery and to address the request they made to remove the bats from their houses.

Next will come the Press release. I say this because if we attempt to do the press release before we address their requests, they will abandon their homes and villages with the word "EBOLA" in the press release and our sampling will cease because no one will be willing to have their villages sampled. The messaging to the community must be crafted very, very carefully and we can use the Social Mobilization teams from the Ministry of Health and the ONS to assist.

If we need to do call on this involving USAID & Predict that will be fine. Please let me know if you have any further issues to address, but the press release must be the last thing.

Best regards,

Aiah

On Fri, Apr 7, 2017 at 4:45 AM, Karen Saylors <ksaylors@metabiota.com> wrote:

Hi Tracey,
Here are my edits to the Metabiota description.

Thanks and talk to you tomorrow morning.
Best,
Karen

---

**From:** [REDACTED] on behalf of Tracey Goldstein <tgoldstein@ucdavis.edu>
**Date:** Thursday, April 6, 2017 at 11:42 AM
**To:** Eddy Rubin <erubin@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>
**Cc:** Aiah Gbakima [REDACTED], Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** <no subject>

Dear Eddy and Karen,

As a follow up from yesterday, given Dennis's announcement at the NSC meeting, we are trying to finalize the draft press release and FAQ for Sierra Leone. As you saw I have requested that Aiah add in Sierra Leone information. Similarly, will you review the blurb for the Metabiota and make any corrections that need to be made.

Would it be possible to do this and send back to me today ?

We help to coordinate with the in country team, USAID etc.

Thank you for the quick turnaround and please let me know if you have any questions.
Tracey
--
Tracey Goldstein, PhD
One Health Institute
School of Veterinary Medicine
University of California
Davis, CA 95616
Phone: (530) 752-0422
Fax: (530) 752-3318
E-mail: tgoldstein@ucdavis.edu

--
**Aiah A. Gbakima**, MSPH, Ph.D., GCOR
Country Director, Metabiota Inc, Sierra Leone
Country Coordinator, USAID/Predict Program, Sierra Leone
Mobile: [REDACTED]
Skype: [REDACTED]

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<Draft_EBOLA_SIERRA LEONE (4.6.17)__UCD edits-2.docx>

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--
Shana Gillette, PhD
Senior Risk Mitigation Adviser
Emerging Threats Division

Office of Infectious Disease
Bureau for Global Health
U.S. Agency for International Development (USAID)
Office Phone: 202-712-1456
Work Mobile: REDACTED
Email: sgillette@usaid.gov

--
Shana Gillette, PhD
Senior Risk Mitigation Adviser
Emerging Threats Division

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---

**Kendra Chittenden, Ph.D.** | **Senior Infectious Disease Advisor| USAID** | mobile (703-209-5424) KChittenden@usaid.gov

**Sent:** Sat, 29 Apr 2017 01:42:33 -0700
**Subject:** Fwd: Bat communication material
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>
**Cc:** "predict@ucdavis.edu" <predict@ucdavis.edu>
Communication Campaign Strategy_2017-04-28_v2_tg.docx

Looping Chris into chain now, as these messages may have further implications in the global behvior plan.
Sorry haven't had much internet access here,
J

---------- Forwarded message ----------
From: **Tracey Goldstein** <tgoldstein@ucdavis.edu>
Date: Fri, Apr 28, 2017 at 2:39 PM
Subject: Re: Bat communication material
To: Leilani Francisco <francisco@ecohealthalliance.org>
Cc: Aiah Gbakima <[redacted]>, Karen Saylors <ksaylors@metabiota.com>, Eddy Rubin <erubin@metabiota.com>, Jonna Mazet <jkmazet@ucdavis.edu>

Hi Leilani,

Sorry for the delay getting this to you. Quite a few comments and suggestions attached - please let me know if you would like to chat further.

Best, Tracey

On Wed, Apr 26, 2017 at 7:19 AM, Leilani Francisco <francisco@ecohealthalliance.org> wrote:

Hello everyone,

Please find attached the latest version of the document which now includes updates from Karen, Aiah, and Billy.

Tracey,

Does everything look ok to you? Did you have any updates you'd like to add?

Best,

Leilani

**From:** Leilani Francisco [mailto:francisco@ecohealthalliance.org]
**Sent:** Thursday, April 20, 2017 1:26 PM
**To:** 'Aiah Gbakima' <[redacted]>; 'Karen Saylors' <ksaylors@metabiota.com>
**Cc:** 'Tracey Goldstein' <tgoldstein@ucdavis.edu>; 'Eddy Rubin' <erubin@metabiota.com>; 'Jonna Mazet' <jkmazet@ucdavis.edu>
**Subject:** RE: Bat communication material

Hi Aiah and Karen,

Many thanks for the helpful videoconference yesterday.

Please find attached an updated version of the plan which incorporates the table, our discussion yesterday, and some additional resources.

I look forward to your edits and feedback.

Best,

Leilani

---

**From:** Leilani Francisco [mailto:francisco@ecohealthalliance.org]
**Sent:** Tuesday, April 18, 2017 4:05 PM
**To:** 'Aiah Gbakima' [redacted]
**Cc:** 'Tracey Goldstein' <tgoldstein@ucdavis.edu>; 'Eddy Rubin' <erubin@metabiota.com>; 'Karen Saylors' <ksaylors@metabiota.com>; 'Jonna Mazet' <jkmazet@ucdavis.edu>
**Subject:** RE: Bat communication material

Thanks Aiah, no worries, you did send the correct one.

Karen and I have just a few follow up questions for you. I'll get in touch directly to set up a time.

Best,

Leilani

---

**From:** Aiah Gbakima [mailto [redacted]
**Sent:** Tuesday, April 18, 2017 1:19 PM
**To:** Leilani Francisco <francisco@ecohealthalliance.org>
**Cc:** Tracey Goldstein <tgoldstein@ucdavis.edu>; Eddy Rubin <erubin@metabiota.com>; Karen Saylors <ksaylors@metabiota.com>; Jonna Mazet <jkmazet@ucdavis.edu>

**Subject:** Re: Bat communication material

I hope I did send the correct one. In any case, here is what I was planning on sending over to you all. If the same, please ignore it.

Best,

Aiah

On Tue, Apr 18, 2017 at 4:41 PM, Leilani Francisco <francisco@ecohealthalliance.org> wrote:

Many thanks for the below and for all of the very helpful updates to the table.

Karen and I will be talking at 3PM US EDT and will circle back with any questions.

Best,

Leilani

**From:** Aiah Gbakima [mailto:[redacted]
**Sent:** Saturday, April 15, 2017 2:13 PM
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** Leilani Francisco <francisco@ecohealthalliance.org>; Tracey Goldstein <tgoldstein@ucdavis.edu>; Eddy Rubin <erubin@metabiota.com>; Karen Saylors <ksaylors@metabiota.com>

**Subject:** Re: Bat communication material

We may need to a one-time intervention since most houses in the areas where the positive bats come from have fairly good houses. The only pressing need will be wire meshes around the outside/under the roof to keep the bats out of their roofs.

What will be necessary for a long time solution will be to teach them on how they can keep the bats out of their houses themselves. Along that line, we have to ask the district councils to include those expenditures in their annual budgets going forward. That way, we teach them to help themselves.

The intial task should be ours since this is one thing that they asked us to do: get the bats out of their houses. We can also use local carpenters to do this job and we may ask local building material stores to donate materials to support these efforts. We will continue to populate the table until we get it right because we need to have a plan for community enagement before we meet the President since he will surely ask about our next steps. Have wondefrul and safe easter.

Aiah

On Fri, Apr 14, 2017 at 8:01 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Looking good so far -- thanks for working on it!

My only concern with what you have so far is the exclusion devise, given that all houses may or may not have doors and windows that are closable and that the bats are about as big as your smallest finger. So unless we were to cover the entire houses (every crack and crevice) with a devise, I'm not sure how those would be feasible and thus worth our time in further development/consideration. I guess as one tool in a tool kit for houses with just one or two problem areas, but I'm not sure that should be our emphasis in the emergency phase. Think about keeping small mice out of a house for frame of reference. If we're thinking a way out for entrapped bat, once all cracks and crevices are sealed by other means, it may be worth a bit more consideration, but I don't think USAID will be able to fund a device for every home, so we should also consider that in advance of messaging.

Otherwise support further development of the strategies described.

Have a nice weekend,

Jonna

On Fri, Apr 14, 2017 at 11:09 AM, Leilani Francisco <francisco@ecohealthalliance.org> wrote:

Dear Proff,

It was a pleasure meeting and talking with you today.

Thank you for all of the helpful information that you shared.

Please find attached an updated strategy table which now contains information from our discussion.

Thanks for being willing to review and add detail to this after the holiday.

Please feel free to get in touch with any questions.

Best regards,

Leilani

--

**Leilani Francisco, PhD, MA, PMP**
*Senior Scientist | PREDICT-2 Senior Behavioral Risk Surveillance Coordinator*

EcoHealth Alliance
460 West 34th Street – 17th floor
New York, NY 10001

1.212.380.4493 (direct)
1.202.577.8165 (mobile)
1.212.380.4465 (fax)
www.ecohealthalliance.org

*EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.*

---

**From:** Karen Saylors [mailto:ksaylors@metabiota.com]
**Sent:** Thursday, April 13, 2017 3:37 PM
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** Tracey Goldstein <tgoldstein@ucdavis.edu>; Eddy Rubin <erubin@metabiota.com>; Leilani Francisco <francisco@ecohealthalliance.org>; Aiah Gbakima <REDACTED>

**Subject:** Re: Bat communication material

Hi Jonna,

Leilani and I just spoke and we will follow up with Aiah tomorrow and get back to this team with a plan as soon as possible.

Thanks,

Karen

---

**From:** <REDACTED> on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
**Date:** Thursday, April 13, 2017 at 10:03 AM
**To:** Karen Saylors <ksaylors@metabiota.com>
**Cc:** Tracey Goldstein <tgoldstein@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Leilani Francisco <francisco@ecohealthalliance.org>, Aiah Gbakima <REDACTED>
**Subject:** Re: Bat communication material

Thanks, Karen,

This information will be helpful in contributing to the overall plan.

I apologize if there was a miscommunication or if I was ambiguous, but I was really hoping for was for you to work with Aiah and Leilani to develop more of an outline of all of the different parts of the communication plan that need to be in place and when, rather than the content of the messaging. Like I said, though, the info will still be a useful contribution. The rest of the development and finalization of that content will happen with the overall team, and I know Leilani has a group pulling all of the literature from the WA outbreak and communication pieces that worked and didn't work for other bat-reservoir outbreaks, as well as for birds in avian influenza situations.

I know you have spoken with Leilani this week, and things are developing.

You have a ton on your plate, with the shipments and other organizational details to get things on track in SL and elsewhere. I don't want to overwhelm your To Do list with every little detail, so please do reach out for confirmation before developing intensive written materials and plans that may or may not be the immediate priority.

What I hope you can do is work with Leilani and Aiah to gather intel regarding our team's capacity on the ground, as well as that of potential partners, regarding feasible plans for how the schedule and staffing of all of the different communication steps will work. We very much also what other groups from within the country may have the best experience/success in communicating about Ebola in the country. Of course all of this information compilation must be done stealthily to avoid leaks, so no information should be shared about the finding, just identification of the best practices that have worked locally and pitfalls to avoid based on lessons learned.

So specifically, I am interested in the following (for each -- feasible and optimal timing, staff options, etc.):

- Community information sharing:
  - what are options and optimal timing (e.g. a single meeting with community leaders first, then follow-up meetings in each community OR individual meetings in certain districts occurring simultaneously (could we even staff that -- maybe with partners if that is preferred, but then we would need a training plan for those teams))
  - Specific staffing plans and mechanisms for this piece
- Mechanisms to provide support for communities for any recommended interventions
  - supplies & procurement/distribution
  - instructions
- Press
  - press release for in-country & FAQs
  - press release for global community
  - preferred feature article for release at same time in-country
  - potential for high-level international press piece to support overall philosophy of finding viruses early
- Additional pieces depending on how long we have to plan and prepare (e.g. linking messages with a publication, damage control if things go wrong, etc.)

I look forward to receiving a check-list and outline for these pieces that can form the structure for a living document that we can flesh out as we continue to develop pieces and strategies. I'm fine with Leilani gathering the information from you two and compiling and constructing the plan, recognizing that your attentions are needed elsewhere on many priority issues at the moment.

Please keep any ideas and products from this request to only the distribution list on this email for now.

Thank you,

Jonna

On Tue, Apr 11, 2017 at 4:09 PM, Karen Saylors <ksaylors@metabiota.com> wrote:

Hi Tracey and Jonna,

Here is a layman's Bat Communication Strategy for your review. I've shared it with no one beyond this group, so it doesn't contain Sierra Leone-specific language or references at this point.

Please let me know if you have suggestions or further orientation.

Thanks,

Karen

---

**From:** REDACTED on behalf of Tracey Goldstein <tgoldstein@ucdavis.edu>
**Date:** Tuesday, April 11, 2017 at 12:57 PM
**To:** Karen Saylors <ksaylors@metabiota.com>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>
**Subject:** Re: Bat communication material

Hi Karen,

As we discussed on the call, please do not share any documents with the in country team - we are not ready for that, we need a comprehensive plan. Please send your thoughts to me and Jonna and we can go from there.

Thank you, Tracey

On Tue, Apr 11, 2017 at 10:49 AM, Karen Saylors <ksaylors@metabiota.com> wrote:

Good morning.

Based on your request on Friday, I'm working on bat communication material for Sierra Leone. I'll share a draft with Aiah and James tonight for them to flesh out, as they are out of town today for James' father's funeral. (He died this weekend.)

I have a question for you about this document:

—who is the target audience? Is it village-level communities where we are doing animal sampling or are we aiming for wider national media coverage? In following up on questions from Dennis and Jonna, Eddy asked me yesterday whether Prof is prepping recommendations intended for a SL major newspaper piece to be released simultaneously or immediately after the country's press release, so I assume we are aiming for a national audience, but please confirm. I know that on Friday, Aiah was talking specifically about how to frame these findings to the communities PREDICT is working in, so I want to orient the draft correctly so that he differentiates between local and national messages.

I'll work with Aiah to get you a document by early Thursday morning unless you tell me you need it more urgently.

Thanks,

Karen

--

Tracey Goldstein, PhD
One Health Institute
School of Veterinary Medicine
University of California
Davis, CA 95616
Phone: (530) 752-0412
Fax: (530) 752-7518
E-mail: tgoldstein@ucdavis.edu

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**Aiah A. Gbakima**, MSPH, Ph.D., GCOR

Country Director, Metabiota Inc, Sierra Leone

Country Coordinator, USAID/Predict Program, Sierra Leone

Mobile: REDACTED

Skype: REDACTED

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**Aiah A. Gbakima**, MSPH, Ph.D., GCOR

Country Director, Metabiota Inc, Sierra Leone

Country Coordinator, USAID/Predict Program, Sierra Leone

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# Sierra Leone: Communication Campaign Strategy

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UCDUSR00005686

# 1.0 In-Country Team Capacity

**In-Country Team Members**

| Team Member | Total # |
|---|---|
| Existing sampling team members (wildlife/animal experts working with communities) | 10 |
| Emergency Operation Center (EOC) team member | 1 |
| Social mobilization team members | 2 |
| Ministry of Health and Sanitation (MOHS) liaisons (2 per district) | 10 |
| Wildlife district staff (2 per district) | 10 |
| Livestock district staff (2 per district) – may not be needed given focus on wildlife | 10 |
| Community liaisons (2 per site for 26 – 30 sites) | 60 |

**One Health Consortium Team Members**

- Karen Saylors
- Leilani Francisco
- Brian Bird
- Tracey Goldstein
- Jonna Mazet
- Chris Johnson
- Emily Hagan
- Jason Euren

# 2.0 Potential Partners

- Ambassador
- President
- Prefect/Administrative Head in the 5 Provinces
- District Council Chairs
- Paramount Chiefs
- Chiefs
- Section chiefs
- Town chiefs
- CDC
- FAO
- WHO
- PREDICT in-country national level staff including the 2 Ministry partner officers:
    - Dr Jambai

- Dr Leno

## 3.0 In-Country Groups with Success Communicating about Ebola

- Social mobilization teams
  - National EOC communication Pillar
  - Others with whom the team has already engaged in field activities
    - MOHS social mobilization coordinators for each district and their team
    - Local Community Officers and leaders
- National Emergency Operations Center
  - Dr. Dafae serving as lead
- National Ebola Response Centre

## 4.0 Potential Pitfalls and Best Practices for Mitigation

| Potential Pitfall | Best Practices for Mitigation |
|---|---|
| Panic caused by media | Community leaders need to be aware of situation before press release to prevent surprise and panic |
| Chain of command not followed | Notify district Ministry Partner leads – District Medical Officers (DMOs), District Agriculture Officers (DAOs) – followed by other district and community leaders as best practice |
| Local sociocultural perceptions of Ebola not taken into account | - See resource: "Biosocial Approaches to the 2013-2015 Ebola Pandemic" (Richardson, et al., 2016)<br>- Use of the word Ebola can understandably lead to panicked reaction; focus on ways to prevent exposure to bat-related viruses, as possible |
| Suspicion and stigma towards Western researchers not acknowledged | - Ensure local level ownership and messengers should be trusted community gatekeepers<br>- District officials should lead communication during all community outreach meetings |



UCDUSR0005688

| Potential Pitfall | Best Practices for Mitigation |
|---|---|
| Previous experiences not leveraged | See resource: "*Lessons from the Response to the Ebola Virus Disease Outbreak in Sierra Leone May 2014 – November 2015*"<br>A study initiated and conducted by the National Ebola Response Centre (NERC), with support from FAO, FOCUS 1000, UNAIDS, UNDP, UNFPA, UNICEF, UNOCHA, UN Women, WFP, and WHO<br><br>Key Recommendations:<br>1. Strengthen decentralisation processes, existing leadership and decision-making structures to create robust, legitimate institutions that are well-placed and resourced to respond to future challenges.<br>2. Leverage on the exceptional role of the military by providing appropriate training and clarifying protocols on their roles in civil affairs during emergencies.<br>3. Strengthen communications by training journalists and editors to provide factual, quality information and guidance to the public in future crises and events.<br>4. The education curriculum should encompass public health and civics to broaden learners' knowledge and generate a pipeline of a well-trained workforce for the future.<br>5. Develop a tripartite cross-border surveillance body or facility based on the close social, political, economic, and cultural ties between Guinea, Liberia, and Sierra Leone with the aim to deepen regional integration and cooperation.<br>6. Incorporate lessons learned from the EVD response into the public sector reform program.<br>7. Mobilize and harness the energy of Sierra Leone's volunteer army of formal and informal Ebola responders as change agents. |
| Intervention method not feasible or sustainable so PREDICT seen as not responsive to community needs | - Discuss intervention recommendations with stakeholders (e.g., end users, local leaders, national leaders, funders)<br>- Focus on practical strategies for decreasing contact with household bats; determine funding level that USAID may dedicate to the bat exclusion or other interventions |
| Plan for communication campaign not feasible | - Clearly define resources (starting with funding)<br>- Follow 10 steps for developing social media marketing campaigns (SAMHSA 2017)<br>- Identify channels of communication |



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| Potential Pitfall | Best Practices for Mitigation |
|---|---|
| Difficulty coordinating and mobilizing a large team rapidly | - Develop a stakeholder register with names and contact information of all team members<br>- Develop a listserve or e-mail distribution list for ease of information dissemination<br>- Maintain a central location for electronic files to be stored for easy access |

## 5.0 Process and Timeline for Information Sharing

| | Activity | Timing |
|---|---|---|
| 1 | Presidential Briefing (PB) | Day 1 |
| 2 | Convene first meeting as a joint briefing in Freetown with DMOs and DAOs (others: Chief Medical Officers (CMOs), Deputy CMO, district chairpersons, Chiefdom Speakers, City Mayors) for the following districts:<br><br>1. Bombali<br>2. Kambia<br>3. Koinadugu<br>4. Kono<br>5. Freetown<br><br>Districts 1 – 3 are the priority (e.g., may not be needed in urban areas of Freetown where livestock was exclusively sampled) but alternatively, we'll want the message to be diffused at the same time to all districts<br><br>US-based team joins by videoconference (Zoom) | Day 4 |
| 3 | District heads 1 – 3 (perhaps 4 and 5 depending on resources) deploy to their districts and bring together leaders from the individual community sites / villages (26 villages across the 5 districts) for briefing<br><br>Others to accompany district heads:<br>• Alah Gbakima<br>• James Bangura<br>• MOHS Social mobilization team member(s)<br>• PREDICT SL team<br>• Exclusion technician(s)<br>• Community liaison(s) | Day 5 |
| 4 | Press release | Day 5 |
| 5 | Village leaders visit households | Days 6 – 14 |

Potential resources needed:

- At least 3 vehicles for deployment
- Petrol
- Per diem
- Communication resources (phones, minutes, etc.)

## 6.0 Intervention Support for Communities

Support for communities will be dependent on available resources. It may not be feasible to expect funding at the district-level in the near term but recommendations include requesting districts to include funding for supplies in their annual budgets going forward to promote sustainability of the intervention.

Funding from USAID will need to be assessed in terms of congressional budget currently being reviewed as well as types of items typically funded.

| Exclusion Components | Details |
|---|---|
| Supplies & procurement / distribution | • Exclusion device (one-way check valve, exclusion tube) supplies: PVC pipes, mesh stockings / collapsible sleeves; wire mesh netting, stainless steel wool, sealant/caulk, etc.<br>• Providers of technical assistance from PREDICT on how to build devices:<br>  • Brian Bird<br>  • Matt LeBreton<br>  • Jon Epstein<br>• Can implement Train the Trainer approach |
| Instructions | • See Flynn, Epstein, & Waldien (2014) report "Conserving Bats and Protecting Human Health: A Strategic Framework to Reduce the Risk of Exposure to Bat-Borne Pathogens" |
| Incentives for Hardware Store Owners | • Solicit donations<br>• Provide incentives for discounts on supplies in the form of publicity in press releases, radio/TV ads, etc. |

## 7.0 Engaging the Press

The University of California at Davis (UCD) has drafted a USAID-vetted press release. The Ambassador will discuss the press release with the President of Sierra Leone. The local community will need to be briefed before the press release is published.

| Type of Publication | Details |
|---|---|

| Type of Publication | Details |
|---|---|
| • Press release for in-country & FAQs | • In-country press release drafted by UCD<br>• FAQs: see appendices |
| • Press release for global community | • Status? |
| • Preferred feature article for release at same time in-country | • Status?<br>• Leverage Aiah's contact (BBC journalist) |
| • Potential for high-level international press piece to support overall philosophy of finding viruses early | • Dependent on availability of time |

## 8.0 Possible Additional Activities

Time and resources permitting, the team will consider:

- Development of fold-out brochures: containing images of exclusion device and instructions, etc.
- Development of damage control plan: to be compiled in conjunction with lessons learned summarized above.

# APPENDICES



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## Appendix A: Resource - Messaging

*(Draft for consideration)*

People should not attempt to kill or eradicate bats in response to this discovery. While bats have been implicated as reservoirs for a number of infectious pathogens, these animals play important roles as providers of ecosystem services through pollination of native and agricultural crops, reduction of insect pests that also spread disease and damage crops, and consumption of mosquitoes and other pests that feed on people and livestock. Bats play important positive ecological and agricultural roles, and the best approach for human benefit and safety is not to touch bats and to leave them alone. Even though we cannot directly see how they help us, they provide important benefits to agriculture and forests, and are important in the control of malaria and other mosquito-borne diseases

Killing or disturbing bats in their natural habitat does not reduce the risk of transmission of this new virus and, in fact, may result in the opposite effect. In Uganda, attempts to eliminate the bat reservoir of the closely-related Marburg virus from caves led to surprising increases in the numbers of virus-infected bats (Amman et al., EID, 2014); infected bat numbers more than doubled as they recolonized depopulated areas. In addition, bats may increase shedding of virus in periods of heightened stress, potentially resulting in an increase in transmission opportunities. Similar effects have been seen in a variety of other viral and bacterial diseases with wildlife reservoirs such as rabies when wholesale eradication was attempted.

**Messages :**

**Handling Bats**

Do not attempt to touch or handle a live bat. Only people trained to handle bats using protective equipment should touch them.

**Dead Bats**

You should never touch or handle a dead bat. A shovel used when attempting to pick up bats. Bats should be placed into a thick plastic bag or container.

**Sick or Injured Bats**

You should not try to touch or handle sick or injured bats.

**Risks**

- Bites or scratches from live bats
- Skin pricks or wounds from handling dead bats
- Contact with bat bodily fluids, such as saliva, blood, urine, or feces

- Eating or drinking food or water that is contaminated with bat bodily fluids
- Breathing air containing particles of bat saliva, urine, or feces

**First Aid After Bat Contact**

- Wash hands thoroughly with soap and water for at least five minutes
- Apply a virucidal antiseptic, such as a disinfectant wipe
- If saliva, urine, or feces enters the eyes, nose, or mouth, the area should be flushed thoroughly with water for five minutes

**Helpful Tips:**

Bats often live where people live, in the rafters of houses or in fruit trees or roosts around houses. Bats are not aggressive and will not try to hurt you. Do not kill bats.

Evidence of bats occupying a house or building can be determined in several ways:

- Seeing bats fly into or out of the house or building
- Seeing bats on the ground by the structure
- Hearing high-pitched chirping noises (roost chatter) from the building
- Seeing staining and rub marks on surfaces by active roost entries
- Seeing bat guano scattered on the wall or ground near a bat entryway

**Bat Management**

If bats are in the rafters of your home: use sealant or wet newspaper to seal up holes in the ceiling through which bat excrement or urine might fall into the house. If bat excrement does fall from the ceiling, use a face mask or cover the face with a cloth before sweeping up, to avoid breathing in the dust that could contain particles that are not good for you. To minimize respiratory exposure to bat microbes in your home, please make sure that children helping with chores also use a face mask or cover their mouths with a cloth to avoid harmful dust that you might breathe in.

If bats are able to enter your home, they may be attracted to uncovered sources of water and other liquids. When bats drink from these sources, they can contaminate it with their saliva, urine, or feces. You should never eat or drink something you suspect bats have come in contact with.

Avoid going into the roof spaces where bats live. Sometimes families send children into the small spaces in the rafters to try to remove bats from the home: avoid such a practice. Children's developing lungs are sensitive and should not be directly exposed to bat urine or feces. By crawling in roof spaces, they are likely to get bat excrement on clothes or skin, which could be unhealthy for them, and they might track this back into the home, exposing other family members as well.

If you are very concerned about removing bats from your home, there are inexpensive tools that you can build for blocking entrances while still allowing bats to exit your rafters. Exclusion tubes are one-way devises that allow bats to exit a roost easily, but not to re-enter. These one-way devices for excluding bats can be made from recycling empty plastic or heavy cardboard caulk tubes, conduit, PVC pipe, hose or tubing. Insect-eating bats are able to enter buildings through very small openings. Remember that if you are able to fit a small finger into a crevice (the finger test), insect-eating bats may be able to enter. Once bats have been removed, wire mesh is the preferred material for bat-proofing a roof. It does not restrict air or water flow, and can be attached with adhesive caulk, nails, staples or screws, as needed.

Please see the following resource:
http://www.batcon.org/pdfs/binb/Finn2012BatManagementExcludingBats.pdf

Bats have been known to roost in buildings especially during certain times of the year, especially when they are giving birth [find local SL periods]. During this time, baby bats (pups) remain at the roost, while the mother leaves the roost to collect food. Exclusions should be avoided before baby bats are able to fly, otherwise they will starve to death when separated from their mothers. When forcefully separated from their young, bat mothers may be driven to search for other means of getting to their pups.

Fruit bats often live and roost in fruit trees around your property. Keep domestic animals out from under these trees to avoid contamination from bat urine or feces getting into the food that farm animals are eating. Trees where bats live should be cordoned off so that farm animals do not directly lie or eat under these bat roosts. The reason for this is that although bats may not show obvious signs of illness, it is possible that they could shed the infectious virus in their saliva and feces or other body fluids. Avoiding direct contact with bats and the food or other materials with which they may have had contact is an important practice to reduce the risks of their viruses being transmitted to people.

Many people eat bats as a source of protein but many types of bats are known to carry diseases for people, thus people should avoid handling and eating bats whenever possible.



