From: "Jonna Mazet" [redacted]
To: <ian.mackay@uq.edu.au>
Cc: [redacted]
Subject: Reminder: Invitation to participate in virus risk ranking assessment
Sent: Wed, 3 May 2017 14:25:13 -0700
RiskRankingPartcipantWorksheet.xlsx

Dear Dr. Ian Mackay,

We hope that you previously received our email soliciting your expert opinion and requesting your participation in a short multidisciplinary process to assess spillover risk from newly detected viruses. As an expert in the field of infectious diseases, your contribution to this exercise would be highly valued and appreciated. If possible, please take a moment of your time to review the information below, and complete the attached worksheet. We anticipate the time allocation to this exercise will be **10** to **20 minutes**.

As you may have heard, the USAID-supported PREDICT project (www.predict.global) has identified short sequences from nearly 1000 unique viral taxonomic units (by consensus PCR followed by sanger sequencing) from viral families known to have members that cause zoonotic diseases. These viruses have been detected in samples collected from animals in more than 20 countries in tropical regions considered to be hotspots for emerging zoonotic disease risk.

As a globally renowned scientist in the field of infectious diseases, we would like to incorporate your expert opinion into an evaluation of the relative impact that select host, environmental, and viral factors contribute to the risk of a new human viral spillover or epidemic event that might originate from novel or known viruses of animal origin. At this point, we are primarily interested in how much each parameter contributes to the overall risk of such an event occurring. The levels of severity within each of the parameters will be evaluated through a different process.

The expert opinion you provide will be combined with that of other top experts in the field and is intended to contribute to a risk ranking module that will be distributed to and evaluated by the scientific community both through the peer-reviewed publication process and via an interactive web application. All contributions to this exercise are voluntary, and identifying information will not be published or be otherwise made available unless you let us know that it is acceptable/desirable to acknowledge you. We are only soliciting opinions from a select group of professionals with relevant expertise; therefore, we ask that the attached worksheet remain confidential and not to be shared with others.

Instructions:

1. Please open and save the worksheet with your initials in the title (i.e. RiskRankingPartipantWorksheet_ZG.xlsx)
2. Complete the 'Demographic Information' at the top of the spreadsheet
3. Answer all categories for 'CONTRIBUTION TO THE RISK OF A NEW HUMAN VIRAL SPILLOVER OR EPIDEMIC EVENT OF ANIMAL-ORIGIN' and 'LEVEL OF EXPERTISE' using provided dropdown options
4. Please return your completed worksheet ASAP to [redacted] original deadline **April 28th 2017** extended for your participation to May 12 or by arrangement if this date is impossible and you would still like to contribute**.**

We sincerely hope that we can count on your important involvement in the process and that you will accept our gratitude for your time and contribution to scientific collaboration.

Sincerely,

Prof. Jonna Mazet

Global Director, PREDICT USAID
Professor of Disease Ecology and Epidemiology
One Health Institute
School of Veterinary Medicine
University of California Davis

[redacted]

Project Scientist, PREDICT USAID
Postdoctoral Researcher in Disease Ecology
One Health Institute
School of Veterinary Medicine
University of California Davis

1089 Veterinary Medicine Drive
Davis, CA 95616, USA
jkmazet@ucdavis.edu

1089 Veterinary Medicine Drive
Davis, CA 95616, USA
REDACTED

From: Peter Daszak <daszak@ecohealthalliance.org>
To: David J Wolking <djwolking@ucdavis.edu>
Cc: "Kevin Olival, PhD" <olival@ecohealthalliance.org>, "Prof. Jonna Mazet" <jkmazet@ucdavis.edu>
Subject: RE: Correction Re. URGENT: Modeling & Analytics semi-annual
Sent: Fri, 26 May 2017 17:03:40 +0000

Sorry for the confusion on these – Anna didn't know the background and was just trying to help, given Kevin's out of the office and I'm working from home today.

Give me a call if you need any more info – REDACTED (cell) or REDACTED (home).