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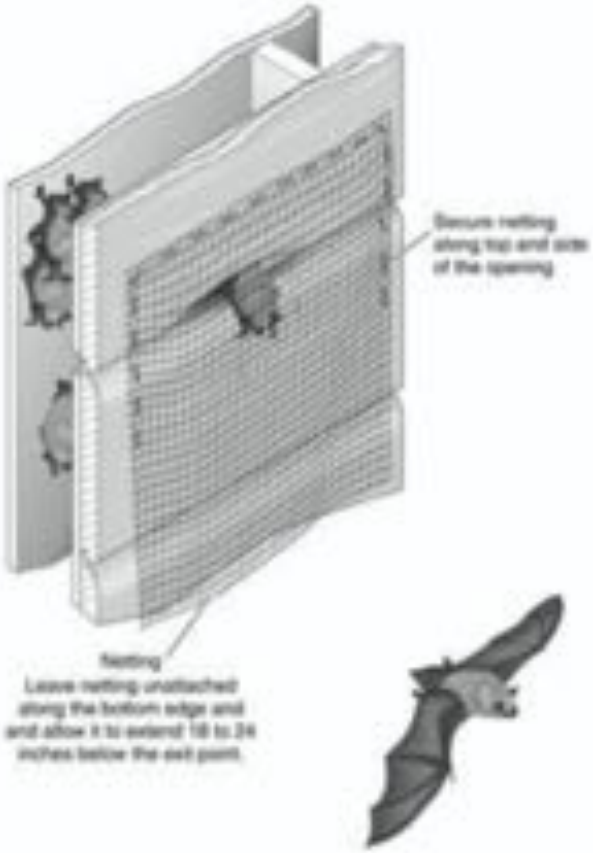
## Appendix B: Resource - Bat Exclusion from Buildings

*(Resource for consideration: Flynn, Epstein, & Waldien 2014)*

Non-lethal exclusion of bats from a building is the optimal strategy. Successful bat exclusion requires establishing one-way exits through which the bats can leave but cannot return and subsequently eliminating all entry points (BCI 2013). The National Council of SPCAs in South Africa recommends to never evict bats 1) during winter hibernation because they will not be able to fly far enough away to find new roosts, will not be able to forage and due to exposure could die; and 2) during the maternity period when new babies are born and nursed by their mothers. If the adult bats are evicted, the babies who cannot fly will be trapped inside, will die and create an odor problem (National Council of SPCAs 2013).

Bat exclusion involves preventing access. BCI recommends sealing all potential entrances on the interior building first, leaving entry points on the outside of buildings open. Because bats do not leave a roost simultaneously, simply sealing entry points at night is not a solution. One way tubes, netting, or valves that do not allow the bats to re-enter should be used for several nights to ensure that all the bats have left. Then, the openings can be sealed (BCI 2013). This principle is also recommended by the Gauteng & Northern Regions Bat Interest Group (GNoR BIG) of South Africa (2013)

Birdnetting can be used to create one-way check valves (see Figure 1). Netting must be of the right size mesh for the bats to ensure that the bats can exit without getting tangled in the netting. The netting must be placed over the roost entrance. Bats should be able to escape out the bottom of the net, but upon returning they land on the net and unable to find the entrance (Kern 1995). GNoR BIG and BCI recommend plastic or lightweight, flexible netting with 0.4 cm mesh or smaller and should be secured to the building along the top and sides of the opening, but not at the bottom. The bottom should hang loose to allow bats to exit, but not return (BCI 2013 and GNoR BIG 2013). Plastic sheeting used in roof construction or for drop clothes can also be used (GNoR BIG 2013). The netting should remain in place for a minimum of five to seven days to ensure all bats have left (BCI 2013).




Source: GNoR BIG 2013

**Figure 1: Bat Exclusion Netting**

Collapsible plastic sleeves can be used at roost entrances that are small or confined (Kern 1995). Proprietary exclusion tubes are available, but they can also be made by home and building owners. GNoR BIG recommends a 5 cm diameter exclusion tube that is approximately 25 cm in length made of PVC pipe or flexible plastic tubing. Bats cannot re-enter through the tubes because they are unable to cling to the smooth surface (GNoR BIG 2013). BCI makes similar recommendations for the exclusion tubes and also recommends that they project no more than one-quarter inch (six millimeters) into the opening to ensure exiting bats can easily enter the tube (BCI 2013). After installed, a piece of light weight, clear plastic can be taped around the end of the tube that projects to the outside to further reduce the likelihood of bats re-entering (GNoR BIG 2013). Figure 2 shows an exclusion tube (BCI 2013).



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**Figure 2: Bat Exclusion Tube**

Source: BCI 2013

The outer plastic sheeting or sleeve collapses on itself, so bats cannot reenter after leaving. Exclusion tubes should remain in place for a minimum of five to seven days to ensure all bats have left. After the bats have been excluded, the tube should be removed and the opening permanently sealed (BCI 2013).

Bat management at Kruger National Park is similar to the methods described above; however as part of the eviction process, they recommend spraying or painting "Jeye's Fluid" on beams or rafters, but not applied directly to the roost site. Jeye's Fluid is a multi-purpose disinfectant that is an apparent biocide. The management plan also discusses removing bats by hand if necessary. This would require qualified personnel to remove the bats wearing the proper personal protective equipment. In addition, Kruger National Park implements measures for post-removal treatment of roosting sites:

1. *Mix 10 ml Starycide (Bayer) with 10l of water and add 80ml Responsar (Bayer). Do not exceed the prescribed dosages and always wear protective clothing, gloves and a mask.*
2. *Spray this mixture liberally over the bat feces and sediment in the roof in order to kill all larvae and other insects.*
3. *Wait for 30 minutes and then remove the feces and sediment and clean the Roof (Kruger National Park n.d).*

After bats are excluded from a building, the building can be sealed using a variety of materials including sheet metal, wood, hardware cloth, wire or fiberglass window screening, silicone caulk, copper mesh, or expandable foam. Bats cannot gnaw through soft material like rodents. Rodent proofing is also effective for bats (Kern 1995). BCI recommends that draft guards be placed beneath doors to attics; electrical and plumbing holes should be filled with steel wool, caulking or weather stripping. BCI does not recommend expanding foam or similar products to seal cracks in a building where bats are active because they can become caught in it if it is not thoroughly dried. And they believe that caulking should be water-base (BCI 2013).

Prior to excluding bats from a roosting area, both BCI and GNOR BIG recommend installation of bat houses as alternative roosting sites, specifically for maternity colonies. The benefit of maintaining a bat colony of insectivorous bats is that they control insects (GNoR BIG 2013).



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**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Kevin Olival, PhD <olival@ecohealthalliance.org>
**CC:** Peter Daszak <daszak@ecohealthalliance.org>;Alison Andre <andre@ecohealthalliance.org>;Anna Willoughby <willoughby@ecohealthalliance.org>
**Sent:** 5/9/2017 11:41:54 AM
**Subject:** Re: GVP Emerging Disease Insights

Comments on GVP per discussion today,
J

On Wed, Apr 12, 2017 at 1:23 PM, Kevin Olival, PhD <olival@ecohealthalliance.org> wrote:
Hi Jonna,

Just wanted to move this forward, as Peter is out of the office this week. We circulated the attached EID on GVP Return on Investment to the PREDICT EB group, and no one has replied with any comments.

Are you okay if we now send this to USAID for review? As agreed, after we give USAID a week or two to review, we would finally circulate to PREDICT and EPT partners and post publicly on the website?

Attaching as word doc for your final review and PDF for circulation.

Cheers,
Kevin

EMERGING DISEASE **INSIGHTS**

Research from the PREDICT Modeling & Analytics team

# Global Costs of Emerging Infectious Diseases: Forecasting Return on Investment for the Global Virome Project.

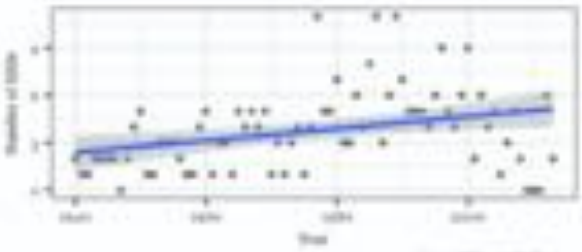
A single emerging infectious disease epidemic such as the SARS pandemic in 2003 cost the global economy an estimated $30-50 billion [1], but investments in prevention and research are often insufficient. To make the economic case for investing in large-scale research programs, it is important to model and quantify the future economic impacts of EIDs and pandemics.

The Global Virome Project (GVP) is a proposed 10-year global effort to discover the majority of viruses with likely zoonotic potential residing in mammals and waterfowl. This project could reduce the burden of emerging infectious diseases by creating a viral sequence and metadata atlas that will allow risk assessments, mitigation plans, and lower response times. The data generated by the GVP is also likely to speed technological advancements and provide a starting point for therapeutic discovery and development. Based on current projected lab and field costs, the GVP is estimated to be achievable for $1.69 billion or $169M annually over the next ten years. Given our estimations of EID frequency, mortality rates, and impacts on the global economy, we project the costs of all potential zoonotic emerging disease events over the next 50 years and calculate projected Return on Investment (ROI) from the Global Virome Project.

## COSTS OF EMERGING INFECTIOUS DISEASES

The incidence of emerging infectious disease events is on the rise [1]. A majority of these diseases, including SARS, MERS, Avian Influenza, and Ebola, are zoonoses caused by spillover from animal into human populations. To project future annual rates of zoonotic EID events, we calculate the average number and variance of EID events per year and the rate of change over time, based on methods detailed in [1]. To calculate the number of deaths per event, we fit case fatality data in our Emerging Infectious Diseases Repository (EIDR) to a power law distribution. To calculate morbidity, we assume that illness length follows a Poisson distribution with most infections being cleared quickly, but a small number of severe infections lasting for several weeks [2].

**Figure 1: Annual frequency of Emerging Infectious Diseases from 1820 to 2011.**



April 5, 2017

For details on methods or analysis contact: PREDICTmodeling@ecohealthalliance.org

## ESTIMATING GLOBAL DAMAGES FROM EID EVENTS

Global damages, or economic costs, from emerging infectious diseases (EID) depend on the annual number of EID events and the average cost of each event. Damages of one event are the sum costs from mortality $M(t)$, morbidity $A(t)$, and economic shocks $G(t)$. To find the total present value of global damages ($PVGD$), we use a standard 5 percent rate ($\delta$=0.05) to discount future savings to their current value.



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$$PVGD = \int_{t=0}^{t=50} (M(t) + A(t) + G(t))\, e^{-\delta t}$$

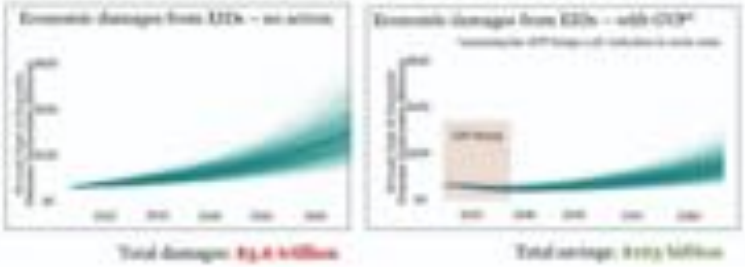
We use methods from [3] to calculate the value of a statistical life and from [2] to calculate the value of one day of work lost. We assume that economic shock costs of a disease event are a non-linear function of fatality rates.

We parameterized our model using the forecasted number of annual EID events, the historical global GDP growth rate of 2.4%, and the 2015 global GDP of $73.4 trillion. **Averaged over 5000 simulations, we find the discounted cost of emerging infectious diseases to be US$3.6 trillion over the next 50 years.**

## COSTS AND ROI OF A GLOBAL VIROME PROJECT

To determine how much it would cost to discover all viral diversity in mammals, mark-recapture ecological techniques were used to estimate the sampling effort required to discover all viruses present in one species [4]. We estimate that there are 1,607,837 (672,015 - 2,543,659) undiscovered viruses likely to reside in mammal and waterbird hosts. However, only 31.9-43.7% (512,900-702,625) of these are likely to be zoonotic, and the ones that are more costly to find are less likely to spillover. Assuming that all mammal species would have equivalent lab and field costs, discovering 85% of all mammalian viruses and waterbird influenzas would cost $1.69 billion, or $169 million per year over 10 years.

**Figure 2: Cost savings from a 5% reduction in damages caused by the GVP.**




Having a baseline of identified viral sequences would lead to earlier detection and quicker response times, lowering both epidemic frequency and impact. We assume that these improvements would be implemented two years after viral sequence collection and collectively lead to a conservative 5% in savings from damages in all events in the next 50 years ($163 billion). As such, the $3.4 billion GVP project would *return* **896 dollars for each dollar invested in it.**

Even if the GVP only reduces the likelihood and impact of EIDs by a small fraction, this project generates large returns on investment due to the high and rising costs of pandemics. The premature loss of lives and economic shocks account for the largest proportion of economic damages from EID events. A $169 million annual budget for a 10-year Global Virome Project is an investment that could produce exceptionally high returns.

### References

[1] Jones, K. E. et al. Global trends in emerging infectious diseases. *Nat. Lett.* 451, 990–994 (2008). [2] Molinari, N. A. M. et al. The annual impact of seasonal influenza in the US: Measuring disease burden and costs. *Vaccine* 25, 5086–5096 (2007). [3] Fan, V. Y., Jamison, D. T. & Summers, L. H. The Inclusive Cost of Pandemic Influenza Risk. *NBER Work. Pap. Ser.* 22137, 24 (2015). [4] Anthony, S. J. et al. A strategy to estimate unknown viral diversity in mammals. *MBio* 4, (2013).

# Sierra Leone Communication Campaign Strategy

This document summarizes a proposed process and timeline for the implementation of a communication campaign in Sierra Leone to address ways to safely and humanely live with bats from an infectious disease perspective. This campaign is necessary because of PREDICT's new surveillance findings that are expected to be publicly released by the Government of Sierra Leone sometime in the near future. However, since the exact timing is not known for when the final scientific results will be ready and when the government will release them, the proposed communication campaign strategy is composed of several parallel tracks that are interconnected. Since PREDICT will not be the only organization involved in the development and execution of the communications campaign, the roles of USAID and others have been spelled out within the proposed strategy.

Background. The USAID/PREDICT global project aims to strengthen capacity for detection and discovery of viruses with pandemic potential that can move between animals and people and to characterize risk factors associated with viral spillover. In many countries, PREDICT has detected numerous viruses, including coronaviruses (e.g., MERS-CoV), paramyxoviruses (e.g., Nipah), and influenza viruses, in bats at high-risk interfaces where there is potential for viral spillover to people. Recently, PREDICT detected a new Ebolavirus in bats in Sierra Leone which is genetically distinct from the Ebola Zaire virus that caused the Ebola epidemic in 2013-2016 in Sierra Leone, Guinea, and Liberia. PREDICT and CDC are currently conducting additional studies to determine if this new Ebola virus has the potential to infect humans.

Proposed risk-reduction communication campaign. While PREDICT and CDC are further characterizing the zoonotic potential of the new Ebola virus, a draft communication campaign strategy has been developed to begin planning out how and when to: 1) inform communities of risk from exposure to infectious pathogens transmitted between animals (especially bats) and people; 2) preemptively address and alleviate fear to the extent possible; and, 3) provide communities with the understanding and information necessary to safely and humanely live with bats, including that they are ecologically essential animals that should be conserved and not exterminated even though bats may be the natural host for many viruses. If the findings from the on-going characterization studies indicate that the new Ebola virus likely can infect people, the communications campaign will be fine-tuned to target communities where the virus-positive bats were sampled to include specific risk-reduction strategies at the community level. The communications campaign may later be used in Guinea and Liberia, particularly if the new Ebola virus is also detected in these countries.

The table below includes activities, roles of partners, and an estimated timeline and sequencing for implementation of the communications strategy. Based on guidance from USAID/ETD, PREDICT will provide technical input for the communications campaign and USAID's specific communication partners will be responsible for developing the messages and implementing the campaign using non-PREDICT funding. If any specific interventions are needed to reduce risk,

these will not be the responsibility of PREDICT to fund or implement. The communications strategy will be refined in conjunction with the Mission, GoSL MOHS and other relevant ministries, and other local and international stakeholders, including the targeted communities.

| Month | PREDICT | USAID/W | USAID/SL | USAID communications partner(s) |
|---|---|---|---|---|
| March 2017 | Laboratory work complete and results to be shared with GoSL and USAID<br><br>Develop draft talking points, FAQ, and press release in anticipation that the GoSL approves release of the findings | Contribute to drafting talking points, FAQ, and press release | Contribute to briefing in-country officials and drafting talking points, FAQ, and press release | |
| April 2017 | Request permission to release the findings and to send samples to CDC for further characterization<br><br>Begin drafting manuscript on surveillance findings *(note: results will not be released until approval is given by the GoSL)* | | | |
| May 2017 | Arrange for samples to be shipped to CDC for additional characterization *(note: actual date of shipment depends on when the GoSL provides approval and access to the samples)*<br><br>Refine existing draft of technical materials to provide to in-country communication implementing partners as a starting point for generic risk-reduction communication campaign<br><br>Review and revise existing draft of | Explore with the GH/communications team what existing projects may be available for implementing the communications campaign<br><br>Identify the specific USAID partner that will implement the communications campaign<br><br>Identify existing or new funding for the communications campaign | | |

| | | | | |
|---|---|---|---|---|
| | scientific discovery manuscript for publication | | | |
| June 2017 | Meet with USAID's communication partner and provide/discuss technical input for generic risk-reduction campaign<br><br>Evaluate results from additional characterization study *(note: actual date results are available depends on when samples arrive at CDC and how fast work is completed)*<br><br>If results of the characterization study suggest the new Ebola has zoonotic potential, (a) develop revised technical input for a specific risk-reduction communication campaign and (b) meet with USAID's communication partner to provide/discuss revised technical input for specific risk-reduction campaign<br><br>Finish writing draft manuscript to include surveillance findings and characterization of the new Ebola virus *(note: results will not be released until approval is given by the GoSL)*<br><br>Submit confidential version of draft manuscript to MOH & Ambassador for Presidential awareness | Obligate new funds (if applicable)<br><br>Provide input on strategy/timeline for implementation<br><br>Provide input on content of messages | Provide input on strategy/timeline for implementation<br><br>Provide input on content of messages | Based on technical input from PREDICT, develop messages and strategy/timeline for implementation<br><br>Consult with USAID/W, USAID/SL, GoSL, PREDICT, and communities on proposed content of messages<br><br>Finalize messages (including making adjustments based on study characterizing the zoonotic potential of the virus)<br><br>Identify in-country mechanisms and staff to implement campaign; share information and conduct training |
| July 2017 | Global PREDICT delegation to SL to | | Coordinate and participate in briefing | Implement communications |





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| | | | | |
|---|---|---|---|---|
| | meet with Mission and GoSL regarding finding (second trip), communication strategy, in-country partner collaboration, and publication; likely Ambassador briefing and/or any other briefings per guidance from Mission<br><br>Support GoSL to issue press release *(note: timing dependent of when GoSL approval is granted)* | | of Ambassador and GoSL senior staff | strategy |
| August 2017 | Publication of journal article *(note: timing dependent of when GoSL approval is granted)* | | | Evaluate/assess effectiveness and impact of communications strategy |

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Sat, 27 May 2017 08:17:57 +0200
**To:** David J Wolking <djwolking@ucdavis.edu>
**Cc:** Alisa Pereira Emerging Threats Division <apereira@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, "Tiffany D'mello" <tdmello@usaid.gov>, "predict@ucdavis.edu" <predict@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>
**Subject:** [predict] Re: Mission conducting portfolio review of its funded projects

Received.

I defer to the people on our team who are more in the know about reporting and M&E.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On May 26, 2017, at 10:36 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

> Hi again,
> Just checking in on this request from USAID/Cambodia, any guidance?

Thanks!

David

On Tue, May 23, 2017 at 1:06 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

> Hi Andrew, Alisa, Shana, and Tiffany,
> We received this interesting portfolio request from USAID/Cambodia today. The requested info (due back by May 31st) is partially aligned with M&E indicators (though does include requests for other updates) and is a bit unusual for our country teams. Since we are submitting the semi-annual report at the end of the week (which includes our full M&E report), we don't want to burden our Cambodia team with a redundant request that might be addressed already with information soon to be received at USAID. Also, with the upcoming M&E meeting in Indonesia, we wanted to check and make sure we were all on the same page with regard to messaging on country-level requests for this type of data.

We would really appreciate guidance on this (or context as Andrew was copied on Sotheara's original email) and if it is possible to wait for the semi-annual report submission and see if that info would satisfy this info request that would be our preferred action plan.

Thanks in advance!

David

---------- Forwarded message ----------
From: **Tracey Goldstein** <tgoldstein@ucdavis.edu>
Date: Tue, May 23, 2017 at 12:36 PM
Subject: Fwd: Mission conducting portfolio review of its funded projects
To: David Wolking <djwolking@ucdavis.edu>

Does this look familiar?
---------- Forwarded message ---------

From: Sotheara Nop <snop@usaid.gov>
Date: Mon, May 22, 2017 at 10:01 PM
Subject: Mission conducting portfolio review of its funded projects
To: Veasna DUONG [redacted]
Cc: Clements, Andrew (GH/HIDN) <AClements@usaid.gov>, Lucy Keatts [redacted], <tgoldstein@ucdavis.edu>, Christina Lau <clau@usaid.gov>

Dear Dr. Veasna,

Thanks for the meeting yesterday and please find enclosed PREDICT-2 project portfolio IM data sheet that we initially filled in some information.

As you had already informed that our Mission will conduct portfolio review of all USAID funded projects which include PREDICT-2 project in early July 2017, and I would appreciate your further work on the IM data sheet with your colleagues and submit it to the Mission by May 31.

Please let me know if you have any questions.

Thanks for your time.

Best,

Sotheara

--
Sent from Gmail Mobile

**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Andrew Clements <aclements@usaid.gov>
**CC:** David J Wolking <djwolking@ucdavis.edu>;Alisa Pereira <apereira@usaid.gov>;Shana Gillette <sgillette@usaid.gov>
**Sent:** 5/31/2017 9:26:10 AM
**Subject:** Re: Letter from the MAFFS to Predict

Me, too!

On Wed, May 31, 2017 at 9:18 AM, Andrew Clements <aclements@usaid.gov> wrote:
Excellent. Thanks.

BTW: very happy to see you have Brian and Cerina working on these two countries.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On May 31, 2017, at 6:11 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Thanks, we will set up a call with Dorothy and Saad and our team. All the bullets are known and being addressed. We had some trouble with Nathan stirring up anxiety with Prof and the SL team, but we had a good call with Metabiota yesterday & new CEO seems to be shutting Nathan down to the extent possible. Resigning of Frantz and Beth is news to us, but we did know that Beth was desiring a change.
We'll get everybody on track.
Jonna

On Wed, May 31, 2017 at 12:51 AM, Andrew Clements <aclements@usaid.gov> wrote:
Hi Jonna,

See below feedback from SL mission. I assume you are aware of some/all of this.

If you have any updates I can share with the Mission please let me know.

Thanks!

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** Dorothy Peprah <dpeprah@usaid.gov>
**Date:** May 30, 2017 at 3:11:26 PM GMT+2
**To:** Andrew Clements <aclements@usaid.gov>
**Cc:** Saad El-Din Hassan <shassan@usaid.gov>, Khadijat Mojidi <kmojidi@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Kendra Chittenden <kchittenden@usaid.gov>
**Subject: Re: Letter from the MAFFS to Predict**

Hi Andrew,

Thanks for this update. I just met with Prof Gbakima so passing on a few updates/concerns from this end.

- *Question on duration and funding level for PREDICT* - Despite assurances that funding is slow as opposed to being reduced, the team on ground do not appear to have this assurance.
- *No plans to resume sampling for time being* - PREDICT could not provide a plan for the next phase of sampling. They are awaiting Jonna's go ahead for this. Unfortunately, this means we're losing time and ability to make seasonal comparisons as we get further into the rainy season.
- *Staff contracts were extended by one month to June 30th* - Contracts for their 17 staff (not including Prof and James) were due to expire tomorrow but have been extended by one month (to 30th June). This is, understandably, causing a great deal of stress to the team as many expected to be with the project until end of year.
- *SLA transition process needs close monitoring* - Prof Gbakima is meeting with SLA office this afternoon to discuss the possibility of switching the agreement from one between GoSL and Metabiota to one between GoSL and UC Davis. UNIMAK would be a subcontractor under this agreement. We are not sure how this process will go given the previous politics around SLAs. Prof assures that having the capacity building plan and reassuring that the program is not closing will help the situation. This process needs close monitoring.

Most concerning at the moment is potentially losing staff and the lack of clarity as to when sampling will resume. I also think that support to Prof and James is really critical as their primary contacts, Franz and Beth, have now apparently resigned.

As communications around this issues have been particularly challenging, we are happy to set up a call later this week to get more clarity.

Thanks,
Dorothy

On Fri, May 26, 2017 at 3:00 PM, Andrew Clements <aclements@usaid.gov> wrote:
Hi Dorothy,

I'm reaching out to Predict HQ to get more information on the response to the MAFFS letter.

Also, I'm sorry about the current management situation. Clearly not ideal, but it was felt that a change was needed in SL so that PREDICT could deliver the best product possible and they think this is the best way forward given the circumstances.

I will be ask for the latest information on the Metabiota management situation in SL so that I'm sharing correct information with you. In the meantime, try not to be concerned about any rumors you hear. In times like these, there can be lots of misunderstandings and miscommunications.

We are trying to minimize the amount of drama for both the Mission and the local PREDICT staff. In an ideal world, you would see almost no change except for the person from the outside who is backstopping SL for PREDICT.

I hope to get this preliminary information for you by later today.

Again, sorry for this confusion.

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On May 26, 2017, at 3:16 PM, Dorothy Peprah <dpeprah@usaid.gov> wrote:

Hi Kendra,

Has there been further update on this issue?

Thank you,
Dorothy

Sent from my iPhone

**From:** Andrew Clements <aclements@usaid.gov>
**To:** William Karesh <Karesh@ecohealthalliance.org>;Jonna Mazet <jkmazet@ucdavis.edu>;Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Lisa Kramer (Nairobi/EA/RHH) <lkramer@usaid.gov>;Andrea Long-Wagar <along-wagar@usaid.gov>;spaige@usaid.gov <spaige@usaid.gov>;rgreene@usaid.gov <rgreene@usaid.gov>;Ashna Kibria <akibria@usaid.gov>
**Sent:** 6/4/2017 11:44:24 PM
**Subject:** Fwd: Hunting for Ebola among the bats of the Congo | Science | AAAS

FYI

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** Ricardo Echalar <rechalar@usaid.gov>
**Date:** June 5, 2017 at 4:38:39 AM GMT+2
**To:** predictmgt@usaid.gov, Dennis Carroll <dcarroll@usaid.gov>, Lindsay Parish <lparish@usaid.gov>, Amalhin Shek <ashek@usaid.gov>
**Subject: Hunting for Ebola among the bats of the Congo | Science | AAAS**

http://www.sciencemag.org/news/2017/06/hunting-ebola-among-bats-congo

Sent from my iPhone

--
You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
To unsubscribe from this group and stop receiving emails from it, send an email to predictmgt+unsubscribe@usaid.gov.
To post to this group, send email to predictmgt@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/-8311662673153497971%40unknownmsgid.

**From:** Brooke Genovese <bgenovese@ucdavis.edu>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>, Andrew Clements <aclements@usaid.gov>, Brian Bird <bnbird@ucdavis.edu>
**Cc:** "predict@ucdavis.edu" <predict@ucdavis.edu>, Corina Grigorescu Monagin <cgmonagin@ucdavis.edu>
**Subject:** SL mission meeting confirmation and call-in info
**Sent:** Mon, 5 Jun 2017 16:48:33 +0000

Hi everyone,

A call regarding the SL mission has been scheduled for **Wednesday, June 7** at 8:00AM PDT / 5:00 PM CEST / 6:00 PM EAT. Jonna will be returning from the field around the call start time and may a couple minutes late-- she's requested you start without her and she'll join as soon as possible.

**Meeting ID: 638 631 6182**

Call-in information below:

Topic: SL Mission Call
Time: Jun 7, 2017 8:00 AM Pacific Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android: https://onehealth.zoom.us REDACTED

Or iPhone one-tap (US Toll): +14086380968 REDACTED or +16465588656, REDACTED

Or Telephone:
Dial: +1 408 638 0968 (US Toll) or +1 646 558 8656 (US Toll)
International numbers available: https://onehealth.zoom.us/ [redacted]

Thank you!

Brooke Genovese
Project Manager
Executive Analyst
One Health Institute
School of Veterinary Medicine
Tel: 530-752-6459
bgenovese@ucdavis.edu

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Brian Bird <bhbird@ucdavis.edu>
**CC:** Alisa Pereira <apereira@usaid.gov>;Shana Gillette <sgillette@usaid.gov>;Kendra Chittenden <kchittenden@usaid.gov>;Tracey Goldstein <tgoldstein@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;Kama Garrison <kgarrison@usaid.gov>
**Sent:** 6/12/2017 10:32:57 AM
**Subject:** Re: Timeline for developing risk reduction messages for SL

Hi Brian,

I agree that making the messages simple/memorable is key and that it's best to start the discussion with the communication partner as soon as possible to determine how to do that.

It appears that we may not try to bridge across two communications partners after all and may wait (2 weeks) until the new project is awarded at the end of June. That will make things a little less complicated.

I've copied Kama Garrison on this email since she is a technical adviser for USAID/W communications activities and may have some thoughts on how and when to start the discussions. I believe she was involved in the Ebola communications work that HC3 conducted in some/all of the countries affected in West Africa so should have good perspective. (She also used to be part of our team so she knows Predict's work and what we are trying to do under EPT.)

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Jun 12, 2017, at 7:17 PM, Brian Bird <bhbird@ucdavis.edu> wrote:

Hi Andrew,

Great question. I think that one of the hardest parts of getting these messages "right" is figuring out what messages might work best in the Sierra Leone context. The technical side of the information is relatively straightforward, but getting the info into an easy to digest (and remember) format for the local population is probably something best done from the start in coordination with real communications folks.

From my perspective, we're in a bit of a "Nancy Regan-Just Say No" problem on the comms piece… simple message, challenging delivery. The technical info and messages are rather simple… but how to say that in a way that makes sense and is sensitive to the realities of the problem is the biggest challenge. I'm afraid without some thought and back and forth on the delivery, we'll just come off as totally tone deaf.

You had mentioned that it's likely the HC3 group would be the implementers of this critical piece. Is that still the overall plan? If so, can an introductory call or meeting with them get set-up as soon as possible to start to sort out these kinds of details? I looked at them on the web, and it seems like they've been pretty involved in health-messaging in SL, so it makes sense to utilize their on the ground expertise if we can.

If HC3 is still the go to partner, I'm happy to reach out directly to them, but probably it's best if you guys start the introduction and link us together under the USAID umbrella?

Thanks!

-B

**From:** Andrew Clements <aclements@usaid.gov>
**Date:** Friday, June 9, 2017 at 6:37 AM
**To:** Brian Bird <bbird@ucdavis.edu>
**Cc:** Alisa Pereira <apereira@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, Kendra Chittenden <kchittenden@usaid.gov>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** Timeline for developing risk reduction messages for SL

Hi Brian,

I forgot to ask on our call the other day if you have a plan/timeline for developing the risk reduction content for SL that will be discussed with our communications project.

Thanks

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Adviser*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** Dennis Carroll <dcarroll@usaid.gov>
**Sent:** Mon, 12 Jun 2017 16:47:36 -0400
**Subject:** Re: Microsoft cloud ad
**To:** Ana Ayala <asa58@georgetown.edu>, Cara Chrisman <cchrisman@usaid.gov>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>

Definitely an approach that makes sense. We need to do a bit more homework on whats they might be investing in that links to the ad

On Mon, Jun 12, 2017 at 4:42 PM, Ana Ayala <asa58@georgetown.edu> wrote:

> Sorry, Dennis and Jonna. Looks like my phone failed to send my message--maybe because I was signing off before our plane took off... My intention in sending you the ad was to raise the possibility of engaging Microsoft with a proposal to use Microsoft Cloud as a potential space where GVP data could be stored and maybe that would interest them to invest financially in GVP! Just a thought!

---

**Ana S. Ayala, J.D., LL.M.**
asa58@georgetown.edu

On Mon, Jun 12, 2017 at 9:47 AM, Dennis Carroll <dcarroll@usaid.gov> wrote:

> Interesting. obvious synergies w GVP.

On Mon, Jun 12, 2017 at 5:02 AM, Ana Ayala <asa58@georgetown.edu> wrote:

--
Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

--
Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

**From:** William B. Karesh <karesh@ecohealthalliance.org>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>;Jennings, David (CTR)" <david.jennings@associates.hq.dhs.gov>;Elizabeth Leasure <ealeasure@ucdavis.edu>
**CC:** Amanda Andre <amanda.andre@ecohealthalliance.org>
**Sent:** 6/29/2017 11:36:39 AM
**Subject:** need decision - PREDICT Semi-Annual Meeting

We had been planning 2 and a half days, with USAID and Advisors on the last day.

Right now we have meeting room booked starting Monday afternoon through the end of the day Wednesday.

Question 1: We can change to Monday morning if you think we need more time or want to end early on Wednesday.

But, if USAID and Advisors come for the last day (wednesday), it seems like a half day is a bit short for them for discussions, etc.

Thanks,

We need to finalize meeting room, and then we will follow up quickly for Hotel rooms to hold - number of people for each night.

BK

**William B. Karesh, D.V.M**
*Executive Vice President for Health and Policy*

EcoHealth Alliance
460 West 34th Street - 17th Floor
New York, NY 10001 USA

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www.ecohealthalliance.org

President, OIE Working Group on Wildlife

Co-chair, IUCN Species Survival Commission - Wildlife Health Specialist Group

EPT Partners Liaison, USAID Emerging Pandemic Threats - PREDICT-2 Program

***EcoHealth Alliance leads cutting-edge research into the critical connections between human and wildlife health and delicate ecosystems. With this science we develop solutions that promote conservation and prevent pandemics.***

**From:** Christine Kreuder Johnson <ckjohnson@ucdavis.edu>
**To:** Karen Saylors <ksaylors@metabiota.com>
**CC:** Eddy Rubin <erubin@metabiota.com>;Prime Mulembakani <pmulembakani@metabiota.com>;James Ayukekbong <jayukekbong@metabiota.com>;Placide Mbala <pmbala@metabiota.com>;Brian Bird <bhbird@UCDAVIS.EDU>;William B. Karesh <karesh@ecohealthalliance.org>;predict@ucdavis.edu" <predict@UCDAVIS.EDU>;Tracey Goldstein <tgoldstein@UCDAVIS.EDU>;Jonna Mazet <jkmazet@UCDAVIS.EDU>
**Sent:** 6/30/2017 6:46:34 PM
**Subject:** Re: follow-up on Buta ecological visit

Hi Karen,
Many thanks for the follow up. Completely agree that we have most likely missed the window to detect viral shedding in a theoretical source population.
But this outbreak should inform surveillance of nearby wildlife populations (within 20-100km of the outbreak) over the next few months. After the team wraps up field activities in Kinshasa, could they head out to conduct in depth investigations primarily targeting other suspect bat populations to which the virus could have spread, and potential spillover (primate) populations, in these areas?
If timing and location line up with a concurrent site, then please stick to the regular plan for species targets etc. But I think the outbreak warrants addition of a few independent sites with similarly high sample sizes.
Of course we'll have to stick with non-lethal sampling.
Thank you for the team's work on this outbreak. Let us know if we can help from over here.
/ckj

**From:** Karen Saylors
**Date:** Thursday, June 29, 2017 at 2:55 PM
**To:** Jonna Mazet , Christine Kreuder Johnson , Tracey Goldstein , Billy Karesh , "predict@ucdavis.edu"
**Cc:** Eddy Rubin , Prime Mulembakani , James Ayukekbong , Placide Mbala
**Subject:** follow-up on Buta ecological visit

Hi folks.
To follow up on our EB convo yesterday, here are some details for us to consider about whether to do this ecological study in the Ebola outbreak zone:

According to the doctor of Buta health zone, for distances:
Buta - Likati: 130 km (accessible only by motorbike about 5 hours of travel)
Likati - Nambwa: 45 Km
Likati - Muma: 100 km
Likati - Ngayi: 50 to 75 km
Likati- Azande: unknown

During the last sampling trip, the PREDICT team sampled animals in Likati. The sampling sites were 45 km beyond Aketi on the Aketi-Likati road: about 102 km from Niambwa, the epicenter of the epidemic (covering an area of 90-100 km). Intermediary vendors move from Aketi to Likati on motorbikes, buying hunted meat to sell in Aketi.

The declaration of the end of the epidemic is scheduled for Monday (03 July 2017) and a meeting of the laboratory committee is scheduled on the same day to discuss activities mainly ecological studies that will have to be conducted on the site over the next 90 days. Several international institutions have expressed their willingness to participate in these studies.

For PREDICT, we believe that it would be appropriate to carry out the sampling mainly in and around Nambwa, focusing on key taxa in order to achieve our annual sampling objectives.

However, the team is prioritizing reaching our sampling targets for Kinshasa and since we are currently in the dry season, we are planning to continue in Kinshasa for at least the next 3 weeks. We could consider a trip to Buta-Likati-Nambwa as early as the last week in July. In such a case, we would send two vet techs, Ipos and Midingi, who would sample rodents and bats and opportunistically hunted primates.

Another point that Prime raised is that this ecological study is being discussed with several partners almost 2 months after the case index; we agree that it's quite late to think of capturing an event related to the spillover. In addition we should know the protocols of other partners: FAO and PREDICT are the only ones that have shared their protocols. We are subject to the rules of IACUC, but not sure about other partners? The University of Kisangani and its partners work on bats, but they practice euthanasia. Up to now, there has never been a coordination meeting to discuss these aspects but as there has been an official request, we must know what is expected of us, so hopefully those details will be revealed in today's meeting.

Placide, please keep us updated with any feedback from the meeting so that we can plan accordingly.

Thanks,
Karen

**From:** Tara Milani <tmilani@usaid.gov>
**Sent:** Tue, 8 Aug 2017 20:17:12 +0000
**To:** James Desmond <REDACTED>
**Cc:** Andrew Clements <aclements@usaid.gov>, "Alisa (GH/HIDN) Pereira" <apereira@usaid.gov>, Jon Epstein <epstein@ecohealthalliance.org>, "predict@ucdavis.edu" <predict@ucdavis.edu>, Ava Sullivan <sullivan@ecohealthalliance.org>, Emma Lane <lane@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>, Monica Dea <mdea@usaid.gov>, Mildred Howard <mphoward@usaid.gov>
**Subject:** [predict] Re: PREDICT Partner Update for Y3Q3

Safe travels, and see you when you get back. t

*Tara Milani*
*Health Office Director*
*USAID/Liberia*
*Office Tel: +231-776-777-371*
*Mobile Tel: +231-776-010-922*
*tmilani@usaid.gov*

On Tue, Aug 8, 2017 at 7:38 PM, James Desmond REDACTED wrote:

Hi Tara,
You're most welcome for the talk - glad you (and others) enjoyed it! It would be great to get some help from the Embassy/Development community on the way forward.

I leave for the US next Wednesday August 16th and return September 10th. I'll be available via email and phone while I'm away in case you need any questions answered. Also, I'll brief Monica on the PREDICT team's plans while I'm in the US - they will be very busy. I'll see you when I get back!

Cheers,

Jim

**James S. Desmond, DVM, MS**
**Email:** desmond@ecohealthalliance.org
**Phone:** REDACTED (Kenya)
**Phone:** REDACTED (Liberia)
**Phone:** REDACTED (USA)
**Skype:** jim.desmond

On Aug 8, 2017, at 7:18 PM, Tara Milani <tmilani@usaid.gov> wrote:

Dear James
Thank you. we will review and get back to you if any questions.

Also, want to take this opportunity and thank you for the most interesting talk you gave last Wednesday. Everyone loved it. Now we have to think of "what next"!

Remind me again the dates you'll be traveling?

All the best for now, t

*Tara Milani*

*Health Office Director*
*USAID/Liberia*
*Office Tel:* REDACTED
*Mobile Tel:*
*tmilano@usaid.gov*

On Tue, Aug 8, 2017 at 1:48 PM, James Desmond REDACTED wrote:

> HI Tara,
> Please find the PREDICT Liberia Year 3 Quarter 3 attached. Let me know if you have any questions.

Regards,

Jim

**James S. Desmond, DVM, MS**
**Email:** desmond@ecohealthalliance.org
**Phone:** (Kenya)
**Phone:** REDACTED (Liberia)
**Phone:** USA)
**Skype:** jim.desmond

**From:** Andrew Clements <aclements@usaid.gov>
**To:** David J Wolking <djwolking@ucdavis.edu>
**CC:** Elizabeth Leasure <ealeasure@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;Alisa Pereira <apereira@usaid.gov>;Cara Chrisman <cchrisman@usaid.gov>;Shana Gillette <sgillette@usaid.gov>
**Sent:** 8/14/2017 4:00:33 PM
**Subject:** Sep 12 meeting

Hi David,

On August 4, you sent out an email to a group of people at USAID regarding the change of dates for the Predict management meeting.

We noticed that Mandy was on the list. Did you specifically want her or someone from GHSA to attend? I'm not sure their presence is necessary and am concerned it may slow things down because of them not being totally familiar with the project.

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Karen L Wood <klwood@ucdavis.edu>
**CC:** Jonna Mazet <jkmazet@ucdavis.edu>;David John Wolking <djwolking@ucdavis.edu>;Kidan Araya <karaya@ucdavis.edu>
**Sent:** 10/23/2017 9:44:53 AM
**Subject:** Re: PREDICT-2 Equipment Request - 10.23.2017

Thanks, Karen.

I'll look at this when I'm back at work on Friday.

Andrew

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Oct 23, 2017, at 7:28 PM, Karen L Wood <klwood@ucdavis.edu> wrote:

Good morning, Andrew –

Please find attached a request for approval to purchase equipment. Detailed justification for each item, as well as accompanying quotes from vendors, are included. Please don't hesitate to contact me should you require any additional information.

Best,

Best,
Karen
~~~
~~~

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**CC:** David J Wolking <djwolking@ucdavis.edu>;Amalhin Shek <ashek@usaid.gov>;Pereira, Alisa (GH/HIDN) <apereira@usaid.gov>;Shana Gillette <sgillette@usaid.gov>
**Sent:** 12/6/2017 8:50:44 AM
**Subject:** Ebola funds

Hi Jonna,

Just had a phone call with Richard asking if you wanted to redistribute your existing Ebola pipeline among countries so that you do not run out of funds in Guinea, Liberia, and Sierra Leone while other countries still have funds. I think in his ideal world, most/all countries would be a similar position in terms of the percentage of their obligated funds that have been expended.

He indicated that new Ebola funding would not be considered for obligation until the previously-obligated Ebola funds have reached about a 75% expenditure rate. (We wouldn't need to wait until you hit 75% expenditures to start the process of requesting the new obligation; in theory, with advanced information from PREDICT on when that threshold will be met, USAID could be ready to do the obligation when that date arrives.)

Your thoughts?

Andrew

--

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-243-4213
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see http://www.usaid.gov/ept2*

**From:** Kendra Chittenden <kchittenden@usaid.gov>
**Sent:** Wed, 6 Dec 2017 19:24:15 -0500
**Subject:** Re: Sierra Leone Update & Way Forward
**To:** Brooke Genovese <bgenovese@ucdavis.edu>
**Cc:** "clouisduthil@usaid.gov" <clouisduthil@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>

Dennis can be reached on his mobile phone at +1-301-646-6235 and confirmed that he is available

On Wed, Dec 6, 2017 at 4:42 PM, Brooke Genovese <bgenovese@ucdavis.edu> wrote:

Hi Kendra –

I have the following number listed as the best to reach you at: REDACTED

Also, 4:30 PM Davis time would be 7:30pm D.C. time – does this still work for you?

-Brooke

---

**From:** Kendra Chittenden <kchittenden@usaid.gov>
**Date:** Wednesday, December 6, 2017 at 9:41 AM
**To:** Brooke Genovese <bgenovese@ucdavis.edu>
**Cc:** "clouisduthil@usaid.gov" <clouisduthil@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>
**Subject:** Re: Sierra Leone Update & Way Forward

Ok- great. Hopefully Dennis' jetlag will get him up early

On Wed, Dec 6, 2017 at 12:23 PM, Brooke Genovese <bgenovese@ucdavis.edu> wrote:

Hi Kendra,

4:30pm Davis time works for Jonna.

-Brooke

---

**From:** Kendra Chittenden <kchittenden@usaid.gov>
**Date:** Wednesday, December 6, 2017 at 6:32 AM
**To:** Brooke Genovese <bgenovese@ucdavis.edu>
**Cc:** "clouisduthil@usaid.gov" <clouisduthil@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>

**Subject:** Re: Sierra Leone Update & Way Forward

I'd like to propose the times below for today---

**4:30 PM in Davis**

**8:30 AM in Kuala Lumpar**

**5:30 PM D.C.**

I am available later as needed and I do not depart until 4 PM tomorrow so could be available for a call as well even though I am on annual leave.

On Tue, Dec 5, 2017 at 6:04 PM, Brooke Genovese <bgenovese@ucdavis.edu> wrote:

Hi all,

Jonna could join a call tomorrow (Dec 6) anytime after 2:00pm PST.

Cassandra – is there a particular time after 2:00 pm PST that would work for Dennis, given his travel itinerary?

Thank you in advance for your help!

-Brooke

**From:** Dennis Carroll <dcarroll@usaid.gov>
**Date:** Tuesday, December 5, 2017 at 2:56 PM
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** Kendra Chittenden <kchittenden@usaid.gov>, Brooke Genovese <bgenovese@ucdavis.edu>
**Subject:** Re: Sierra Leone Update & Way Forward

Let me amend my last message. I was in the air between Canberra and Sydney when the call was scheduled. Apologies. Now readying to lift off the BKok.

Dr Dennis Carroll

Director, Emerging Threats Program

U.S. Agency for International Development

Office: (202) 712-5009

Mobile: REDACTED

On Dec 6, 2017, at 9:49 AM, Dennis Carroll <dcarroll@usaid.gov> wrote:

> I am on the tarmac in Sydney on a flight for KL. Sorry for the confusion.
>
> Dr Dennis Carroll
>
> Director, Emerging Threats Program
>
> U.S. Agency for International Development
>
> Office: (202) 712-5009
>
> Mobile: REDACTED
>
> On Dec 6, 2017, at 6:50 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
>
>> Hey there, Dennis,
>>
>> We meeting in 10 mins or no?
>>
>> If yes, I can call out to you, two. Best numbers?
>>
>> Thanks,
>>
>> Jonna
>>
>> On Mon, Dec 4, 2017 at 9:51 AM, Kendra Chittenden <kchittenden@usaid.gov> wrote:
>>
>> Brooke-
>>
>> thanks - any of those times works for me.
>>
>> Dennis schedule is probably more challenging so depending on what works best for him then I can do. Kendra
>>
>> On Mon, Dec 4, 2017 at 12:44 PM, Brooke Genovese <bgenovese@ucdavis.edu> wrote:
>>
>> Hello Kendra,
>>
>> My name is Brooke Genovese and I assist Jonna with administrative tasks. She will be teaching at 1:00pm PST tomorrow, but if free from 12:00 – 1:00 PST (would be quite early in Canberra, though) and after 3:30pm (would be a little late on the east coast). She is also free at 2:00pm PST on Wednesday, Dec 6.
>>
>> Let me know if any of these days/times work for you.

Best,

Brooke Genovese

PREDICT Project Support

Executive Analyst

One Health Institute

School of Veterinary Medicine

Tel: 530-752-6459

bgenovese@ucdavis.edu

---

**From:** REDACTED on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
**Date:** Monday, December 4, 2017 at 8:24 AM
**To:** Brooke Genovese <bgenovese@ucdavis.edu>
**Subject:** Fwd: Sierra Leone Update & Way Forward

---------- Forwarded message ----------
From: **Kendra Chittenden** <kchittenden@usaid.gov>
Date: Mon, Dec 4, 2017 at 5:30 AM
Subject: Re: Sierra Leone Update & Way Forward
To: Jonna Mazet <jkmazet@ucdavis.edu>, Dennis Carroll <dcarroll@usaid.gov>

How about tomorrow Tues at 8 am Canberra, 1 pm Davis, 4 pm D.C.?

Sent from my iPhone

On Dec 1, 2017, at 9:48 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> Thanks -- Kendra, let me know what works best for you.
>
> Jonna
>
>
> On Fri, Dec 1, 2017 at 6:44 PM, Dennis Carroll <dcarroll@usaid.gov> wrote:

Glad to join the call. I will be in Canberra on Tuesday and KL beginning Wed night. Let me know what works for you

Dr Dennis Carroll

Director, Emerging Threats Program

U.S. Agency for International Development

Office: (202) 712-5009

Mobile: REDACTED

On Dec 1, 2017, at 7:18 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> Dear Dennis & Kendra,
>
> Please may I have a confidential call with just the two of you next week regarding the finding/publication? Dennis, I know you are traveling, so please suggest a time that suits in your zone, and I will try to make it work. Outside of my work hours is fine, since I am also fully booked. Given our previous discussions and new information, it can not/should not wait. We will want to bring SL & other DC colleagues into the conversation once we are on the same page re way forward.
>
> Thanks in advance for suggesting times,
>
> Jonna

--

Kendra Chittenden, Ph.D. | Senior Infectious Disease Advisor| USAID | mobile (703-209-5424) KChittenden@usaid.gov

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Kendra Chittenden, Ph.D. | Senior Infectious Disease Advisor| USAID | mobile (703-209-5424) KChittenden@usaid.gov

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Kendra Chillenden, Ph.D. | Senior Infectious Disease Advisor| USAID | mobile (703-209-5424) KChillenden@usaid.gov

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Kendra Chillenden, Ph.D. | Senior Infectious Disease Advisor| USAID | mobile (703-209-5424) KChillenden@usaid.gov

**From:** "Katherine Leasure" <kaleasure@ucdavis.edu>
**To:** "PREDICTMGT" <predictmgt@usaid.gov>
**Cc:** "Predict inbox" <predict@ucdavis.edu>, "Jonna Mazet" <jkmazet@ucdavis.edu>
**Subject:** PREDICT International Travel Requests
**Sent:** Thu, 21 Dec 2017 16:25:32 -0800

*Please find below international travel requests for your review and approval. Please let me know if you have any questions. Thanks!*

1. Machalaba, Karesh (Liberia): $1600 (Machalaba), $6000 (Karesh) airfare **business class fare required for Dr. Karesh due to* REDACTED $295 (Monrovia) max daily per diem
2. Machalaba (Switzerland): $1300 airfare/$478 (Geneva) max daily per diem
3. Thuy (Bangkok): $200 airfare/$246 (Bangkok) max daily per diem
4. Karesh (France): $7500 airfare **business class required due to* REDACTED $608 (Paris) max daily per diem

Travel Requests –

1. EcoHealth Alliance would like to request travel approval for Dr. William Karesh and Ms. Catherine Machalaba to travel from New York City, NY, USA to Monrovia, Liberia from January 14-20, 2018 to conduct a ground-truthing and initial pilot of the World Bank Capacity Assessment for Environmental Health Services (a tool developed with technical support from PREDICT partners).

**Trip Purpose:** The pilot will include a workshop with relevant ministries (those responsible for health, agriculture, environment, and disaster risk reduction) and targeted ministry meetings to review the draft tool and collect information sources for the assessment. The tool complements animal and human health system capacity assessments (WHO's Joint External Evaluation and OIE Performance of Veterinary Services) to reinforce country ability to more effectively and proactively assess and manage environmental health risks, including drivers of disease emergence. Capabilities for wildlife health services are emphasized. The tool strongly promotes One Health approaches and can help broaden application of best practices learned from PREDICT-2 operations. Dr. Karesh and Ms. Machalaba will oversee the pilot of the tool in partnership with colleagues from the World Bank.

2. EcoHealth Alliance would like to request travel approval for Ms. Catherine Machalaba to travel from New York City, NY, USA to Geneva, Switzerland from February 25 to March 1, 2018 to participate in the WHO-FAO-OIE Tripartite Zoonoses Guide expert workshop.

**Trip Purpose:** Ms. Machalaba serves on working groups for the Guide's Planning and Preparedness and Joint Risk Communication and Risk Reduction chapters and has been invited to the February meeting to help finalize the Guide. The Guide incorporates strategies from the PREDICT project, including information sourced from One Health case studies assembled from EPT-2 partners.

3. Wildlife Conservation Society (WCS) would like to request travel approval for Ms. Hoang Bich Thuy to travel from Ha Noi, Viet Nam to Bangkok, Thailand from January 31, 2018 to February 3, 2018 to participate in the Prince Mahidol Award Conference 2018 on "Making the World Safe from the Threats of EIDs."

**Trip purpose:** The conference will provide a sharing and learning forum for multi-sectoral experts in zoonosis and AMR, as well as climate change and related environmental fields. Ms. Thuy will be one of the panelists to represent WCS and its PREDICT work on impacts of human travel and trade in animal products and their influence on emerging disease dynamics.

4. EcoHealth Alliance would like to request travel approval for Dr. William Karesh to travel from New York City, NY, USA to Paris, France from January 22-25, 2018 to participate in the World Organisation for Animal Health's (OIE) ad hoc group on killing methods for farmed reptiles for their skins and meat.

**Trip purpose:** Dr. Karesh will participate in World Organisation for Animal Health's (OIE) ad hoc group. This meeting is a follow up to a meeting held in August with the aim of setting health and IACUC related standards for wildlife farming for OIE code purposes. The farming of wildlife presents opportunities for the emergence of infectious diseases due to the unusual and unnatural groupings of species unnatural habitats in contact with other species in humans that does not occur in the wild. OIE is working to develop standards and codes for countries to follow that will reduce the risk of disease emergence in both animals and humans. Since good standards such as used in the US in IACUC process also lend themselves to disease risk reduction OIE provides an opportunity to promote similar standards in countries where best practices are currently not being utilized. **The OIE will provide funds for Dr. Karesh's economy*

*fare and per diem expenses for this meeting.*

**Katherine Leasure**
HR/Payroll/Financial Assistant
One Health Institute
University of California, Davis
530-752-7526
530-752-3318 FAX
kaleasure@ucdavis.edu

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Thu, 11 Jan 2018 09:08:15 -0800
**Subject:** Fwd: 5th International One Health Congress, June 2018, Canada - fellowship support
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Cc:** Alisa Pereira <apereira@usaid.gov>

See below. Great if you're already doing something so that no additional effort needed. Let's discuss if you have any concerns. I don't have a feel for how urgent this is.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** Dennis Carroll <dcarroll@usaid.gov>
**Date:** January 11, 2018 at 3:06:31 PM GMT+1
**To:** Lindsay Parish <lparish@usaid.gov>, Andrew Clements <aclements@usaid.gov>, Ricardo Echalar <rechalar@usaid.gov>, Marilyn Crane <mcrane@usaid.gov>
**Subject: Fwd: 5th International One Health Congress, June 2018, Canada - fellowship support**

Following up on an earlier email: see below. Do you have ANY interest in having your projects support participants to the OH Conference in Saskatoon this summer? Let me know

d

---------- Forwarded message ----------
From: **Ab Osterhaus** <a.osterhaus@onehealthplatform.com>
Date: Thu, Jan 11, 2018 at 6:51 AM
Subject: Re: 5th International One Health Congress, June 2018, Canada - fellowship support
To: Dennis Carroll <dcarroll@usaid.gov>
Cc: Chris Vanlangendonck <c.vanlangendonck@onehealthplatform.com>

Dear Dennis,
This is a quick note to follow up on the conversation below and to check whether USAID will be able to provide bursary support to the congress. We hope to assist as many promising researchers as possible and USAID's support would be of utmost value to that end.

Looking forward to getting in touch again soon!

Very best wishes,

Ab Osterhaus

Op 9 dec. 2017, om 06:36 heeft Dennis Carroll <dcarroll@usaid.gov> het volgende geschreven:

Thanks Ab, and congratulations on the strong response. I will share the list my team to see what we might be able to do
All the best

d

Dr Dennis Carroll
Director, Emerging Threats Program
U.S. Agency for International Development
Office: (202) 712-5009
Mobile: REDACTED

On Dec 8, 2017, at 6:28 PM, Ab Osterhaus <a.osterhaus@onehealthplatform.com> wrote:

Dear Dennis,
I sincerely hope this e-mail finds you well!

I'm contacting you again on behalf of the Organizing Committee of the 5th International One Health Congress to inform you of the unexpected success of our Open Call for Congress Fellowship Applications. As a matter of fact, we had received 356 applications for bursary support by the application deadline of 1 December, mainly from Africa and Asia/Middle East:

Asia/Middle East: 135
Africa: 153
Americas: 25
Australia: 7
Europe: 36

The attached spreadsheet provides a detailed overview of the applications already. However, applicants were asked to submit a registration form (listing personal details and motivation to attend the congress), an abstract of their work and a proof of their academic status/letter of recommendation. We have assembled this information in separate folders per applicant, which can be accessed via this url (WeTransfer, available for seven days): https://we.tl/PoEgbMb48y.

Obviously, we aim to facilitate attendance of as many promising scientists as possible, and we really hope USAID will consider providing support to our fellows. May I invite you to review the applicants' information to that end? Of course, it will be me pleasure to discuss this over the phone if this would be more convenient.

Kind regards,

Ab Osterhaus

<OHP_5OHC_bannerMelbourne_press.jpg>

<IOHC18 Fellows appl overview.xlsx>

<OH Fellows Fund-concept.pdf>

--

Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

**From:** Dennis Carroll <dcarroll@usaid.gov>
**Sent:** Wed, 24 Jan 2018 08:50:32 -0500
**Subject:** Re: Meeting room check
**To:** REDACTED
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>

My arrival to Bangkok has been delayed a day; I now arrive late evening on Saturday the 27. I can meet Sunday morning for a look

On Tue, Jan 23, 2018 at 7:51 PM, REDACTED > wrote:

Hi Dennis,

Will you be able to meet with the PMAC secretariat on Saturday Jan 28 between 3-5pm to check the GVP side-meeting room (Lotus Suite 11), as per secretariat instructions?

Best,
[redacted]

REDACTED

Fellow

One Health Institute

School of Veterinary Medicine

University of California, Davis

--
Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

| | |
|---|---|
| **From:** | Andrew Clements <aclements@usaid.gov> |
| **To:** | Brian Bird <bhbird@ucdavis.edu> |
| **CC:** | PREDICTMGT <predictmgt@usaid.gov>,PREDICT-outbreak <predict-outbreak@ucdavis.edu> |
| **Sent:** | 3/10/2018 8:27:19 AM |
| **Subject:** | [predict] [predict-outbreak] Re: PREDICT Ghana Lassa fever event update 09Mar2018 |

Thanks, Brian. Hopefully, there will be cross-sectoral representation so that this can be an opportunity for the GOG partners to use a OH approach in the field.

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On Mar 10, 2018, at 7:27 AM, Brian Bird <bhbird@ucdavis.edu> wrote:

Hi all,

As expected, the team has received an official request to support rodent field sampling activities near the home of the recent Lassa fever case in Tema district in Ghana.

A written copy of the request is pending, but verbally the GoG has requested that the PREDICT team conduct field sampling at three-sites in Tema district. The team estimates that the time required would be approximately 12 days at a cost of approximately $11k (transportation, personnel time/per diems, and supplies/PPE). The team is working with the government and other partners involved (CDC and NAMRU) to coordinate any potential field activities. It is expected that a coordination meeting will occur with the various partners on Monday (Mar 12) to discuss and make plans.

Details on the single human case and travel history in the attached report, as well as a proposed budget for your consideration and discussion.

Have a good evening/weekend,

-Brian

Brian H. Bird DVM, MSPH, PhD
Global Lead Sierra Leone and
Multi-Country Ebola operations
PREDICT-USAID

One Health Institute
1089 Veterinary Medicine Dr.
School of Veterinary Medicine
University of California, Davis
Email: bhbird@ucdavis.edu
Skype: brianhbird1
http://www.vetmed.ucdavis.edu/ohi/predict/index.cfm

--

You received this message because you are subscribed to the Google Groups "PREDICTMGT" group.
To unsubscribe from this group and stop receiving emails from it, send an email to
predictmgt+unsubscribe@usaid.gov.

To post to this group, send email to predictmgt@usaid.gov.
To view this discussion on the web visit https://groups.google.com/a/usaid.gov/d/msgid/predictmgt/07136043-2002-498C-8CC5-44482C1BEFC5%40ucdavis.edu.

**From:** David J Wolking <djwolking@ucdavis.edu>
**Sent:** Wed, 21 Mar 2018 13:56:03 -0700
**Subject:** Management team update: Call rescheduled with USAID for Wednesday March 28, 2018 at 9AM PDT/12PM EDT
**To:** Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Leilani Francisco <francisco@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>, "Prof. Jonna Mazet" <jkmazet@ucdavis.edu>, William Karesh <karesh@ecohealthalliance.org>, Karen Saylors <ksaylors@metabiota.com>
**Cc:** Catherine Machalaba <Machalaba@ecohealthalliance.org>, Brooke Genovese <bgenovese@ucdavis.edu>, Ava Sullivan <sullivan@ecohealthalliance.org>, Alison Andre <andre@ecohealthalliance.org>, Amanda Andre <amanda.andre@ecohealthalliance.org>, Molly Turner <turner@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>

Hi everyone,
Just a late breaker here on our USAID management team call schedule. Andrew has a planned annual leave in early April and will not be joining us in Napa, so instead of cancelling all management team calls until mid to late April we worked with him to arrange a call for next week Wednesday March 28, 2018 at 9AM PDT/12PM EDT. Hopefully you all can make it.

[redacted]nd I will follow-up with an agenda as soon as possible.

Best,

David

**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** PREDICTMGT <predictmgt@usaid.gov>;isimmons@usaid.gov <isimmons@usaid.gov>;bhaberer@usaid.gov <bhaberer@usaid.gov>;Jean-Felly Numbi <jnumbi@usaid.gov>
**CC:** PREDICT-outbreak <predict-outbreak@ucdavis.edu>;Brian Bird <bhbird@ucdavis.edu>;Karen Saylors <ksaylors@metabiota.com>
**Sent:** 5/18/2018 10:43:02 AM
**Subject:** UPDATE PREDICT DRC EVD outbreak 17 May 2018

Hello,
Here is today's update. Brian is traveling now, so I will send these to you through Sunday.
Best,
Jonna

Jonna A.K. Mazet, DVM, MPVM, PhD
Professor of Epidemiology & Disease Ecology
Executive Director, One Health Institute
Global Director, PREDICT Project of USAID Emerging Pandemic Threats Program

School of Veterinary Medicine
University of California
1089 Veterinary Medicine Drive
Davis, CA 95616, USA
+1-530-752-3630
onehealthinstitute.net

For scheduling and logistical issues, please contact:
Ms. Brooke Genovese
bgenovese@ucdavis.edu
+1-530-752-3630

USAID | PREDICT

# PREDICT Outbreak or Health Event Rapid Report

**Today's Date: May 17, 2018**
**Working Title of Investigation**: Ebola virus disease outbreak in Bikoro Health Zone of Equateur province, DR Congo.
**Cumulative day of the outbreak investigation: 12 days**

**Please describe the disease signs and symptoms and species affected (humans, domesticated animals, wildlife:**

Between April 3 and May 7, 2018, 17 successive deaths were recorded in the health district of Ikono Imponge, in the health zone of Bikoro (Equateur Province). Seventeen individuals were linked through family relationships. Patients presented with the following symptoms prior to their death: fever, diarrhea, abdominal pain, vomiting, muscle and joint pain, and hemorrhagic symptoms.

On May 4, an alert for suspected Viral Hemorrhagic Fever in the Bikoro health zone was received at the MOH Office of Disease Control.

On May 8, two out of five individuals tested were confirmed as Ebola virus (species, *Zaire ebolavirus*) by RT-PCR at INRB.

As of May 12, additional possible EVD cases continue to be identified in the affected area.

| Location | |
|---|---|
| Country: | Democratic Republic of the Congo |
| District: | Equateur |
| Village/Town: | IKONO IMPONGE / Health zone of BIKORO |
| GPS Coordinates (if known): | Latitude : -0.749997 ; Longitude : 18.1166662 |
| Date that first case(s) of illness occurred (if known or estimate): | April 03, 2018 |
| Date that PREDICT was first notified of outbreak: | May 07, 2018 |



UCDUSR0005741

| Key Information | Description of Findings/Actions/Outcomes |
|---|---|
| How many affected individuals? | |

| | Suspected | Confirmed | Deaths | Total affected |
|---|---|---|---|---|
| **Humans** | 22 | 14 | 24 | 45 |
| **Domestic Animals** | 0 | 0 | 0 | 0 |
| **Wild Animals** | 0 | 0 | 0 | 0 |

| | |
|---|---|
| How was outbreak first noticed? | Ikono Imponge health district notified the Bikoro Health Zone of 1 death with viral hemorrhagic fever-like symptoms. |
| Where was the first reported case? What is/was the extent of geographic spread? Include comments on the apparent speed of spread. | • A recent cluster since week 11 (12-18 March 2018) in Bikoro area, Equateur, DRC, including 19 cases including 17 deaths, 15 deaths of which were in the community, raised the alert of suspected VHF.<br>• Symptoms observed include fever, vomiting, abdominal pain, eye redness, and diarrhea, and were not alleviated by antibiotic and antimalarial treatment.<br>• The first reported case was at IKONO IMPONGE Health District. Between April 3 and May 7, 2018, 17 deaths were recorded among people with family relationships, from a total of 27 total cases, according to MOH. (According to WHO reports, investigations identified 135 cases retrospectively, going back as far as January 2018 in the Igende zone, 60km from Bikoro, so there is some conflicting information circulating.)<br>• The first case of the recent cluster in Bikoro was a policeman who arrived from Igende area. He died in a health centre in Ikoko Impenge village, Bikoro area.<br>• Following the first case's funeral, 11 family members developed symptoms and 7 died. The deceased all had either attended the funeral or acted as caregivers.<br>• There are currently 10 cases in treatment in two different facilities. Five patients were sampled and tested for EVD, of which two were found positive for Ebola *zoirevirus* by RT-PCR at INRB in Kinshasa on 8 |



UCDUSR0005742

| | |
|---|---|
| | May 2018. |
| Has the country requested support from PREDICT (include date of request)? | The DRC requested unspecified support from PREDICT on May 7, 2018. On Tuesday, May 8, MOH requested that PREDICT conduct additional testing of the 5 samples stored at INRB, which USAID approved on the same day. The PREDICT lab team received samples and initiated testing on Wednesday, May 9.<br><br>On May 9, a list of unmet needs was developed at the outbreak response meeting with MOH and partners.<br><br>Late on May 11, PREDICT received a formal request from the Government through INRB regarding support for outbreak response activities. In response to the list of unmet needs provided by the laboratory commission, PREDICT provided 150 PPE, a Smartcycler PCR machine and accompanying computer, and two gloveboxes.<br><br>On May 12, INRB requested PPE and sampling kits from PREDICT to send to the outbreak sites. Following prompt approval by USAID, Metabiota ordered and sent the equipment to DRC.<br><br>On May 16, MOH (through INRB) officially asked PREDICT for a space in a -80 freezer to store Ebola vaccines. |
| If so, which government agency requested PREDICT support? | Ministry of Health through the National Institute of Biomedical Research (INRB) |
| When was PREDICT response initiated (date)? | Tuesday, May 8, 2018 |
| Are other EPT partners involved in the response (which ones and how)? | No. |
| What type of assistance did PREDICT initially provide? Which PREDICT personnel were involved? | PREDICT is running the PREDICT protocol testing on patient specimens, using PREDICT virus family primers with the intent of finding filoviruses or other viral families, as well as identifying sequences for further elucidation of species and strain. (Previously INRB testing of five patients' whole blood specimens for EVD found two to be positive for Ebola virus (*Zaire ebolavirus*) by RT-PCR at INRB in Kinshasa on May 7 2018.) |



UCDUSR0005743

| | |
|---|---|
| | On May 12, the K-Plan mobile lab (previously acquired through USAID support) was deployed to the outbreak site in Bikoro and Iboko. The INRB team arrived that Saturday morning in Mbandaka, the capital of Equator Province, for preparation. |
| When was the first official acknowledgement of the outbreak (by which government agency or other reputable body and date)?<br><br>When was a response initiated and by whom? Which agencies were involved? Who was in charge of the national response? | The first official acknowledgement of the outbreak was by the MOH Office of Disease Control on May 6, 2018.<br><br>A joint investigation team was deployed by MOH, WHO and MSF, and according to MOH, another team from the MOH Office of Disease Control and WHO deployed today to Mbandaka (capital of Equateur province) to lead case investigations.<br><br>Background on area: Ikoko Impenge health area covers 15km and includes 5 villages, all of which have reported suspected cases. This area of DRC has not suffered previous documented Ebola outbreaks.<br><br>Ikoko Impenge health area is not covered by mobile telephone networks, but is accessible by road. It lies 128km from Mbandaka, the capital of Equateur province, however the road is under renovation and the current route is 280km. An airstrip is present 8km from Bikoro, which is 30km from Ikoko. |
| Was the cause of the outbreak confirmed by a laboratory? If so, give details of the initial confirmation (cause, species, specimen types tested and dates of testing if known). | The analysis is ongoing. Results expected this evening. |
| Where was the laboratory testing performed (name of laboratory)? | INRB |
| Number of days between initiation of government response and lab confirmation of laboratory results. | 1 day |

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|---|---|---|---|---|
| **Summary of the Outbreak or Event:** | **To be filled after active outbreak or event activity has ceased** | | | |
| **Working name of the outbreak:** | | | | |
| **Total number of cases:** | | **Suspected:** | **Confirmed:** | **Deaths:** |
| | **Humans** | | | |



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| | | | | |
|---|---|---|---|---|
| | Domestic Animals | | | |
| | Wild Animals | | | |
| **Summary of PREDICT Team response activities during the outbreak.** | | | | |

**PREDICT Outbreak or Health Event Response Daily Activities/Timeline**

**Working Title of Investigation: Ebola virus outbreak DRC Equateur April-May 2018**

**Key Events:**

| Date | Day # | Notification or Action Taken |
|---|---|---|
| April 3, 2018 | -34 | First suspect case in family cluster |
| May 6, 2018 | 1 | Head Office of Disease Control officially acknowledges the outbreak. |
| May 7, 2018 | 2 | The government, through the INRB, verbally requests PREDICT support. Specific details of request pending.<br><br>Confirmation of Ebola virus by RT-PCR at the INRB laboratory. Of five samples tested, two were positive for *Zoire ebolavirus*. |
| May 8, 2018 | 3 | MOH verbally requests for PREDICT to conduct PREDICT protocol testing of samples at INRB. Written approval from USAID AOR communicated to PREDICT DRC team. Samples transferred to PREDICT lab.<br><br>Official Statement of the Ebola Virus Epidemic released by the Congolese Government (Ministry of Health).<br>Developed road map and response plan.<br><br>An investigative mission led by the director of the Office of Disease Control (DGLM) planned for Wednesday May 9, 2018 in the province of Equateur.<br><br>New cases registered: 4 (in the health center)<br>On five previous cases monitored, three were released. There are two active cases in the General Hospital.<br>Total of active and monitored cases: 6 (among which 4 are suspected cases).<br>Laboratory confirmed cases : 2<br>Deaths : 17 |



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| | | Total cases: 23 |
| May 9, 2018 | 4 | PREDICT lab analysis of clinical specimens following PREDICT virus-family level protocols is in progress. PREDICT Country Coordinator met with MOH and partners on response plan and development of list of unmet needs.<br>An investigative mission led by Office of Disease Control (DGLM) was deployed today May 9 to the province of Equateur.<br><br>New cases registered: 4<br>Total of active and monitored cases: 10 (among which 8 are suspected cases).<br>Confirmed cases : 2<br>Deaths: 17<br>Total cases under investigation: 27 |
| May 10, 2018 | 5 | Four new suspected cases and one death were reported in the health zone of Iboko, near the Bikoro health zone. The deceased case was a health professional who had symptoms suggestive of Ebola virus disease.<br><br>Deaths: 18 cases<br>Suspected cases: 12 cases<br>Confirmed cases: 2 cases<br>Total cases reported in Bikoro and Iboko health zones: 32 cases<br><br>Identified actions:<br>• Identification of positive cases<br>• Contact tracing<br>• Active monitoring<br>• Sensitization seminars of all the Chief Medical officers in the health zones of Equator Province. |
| May 11, 2018 | 6 | Late on May 11, the PREDICT DRC team received a formal request from the Government, through INRB regarding support for response activities.<br>In response to the list of unmet needs provided by the laboratory commission, PREDICT provided 150 PPE, a Smartcycler and accompanying computer, and two gloveboxes.<br><br>The K-Plan mobile lab (previously acquired through USAID support) will be deployed to the outbreak site in Bikoro and Iboko tomorrow (May 12, 2018).<br><br>There is a significant and urgent need for sampling kits on sites of the |



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| | | outbreak.<br><br>According to the WHO, all conditions are met for the vaccine to arrive in Kinshasa next week (week of May 14 to 20, 2018).<br><br>**Monitoring report**:<br>New suspected cases : 2 (one in Iboko and the other in Bikoro)<br>There are three community alert cases in Mbandaka of new reports of ill individuals in the community requiring follow-up.<br>Alert cases: 3 in Mbandaka<br>Deaths : 18<br>Suspected cases: 14 (9 in Bikoro, 5 in Iboko)<br>Confirmed cases: 2<br>Total notified cases: 34 (in Bikoro and Iboko) |
| May 12, 2018 | 7 | In preparation for this deployment, the INRB Team arrived in the in Mbandaka, the capital of Equator Province.<br><br>The Minister of Health and Ministry of Health officials arrived this morning to the sites of the epidemic. The INRB Team is in Bikoro. The K-Plan mobile lab was shipped this morning to Bikoro via Mbandaka.<br><br>The Director General of the WHO arrives tonight in Kinshasa.<br><br>**Monitoring report**:<br>New suspected cases : 2 (in Wangata, one of three health zones of Mbandaka)<br>After re-evaluation of the situation, the number of suspected cases was revised downward to Bikoro (8 suspected cases) and Iboko (2 suspected cases).<br><br>Alert cases: 7 alert cases (five in Iboko and two in Ntondo, a health zone located in the South-East of the Bikoro health zone and West of the Iboko health zone).<br><br>Deaths: 18<br>Suspected cases: 12 (8 in Bikoro, 2 in Iboko, 2 in Wangata)<br>Confirmed cases: 2<br>Previously suspected but tested negative cases: 3<br>Total notified cases: 35 in 4 health zones (Bikoro , Iboko, Wangata and Ingende; this count includes the 3 laboratory-negative cases). |
| May 13, 2018 | 8 | Visite of the Director General of the WHO, the MOH and representative of WHO DRC to Mbandaka and Bikoro. |



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| | | **Monitoring report:**<br>New suspected cases : 5 (2 in Bikoro ; 3 in Iboko)<br>Alert cases: 4 (in Bikoro)<br><br>Deaths: 20 (17 in Bikoro; 3 in Iboko)<br>Suspected cases: 17 (10 in Bikoro, 5 in Iboko, 2 in Wangata)<br>Confirmed cases: 2<br>Previously suspected but tested negative cases: 3<br>Total notified cases: 42 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count includes the 3 laboratory-negative individuals |
| May 14, 2018 | 9 | Cold chain for vaccination is being deployed on site.<br><br>**Monitoring report:**<br>New suspected cases : 3 (in Bikoro )<br>Alert cases: 7 (in Bikoro)<br><br>Deaths: 20 (17 in Bikoro; 3 in Iboko)<br>Suspected cases: 20 (13 in Bikoro, 5 in Iboko, 2 in Wangata)<br>Confirmed cases: 2<br>Previously suspected but tested negative cases: 3<br>Total notified cases: 45 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count includes the 3 laboratory-negative individuals |
| May 15, 2018 | 10 | USAID approved the request in support for outbreak response.<br>Previously, the analysis made on the five samples at the PREDICT lab cost $111.35<br>At the end of all analysis , this amount may reach $276.69<br><br>**Monitoring report:**<br>New suspected cases : 3 (in Wangata)<br>Alert cases: 0<br><br>Deaths: 20 (18 in Bikoro; 2 in Iboko)<br>Suspected cases: 20 (14 in Bikoro, 3 in Iboko, 3 in Wangata)<br>Confirmed cases: 2<br>Previously suspected but tested negative cases: 3<br>Total notified cases: 42 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals |
| May 16, 2018 | 11 | 5412 doses of vaccines against EVD arrived in Kinshasa.<br>The MOH (INRB) officially asked PREDICT for a space in a -80 freezer to store the vaccines. |



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| | | A vaccination committee will be set up to coordinate vaccination activities.<br><br>In view of the spread of the outbreak in several health zones, a reassessment of laboratory needs is being made by the Laboratory commission. This changing state of need will integrate all affected health areas.<br>**Monitoring report:**<br>New suspected cases : 2 (1 in Bikoro and another in Wangata)<br>Alert cases: 2<br><br>Deaths: 23 (20 in Bikoro; 3 in Iboko)<br>Probable cases: 20 (18 in Bikoro; 2 in Iboko)<br>Suspected cases: 21 (15 in Bikoro, 3 in Iboko, 3 in Wangata)<br>Confirmed cases: 3<br>Previously suspected but tested negative cases: 3<br>Total notified cases: 44 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count doesn't include the 3 laboratory-negative individuals |
| May 17, 2018 | 12 | Vaccination at the sites of the outbreak will begin on Monday, May 21, 2018. Vaccination will target health care professionals working in hospitals, contacts of the confirmed cases, and contacts of the case contacts.<br><br>In view of the importance of the outbreak, the laboratory and research commission reassessed the needs for assistance. In order to circumvent the difficulties related to customs clearance, the chairman of the commission, Pr Muyembe, suggested that some materials be bought in Kinshasa.<br><br>Six specimens collected on May 16 should arrive tonight in Kinshasa from Mbandaka. The laboratory in Bikoro, is fully functional. Rapid diagonostic tests and RT-PCR will be used. In Mbandaka, the GeneXpert is set up, but electricity is a problem.<br><br>**Monitoring report:**<br>New suspected cases : 0<br>Alert cases: 2 (in Iboko)<br>Deaths: 24 (21 in Bikoro; 3 in Iboko)<br>Probable cases: 21 (19 in Bikoro; 2 in Iboko)<br>Suspected cases: 1 (health zone has not been specified)<br>Confirmed cases: 14 (13 in Bikoro ; 1 in Wangata) |



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| | | Contact cases: 532 (330 in Bikoro; 120 in Iboko; 52 in Wangata; 30 in Ntondo)<br>Previously suspected but cases tested negative: 3<br>Total notified cases: 45 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative cases<br><br>Please note that the total notified cases (45) does not match the sum of the suspected, confirmed and deceased cases, but these are the numbers MOH is reporting. The WHO situation report (May 16 version) indicates a total of 44 notified cases and 23 deaths. |
| | | |



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USAID | PREDICT

## In-Country Government Outbreak or Health Event Points of Contact

| Public Health ministry or department: | |
|---|---|
| Name: | Bathe Ndjokolo |
| Email: | REDACTED |
| Mobile Phone: | |

| Livestock ministry or department: | |
|---|---|
| Name: | Leopold Mulumba |
| Email: | REDACTED |
| Mobile Phone: | |

| Wildlife/Environment ministry or department: | |
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| Name: | Jeff Mapilanga |
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| OIE focal point: | |
|---|---|
| Name: | Honore N'Lemba Mabela |
| Email: | REDACTED |
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| IHR focal point: | |
|---|---|
| Name: | Theophile Bokenge |
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| FAO: | |
|---|---|
| Name: | Philippe Kone |
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| WHO: | |
|---|---|
| Name: | Ernest Dabire |
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| Mobile Phone: | |

| EPT ONE HEALTH WORKFORCE Project: | |
|---|---|
| Name: | Diafuka Saila Ngita |
| Email: | REDACTED |

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USAID | PREDICT

| | |
|---|---|
| Mobile Phone: | REDACTED |

| EPT PREPAREDNESS and RESPONSE Project: | |
|---|---|
| Name: | |
| Email: | |
| Mobile Phone: | |

**Other Important Contacts:**

| | |
|---|---|
| Organization: | |
| Name: | |
| Email: | |
| Mobile Phone: | |

| | |
|---|---|
| Organization: | |
| Name: | |
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| Mobile Phone: | |

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| Mobile Phone: | |

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| Organization: | |
| Name: | |
| Email: | |
| Mobile Phone: | |



UCDUSR0005752

**From:** Brian Bird <bhbird@ucdavis.edu>
**To:** PREDICTMGT <predictmgt@usaid.gov>;isimmons@usaid.gov <isimmons@usaid.gov>;bhaberer@usaid.gov <bhaberer@usaid.gov>;Jean-Felly Numbi <jnumbi@usaid.gov>
**CC:** PREDICT-outbreak <predict-outbreak@ucdavis.edu>;Karen Saylors <ksaylors@metabiota.com>;Jonna Mazet <jkmazet@ucdavis.edu>
**Sent:** 5/30/2018 9:59:31 AM
**Subject:** UPDATE PREDICT DRC EVD outbreak 29 May 2018

Hi everyone,

Some minor updates from the field, and the latest MoH SitRep that is available.

Yours,

-Brian

Brian H. Bird DVM, MSPH, PhD
Global Lead Sierra Leone and
Multi-Country Ebola operations
PREDICT-USAID

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# PREDICT Outbreak or Health Event Rapid Report

**Today's Date: May 29, 2018**
**Working Title of Investigation**: Ebola virus disease outbreak in Equateur province, DR Congo.
**Cumulative day of the outbreak investigation: 24 days**

**Please describe the disease signs and symptoms and species affected (humans, domesticated animals, wildlife:**

Between April 3 and May 7, 2018, 17 successive deaths were recorded in the health district of Ikoko Impenge, in the health zone of Bikoro (Equateur Province). Seventeen individuals were linked through family relationships. Patients presented with the following symptoms prior to their death: fever, diarrhea, abdominal pain, vomiting, muscle and joint pain, and hemorrhagic symptoms.

On May 4, an alert for suspected Viral Hemorrhagic Fever in the Bikoro health zone was received at the MOH Office of Disease Control.

On May 8, two out of five individuals tested were confirmed as Ebola virus (species, *Zaire ebolavirus)* by RT-PCR at INRB. As of May 12, additional possible EVD cases continue to be identified in the affected area.

| Location | |
|---|---|
| Country: | Democratic Republic of the Congo |
| District: | Equateur |
| Village/Town: | IKOKO IMPENGE / Health zone of BIKORO |
| GPS Coordinates (if known): | Latitude : -0.749997 ; Longitude : 18.1166662 |
| Date that first case(s) of illness occurred (if known or estimate): | April 03, 2018 |
| Date that PREDICT was first notified of outbreak: | May 07, 2018 |



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| Key Information | Description of Findings/Actions/Outcomes |
|---|---|
| How many affected individuals? | |

| | Suspected | Confirmed | Deaths | Total affected |
|---|---|---|---|---|
| **Humans** | 3 | 35 | 25 | 51 |
| **Domestic Animals** | 0 | 0 | 0 | 0 |
| **Wild Animals** | 0 | 0 | 0 | 0 |

| | |
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| How was outbreak first noticed? | Ikoko Impenge health district notified the Bikoro Health Zone of 1 death with viral hemorrhagic fever-like symptoms. |
| Where was the first reported case? What is/was the extent of geographic spread? Include comments on the apparent speed of spread. | • A cluster in week 11 (12-18 March 2018) in Bikoro area, Equateur, DRC, including 19 cases including 17 deaths, 15 deaths of which were in the community, raised the alert of suspected VHF.<br>• Symptoms observed include fever, vomiting, abdominal pain, eye redness, and diarrhea, and were not alleviated by antibiotic and antimalarial treatment.<br>• The first reported case was at IKOKO IMPENGE Health District. Between April 3 and May 7, 2018, 17 deaths were recorded among people with family relationships, from a total of 27 total cases, according to MOH. (According to WHO reports, investigations identified 135 cases retrospectively, going back as far as January 2018 in the Igende zone, 60km from Bikoro, so there is some conflicting information circulating.)<br>• The first case in Bikoro was a policeman who arrived from Igende area. He died in a health centre in Ikoko Impenge village, Bikoro area.<br>• Following the first case's funeral, 11 family members developed symptoms and 7 died. The deceased all had either attended the funeral or acted as caregivers.<br>• Five patients were sampled and tested for EVD, of which two were found positive for EVD by RT-PCR at INRB in Kinshasa on 8 May 2018. |
| Has the country requested support from PREDICT (include date of request)? | The DRC requested unspecified support from PREDICT on May 7, 2018. On Tuesday, May 8, MOH requested that PREDICT conduct additional testing of the 5 samples stored at INRB, which USAID approved on the same day. The PREDICT lab |



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| | team received samples and initiated testing on Wednesday, May 9.<br><br>On May 9, a list of unmet needs was developed at the outbreak response meeting with MOH and partners.<br><br>Late on May 11, PREDICT received a formal request from the Government through INRB regarding support for outbreak response activities. In response to the list of unmet needs provided by the laboratory commission, PREDICT provided 150 PPE, a Smartcycler PCR machine and accompanying computer, and two gloveboxes.<br><br>On May 12, INRB requested PPE and sampling kits from PREDICT to send to the outbreak sites. USAID quickly approved this, so Metabiota ordered these with the plan to express them to DRC.<br><br>On May 16, the MOH (INRB) officially asked PREDICT for a space in a -80 freezer to store Ebola vaccines.<br><br>The mobile lab in Bikoro is functional (with RT-PRC, rapid tests, and GeneExpert up and running) as is the Mbandaka MOH-INRB lab |
| If so, which government agency requested PREDICT support? | Ministry of Health through the National Institute of Biomedical Research (INRB) |
| When was PREDICT response initiated (date)? | Tuesday, May 8, 2018 |
| Are other EPT partners involved in the response (which ones and how)? | No |
| What type of assistance did PREDICT initially provide? Which PREDICT personnel were involved? | PREDICT is running the PREDICT protocol testing on patient specimens, using PREDICT virus family primers with the intent of finding filoviruses or other viral families, as well as identifying sequences for further elucidation of species and strain. (Previously INRB testing of five patients' whole blood specimens for EVD found two to be positive for Ebola virus (*Zaire ebolavirus)* by RT-PCR at INRB in Kinshasa on May 7 2018.)<br><br>On May 12, the K-Plan mobile lab (previously acquired through USAID support) was deployed to the outbreak site in |



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| | Bikoro and Iboko. The INRB team arrived that Saturday morning in Mbandaka, the capital of Equator Province, for preparation. |
| When was the first official acknowledgement of the outbreak (by which government agency or other reputable body and date)?<br><br>When was a response initiated and by whom? Which agencies were involved? Who was in charge of the national response? | The first official acknowledgement of the outbreak was by the MOH Office of Disease Control on May 6, 2018.<br><br>A joint investigation team was deployed by MOH, WHO and MSF, and according to MOH, another team from the MOH Office of Disease Control and WHO deployed today to Mbandaka (capital of Equateur province) to lead case investigations.<br><br>Background on area: Ikoko Impenge health area covers 15km and includes 5 villages, all of which have reported suspected cases. This area of DRC has not suffered previous documented Ebola outbreaks.<br><br>Ikoko Impenge health area is not covered by mobile telephone networks, but is accessible by road. It lies 128km from Mbandaka, the capital of Equateur province, however the road is under renovation and the current route is 280km. An airstrip is present 8km from Bikoro, which is 30km from Ikoko. |
| Was the cause of the outbreak confirmed by a laboratory? If so, give details of the initial confirmation (cause, species, specimen types tested and dates of testing if known). | INRB testing of five patients' whole blood specimens for EVD found two to be positive for Ebola virus (*Zaire ebolavirus*) by RT-PCR at INRB in Kinshasa on May 7 2018. |
| Where was the laboratory testing performed (name of laboratory)? | INRB |
| Number of days between initiation of government response and lab confirmation of laboratory results. | 1 day |

| | | | | |
|---|---|---|---|---|
| **Summary of the Outbreak or Event:** | **To be filled after active outbreak or event activity has ceased** | | | |
| **Working name of the outbreak:** | | | | |
| **Total number of cases:** | | **Suspected:** | **Confirmed:** | **Deaths:** |
| | **Humans** | | | |
| | **Domestic Animals** | | | |
| | **Wild Animals** | | | |

| Summary of PREDICT Team response activities during the outbreak. | |
|---|---|

PREDICT Outbreak or Health Event Response Daily Activities/Timeline

**Working Title of Investigation: Ebola virus outbreak DRC Equateur April-May 2018**

**Key Events:**

| Date | Day # | Notification or Action Taken |
|---|---|---|
| April 3, 2018 | -34 | First suspect case in family cluster |
| May 6, 2018 | 1 | Head Office of Disease Control officially acknowledges the outbreak. |
| May 7, 2018 | 2 | The government, through the INRB, verbally requests PREDICT support. Specific details of request pending.<br><br>Confirmation of Ebola virus by RT-PCR at the INRB laboratory. Of five samples tested, two were positive for *Zaire ebolavirus*. |
| May 8, 2018 | 3 | MOH verbally requests for PREDICT to conduct PREDICT protocol testing of samples at INRB. Written approval from USAID AOR communicated to PREDICT DRC team. Samples transferred to PREDICT lab.<br><br>Official Statement of the Ebola Virus Epidemic released by the Congolese Government (Ministry of Health).<br>Developed road map and response plan.<br><br>An investigative mission led by the director of the Office of Disease Control (DGLM) planned for Wednesday May 9, 2018 in the province of Equateur.<br><br>**Monitoring report:**<br>• New cases registered: 4 (in the health center)<br>• On five previous cases monitored, three were released. There are two active cases in the General Hospital.<br>• Total of active and monitored cases: 6 (among which 4 are suspected cases).<br>• Laboratory confirmed cases : 2<br>• Deaths : 17<br>• Total notified cases: 23 |
| May 9, 2018 | 4 | PREDICT lab analysis of clinical specimens following PREDICT virus-family |



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| | | level protocols is in progress. PREDICT Country Coordinator met with MOH and partners on response plan and development of list of unmet needs.<br>An investigative mission led by Office of Disease Control (DGLM) was deployed today May 9 to the province of Equateur.<br><br>**Monitoring report:**<br>• New cases registered: 4<br>• Total of active and monitored cases: 10 (among which 8 are suspected cases).<br>• Confirmed cases : 2<br>• Deaths: 17<br>• Total cases under investigation: 27 |
| May 10, 2018 | 5 | Four new suspected cases and one death were reported in the health zone of Iboko, near the Bikoro health zone. The deceased case was a health professional who had symptoms suggestive of Ebola virus disease.<br><br>**Monitoring report:**<br>• Deaths: 18 cases<br>• Suspected cases: 12 cases<br>• Confirmed cases: 2 cases<br>• Total notified cases: 32 cases (in Bikoro and Iboko)<br><br>Identified actions:<br>• Identification of positive cases<br>• Contact tracing<br>• Active monitoring<br>• Sensitization seminars of all the Chief Medical officers in the health zones of Equator Province. |
| May 11, 2018 | 6 | Late on May 11, the PREDICT DRC team received a formal request from the Government, through INRB regarding support for response activities.<br>In response to the list of unmet needs provided by the laboratory commission, PREDICT provided 150 PPE, a Smartcycler and accompanying computer, and two gloveboxes.<br><br>The K-Plan mobile lab (previously acquired through USAID support) will be deployed to the outbreak site in Bikoro and Iboko tomorrow (May 12, 2018).<br><br>There is a significant and urgent need for sampling kits on sites of the |



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| | | outbreak.<br><br>According to the WHO, all conditions are met for the vaccine to arrive in Kinshasa next week (week of May 14 to 20, 2018).<br><br>**Monitoring report**:<br>• New suspected cases : 2 (one in Iboko and the other in Bikoro)<br>• There are three community alert cases in Mbandaka of new reports of ill individuals in the community requiring follow-up.<br>• Deaths : 18<br>• Suspected cases: 14 (9 in Bikoro, 5 in Iboko)<br>• Confirmed cases: 2<br>• Total notified cases: 34 (in Bikoro and Iboko) |
| May 12, 2018 | 7 | In preparation for this deployment, the INRB Team arrived in Mbandaka, the capital of Equator Province.<br><br>The Minister of Health and Ministry of Health officials arrived this morning to the sites of the epidemic. The INRB Team is in Bikoro. The K-Plan mobile lab was shipped this morning to Bikoro via Mbandaka.<br><br>The Director General of the WHO arrives tonight in Kinshasa.<br><br>**Monitoring report**:<br>• New suspected cases : 2 (in Wangata, one of three health zones of Mbandaka)<br>• After re-evaluation of the situation, the number of suspected cases was revised downward to Bikoro (8 suspected cases) and Iboko (2 suspected cases).<br>• Deaths: 18<br>• Suspected cases: 12 (8 in Bikoro, 2 in Iboko, 2 in Wangata)<br>• Confirmed cases: 2<br>• Cases previously suspected but tested negative: 3<br>• Total notified cases: 35 in 4 health zones (Bikoro , Iboko, Wangata and Ingende; this count includes the 3 laboratory-negative cases). |
| May 13, 2018 | 8 | Director General of the WHO, MOH and representative of WHO DRC visit Mbandaka and Bikoro.<br><br>**Monitoring report**:<br>• New suspected cases : 5 (2 in Bikoro ; 3 in Iboko)<br>• Deaths: 20 (17 in Bikoro; 3 in Iboko)<br>• Suspected cases: 17 (10 in Bikoro, 5 in Iboko, 2 in Wangata) |



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| | | • Confirmed cases: 2<br>• Cases previously suspected but tested negative: 3<br>• Total notified cases: 42 in 4 health zones (Bikoro , Iboko, Wangata and Ingende; this count includes the 3 laboratory-negative |
| May 14, 2018 | 9 | Cold chain for vaccination is being deployed on site.<br><br>**Monitoring report:**<br>• New suspected cases : 3 (in Bikoro )<br>• Deaths: 20 (17 in Bikoro; 3 in Iboko)<br>• Suspected cases: 20 (13 in Bikoro, 5 in Iboko, 2 in Wangata)<br>• Confirmed cases: 2<br>• Cases previously suspected but tested negative: 3<br>• Total notified cases: 45 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count includes the 3 laboratory-negative |
| May 15, 2018 | 10 | USAID approved the request in support for outbreak response.<br>Previously, the analysis made on the five samples at the PREDICT lab cost $111.35<br>At the end of all analysis, this amount may reach $276.69<br><br>**Monitoring report:**<br>• New suspected cases : 3 (in Wangata )<br>• Deaths: 20 (18 in Bikoro; 2 in Iboko)<br>• Suspected cases: 20 (14 in Bikoro, 3 in Iboko, 3 in Wangata)<br>• Confirmed cases: 2<br>• Cases previously suspected but tested negative: 3<br>• Total notified cases: 42 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 16, 2018 | 11 | 5412 doses of vaccines against EVD arrived in Kinshasa.<br>The MOH (INRB) officially asked PREDICT for a space in a -80 freezer to store the vaccines.<br>A vaccination committee will be set up to coordinate vaccination activities.<br><br>In view of the spread of the outbreak in several health zones, a reassessment of laboratory needs is being made by the Laboratory commission. This changing state of need will integrate all affected health areas.<br><br>**Monitoring report:** |

| | | |
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| | | • New suspected cases : 2 (1 in Bikoro and another in Wangata )<br>• Deaths: 23 (20 in Bikoro; 3 in Iboko)<br>• Probable cases: 20 (18 in Bikoro; 2 in Iboko)<br>• Suspected cases: 21 (15 in Bikoro, 3 in Iboko, 3 in Wangata)<br>• Confirmed cases: 3<br>• Cases previously suspected but tested negative: 3<br>• Total notified cases: 44 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 17, 2018 | 12 | Vaccination at the sites of the outbreak will begin on Monday, May 21, 2018. Vaccination will target health professionals working in the hospitals, contacts of the confirmed cases, and contacts of the case contacts.<br><br>In view of the importance of the outbreak, the laboratory and research commission reassessed the needs for assistance. In order to circumvent the difficulties related to customs clearance, the chairman of the commission, Pr Muyembe, suggested that some materials be bought in Kinshasa.<br><br>Six specimen collected on May 16 should arrive tonight in Kinshasa from Mbandaka.<br><br>The laboratory in Bikoro is fully functional. Rapid diagnostic test and RT-PCR will be used. In Mbandaka, the GeneXpert is set up, but electricity is a problem .<br><br>**Monitoring report:**<br>• New suspected cases : 0<br>• Deaths: 24 (21 in Bikoro; 3 in Iboko)<br>• Probable cases: 21 (19 in Bikoro; 2 in Iboko)<br>• Suspected cases: 1 (health zone has not been specified)<br>• Confirmed cases: 14 (13 in Bikoro ; 1 in Wangata)<br>• Contact case: 532 (330 in Bikoro; 120 in Iboko; 52 in Wangata; 30 in Ntondo)<br>• Cases previously suspected but tested negative: 3<br>• Total notified cases: 45 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative cases.<br><br>Please note that the total notified cases (45) does not match the sum of the suspected, confirmed and deceased cases, but these are the |



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| | | numbers MOH is reporting.<br><br>The WHO situation report (May 16 version) indicates a total of 44 notified cases and 23 deaths. |
| May 18, 2018 | 13 | A new MOH team arrived in Mbandaka this morning.<br><br>**Monitoring report:**<br>• New suspected cases : 4 (in Iboko)<br>• Deaths: 25 (20 in Bikoro; 4 in Iboko ; 1 in Wangata)<br>• Probable cases: 21 (19 in Bikoro; 2 in Iboko)<br>• Suspected cases: 4 (in Iboko)<br>• Confirmed cases: 17 (8 in Bikoro ; 5 in Iboko; 4 in Wangata)<br>• Followed contact cases: 429 (274 in Bikoro; 73 in Iboko; 52 in Wangata; 30 in Ntondo)<br>• Total notified cases: 42 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals.<br><br>Please note that the total notified cases (42) does not match the sum of the suspected, confirmed and deceased cases, but these are the numbers MOH is reporting.<br><br>The WHO situation report (May 17 version) indicates a total of 45 notified cases and 24 deaths. |
| May 19, 2018 | 14 | Free health care will be provided in epidemic health zones (areas where there are confirmed cases) and in health zones close to the epidemic zone. In total, seven health zones have been identified.<br><br>In Mbandaka , 62 frontline health care and laboratory workers (11 in Wangata, 24 in Bolenge and 27 at the Ebola Treatment Center) have been identified to receive the vaccine. An additional 3000 doses are expected to reach Kinshasa on May 19, 2018. The shipping of vaccines to Mbandaka will begin on May 20, 2018.<br><br>**Monitoring report:**<br>• Deaths: 26 (22 in Bikoro; 3 in Iboko ; 1 in Wangata)<br>• Probable cases: 21 (19 in Bikoro; 2 in Iboko)<br>• Suspected cases: 3 (2 in Iboko; 1 in Wangata)<br>• Confirmed cases: 21 (10 in Bikoro ; 7 in Iboko; 4 in Wangata)<br>• Followed contact cases: 501 (279 in Bikoro; 75 in Iboko; 117 in Wangata; 30 in Ntondo)<br>• Total notified cases: 45 in 4 health zones (Bikoro , Iboko, |



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| | | Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 20, 2018 | 15 | On May 19, a confirmed female case from Wangata left the Ebola treatment center in Mbandaka.<br>An alert case in Kinshasa was tested negative for Ebolavirus by RT-PCR at INRB.<br>560 doses of vaccine arrived in Mbandaka.<br><br>**Monitoring report:**<br>• Deaths: 26 (22 in Bikoro; 3 in Iboko ; 1 in Wangata)<br>• Probable cases: 21 (19 in Bikoro; 2 in Iboko)<br>• Suspected cases: 6 (6 in Iboko)<br>• Confirmed cases: 22 (10 in Bikoro ; 8 in Iboko; 4 in Wangata)<br>• Followed contact cases: 511 (273 in Bikoro; 95 in Iboko; 113 in Wangata; 30 in Ntondo)<br>• Total notified cases: 49 in 4 health zones (Bikoro , Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 21, 2018 | 16 | The vaccination campaign (rVSV-ZEBOV) started today in the epidemic zones.<br><br>The PREDICT laboratory analyzed four confirmed positive specimens from Mbandaka, which previously tested positive by the geneXpert platform. One of the four specimens tested positive for filovirus RNA using the PREDICT virus-family consensus PCR protocol, this initial result will be confirmed by genetic sequencing.<br><br>The PREDICT lab also tested the two positive confirmed specimens from Bikoro. One sample was positive for filovirus using the PREDICT virus-family level consensus PCR protocol which will also be confirmed by genetic sequencing.<br><br>**Monitoring report:**<br>• Deaths: 27 (22 in Bikoro; 3 in Iboko ; 2 in Wangata)<br>• Probable cases: 21 (19 in Bikoro; 2 in Iboko)<br>• Suspected cases: 2 ( in Wangata)<br>• Confirmed cases: 28 (10 in Bikoro ; 14 in Iboko; 4 in Wangata)<br>• Followed contact cases: 561 (301 in Bikoro; 115 in Iboko; 115 in Wangata; 30 in Ntondo)<br>• Total notified cases: 51 in 4 health zones (Bikoro, Iboko, Wangata |



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| | | and Ingende); this count does not include the 3 laboratory-negative individuals.<br><br>Please note: the WHO situation report (May 20 version) indicates a total of 49 notified cases and 26 deaths. |
| May 22, 2018 | 17 | Two patients left the Wangata Ebola Treatment Center. Both were found later, including one individual who had died after returning to their home.<br>One death in Wangata (from May 20) was reported as non-EVD.<br><br>33 people were vaccinated (rVSV-ZEBOV) including 10 hospital health personnel in Wangata, 22 case contacts and the Director of the Expanded Vaccination Program.<br><br>**Monitoring report:**<br>• Deaths: 27 (23 in Bikoro; 3 in Iboko ; 1 in Wangata)<br>• Probable cases: 21 (19 in Bikoro; 2 in Iboko)<br>• Suspected cases: 9 (6 in Iboko; 3 in Wangata)<br>• Confirmed cases: 28 (10 in Bikoro; 14 in Iboko; 4 in Wangata)<br>• Followed contact cases: 561 (321 in Bikoro; 114 in Iboko; 112 in Wangata; 30 in Ntondo) [note the total should be 577]<br>• Total notified cases: 58 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 23, 2018 | 18 | Another 3,800 doses of vaccines have been received in Mbandaka. The total number of doses delivered and available for administration in the outbreak sites is 4,360.<br><br>**Monitoring report:**<br>• Deaths: 30 (24 in Bikoro; 3 in Iboko ; 3 in Wangata)<br>• Probable cases: 22 (20 in Bikoro; 2 in Iboko)<br>• Suspected cases: 16 (2 in Bikoro; 8 in Iboko; 6 in Wangata)<br>• Confirmed cases: 30 (10 in Bikoro; 16 in Iboko; 4 in Wangata)<br>• Followed contact cases: 587 (344 in Bikoro; 111 in Iboko; 102 in Wangata; 30 in Ntondo)<br>• Total notified cases: 68 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |



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| May 24, 2018 | 19 | As part of WASH and communication efforts, MOH did a training on safe burial practices, and has begun disinfecting houses of those who have died. They are providing psychosocial support to victims, family members, and medical staff, as well as sensitization to cultural, religious, and opinion leaders.<br><br>The Minister of Health said today that safe burials are regarded as inhumane, so there is a lot of communication that must accompany this, and that we must learn lessons from West Africa on how best to roll this out to communities.<br><br>**Monitoring report:**<br>• Deaths: 23 (16 in Bikoro; 4 in Iboko ; 3 in Wangata)<br>• Probable cases: 13 (11 in Bikoro; 2 in Iboko)<br>• Suspected cases: 8 (2 in Bikoro; 5 in Iboko; 1 in Wangata)<br>• Confirmed cases: 31 (10 in Bikoro; 17 in Iboko; 4 in Wangata)<br>• Followed contact cases: 927 (445 in Bikoro; 302 in Iboko; 180 in Wangata) ; this represents 85% coverage rate.<br>• Total notified cases: 52 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals.<br><br>560 additional vaccine doses were sent to outbreak site today, with 4000 supplemental doses expected later this week.<br><br>Vaccination of traditional medicine practitioners began today in the affected areas. |
| May 25, 2018 | 20 | *Informational update and details on INRB initiated animal sampling field activities:* As part of an ecological study, two members of INRB Team were sent to Bikoro. Their objective is to capture and sample bats in order to research potential Ebola virus reservoirs. One of the INRB field-team members, has been trained by PREDICT on animal sampling protocols and regularly works with the PREDICT team to sample wild animals in bushmeat markets and with hunters and trappers. The INRB animal sampling team intends to conduct field sampling until June 9, 2018. The PREDICT team has no direct involvement in these activities at this time.<br><br>*VSV-ZEBOV vaccine:* Of the 180 contacts registered in Mbandaka, 154 people have been vaccinated. |



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| | | *PREDICT laboratory testing*: PREDICT conducted laboratory testing following virus family level consensus PCR protocols of two previously INRB tested Ebola-positive specimens sent from the outbreak sites. PCR products from one of these two specimens were obtained by the PREDICT laboratory testing methods, and were shipped Friday to Germany for sequencing.<br><br>**Monitoring report:**<br>• Deaths: 24 (16 in Bikoro; 5 in Iboko ; 3 in Wangata)<br>• Probable cases: 13 (11 in Bikoro; 2 in Iboko)<br>• Suspected cases: 6 (3 in Bikoro; 2 in Iboko; 1 in Wangata)<br>• Confirmed cases: 35 (10 in Bikoro; 21 in Iboko; 4 in Wangata)<br>• Followed contact cases: 948 (483 in Bikoro; 296 in Iboko; 129 in Wangata; 40 in Ntondo) ; this represents 86,4% coverage rate.<br>• Total notified cases: 54 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 26, 2018 | 21 | *VSV-ZEBOV vaccine*: 56 people (registered contacts and health staff) were vaccinated in Mbandaka. To date, a total of 210 people have been vaccinated.<br><br>**Monitoring report:**<br>• Deaths: 25 (16 in Bikoro; 6 in Iboko ; 3 in Wangata)<br>• Probable cases: 13 (11 in Bikoro; 2 in Iboko)<br>• Suspected cases: 6 (2 in Bikoro; 3 in Iboko; 1 in Wangata)<br>• Confirmed cases: 35 (10 in Bikoro; 21 in Iboko; 4 in Wangata)<br>• Followed contact cases: 922 (478 in Bikoro; 296 in Iboko; 148 in Wangata) ; this represents 84,1% coverage rate.<br>• Total notified cases: 54 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 27, 2018 | 22 | *VSV-ZEBOV vaccine*: 108 people (registered contacts and health staff) were vaccinated in Mbandaka. To date, a total of 318 people have been vaccinated.<br><br>*Contact Tracing*: The Director General of the Directorate of Disease Control reported the extension of the case investigation zone to Kiri Health Zone, Bandundu Province. A woman died in Iboko between May |



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| | | 5-10 and the corpse was returned to Kiri, where it was handled by 14 people. The woman's daughter also died. These exposed contacts will be investigated by a team of MOH experts, scheduled for tomorrow (May 28).<br><br>Please note that the number of contact cases followed was not announced. However, the Epidemiological Surveillance Commission reports 201 new contacts registered.<br><br>**Monitoring report:**<br>• Deaths: 25 (16 in Bikoro; 6 in Iboko ; 3 in Wangata)<br>• Probable cases: 13 (11 in Bikoro; 2 in Iboko)<br>• Suspected cases: 8 (2 in Bikoro; 5 in Iboko; 1 in Wangata)<br>• Confirmed cases: 35 (10 in Bikoro; 21 in Iboko; 4 in Wangata)<br>• Total notified cases: 56 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 28, 2018 | 23 | *VSV-ZEBOV vaccine*: 50 people (registered contacts ) were vaccinated in Mbandaka. To date, a total of 368 people have been vaccinated.<br><br>*Contact Tracing*: An investigation will be conducted in Kiri on May 29. The Surveillance Commission mentioned 15 contact cases in Kiri, which is not consistent with their announcement on May 27.<br><br>**Monitoring report:**<br>• Deaths: 25 (16 in Bikoro; 6 in Iboko ; 3 in Wangata)<br>• Probable cases: 13 (11 in Bikoro; 2 in Iboko)<br>• Suspected cases: 6 (1 in Bikoro; 4 in Iboko; 1 in Wangata)<br>• Confirmed cases: 35 (10 in Bikoro; 21 in Iboko; 4 in Wangata)<br>• Followed contact cases: 736 (265 in Bikoro; 317 in Iboko; 154 in Wangata) ; this represents 74% coverage rate.<br>• Total notified cases: 54 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the 3 laboratory-negative individuals. |
| May 29, 2018 | 24 | *VSV-ZEBOV vaccine*: 94 people were vaccinated (58 in Mbandaka; 20 in Bikoro; 16 in Iboko). To date, a total of 462 people have been vaccinated.<br><br>*Contact Tracing*: MOH experts went to Kiri for an investigative mission. |



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| | | **Monitoring report:**<br>• Deaths: 25 (16 in Bikoro; 6 in Iboko ; 3 in Wangata)<br>• Probable cases: 13 (11 in Bikoro; 2 in Iboko)<br>• Suspected cases: 3 (2 in Bikoro; 1 in Wangata). Please note that 5 suspected cases tested negative (4 in Iboko; 1 in Wangata).<br>• Confirmed cases: 35 (10 in Bikoro; 21 in Iboko; 4 in Wangata)<br>• Followed contact cases: 528 (112 in Bikoro; 262 in Iboko; 154 in Wangata) ; this represents 55% coverage rate.<br>• Total notified cases: 51 in 4 health zones (Bikoro, Iboko, Wangata and Ingende); this count does not include the laboratory-negative individuals.<br><br>Please note: the WHO situation report (May 28 version) indicates a total of 56 notified cases and 25 deaths. |



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## In-Country Government Outbreak or Health Event Points of Contact

| Public Health ministry or department: | |
|---|---|
| Name: | Bathe Ndiokolo |
| Email: | REDACTED |
| Mobile Phone: | |

| Livestock ministry or department: | |
|---|---|
| Name: | Leopold Mulumba |
| Email: | REDACTED |
| Mobile Phone: | |

| Wildlife/Environment ministry or department: | |
|---|---|
| Name: | Jeff Mapilanga |
| Email: | REDACTED |
| Mobile Phone: | |

| OIE focal point: | |
|---|---|
| Name: | Honore N'Lemba Mabela |
| Email: | REDACTED |
| Mobile Phone: | |

| IHR focal point: | |
|---|---|
| Name: | Theophile Bokenge |
| Email: | REDACTED |
| Mobile Phone: | |

| FAO: | |
|---|---|
| Name: | Philippe Kone |
| Email: | REDACTED |
| Mobile Phone: | |

| WHO: | |
|---|---|
| Name: | Ernest Dabire |
| Email: | REDACTED |
| Mobile Phone: | |

| EPT ONE HEALTH WORKFORCE Project: | |
|---|---|
| Name: | Diafuka Saila Ngita |
| Email: | REDACTED |
| Mobile Phone: | |

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| EPT PREPAREDNESS and RESPONSE Project: | |
|---|---|
| Name: | |
| Email: | |
| Mobile Phone: | |

**Other Important Contacts:**

| | |
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| Organization: | |
| Name: | |
| Email: | |
| Mobile Phone: | |

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World Health Organization
Africa

# EPIDEMIE DE LA MALADIE A VIRUS EBOLA

## PROVINCE DE L'EQUATEUR, REPUBLIQUE DEMOCRATIQUE DU CONGO

## RAPPORT DE SITUATION N°12

Date de publication : 28 mai 2018
Date des données : 26 mai 2018

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## 1.POINTS SAILLANTS

- Quatre (4) nouveaux cas suspects notifiés ce jour dont trois (3) à Iboko et un (01) à Bikoro, tous des contacts connus.
- Aucun nouveau cas confirmé au laboratoire.
- Les investigations sont en cours pour une alerte d'un cas probable dans la zone de santé de Kiri, Province de Mai-Ndombe.
- En date du 26 mai 2018, un total de de 56 cas et 25 décès ont été rapportés soit une létalité de 44.6%.
- La formation des relais communautaires, des superviseurs et le déploiement d'EWARS conformément à la stratégie nationale de suivi de contacts se traduit par une amélioration significative du suivi de contacts au niveau de Mbandaka. Des 149 contacts identifiés, 134 ont été suivis soit un pourcentage de suivi de 90%. L'identification et le suivi des 10% restants sont planifies.
- Le nombre de personnes vaccinées est passé de 33 (au 21 mai) à 318 au 26 mai 2018.
- Poursuite de la mise à jour de la base de données et actualisation des listes de contacts par le Ministère de la Sante avec l'appui des partenaires (CDC, OMS, Epicentre et autres).

## 2. CONTEXTE

- Le 08 Mai 2018, conformément aux dispositions du Règlement Sanitaire International (RSI), le Ministère de la santé de la République Démocratique du Congo (RDC) a notifié à l'OMS deux cas confirmés de la maladie à virus Ebola (MVE) dans la zone de santé de Bikoro dans la province de l'Equateur. Depuis cette déclaration, deux autres zones de santé ont rapporté des cas (Iboko et Wangata dans la ville de Mbandaka). Les zones affectées sont frontalières avec la République du Congo. Il s'agit de la neuvième épidémie d'Ebola en RDC, mais la première dans la province démembrée de l'Equateur.

## 3. MISE A JOUR DE LA SITUATION EPIDEMOLOGIQUE

- En date du 26 mai 2018, quatre (4) nouveaux cas suspects sont rapportés dont trois (3) à ZS Iboko (AS Itipo) et un (1) à ZS Bikoro (AS Moheli). Le cumulatif des cas est présenté dans le Tableau 1.
- Le service de surveillance a reçu un total de 7 nouvelles alertes dont quatre (4) validées après les investigations.
- Aucun nouveau cas confirmé au laboratoire.
- Aucun nouveau décès rapporté.
- Un total de 22 patients sont hospitalisés dont 14 dans le CTE de Bikoro, un (1)



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dans le CTE de Mbandaka, sept (7) en isolement de transit dans les centres de santé (trois (3) cas au CS Iboko, trois (3) cas à Itipo et un (1) cas à Moheli).

- La répartition géographique des cas par zones de santé se présente comme suit : 22 cas (39%) à Bikoro, 28 cas (50%) à Iboko, cinq (5) cas (9%) à Wangata et un (1) cas (2%) à Ntondo (voir la cartographie, Figure 7).
- Les investigations sont en cours pour une alerte d'un cas probable dans la zone de santé de Kiri, Province de Mai-Ndombe. Il s'agit d'une femme de 60 ans qui aurait participé aux funérailles dans la zone de santé d'Iboko. Elle serait décédée entre le 5 et 10 mai 2018. Un (01) de ses contacts à haut risque (sa propre fille est décédée) et 13 contacts identifiés sont en cours de suivi.
- L'équipe d'investigation composée de 2 épidémiologistes, 2 techniciens de laboratoire et 2 communicateurs du MSP se rendra sur le lieu le 29 mai 2018 pour approfondir les investigations.
- La répartition des cas de MVE est présentée dans le tableau ci-dessous.

*Tableau 1 : Répartition des cas de MVE en RDC au 26 mai 2018*

| | Zones de Santé | | | | |
|---|---|---|---|---|---|
| **Description** | **Bikoro** | **Iboko** | **Wangata** | **Ntondo** | **Total** |
| **Nouveaux cas enregistrés** | | | | | |
| Nouveaux cas suspects | 1 | 3 | 0 | 0 | 4 |
| Nouveaux cas probables | 0 | 0 | 0 | 0 | 0 |
| Nouveaux cas confirmés | 0 | 0 | 0 | 0 | 0 |
| ***Total nouveaux cas*** | ***1*** | ***3*** | ***0*** | ***0*** | ***4*** |
| **Cumul des cas** | | | | | |
| Total des cas suspects | 1 | 5 | 1 | 1 | 8 |
| Total ces cas probables | 11 | 2 | 0 | 0 | 13 |
| Total des cas confirmés | 10 | 21 | 4 | 0 | 35 |
| ***Total des cas*** | ***22*** | ***28*** | ***5*** | ***1*** | ***56*** |
| **Décès** | | | | | |
| Nouveaux décès du jour | 0 | 0 | 0 | 0 | 0 |
| ***Total des décès*** | ***16*** | ***6*** | ***3*** | ***0*** | ***25*** |
| ***Dont total des décès parmi les cas confirmés*** | 5 | 4 | 3 | 0 | 12 |



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La *Figure 1* montre la distribution des cas de la MVE en RDC rapportés par jour. Les cas suspects qui sont testés négatifs ou les cas probables qui sont invalidés après les investigations n'y sont pas représentés. Les *Figures 2 à 4* montrent l'évolution par zone de santé.

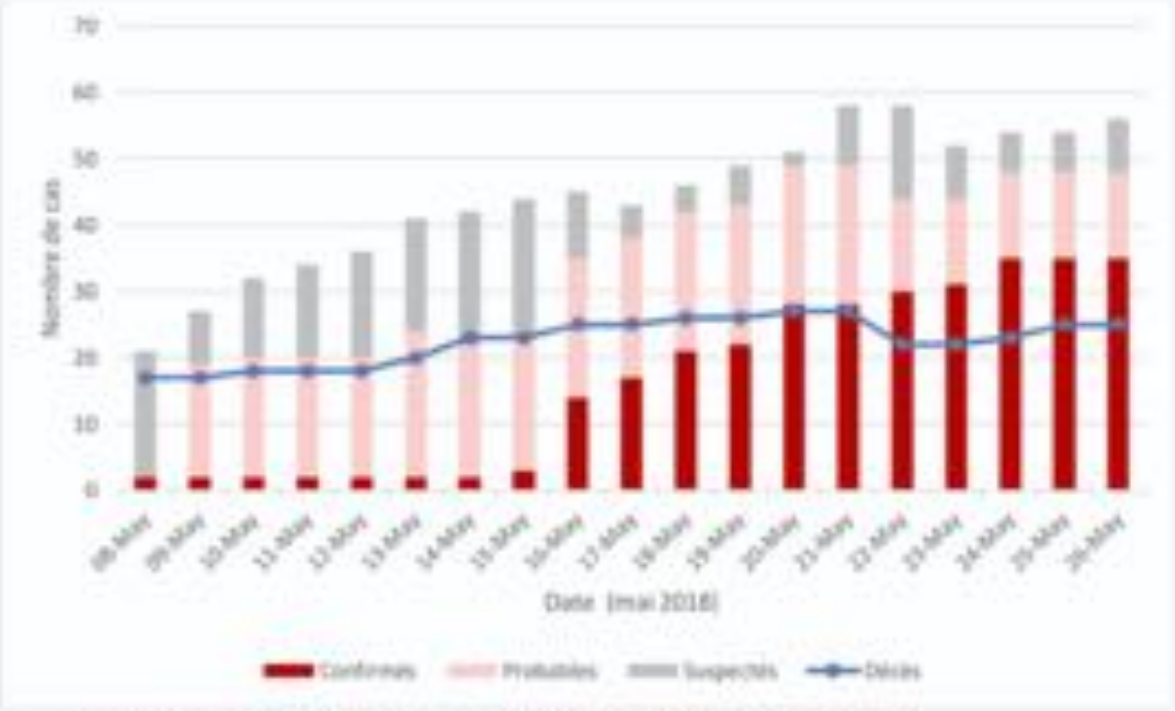


***Figure 1 : Evolution journalière des cas de la MVE en RDC, au 26 mai 2018.***

***Figure 2 : Evolution journalière des cas de MVE en RDC dans la zone de santé de Bikoro, 26 mai 2018.***



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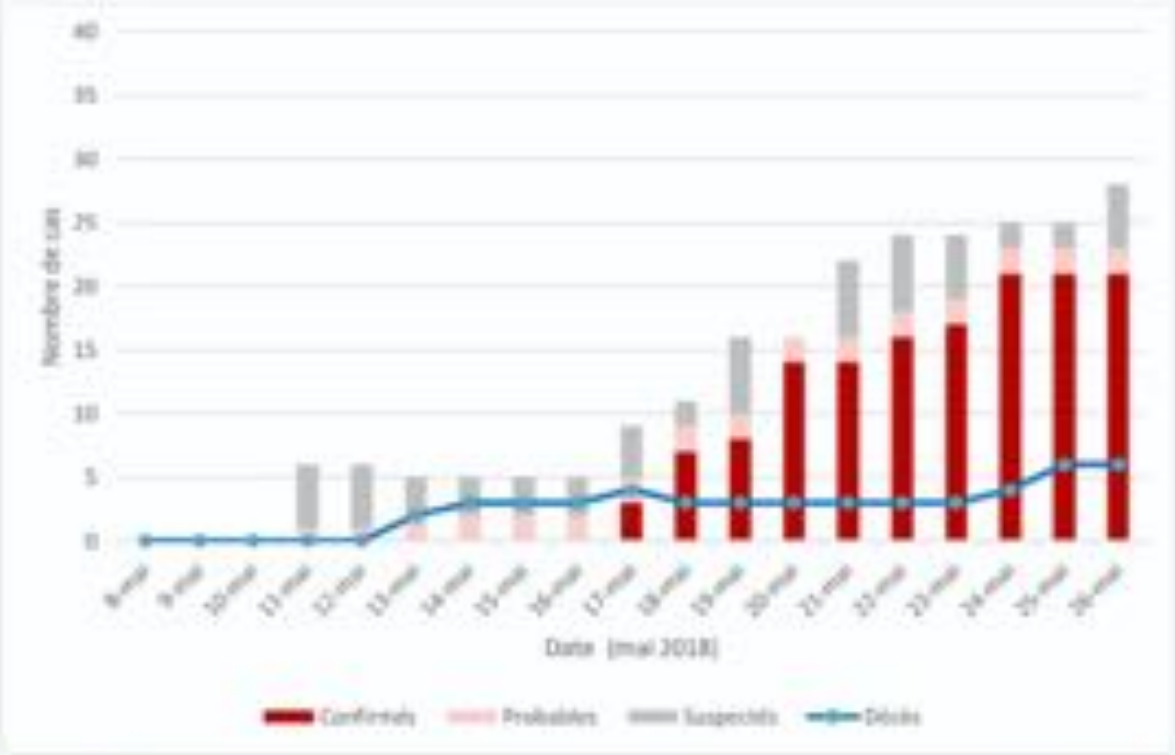


*Figure 3 : Evolution journalière des cas de MVE en RDC dans la zone de santé d'Iboko, au 26 mai 2018.*

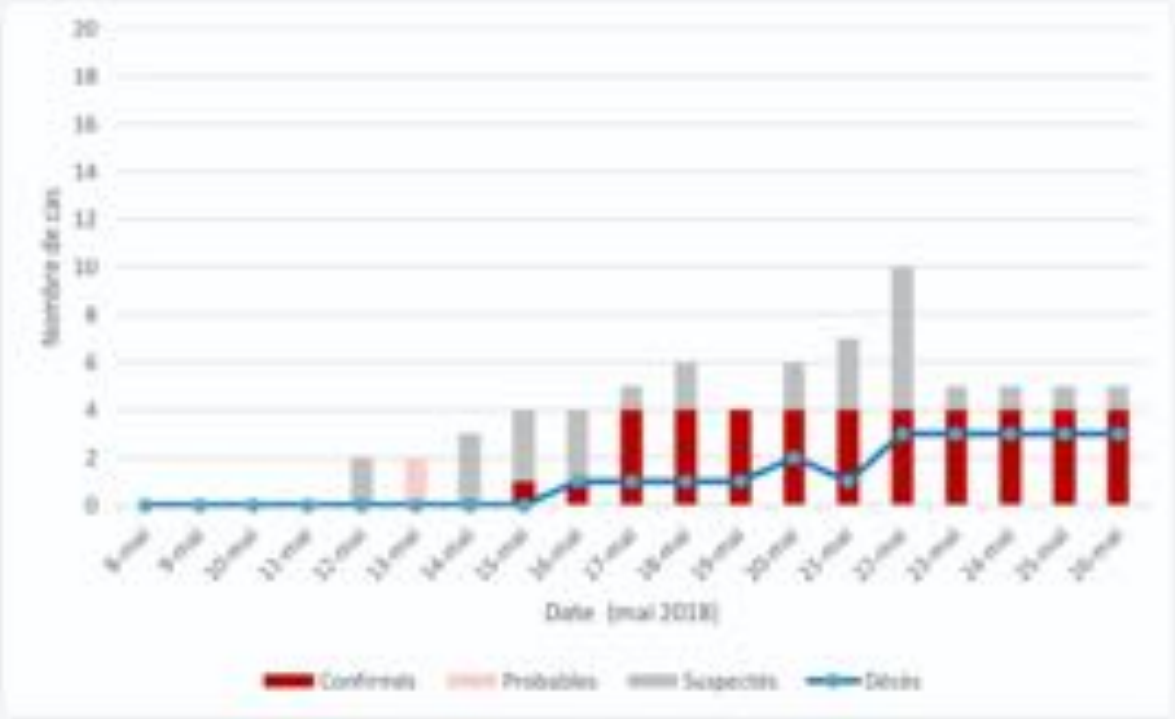


*Figure 4 : Evolution journalière des cas de MVE en RDC dans la zone de santé de Wangata, au 26 mai 2018.*



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La *Figure 5* illustre la répartition des cas et décès par date de début de symptômes. La majorité de décès sont survenus entre les semaines 14 et 17.

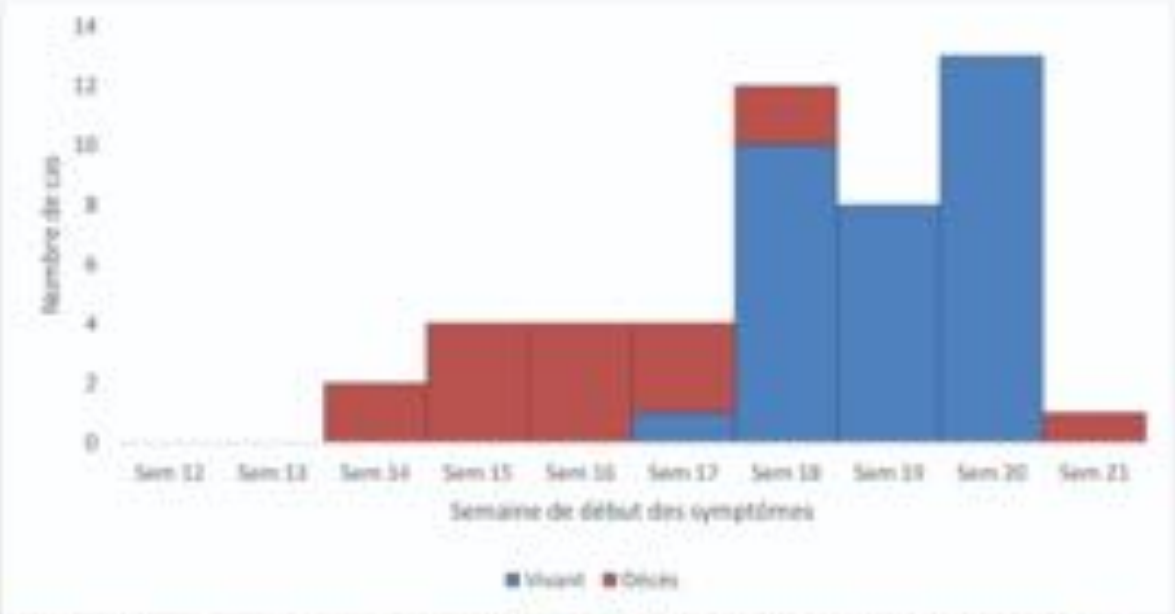


***Figure 5 : Courbe épidémique des cas par semaine de début des symptômes (au semaine épidémiologique 21)***

La *Figure 6* ci-dessous montre l'évolution de l'épidémie par zones de santé. Il y ressort que l'épidémie aurait débuté dans la ZS de Bikoro. Les investigations et le travail d'élaboration des chaînes de transmission en cours permettront probablement d'identifier le premier cas et le cas index.

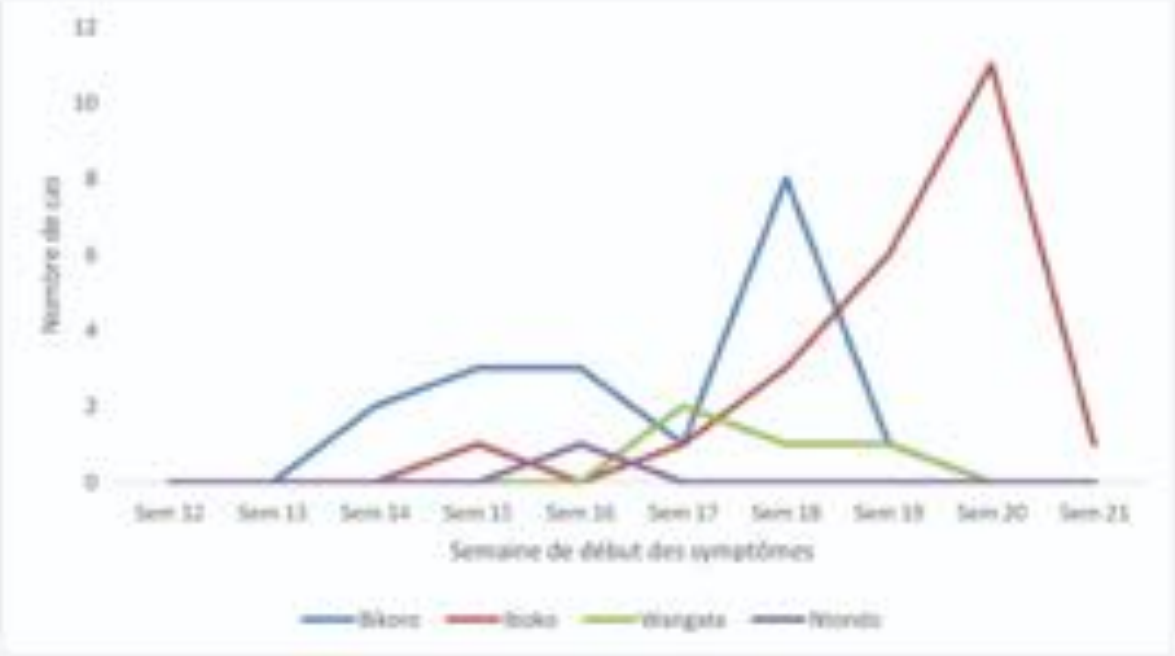


***Figure 6 : Evolution de l'épidémie au niveau de chaque zone de santé affectées.***



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La distribution géographique des cas est présentée dans la figure ci-dessous.

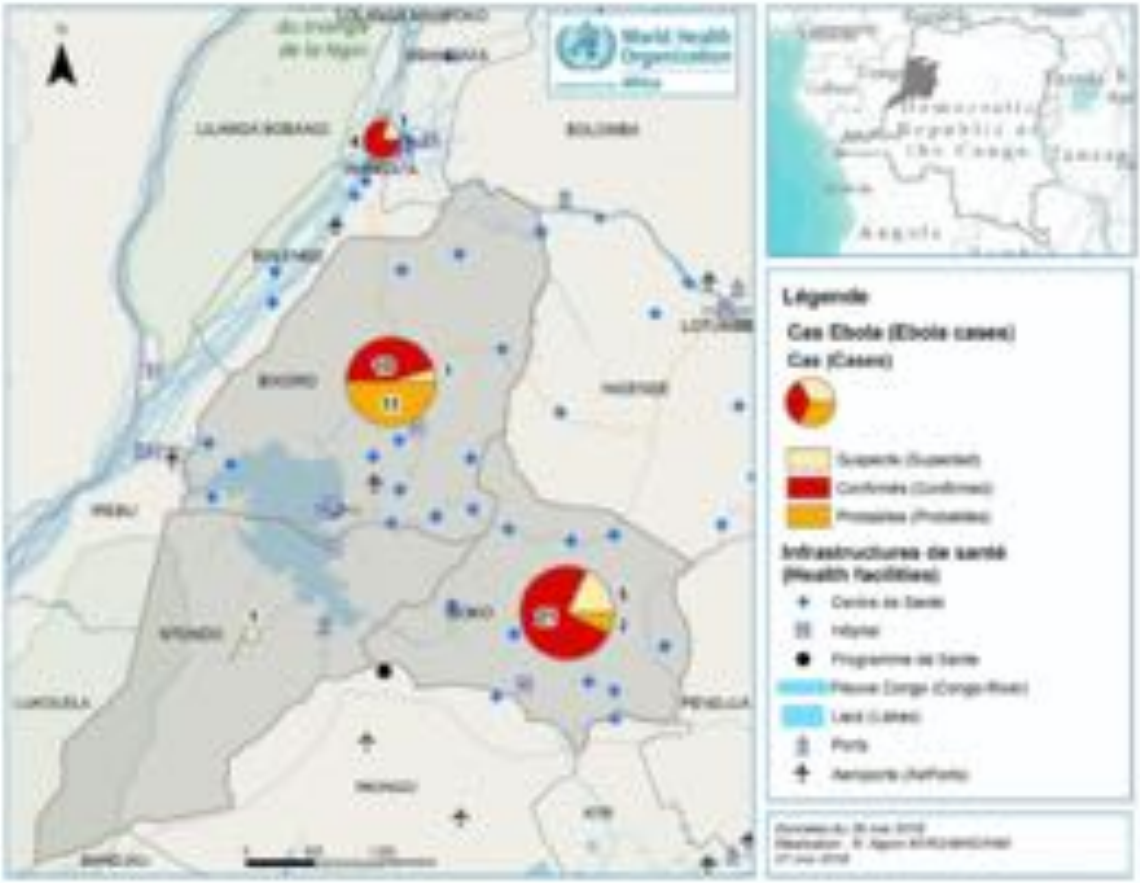


*Figure 7 : Cartographie des cas cumulés de la maladie à virus Ebola par zones de santé, au 26 mai 2018.*

### Suivi des contacts

- Comme mentionné dans les précédents rapports de situation, des efforts considérables sont en cours afin d'organiser la mise en œuvre de suivi des contacts conformément à la stratégie nationale de suivi des contacts. Le Ministère de la Santé a identifié et formé les relais communautaires et superviseurs sur les modalités de suivi des contacts. Il a également mis à leur disposition des intrants pour faciliter cet exercice.
- Le tableau ci-dessous résume le suivi des contacts à Mbandaka.

### Au niveau de Mbandaka

- A la date du 25 mai 2018, un total de 149 contacts identifiés devrait faire l'objet d'un suivi régulier de 21 jours requis. Parmi eux, 134 ont été suivis soit un pourcentage de 90%. Les 15 contacts (10%) non vus le seront dans les 24 à 48 heures à venir au terme de l'identification de leurs adresses et éventuels mouvements.



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*Tableau 2 : Synthèse du suivi des contacts au 25 mai 2018 à Mbandaka*

| | Contacts à suivre | Contacts vus | Contacts avec symptômes | Contacts non vus | Contacts déchargés | Contacts vus (%) | Observations |
|---|---|---|---|---|---|---|---|
| BOLENGE | 15 | 15 | 0 | 0 | - | 100% | |
| MBANDAKA | 8 | 6 | 0 | 2 | 3 | 75% | Les adresses des deux personnes non vues ont été retrouvés et les contacts vus ce 26/05/2018 |
| WANGATA | 126 | 113 | 0 | 13 | - | 90% | |

- Quatorze (14) des contacts n'ont pu être suivis du fait des difficultés de retrouver leurs adresses à ce jour. Un contact s'est déplacé à Lobengo. Vingt-cinq (25) contacts ont complété leur suivi de 21 jours et sont sortis.

**Au niveau de Bikoro et d'Iboko**

- Le suivi de contacts continue dans les aires de santés affectées des deux ZS.
- Les 3 contacts de Bikoro se sont déplacés pour Mbandaka. Ils sont suivis dorénavant par l'équipe de surveillance de Mbandaka.

**Vaccination**

- En date du 26 mai 2018, 104 personnes ont été vaccinées.
- Le nombre de personnes vaccinées dans les zones affectées est passé de 33 à 318 durant la période allant du 21 au 26 mai 2018 (Figure 8 ci-dessous).



UCDUSR0005779

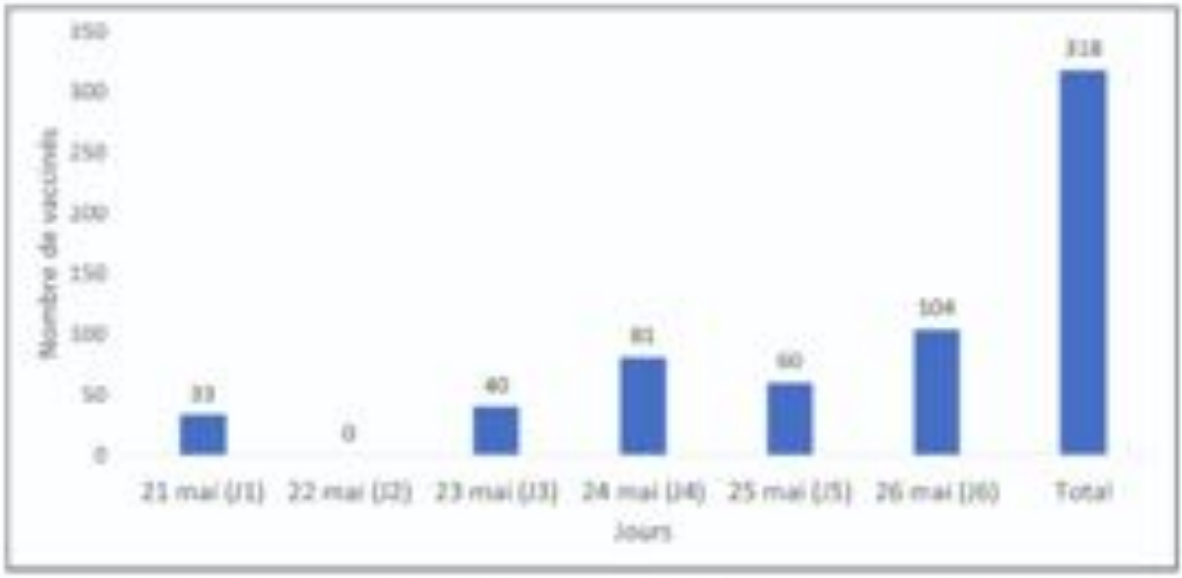


*Figure 8 : Nombre de personnes vaccinées dans les zones affectées par la MVE en RDC, 26 mai 2018.*

## 4. MESURES DE SANTE PUBLIQUE

### Coordination

- Rencontre avec le Ministre de la santé pour des discussions sur les activités de surveillance et de vaccination à Bikoro.
- Réunion de coordination du CNC pour passer en revue la situation, identifier les gaps et proposer des actions clés visant à accélérer la mise en oeuvre des mesures de sante publique.

### Surveillance

- Poursuite de la mise à jour de la base de données et actualisation des listes de contacts par le Ministère de la Santé avec l'appui des partenaires (CDC, OMS, Epicentre et autres).
- Installation de trois nouveaux points d'entrée et poursuite des activités de screening des voyageurs en provenance de Mbandaka et en partance de la ZS de Bikoro aux 8 points d'entrée fonctionnels de la zone.
- Screening aux cinq points d'entrée et de sortie (ports, marchés et parking) du cordon sanitaire de Bikoro. Un total de 230 voyageurs ont fait l'objet d'un screening ; pour Mbandaka 539 voyageurs ont été screenés et 316 à Kinshasa
- Visite de terrain pour évaluer la qualité du suivi des contacts dans l'Aire de Santé de Moheli
- Réunion avec le président de la commission surveillance pour explorer la faisabilité d'implémenter le système EWARS dans la ZS de Bikoro



UCDUSR0005780

## Vaccination

- Début des activités de vaccination à Bikoro et à Itipo prévu dès ce 28 mai 2018 par MSF-Suisse
- Préparatifs pour le lancement de la vaccination à Iboko du 28 mai au 2 juin 2018 par l'OMS

## Activités de préparation « epidemic preparedness »

Dans le but de prévenir l'extension de l'épidémie de la MVE de Mbandaka vers Kinshasa, un plan d'urgence de préparation de la province de Kinshasa a été élaboré. Des activités prioritaires suivantes seront mises en oeuvre :

- Positionner des équipes qualifiées, chargées de détecter, d'évaluer et de prendre correctement en charge les cas potentiels de MVE aux 13 points d'entrées identifiés.
- Réhabiliter et équiper le Centre de traitement Ebola (CTE) de Kinkole.
- Mettre en place des unités d'isolement de base (2 lits) pour les cas de MVE potentiels, dans les formations sanitaires.
- Former les membres de l'EIR sur la maladie à virus Ebola (ils ont été formés sur la MVE a eu lieu en 2015).
- Mettre sur place une ligne verte pour la notification des alertes.
- Sensibiliser la population sur la maladie et les mesures préventives.

## Laboratoire

- Poursuite des activités de laboratoire. Huit échantillons sont en cours d'analyse.
- Deux (2) résultats étaient négatifs à la PCR au laboratoire de Bikoro.

## Eau, Hygiène et Assainissement

- Descente de deux hygiénistes à Itipo pour appuyer la décontamination de deux ménages de Mpua et Ndie et désinfections de l'autel des sièges de l'église et une salle du CSR qui avait reçu un cas suspect.
- Approvisionnement en eau potable au niveau de l'HGR de Bikoro.



UCDUSR0005781

## Communication sur les risques, sensibilisation et engagement communautaire

**Au niveau national**

- Téléconférences à l'Université Libre de Kinshasa (ULK) entre les notables de Bikoro de Kinshasa et les 3 chefs de territoires, l'administrateur du territoire et 18 chefs de groupements de Bikoro.
- Engagement des 18 chefs de groupements de Bikoro d'entrer en contact avec l'équipe de communication de terrain en vue d'intégrer le groupe de MOSO sur place.
- Messe de compassion à l'ULK en vue de sensibiliser et prier pour les populations de Bikoro.
- Sensibilisation des ressortissants de Bikoro présents à la messe par le S.G à la Santé sur la diffusion des rumeurs et sur les résistances.

**A Mbandaka**

- Sensibilisation dans les marchés et dans les points d'entrées par l'équipe de communication nationale et provinciale.
- Sensibilisation de 453 personnes avec la DPS, CARITAS, l'OMS et l'UNICEF dans deux AS. Elle a ciblé 15 prêtres, 102 CVB (4 personnes par CVB) et15 coordonnateurs entre autres.
- Sensibilisation porte à porte dans les AS touchées au moyen de questionnaires permettant aux équipes de recueillir la perception de la population sur la MVE.

**A Iboko et à Bikoro**

- Installation du comité local de communication et de MOSO à Iboko.
- Amendement et adaptation du Plan d'Action trimestriel (juin-août 2018) de la communication de l'OMS pour ZS Bikoro et ZS Iboko.
- Présentation des résultats des enquêtes socio-anthropologiques réalisées dans la zone de santé de Bikoro.

## Prise en charge psychosociale

- Formation des assistants psychosociaux au niveau de la ZS de Bikoro.
- Entretien et soutien psychologique de tous les patients du CTE de Bikoro.
- Médiation entre un guéri et sa belle-famille.



UCDUSR0005782

## 5. DÉFIS

- En dépit de progrès considérables observés au cours de ces deux dernières semaines, des défis logistiques sont signalés par les équipes sur le terrain. Il s'agit à titre d'exemple de l'insuffisance de logements pour l'hébergement du staff au niveau de Bikoro, du besoin de véhicules supplémentaires et de carburant pour appuyer les activités de surveillance, et du besoin de plus de *Thuraya* dans les ZS pour améliorer la communication avec Itipo et Iboko.

## 6. RECOMMANDATIONS

- Poursuivre les efforts en cours en matière de logistique en vue de faciliter les opérations sur le terrain.
- D'autres recommandations mentionnées dans le précédent rapport de situation sont en cours de mise en œuvre par les équipes travaillant sur chacun des piliers de la réponse.

**Pour plus d'informations, contactez :**

- Pour le ministère de la Santé Publique :
  - ✓ Dr Bathe Ndjokolo (Directeur Général de la lutte contre la maladie) :
  - ✓ Dr Leopold Lubula (Directeur a.i. de la surveillance épidémiologique):
- Pour l'OMS :
  - ✓ Dr Benido Impouma (HIM Programme Area Manager):
  - ✓ Dr Franck Mboussou (Information Management Officer Lead) :



UCDUSR0005783

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Thu, 14 Feb 2019 17:38:22 +0100
**Subject:** Re: AID-OAA-A-14-00102 - PREDICT-2 - Request
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, "predictmgt@usaid.gov" <predictmgt@usaid.gov>, predict Sympa List <predict@ucdavis.edu>

sounds good. thanks.

Andrew Clements, Ph.D.
Senior Scientific Advisor
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
U.S. Agency for International Development
Mobile phone: 1-571-345-4251
E-mail: aclements@usaid.gov

*For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2*

On Wed, Feb 13, 2019 at 6:19 PM Elizabeth Leasure <caleasure@ucdavis.edu> wrote:

Hi Andrew. We have our regular SMT call next Tuesday, so we'll add this as an item to the agenda.

Thanks,

Liz

*Elizabeth Leasure*

*Financial Operations Manager*

*One Health Institute*

REDACTED *(cell)*

*530-754-9034 (office)*

*Skype: caleasure*

---

**From:** Andrew Clements <aclements@usaid.gov>
**Sent:** Tuesday, February 12, 2019 12:19 PM
**To:** Jonna Mazet <jkmazet@ucdavis.edu>; Elizabeth Leasure <ealeasure@UCDAVIS.EDU>; David John Wolking <djwolking@ucdavis.edu>
**Cc:** predictmgt@usaid.gov
**Subject:** Fwd: AID-OAA-A-14-00102 - PREDICT-2 - Request

Let's set up a time to discuss your recommendations on a controlled slowdown.

*Andrew P. Clements, Ph.D.*

*Senior Scientific Advisor*

*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*

*U.S. Agency for International Development*

*Mobile phone: 1-571-345-4253*

*Email: aclements@usaid.gov*

Begin forwarded message:

**From:** Jose Nunez Grullon <jnunezgrullon@usaid.gov>
**Date:** February 12, 2019 at 7:19:55 PM GMT+1
**To:** Elizabeth Leasure <calcasure@ucdavis.edu>
**Cc:** Patricia Bradley <pbradley@usaid.gov>, Andrew Clements <aclements@usaid.gov>, Lindsay Parish <lparish@usaid.gov>, PREDICTMGT <predictmgt@usaid.gov>
**Subject: AID-OAA-A-14-00102 - PREDICT-2 - Request**

Dear Ms. Leasure,

Please find attached correspondence from the Agreement Officer in relation to subject award.

Please kindly acknowledge as indicated in the letter.

Sincerely,

**JOSE L. NUNEZ**
Acquisition and Assistance Specialist, M/OAA/GH
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
SA-44, Rm 609-G
1300 Pennsylvania Ave., NW
Washington, DC, 20523-7900
T 202 567-4123

**(Contractor-Jefferson Solutions, LLC)**

| | |
|---|---|
| **From:** | Nicole R Gardner <nrgardner@ucdavis.edu> |
| **To:** | predict-surveillance Sympa List <predict-surveillance@ucdavis.edu>;Julie Rushmore <rushmore@ucdavis.edu> |
| **CC:** | Jonna Mazet <jkmazet@ucdavis.edu>;karesh@ecohealthalliance.org" <karesh@ecohealthalliance.org>;machalaba@ecohealthalliance.org" <machalaba@ecohealthalliance.org> |
| **Sent:** | 3/8/2019 12:30:20 PM |
| **Subject:** | Surveillance Call Notes - Feb 28 |

Hi Surveillance Team,

Our next call will be **Thursday, Mar 14 at 10am PT / 1pm ET**. You'll find our notes from Feb 28 attached. Please send any agenda items for the upcoming call.

Nicole

Nicole Gardner
EID Operations Specialist
One Health Institute
University of California, Davis

## Feb 28, 2019 Surveillance Team Call

**Action Items and Reminders for next call:**

1. Check your test progress in EIDITH
    a. Contact IM team to remove samples that will not be tested to better represent your progress in the reports.

**Participants:**
Ava Sullivan, Bridgette Smith, Carolina Churchill, Christine K Johnson, Corina Monagin, Dan O'Rourke, David Wolking, Dawn Zimmerman, Emily Hagan, Hong Ying Li, Jaber Belkhiria, Jennie Lane, Julie Rushmore, Karen Saylors, Kevin Gonzalez, Lucy Keatts, Marcy Uhart, Matt LeBreton, Megan Doyle, Mindy Reisal, Nicole Gardner, Pranav Pandit, Rebecca Hill, Rima Shrestha, Sarah Olson, Stephanie Martinez, Tammie O'Rourke, Terra Kelly, Tracey Goldstein.

**Serology shipment status updates**

- Received at UCD: Cambodia, Laos, Nepal, Uganda
- Shipping soon to UCD: DRC, Senegal (arrived 3/4), Tanzania, Vietnam
- Received at Columbia: Bangladesh
- Shipping soon to Columbia: Côte d'Ivoire
- Finalizing paperwork and/or permissions: Indonesia, Kenya, Malaysia, Myanmar, Thailand

**Data Cleaning: Illness Module Data**

- We discussed the human illness module, particularly agreement between diagnosis (Q1), body temperature (Q6), days of fever (Q7), and self-report symptoms (Q9) fields.

- In the extracts provided before the call, we created 6 new columns (G-L) that group symptoms from Q9 into clinical case definition categories of interest:
    - Fever
    - Fever + Cough
    - Fever + Diarrhea and/or Vomiting
    - Fever + Convulsions and/or Altered Consciousness
    - Fever + Headache and/or Joint Pain
    - Fever + Bleeding + Vomiting and/or Diarrhea

- IM team will prepare new country specific extracts of this section of the illness module based on our discussions on this call, which will include the following changes:
    - If body temperature is greater than or equal to 38°C, the fever column will indicate "yes", even if fever is not self-reported in Q9 (orange highlighting).
    - If body temperature is greater than or equal to 38°C and days of fever equals 0, days of fever will be updated to 1 (green highlighting).
    - We will add a yes/no column allowing each country team to assess and decide if there is strong evidence for a history of fever in this patient based on data in Q1 Clinical

Diagnosis by physician, Q7 days of fever, or other clinical notes that are available. This will allow each country to tailor the clinical case definition columns to most accurately represent their data. This column can be used with any data, but particularly blue and yellow highlighted rows should be assessed.
    - We will add a yes/no column based on days of fever to indicate if the fever is acute (≤ 5 days in duration). This will allow us to better interpret and explain test results.

**Data Cleaning: Other Updates**

- We confirmed that we will use the following taxonomic references to standardize species scientific names.
    - Mammals: Wilson and Reeder, Mammal Species of the World, Third Edition (2005) https://www.departments.bucknell.edu/biology/resources/msw3/
    - Birds: Bird Life International http://datazone.birdlife.org/species/search
    - For domestic animals, we do not have a go-to reference, but we will use the subspecies names ending in *domesticus*/*domestica* or similar for species whose Latin genus/species name is the same for both wild and domesticated forms.

- We are developing a data cleaning checklist and R code updates with EHA and IM team to help provide guidance on data cleaning activities.

- We will work on livelihood data cleaning on the next Surveillance Call (3/14) and self-reported symptoms in the human questionnaire in the following call (3/28).

**Behavior Team Updates**

- Behavior team is looking at how to clean up livelihoods.

- Methods paper under development.

- There are plans to put the Asia version of bat book online. Prior to posting online, the book will the shared for review. There have been some graphic changes since the Africa version of the bat book.

- Developing manuscript ideas and deciding on analyses particularly around regional/thematic ideas and qualitative data analysis.

**From:** Jon Epstein <epstein@ecohealthalliance.org>
**Sent:** Mon, 13 May 2019 10:08:26 -0400
**Subject:** Re: Guinea Result Communications
**To:** Corina Grigorescu Monagin <cgmonagin@ucdavis.edu>
**Cc:** Brian H Bird <bhbird@ucdavis.edu>, Jaber Amine Belkhiria <jabelkhiria@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>

Thanks Corina,
Will do, and good luck with communications.
Let me know if there's anything I can help with on this end.
Cheers,
Jon

On Mon, May 13, 2019 at 3:48 AM Corina Grigorescu Monagin <cgmonagin@ucdavis.edu> wrote:

Hi Brian and Jon,

Please see attached for drafts of the Guinea communications regarding the finding. We will be meeting with the ANSS (Agence National de la Securite Sanitaire) in Conakry this morning and will update you all by whatsapp/email.

**Jon – please let Jim know at this point.**

Thanks!

Corina

--
Jonathan H. Epstein DVM, MPH, PhD

*Vice President for Science and Outreach*

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Twitter: @epsteinjon

*EcoHealth Alliance leads cutting-edge scientific research into the critical connections between human and wildlife health and delicate ecosystems. With this science, we develop solutions that prevent pandemics and promote conservation.*

**From:** Andrew Clements <aclements@usaid.gov>
**To:** Jonna Mazet <jkmazet@ucdavis.edu>
**Sent:** 5/14/2019 6:52:10 AM
**Subject:** Re: Guinea Results Heads-up

Cool! Thanks

*Andrew P. Clements, Ph.D.*
*Senior Scientific Advisor*
*Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health*
*U.S. Agency for International Development*
*Mobile phone: 1-571-345-4253*
*Email: aclements@usaid.gov*

On May 14, 2019, at 3:45 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Tamar is being briefed now.
Will forward the materials pre-prepared in a second chain for sharing with DC only until President approves release, but they may go with a media briefing in Guinea later today.
Hope all is well,
Jonna

On Mon, May 13, 2019 at 9:33 AM Jonna Mazet <jkmazet@ucdavis.edu> wrote:
Hi Andrew,
As promised, keeping just you in the loop on progress.
The team, including Prof Alpha, Corina & Jaber, met with Dr. Sakoba today (1 hour ago) in Conakry. He took absorbed the information on the finding well and wants to brief the Minister of Health and President today and tomorrow before sharing the result with USAID. There is no indication that there are any concerns about sharing the information, just taking time to do due diligence. Dr. Sakoba also agreed that he (MoH) and Predict team with brief Tamar together. She has scheduled meetings with our team already for tomorrow and Thursday, so her briefing will likely be tomorrow but could push to Thursday. Our leads in Liberia and and Sierra Leone are ready to do briefings with their teams, Missions, etc., as soon as Tamar is briefed and has a chance to weigh in and we have permission to share more widely.
PowerPoints, FAQs, fact sheet, etc. have all been prepared in English and French and will be shared with you to give to Kendra, etc., as soon as we get the green light and Tamar's thoughts.
The team has asked that we keep things strictly under wraps for a day or two more to get the reaction from the Minister & President and in order to understand the atmosphere, but all seems positive so far.
Hope that all sounds good,
Jonna

**From:** Nicole R Gardner <nrgardner@ucdavis.edu>
**To:** predict-surveillance Sympa List <predict-surveillance@ucdavis.edu>
**Cc:** Jonna Mazet <jkmazet@ucdavis.edu>, "karesh@ecohealthalliance.org" <karesh@ecohealthalliance.org>, "machalaba@ecohealthalliance.org" <machalaba@ecohealthalliance.org>
**Subject:** Surveillance Call - Jun 20 at 10am PT
**Sent:** Wed, 19 Jun 2019 16:12:47 +0000
Surveillance Call 2019.05.23 NOTES.docx

Hi Surveillance Team,

Our next call will be **Thursday, June 20 at 10am PT / 1pm ET**. Please send any additional agenda items for the upcoming call. You'll find the notes from the May 23rd call attached.

**Agenda**

- Data cleaning update - Tammie & Dan
- Follow up on specimen type categorization questions: How were guano, chew rope, and environmental samples categorized?
  - For guano: Were samples categorized as non-invasive or environmental? Did you collect from tarps or the ground? Were you able to collect feces and urine separately or were samples mixed? Which sample type was selected for these samples?
  - For environmental samples: Where these truly environmental samples or do they fit better in the non-invasive category?
  - For primate chew ropes: Did you collect and test any samples that were chewed by more than 1 primate? Which sample type was selected for these samples?

**Reminders**

- June 28th is the next deadline for uploading virus sequence results to EIDITH for interpretation.
- Human Questionnaire Confidence Surveys – When we last checked on 6/5, we had not received completed surveys for the following countries. Please try to get these completed ASAP and let us know if there are any issues.
  - Bangladesh
  - Malaysia
  - Senegal (pending)
  - Tanzania (pending)
  - India

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International numbers: https://zoom.us/u/vlwkq

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Nicole

Nicole Gardner
EID Operations Specialist
One Health Institute
University of California, Davis

## May 23, 2019 Surveillance Team Call

**Action Items and Reminders for next call:**

1. June 28th is the next deadline for uploading virus sequence results to EIDITH for interpretation.
2. Please have teams complete the human questionnaire confidence assessment by June 6th.

**Participants:** Alice Latinne, Ava Sullivan, Bridgette Smith, Carolina Churchill, Christian Lange, Christine K Johnson, Corina Monagin, Dan O'Rourke, Dave McIver, David Wolking, Denise Grieg, Emily Hagan, Gema Vidal, Hong Ying Li, Jennie Lane, Julie Rushmore, Karen Saylors, Kevin Gonzalez, Lucy Keatts, Mercy Uhart, Matt LeBreton, Megan Doyle, Mindy Rovtal, Nicole Gardner, Pranav Pandit, Rebecca Hill, Rima Shrestha, Sarah Olson, Tammie O'Rourke, Tracey Goldstein, [redacted]

**Data Cleaning**

- Specimen type categorization and grouping
  - Specimen types will be grouped to aid in analyses. These groups will be congruent with P1 specimen type groups.
  - We need more information about how some types of samples were collected and categorized. Please discuss these items with your country teams and we will follow-up on this topic on a future surveillance call.
    - Guano: Did you collect from tarps or the ground? Were you able to collect feces and urine separately or were samples mixed? Which sample type was selected for these samples? Were samples categorized as non-invasive or environmental, and was the category selected consistent?
    - Primate chew ropes: Did you collect and test any samples that were chewed by more than 1 primate? Which sample type was selected for these samples?
      - Chew ropes from just one animal that did not touch the ground are comparable to an oral swab.
    - Environmental samples: Where these truly environmental samples or do they fit better in another category?
      - Environmental samples include swabbing cages, tables, or sampling water at markets or wildlife farms.

- Livelihoods
  - We will add the category of "non-wildlife restaurant" for participants who reported that they work in a restaurant, to allow us to better capture potential risk due to the handling and cooking of meat from domestic animals.

- Consistency in Site Characterization
    - Review the Surveillance Activities and Risk Characterization report from EIDITH as soon as you can in the data cleaning process. Look for internal consistency in site characterization.
    - Also review the Event data, particularly fields for Human Density Impact and Sampling Area Size, to ensure a site was appropriately categorized over multiple events.
        - Human Density Impact definitions:
            - urban: densely living population, little or no green space visible (e.g. parks, cultivation or raising animals)
            - peri-urban: may still be dense population but more green space/scrub visible between dwellings, could be used for cultivation or raising animals or fallow
            - rural: could be abutting pristine, majority of land does not have dwellings, could be used for agricultural (crops or animals), may be fallow, may be extractive industry
            - low disturbance: no human dwellings, very few signs of human activity, includes 'pristine' habitat
    - Some sites may have experienced development throughout the project that may explain category changes. Also, sampling may have occurred in different areas of larger sites, resulting in changes in how the site was characterized. Work with your country teams to determine which sites may need to be corrected.
    - See the data cleaning checklist for details on which tables we reviewed on the call:

REDACTED

**Steps towards characterizing risk**

- What are everyone's risk characterization plans? To what extent will you include other potential zoonotic pathogens, either at an analysis or interpretation level. Think more on this and we will discuss on a future call.

- Our testing strategy during PREDICT was geared toward pandemic threats, however, we collected data related to other zoonotic risk. We can also incorporate data from other databases to provide a more complete view of risk.
    - For remaining species barcoding (if budget exists), try to make sure there is coverage at every disease transmission interface.

- [redacted] will share the risk ranking website (hosts-viruses) on surveillance call once available

**From:** Terra Kelly <trkelly@ucdavis.edu>
**Sent:** Sun, 18 Aug 2019 10:08:49 -0700
**Subject:** Re: Your submission to One Health Outlook - ONEH-D-19-00004
**To:** "William B. Karesh" <karesh@ecohealthalliance.org>
**Cc:** Catherine Machalaba <machalaba@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>
Kelly et al. Manuscript_Operationalizing OH_Outlook_R1.docx

Hi there,

Thanks for your thoughts! I have made major revisions to refocus the manuscript on global efforts and PREDICT's unique contributions to One Health. I think we might be in good shape without adding an additional case study? Take a peek and see what you think and please feel free to edit as you see fit. Once we decide on content, I will update the references. I will be asking the editor for an extension to allow coauthors time to review and provide input if they are interested/have time given all that we have on our plates these days! :-)

Thanks again!

Best,
Terra

On Wed, Aug 7, 2019 at 3:14 PM William B. Karesh <karesh@ecohealthalliance.org> wrote:

Sounds good to me.
BK

On Aug 6, 2019, at 9:22 AM, Terra Kelly <trkelly@ucdavis.edu> wrote:

Thanks, Catherine! That sounds great to me. Billy and Jonna, what do you think of this approach?

Best,
Terra

On Mon, Aug 5, 2019 at 10:23 AM Catherine Machalaba <machalaba@ecohealthalliance.org> wrote:

Hi Terra,
Thanks for sharing the reviews - they look really positive overall. Congrats!! I really like the idea to focus it on global efforts, and it looks like we can do that pretty easily by changing the wording of a few headers and taking out reference to the U.S. Lines 75-85 are U.S.-government focused so we could remove that section or perhaps give a few examples from other countries to balance it a bit (e.g. Bangladesh's One Health Secretariat, decrees signed in Cote d'Ivoire, formation of Kenya's Zoonotic Disease Unit, Liberia's One Health governance manual involving 25 partners, presidential and prime minister support in Tanzania and Senegal, etc.)

If Billy and Jonna like this approach, please let me know how I can help with next steps on the revisions. For Reviewer 2's comments on 138-139 (page 7), the amounts are global.

Many thanks, and great job Terra and team!!!

Kind regards,
Catherine

**Catherine Machalaba, MPH**
*Policy Advisor and Research Scientist*

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Chair, Veterinary Public Health Special Primary Interest Group, American Public Health Association

Program Officer, IUCN SSC Wildlife Health Specialist Group

Science Officer, Future Earth oneHEALTH Project

*EcoHealth Alliance leads cutting-edge scientific research into the critical connections between human and wildlife health and delicate ecosystems. With this science, we develop solutions that prevent pandemics and promote conservation.*

On Aug 4, 2019, at 11:28 AM, Terra Kelly <trkelly@ucdavis.edu> wrote:

Hi there!

Hope you are well! I wanted to reach out to get your thoughts on the direction of our One Health paper based on the reviewer's comments from One Health Outlook. The reviewer had a few major comments (pasted below) focusing mostly on the lack of depth of our discussion of One Health approaches in the U.S. (which has already been reported in the literature) and a lack of clarity on how lessons learned from PREDICT are applicable in the U.S. He/she suggests that we focus solely on the unique contributions made by PREDICT or make a stronger case for linking PREDICT's One Health successes to strategies for operationalizing One Health in the U.S.

Given our target journal and audience, I am leaning towards major revisions to refocus the manuscript on global efforts and PREDICT's unique contributions to One Health.What do you guys think about this approach? I have attached the manuscript here for your reference.

Thanks very much in advance for your thoughts on this!
Terra

**Reviewer reports:**

Reviewer #1: This is well-written narrative review with 2 major parts:
1. Overview and critique of One Health initiatives in the US: this part provides a fairly high level overview of government and university initiatives to facilitate coordination and strengthen capacity of graduates, respectively. This is followed by a fairly cursory discussion on the barriers to operationalizing and added value of One Health to the US - much of which has been reported in the literature previously
2. Case studies from the PREDICT program in Africa: this part includes case studies on outbreak response and containment (EBOV in DRC), disease prevention (YF in Bolivia), data sharing (Rwanda and Tanzania). This builds on a previous paper about PREDICT's activities by the same author (Kelly et al., Prev Vet Med 2017; 137 Pt B: 112-118) and appears to offer some new insights into PREDICT's experiences in Africa

**Major comments**

1. Much of the early and late parts of the paper focus on operationalizing OH in the US. This discussion lacks some of the depth and critique of previous papers and so the added value of this discussion to the One Health literature is not so clear
2. The case for drawing on experience from PREDICT which emphasises foreign government, universities etc is not very clear - unless the authors are suggesting that lessons learned from overseas are applicable in the US. The latter comes out a little towards the end - but the authors need to make a stronger case for the linkage between the 2 major parts or revise the manuscript to focus more on the novel contributions by PREDICT.

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Subject: Your submission to One Health Outlook - ONEH-D-19-00004
To: Terra Kelly <trkelly@ucdavis.edu>

CC: albert.osterhaus@tiho-hannover.de, marietjie.venter@up.ac.za

ONEH-D-19-00004
Operationalizing One Health Approaches to Confront Emerging Disease Threats: Lessons from PREDICT
Terra Kelly; Catherine Machalaba; William B. Karesh; Paulina Zielinska Crook; Kirsten Gilardi; Julius Nziza; Marcela M. Uhart; Erika Alandia Robles; Karen Saylors; Damien O. Joly; Corina Monagin; Prime Mulembakani Mangombo; Placide Mbala Kingebeni; Rudovick Kazwala; David Wolking; Woutrina Smith; Jonna A.K. Mazet
One Health Outlook

Dear Dr. Kelly,

Your manuscript "Operationalizing One Health Approaches to Confront Emerging Disease Threats: Lessons from PREDICT" (ONEH-D-19-00004) has been assessed by our reviewers. Although it is of interest, we are unable to consider it for publication in its current form. The reviewers have raised a number of points which we believe would improve the manuscript and may allow a revised version to be published in One Health Outlook.

Their reports, together with any other comments, are below.

If you are able to fully address these points, we would encourage you to submit a revised manuscript to One Health Outlook. Once you have made the necessary corrections, please submit online at:

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I look forward to receiving your revised manuscript soon.

Best wishes,

Marietje Venter
One Health Outlook
https://onehealthoutlook.biomedcentral.com/

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Minor comments
Title Revise the title to reflect the US emphasis of much of the paper
Line 101 "...insightful staff interpretation of missions of the respective agencies recognizing opportunities for multi-sectoral involvement". Clumsy wording. Simplify.
Line 110 Check spelling of operationalizing/operationalization
Line 116-125 The examples of ape-die offs/EBOV and RVF seem strange under a section titled "Value of One Health and the need for operationalization in the US". Further, I don't feel this section makes a particularly strong case for operationalization in the US. This needs to be strengthened if the focus is to remain the US.
Line 138 $300 billion globally?
Line 139 $3.4 billion per year globally?
Line 147 "Concerns about Zika....vector determinants" This sentence is combining multiple ideas. The concerns about Zika don't demonstrate the rapidity in which a PHE can develop. Nor does CDC's request for $1.8 billion demonstrate this rapidity. I suggest splitting out these separate ideas into 2-3 sentences.
Line 261 "...which was called out in several JEEs across the world..." Re-phrase (too colloquial)
Line 265 "...health systems" in the US or globally?
Line 267 "...health systems" in the US or globally?

Line 269 "…across sectors" in the US or globally?
Line 276 "…universities" in the US or globally?

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# Implementing One Health Approaches to Confront Emerging Zoonotic Disease Threats: Lessons from PREDICT

Terra R. Kelly[1], Catherine Machalaba[2], William B. Karesh[2], Paulina Zielinska Crook[1], Kirsten Gilardi[3], Julius Nziza[1], Marcela M. Uhart[1], Erika Alandia Robles[4], Karen Saylors[5], Damien O. Joly[5], Corina Monagin[1], Prime Mulembakani Mangombo[5], Placide Mbala Kingebeni[5], Rudovick Kazwala[6], David Wolking[1], Woutrina Smith[1], PREDICT Consortium, and Joana A.K. Mazet[1]

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**Abstract**

Outbreaks of emerging and re-emerging zoonoses, such as Ebola virus disease and H1N1 pandemic influenza serve as a reminder that the health of humans, animals, and ecosystems are interconnected and that early response to emerging zoonotic pathogens requires a coordinated, interdisciplinary, cross-sectoral approach. As our world becomes increasingly connected,



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emerging diseases pose a greater threat, requiring coordination at local, regional, and global levels. One Health is a multisectoral, transdisciplinary, and collaborative approach promoted to more effectively address these complex health threats. Despite strong advocacy for One Health, challenges for practical implementation remain. Here we provide an overview of , the value of One Health for addressing complex health threats and current challenges in implementing One Health approaches. We also share strategies applied to achieve successful One Health outcomes through the USAID Emerging Pandemic Threats Program PREDICT project, which serve as useful case studies for implementing One Health approaches. Lastly, we explore strategies for promoting more formal One Health strategies to capitalize on the added value of shared knowledge and leveraged resources.

**Keywords**

Emerging infectious diseases, global health, One Health, zoonotic diseases



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**Background**

Zoonoses lead to millions of deaths annually; the economic losses from a single outbreak can amount to billions of dollars.[4-6] Outbreaks of emerging and re-emerging zoonotic infectious diseases, such as Ebola virus disease (EVD), Severe Acute Respiratory Syndrome (SARS), avian influenza (H5N1, H1N1, H7N9), and Zika virus disease underscore the need to consider the interconnections between human, animal, and environmental health in disease prevention and control measures. As trade and travel facilitate greater access and connections across the world, these infectious diseases pose a significant global health threat.

Lessons learned from these disease outbreaks highlight the need to shift to a more integrated, holistic, and proactive approach, such as One Health. One Health considers the linkages between the health of humans, animals, and their shared environment. As such, the approach allows for a deeper understanding and ability to address the complex eco-social determinants of health and to more effectively and efficiently tackle threats through coordination among institutions in multiple sectors, including human and animal health, agriculture, and the environment. One Health approaches are increasingly recognized for their value in addressing emerging infectious disease (EID) threats as the majority of EIDs arise from wild animal reservoirs in biodiverse landscapes experiencing strong anthropogenic pressures, including human population growth, land use change, and natural resource extraction.

At a global level, there is broad support for the One Health concept, which has led to the establishment of several One Health initiatives around the world, including One Health designated divisions within federal agencies (e.g., National Park Service One Health Initiative, Centers for Disease Control and Prevention One Health Office, U.S. Department of Agriculture One Health Coordination Center), interagency working groups (Rubin et al. 2015) international One Health



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networks and consortia (e.g., FAO/OIE/WHO Tripartite, One Health Workforce, One Health Alliance of South Asia, Southeast Asia One Health University Network, One Health Central and Eastern Africa) and One Health designated degree and training programs. Furthermore, nearly 50 countries have signed on to the Global Health Security Agenda (GHSA), which was launched in 2014 to bring countries together to promote One Health approaches and strengthen capacities to prevent, detect, and respond to infectious disease threats. However, despite this broad support, implementing One Health approaches still prove challenging.

In 2009, the US Agency for International Development (USAID) launched the Emerging Pandemic Threats (EPT) Program PREDICT project. PREDICT utilizes a One Health approach focused on early detection and response to potentially zoonotic viral threats at their source before they emerge in people.[7] PREDICT's efforts have focused on strengthening zoonotic virus surveillance and laboratory capacity in "hotspots" for EIDs. The project provided a platform for breaking down barriers through development of cross-sectoral surveillance and laboratory networks with open sharing of data, coordination on disease outbreak response, and contributions to national One Health platforms. PREDICT's efforts to operationalize One Health in collaboration with government and university partners provide valuable examples and evidence for the importance of One Health approaches in addressing complex health challenges. Here we provide an overview of One Health initiatives, current barriers to operationalization, and the value of One Health for addressing complex health threats at the human-animal-environment interface and current hurdles for implementing One Health. We also share approaches used by PREDICT to achieve successful One Health outcomes, which serve as useful case studies for implementing One Health.



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## VALUE OF ONE HEALTH APPROACHES

The One Health approach builds on existing capacities but is novel in bringing disciplines and sectors together to provide broader health benefits. Increasing cross-sectoral coordination can help promote science-based decision making, reduce unnecessary duplication among the human, animal, and environmental health sectors, and more effectively address outside factors influencing disease burdens.

Comparative medicine has long been acknowledged for its benefits in scientific research, and One Health expands comparative medicine's scope to surveillance in animals and the environment for early detection of threats. For example, great ape die-offs associated with Ebola virus have been detected prior to outbreaks in humans, providing a potential predictive value that can help prevent human cases if paired with risk mitigation measures, such as hunter avoidance of carcasses.[25] Weather conditions have also been used to forecast Rift Valley fever and other outbreaks and can inform vaccination and mosquito control campaigns to benefit health and economic outcomes.[26] Integrated human, animal and environmental surveillance can also elucidate pathways of pathogen sharing and inform development of more comprehensive solutions that emphasize prevention at the source.

The appearance of disease ultimately linked to West Nile virus (WNV) in the U.S. in 1999 left public health authorities challenged with identifying its origin. Critical insight was gained from the veterinary community in elucidating the virus and transmission. Currently, sentinel surveillance in mosquitos, birds, and horses is used routinely to monitor risk. The U.S. has also made a concerted effort to control rabies. The successful control in domestic animals through vaccination has allowed for a targeted approach to managing wildlife reservoirs. Baseline surveillance data allow for risk monitoring and targeted control efforts, as seen in response to the rise of raccoon rabies.



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While rabies control efforts in the U.S. have required substantial investments (up to $1 billion per year), they have yielded high benefits in the form of an average of only 1-3 human cases per year.[27]

An economic optimization projection suggested that investing in a One Health approach through mitigation of pandemic threats versus business-as-usual adaptation could yield a savings of over $300 billion globally over the next century.[23] Similarly, a World Bank analysis suggested that upfront investments of $3.4 billion per year globally in One Health capacity through improved veterinary services could avoid over $30 billion in zoonotic disease response annually.[5]

While these scenarios reflect value for global public goods, the U.S. has endorsed global health security as a priority, given trade and travel networks and the potential for disease spread. However, investments at a national level can and should help address disease risks within the nation's borders. Climate and other ecological changes are resulting in shifts in geographic ranges of species and their pathogens. Invasive species introductions cost the U.S. almost $120 billion annually.[28] The spread of Zika virus and CDC's request to the U.S. government for $1.8 billion to respond demonstrate the rapidity in which a public health emergency can develop and the utility of ecological information to understand vector determinants and implement preventive measures prior to disease emergence. Forming surveillance, reporting, and control efforts across agencies on an ad-hoc and single-disease basis to only address urgent priorities misses the opportunity to anticipate and get ahead of future threats.

**MAJOR CHALLENGES FOR IMPLEMENTING ONE HEALTH APPROACHES**

Implementing One Health approaches requires coordination and integration of activities across the human health, animal health, and environmental health sectors. However, most countries are still lacking formal mechanisms for collaboration and joint planning across the



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different sectors, which are traditionally based in separate ministries or government agencies with different mandates on activities and spending.[19,20] As a result, practical applications of One Health approaches have largely been ad-hoc,[20,21] which can result in delayed or incomplete prevention and control measures. In addition, there is limited awareness of the role that environmental factors play in disease emergence resulting in weak representation and engagement of stakeholders from the environment sector (Machalaba et al. 2018). Issues with inter-sectoral privacy and trust, as well as limited resources, especially for the agriculture and environment sectors, further compound these challenges (Lee and Brumme 2012).

A lack of formal governance and national One Health policies or platforms currently present major hurdles for implementing One Health in countries around the world (Johnson et al. 2017; Lee and Brumme 2012). One Health requires a joint approach to decision making and planning that brings professionals together from multiple disciplines and incorporates a range of political, social, and economic perspectives. It requires national policies or platforms that provide a framework for integrated programs and activities and an enabling environment for diverse stakeholders to work together to achieve One Health outcomes.

Another challenge for implementing One Health is the lack of formal analyses showing the added benefits of One Health over conventional approaches in disease prevention and control.[19,22] A growing body of research, including studies revealing the financial benefits of One Health investments in addressing emerging zoonoses, is building the evidence base for One Health.[23,24] However, additional case studies and formal assessments demonstrating the social, health, and economic benefits are needed to garner broader high-level support by decision makers.

## CASE STUDIES: ONE HEALTH CONTRIBUTIONS TOWARD MORE EFFICIENT AND EFFECTIVE RESPONSE TO EMERGING DISEASE THREATS



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Over the past decade, PREDICT partnered with foreign governments, universities, and other organizations to advance One Health initiatives.[7] In collaboration with local partners, the PREDICT project strengthened capacity for viral surveillance at high-risk animal-human interfaces. Also, when requested by host country government partners, PREDICT provided support during disease outbreaks through incorporating animal sampling into investigations, expanding laboratory analyses to look for novel viruses, and promoting the growth of a trained One Health workforce.

**Rapid outbreak response and containment**

During the widespread EVD outbreak in West Africa in 2014, the Democratic Republic of Congo (DRC) experienced its own separate and unique Ebola virus disease outbreak. Unlike West Africa, DRC has a long history of Ebola outbreaks and substantial capacity for response, due in part to a long-running partnership between l'Institut National de Recherche Biomédicale (INRB), the national infectious disease reference laboratory, and other partners like PREDICT. Many experts from the Viral Hemorrhagic Fever Unit of the INRB were deployed in West Africa when the outbreak in DRC occurred. As a result, PREDICT was requested to perform the laboratory testing. Suspect cases were sampled, specimens were shipped to the INRB for analyses, and Ebola virus was detected within one day of receiving the specimens. Importantly, the strain of Ebola virus detected was distinct from the strain causing the West Africa epidemic, ruling out linkages between the two outbreaks. Because of the prompt testing, the DRC government was able to respond rapidly with contact tracing, dispatching a mobile laboratory, and quarantining suspected cases, leading to swift containment. There were 66 cases reported over the two-month duration of this outbreak, while the West Africa outbreak extended over a 2.5 year period with greater than 28,000 cases.



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The PREDICT team was also able to assist with collection of wildlife samples from the outbreak area. Contact tracing later identified the likely source of the outbreak as an infected wild animal that had been found dead and butchered for food. This information was key to identifying high-risk practices to target for disease prevention. The rapid response and field investigations informing on prevention measures illustrate what is achievable when an in-country One Health workforce is trained, employed, and ready to act.

**Prevention of human disease outbreaks**

Currently, response to outbreaks around the world is highly reactive, with control measures employed once an outbreak in humans has been detected. PREDICT activities in Bolivia demonstrated that monitoring for zoonotic viruses in wild animals can be a valuable early detection tool for preventing disease outbreaks, particularly in landscapes undergoing substantial alteration, such as deforestation, where breakdown of natural barriers leads to increased contact between wildlife and people.

Yellow fever (YF) is a zoonotic viral hemorrhagic disease[29] that is perpetuated in a transmission cycle involving mosquitos and non-human primate hosts. Because New World primate hosts are especially susceptible to YFV infection, acute clusters of mortality in these populations can signal YFV activity and alert authorities to increased risk of human infection, thereby serving as an early warning system.

In 2012, staff at a wildlife sanctuary in Bolivia, who had received training in wildlife disease surveillance through PREDICT, discovered six dead howler monkeys (*Alouatta sara*) near the park. In collaboration with the sanctuary, PREDICT investigated the mortality event. Post-mortem examinations and diagnostic testing performed at the University of San Andres' Institute of Molecular Biology and Biotechnology (IBMB), PREDICT's partner laboratory in Bolivia,



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indicated infection by a Flavivirus, the family of viruses to which YFV belongs. PREDICT partners reported the results to the Ministry of Health, while conducting further laboratory analyses to confirm that infection was caused by YFV. The Ministry of Health, Pan-American Health Organization (PAHO), and PREDICT conducted a joint risk assessment followed by a prompt cross-sectoral, coordinated response in the affected area. The response included preventive YF human vaccination, public education and outreach, and mosquito control to reduce risk of infection.

Although YF outbreaks had never been documented in Bolivian primates, authorities were able to implement preventive measures within one week of detection of the mortality event. Moreover, no human cases of YF were reported, suggesting the value of early warning systems for increased zoonotic disease risk, local pathogen detection capacity, effective collaboration channels across sectors, and prompt implementation of public health measures for preventing pathogen spillover from animals into people.

**Systematic coordinated data sharing and national One Health platforms**

PREDICT worked with foreign government partners to establish a systematic One Health approach to sharing results stemming from disease surveillance. The process involved sharing results with designated points of contact in the ministries representing public health, livestock/agriculture, and wildlife, which facilitated discussions on coordinated solutions. It also established open communication channels that enabled more rapid coordinated responses to disease outbreaks. In Rwanda and Tanzania, this collaborative approach was the impetus for PREDICT's involvement in the development of national One Health platforms in the countries.

In Rwanda, PREDICT is a member of the Government of Rwanda's One Health Steering Committee. The committee, which is made up by representatives from the animal, human, and



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environmental health sectors, applied "a participatory and consensus building process" to develop an integrative framework for solving problems at the animal-human-environmental interface.[30] As part of the committee, PREDICT aided in the development of a One Health Strategic Plan in 2015.[30] The plan corroborates commitments to enhance cross-sectoral collaboration and increase One Health workforce capacity in Rwanda. It outlines an implementation strategy covering organizational structure and pooling and mobilizing resources.[31] The Steering Committee oversees the plan, including prioritization of resource allocations, and coordinates the technical aspects of the strategy, which are integrated into the annual action plans of the implementing partners. If successfully operationalized, Rwanda's One Health Strategic Plan will lead to more efficient and timely responses to disease threats.[31]

Following the avian influenza (AI) outbreak in Uganda in 2017, the Rwanda Agriculture Board, in collaboration with representatives from the National One Health Steering Committee, conducted a field investigation of an avian mortality event in Rwanda. In the process of their investigation, they conducted public sensitization around AI risk through informal community meetings and radio broadcast. Although AI was not confirmed in Rwanda, the collaborative efforts initiated by the committee raised critical awareness and led to improvements in Rwanda's National Contingency Plan against AI highlighting the benefits of this plan to improving preparedness.

Alongside Rwanda, Tanzania launched its One Health Strategic Plan in 2015. This plan laid the groundwork for multi-sectoral coordination and established a One Health Coordination Unit overseen by a One Health Steering Committee, comprised of secretaries of participating ministries and supported by five technical working groups. Tanzania was the first country to undergo a self-assessment using the World Health Organization (WHO) Joint External Evaluation (JEE) tool,



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which is a voluntary, collaborative process to assess a country's capacity to prevent, detect, and rapidly respond to health threats.[32] PREDICT served in one of the technical working groups using the tool to evaluate strengths, gaps, and priority actions for enhancing national health security. The assessment was instrumental for encouraging cross-sectoral communication and identifying activities where ministry partners could work together to combat disease threats. The process paved the way for developing the Tanzania National Action Plan for Health Security, which addresses gaps identified by the evaluation. As a culmination of these efforts, Tanzania formally launched the first national One Health Platform and One Health Strategic Plan in 2018.[33]

**THE WAY FORWARD: IMPLEMENTING ONE HEALTH**

While mechanisms for operationalizing One Health are variable across contexts, case studies demonstrating successful One Health outcomes can provide valuable insight for implementing approaches elsewhere. Over the past five years, the GHSA has been instrumental in creating an enabling environment and political will for strengthening global and national health securities through a One Health approach. JEEs conducted in several countries around the world have revealed weaknesses in coordination across health sectors prompting the recommendation to develop national One Health platforms. To work towards this goal, the World Bank, USAID EPT program, and United Nations organization partners, compiled resources to assist countries with formalizing a One Health strategy, including tools for capacity assessments, resource mapping and prioritization, and One Health systems improvement.[26, 35-37] These tools will aid in the exercises to identify where investments in One Health approaches and leveraged resources could fill gaps, avoid unnecessary overlap, and result in more holistic, preventive approaches.[38] In allocating resources, it may be beneficial to conduct formal standardized assessments to evaluate how best to optimize investments to ensure added value gained by integrating efforts across health



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sectors.[16, 17] For example, One Health approaches have yielded higher returns on investments through joint human-animal disease surveillance and prevention and control measures, including vaccination campaigns.[24,38,7] Cross-sectoral exercises to assess risk and economic impacts of zoonoses have also brought stakeholders to the table to facilitate more systematic collaboration and communication and to identify opportunities of mutual benefit.[24,39,40]

Finally, it is critical to continue to raise awareness of One Health and foster leaders in the field, to ensure a workforce of One Health leaders who are uniquely skilled to work across disciplines and sectors. Around the world, universities and university networks are progressively incorporating One Health education into their curricula, including designated One Health degree programs. These programs need to be developed around a set of core competencies with an emphasis on practical skill-building[15] to provide students with the knowledge and experience necessary to address complex health threats.

**CONCLUSIONS**

While there is increasing commitment to One Health across the world, implementing One Health approaches still prove challenging. Development of national One Health platforms and policies are critical for improving coordination and integration of activities and programs across sectors. In many countries, the GHSA has created an enabling environment and the political will needed to initiate One Health strategic plans and to develop national platforms. In addition, support from international organizations, such as the World Bank, USAID (EPT program), and FAO, has provided assistance to several countries with designing and implementing One Health strategies and strengthening national One Health systems.[24, 16,17] Further, there is a need to continue to invest in training a workforce of One Health professionals who will put these policies into action. This will require that universities continue to incorporate One Health education into their



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curricula, focusing on key core competencies[11] and practical skills needed to apply integrative approaches.

## LIST OF ABBREVIATIONS

**AI** – avian influenza

**CDC** – Centers for Disease Control and Prevention

**DRC** – Democratic Republic of Congo

**EID** – Emerging Infectious Disease

**EPT** – Emerging Pandemic Threats

**EVD** – Ebola Virus Disease

**JEE** – Joint External Evaluation

**OHI** – One Health Initiative

**OHC** – One Health Commission

**USAID** – US Agency for International Development

**WHO** – World Health Organization

**YF** – Yellow Fever

## DECLARATIONS

### Ethics approval and consent to participate

Not applicable

### Consent for publication

Not applicable

### Availability of data and material

Not applicable



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**Competing interests**

The authors declare that they have no competing interests.

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**Authors' contributions**

TRK, CM, WBK, PZC, and JM conceived the study and were major contributors in writing the manuscript. KG and JN led the PREDICT project's activities in Rwanda and contributed to the writing of the manuscript. MMU and EAR led the PREDICT project's activities in Bolivia and contributed to the writing of the manuscript. KS, DOJ, CM, PMM, and PMK led the PREDICT project's activities in the DRC and contributed to the writing of the manuscript. RK, DW, and WS led the project's activities in Tanzania and contributed to the writing of the manuscript. The PREDICT Consortium is a consortium of researchers who have made substantial contributions to the design and implementation of the PREDICT project. All authors read and approved the final manuscript.

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UCDUSR0005819

**From:** Evelyn Luciano <luciano@ecohealthalliance.org>
**To:** Elizabeth Leasure <ealeasure@ucdavis.edu>
**CC:** predict Sympa List <predict@ucdavis.edu>;Peter Daszak <daszak@ecohealthalliance.org>;Hannah R Chale <hrchale@ucdavis.edu>;Aleksei Chmura <chmura@ecohealthalliance.org>
**Sent:** 11/25/2019 1:13:58 PM
**Subject:** [predict] Re: Please provide $120K budget ASAP (PREDICT)

Hi Liz,

Here you go. Let me know if you need anything further.

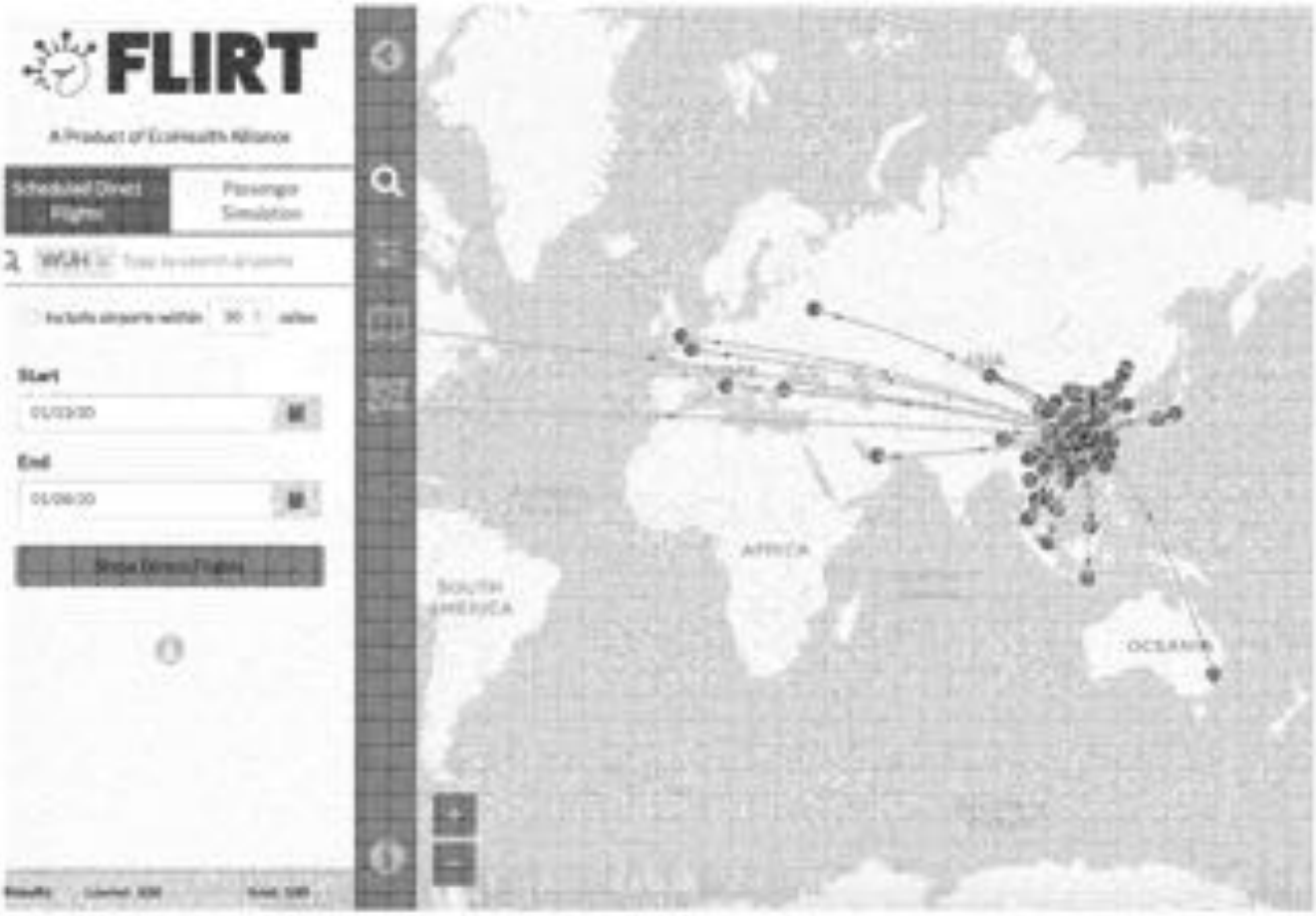
Thanks.

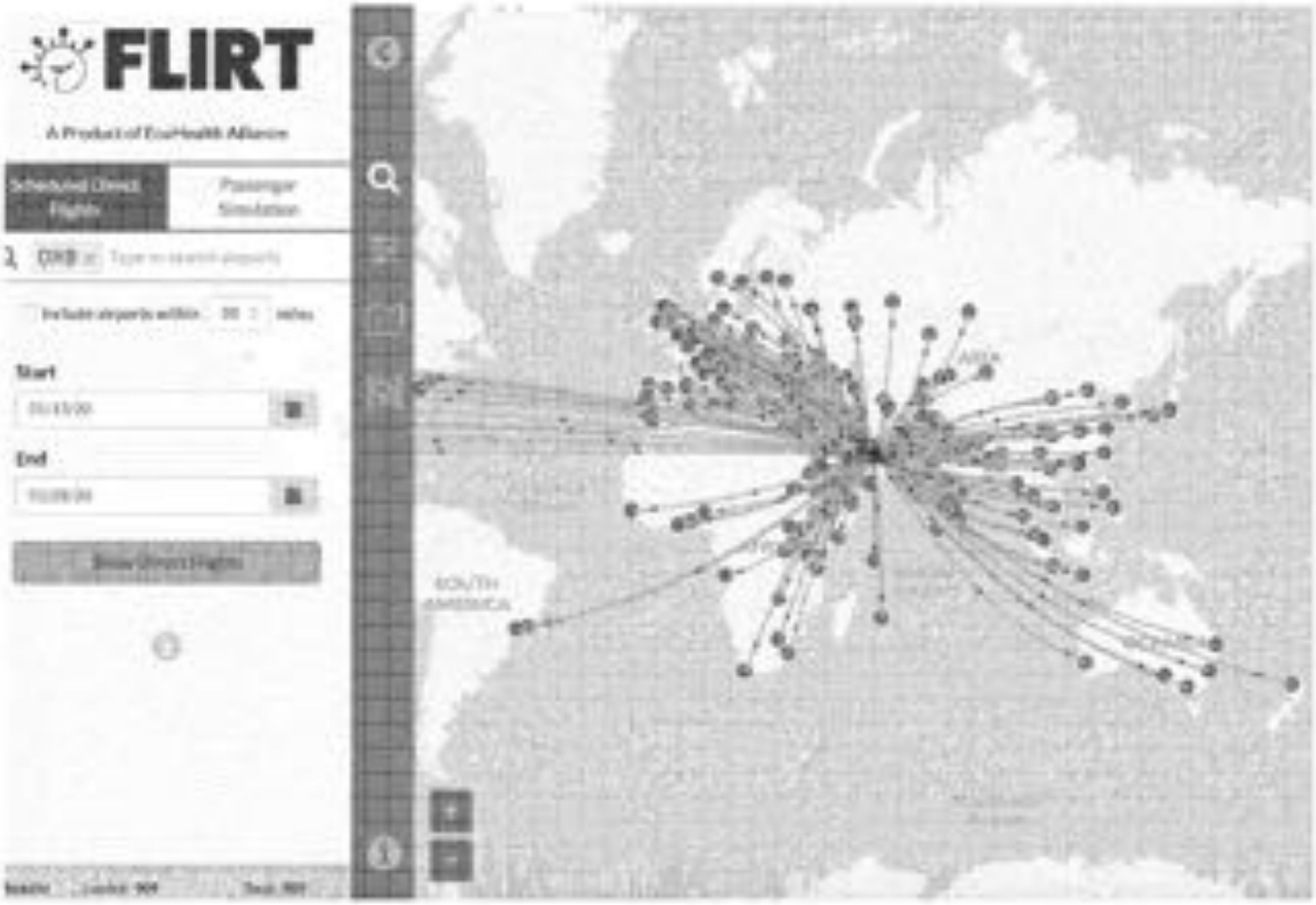
Evelyn

**From:** William B. Karesh <karesh@ecohealthalliance.org>
**To:** Andrew Clements <aclements@usaid.gov>
**CC:** Peter Daszak <daszak@ecohealthalliance.org>;Jonna Mazet <jkmazet@ucdavis.edu>;Chris Johnson <ckjohnson@ucdavis.edu>;PREDICTMGT <predictmgt@usaid.gov>;Kevin Olival <olival@ecohealthalliance.org>
**Sent:** 1/21/2020 10:08:09 AM
**Subject:** Re: nCoV and travel to Africa

No scheduled direct flights from Wuhan, but the link to Dubai provides connections across Africa. Peter and Kevin might be able to run the models we have for secondary connections and data on numbers of passengers.

See screen shoots below:



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**Sent:** Wed, 6 May 2020 16:56:27 -0700
**Subject:** Fwd: Fw: Global Virome Project
**From:** Jonna Mazet <jkmazet@ucdavis.edu>
**To:** Dennis Carroll <REDACTED>

---------- Forwarded message ---------
From: **Krisztian Banyai** <REDACTED>
Date: Mon, Mar 23, 2020 at 5:47 AM
Subject: Re: Fw: Global Virome Project
To: REDACTED, Jonna Mazet <jkmazet@ucdavis.edu>
Cc: Peter Daszak <daszak@ecohealthalliance.org>

Dear Eri,

We have been collecting wild bird samples for virus discovery a while. I have also been approached recently by a Cameroonian colleague who did his lab work in the mid-2010s at my lab saying that they have a huge number of animal samples available for analysis. If you have any ideas concerning the planned collaboration please let me know.

Best wishes,
Krisztián

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**From:** REDACTED
**Sent:** Friday, July 20, 2018 7:14 PM
**To:** Jonna Mazet <jkmazet@ucdavis.edu>; Krisztian Banyai <REDACTED>
**Cc:** Peter Daszak <daszak@ecohealthalliance.org>
**Subject:** RE: Fw: Global Virome Project

Dear Krisztian,

It is a pleasure to be in touch with you. Thank you for sharing information about your and your colleagues' interest, work, and capabilities. As Jonna mentioned, I am currently helping develop GVP and happy to be your point of contact. Please feel free to follow up with me anytime.

I hope to keep in touch and looking forward to future collaborations.

Best wishes,
REDACTED
REDACTED
Fellow
One Health Institute
School of Veterinary Medicine
University of California, Davis

**From:** REDACTED **On Behalf Of** Jonna Mazet
**Sent:** Thursday, July 19, 2018 12:33 PM
**To:** Krisztian Banyai REDACTED >
**Cc:** Peter Daszak <daszak@ecohealthalliance.org>; Eri Togami <REDACTED>
**Subject:** Re: Fw: Global Virome Project

We definitely can, Krisztián! This is great news. We will keep you updated & will come to you to discuss as opportunities develop.
I'd like to also introduce REDACTED who is currently a One Health Fellow here and is working with us to help develop GVP.

You'll likely here from her in the future,
Jonna

On Wed, Jul 18, 2018 at 1:21 PM, Krisztian Banyai <REDACTED> wrote:
Dear Jonna,

Thank you for your response. I understand that no funds are avaialable at this moment.
Concerning the funding of our research group, we do not have funds specifically allocated to virome analyses of wild animals but assuming that our institutional support will remain we may be able to perform viral metagenomics on 100-150 samples per year.
Concerning samples, we have access to samples collected from birds, rodents and bats. Rodent and bat samples were collected by our collaborative partners who may also be interested in GVP.

Please let me know if we can continue thinking together on the project or our participation.

Best wishes,
Krisztián

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**From:** REDACTED on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
**Sent:** Thursday, July 12, 2018 7:29 PM
**To:** Krisztian Banyai
**Cc:** Peter Daszak; gvp@ucdavis.edu
**Subject:** Re: Fw: Global Virome Project

Dear Dr. Banyai,
Thank you for your interest. I'd be pleased to discuss further with you. I did receive your inquiry, forwarded from the main GVP email address, but I have been traveling and not available to get back to you until today.

At this point, the Global Virome Project (GVP) is an international initiative in the conceptual stage, and we are currently developing and collecting data on the interest of countries to participate, as well as scientists, such as yourself, who are willing to support. Most of the confirmed interest in participating so far has been coming from Asia. We have been working with some European countries, especially with teams from England and France, who have laboratory networks and support activities in Asia and Africa, as those continents have been targeted for initial investments because of the high likelihood of viral spillover of emerging threats in the short-term. Some of our team will be in France again and then Germany later in the summer to discuss those countries' support of efforts on those continents. We, of course, welcome activities in any country that is willing to participate if there are funds sourced from those countries to participate. While it may sound funny, though my personal lab is working hard on these efforts, I haven't been able to secure funding to conduct work for my own country, only for efforts in Asia, Africa, and Latin America.

Do you have projects collecting wildlife samples that could contribute to the GVP effort? We welcome your support and participation, but at this point, we are not planning to export samples for analyses outside of the countries where the samples are collected, unless a collaborator is collecting those samples and dealing with export permissions and transboundary relationships for testing in their labs. We also do not have funds to support laboratory partners at this point; we are really in the interest-raising and fundraising stage.

We can certainly keep your CV and interest in mind and provide you with updates as things develop and opportunities arise. However, if you currently have projects or partnerships that can contribute at this formative stage, we welcome them and further discussions.

Hoping to collaborate in the future,
Jonna

Jonna AK Mazet, DVM, MPVM, PhD

Professor of Epidemiology & Disease Ecology

Executive Director, One Health Institute

Global Director, PREDICT Project of USAID Emerging Pandemic Threats Program

School of Veterinary Medicine

University of California

1089 Veterinary Medicine Drive

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onehealthinstitute.net

For scheduling and logistical issues, please contact:

Ms. Brooke Genovese

bgenovese@ucdavis.edu

+1-530-752-3630

On Thu, Jul 12, 2018 at 3:25 AM, Krisztian Banyai REDACTED wrote:

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**From:** Krisztian Banyai REDACTED
**Sent:** Thursday, July 12, 2018 10:17 AM
**To:** daszak@ecohealthalliance.org; jkmazet@ucdavis.ed
**Subject:** Global Virome Project

Dear Drs Mazet and Daszak,

I have recently sent an enquiry through the GVP homepage but got no response. Basically I am interested in the your project 'Global Virome Project' and would like to know whether I can join this initiative.

I have a good laboratory facility with NGS platforms (IonTorrent, Illumina 500) and GMO license for numerous viral pathogens. I have attached my CV in case you are open to accept my application.

I hope to hear from you soon.

Kind regards,

Krisztián Bányai