And by the way – glad you caught both of these…

Cheers,

Peter

Peter Daszak
President

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

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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: Peter Daszak
Sent: Friday, May 26, 2017 12:55 PM
To: Anna Willoughby; David J Wolking
Cc: Kevin Olival, PhD; Prof. Jonna Mazet
Subject: Correction Re. URGENT: Modeling & Analytics semi-annual
Importance: High

Hi David, Jonna,

Looking at this now, and glad you caught both these things.

Re. the EIDR database, the correct wording in the report should be "Partially-funded by PREDICT", not "PREDICT-derived". That's our fault, but it needs to be corrected. The truth is that DTRA funded the specific building and launching of EIDR as a public database, and we later on supported this with some PREDICT funds, so that we can make sure we get full benefit for PREDICT. If we brand this as USAID PREDICT, it will cause huge problems with DTRA, so I need to make sure we do this correctly and co-brand it. I'll talk with the tech team and look at the branding.

The webpage is: https://eidr.ecohealthalliance.org/ At the very least I'll have our folks insert language about 'funded by', and include DTRA, PREDICT and check if any other funders need to be in there. If you agree, we can insert logos for the funders as well, so there's better visibility when USAID click on it. I'll also get our folks to change the page under our EHA 'programs' list, because this doesn't have information about funders either (and it has our usual 'donate now' button, which wouldn't look great if USAID

clicked on it!!!).

Re. the seasonality thing – this refers to some prelim analyses on EHA data that Evan Eskew has been doing and has seen some trends, and we do want to dig in deeper. I know you have a student working on this and we will make sure that 1) we don't scupper her work, and 2) if possible we aim for a bigger collaboration.

Cheers,

Peter

Peter Daszak
President

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From: Anna Willoughby [mailto:willoughby@ecohealthalliance.org]
Sent: Friday, May 26, 2017 12:23 PM
To: David J Wolking
Cc: Kevin Olival, PhD; Peter Daszak; Prof. Jonna Mazet
Subject: Re: URGENT: Modeling & Analytics semi-annual

Hi David,

Kevin is in Thailand, so not sure if he will be able to respond this morning. I will follow up with our Tech team next week to ensure appropriate branding is visible on the EIDR site. The second item does refer to EHA work: an ongoing analysis of viral detection seasonality in bats that has been expanded significantly to include climate/life history data since we started the project in summer of 2016. Perhaps adding in that this is specific to bats will help clarify?

Let me know if you have any further questions.

Best,
Anna

On May 26, 2017, at 11:00 AM, David J Wolking <djwolking@ucdavis.edu> wrote:

> Hi Kevin, Peter, and Anna,
>
> We are getting ready to share the semi-annual report later today. Before it goes to USAID I just wanted to follow-up on a few things from your section.
>
> 1. You mention that the EIDR is a "PREDICT-derived publicly available database" and linked to it in the report. If this is accurate then we need to get some PREDICT branding on the site so that is clear to those who follow that link.

2. Also, Jonna wanted to double check that the item featured under Analyzing P-1 data refers to work in progress by UCD students and not separate efforts at EHA. For quick reference: "Finally, to assess most productive timing for sample collection, we began analysis of seasonal patterns in viral detection from PREDICT-1 data, including integration of life history data and global climate datasets"

Thanks and we appreciate a quick message back this AM if possible,

David

On Thu, May 11, 2017 at 3:26 PM, Kevin Olival, PhD <olival@ecohealthalliance.org> wrote:
David,

I'm also going to cc you when I send the full M&A M&E tomorrow, just in case you want any more detail when you're editing the SAR bullets we sent. There are figures (47 of them!) and more detailed captions in that document that may help provide some context.

Cheers,
Kevin

Kevin J. Olival, PhD
Associate Vice President for Research

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New York, NY 10001

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On May 11, 2017, at 12:58 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Thanks Peter received

David

On Wed, May 10, 2017 at 6:10 PM, Peter Daszak <daszak@ecohealthalliance.org> wrote:
Hi David,

De-scientificated our M&A semi-annual following Jonna's suggestions, and added a couple of pictures….hope it's ok..

M&E stuff will come to you on Friday…

Cheers,

Peter

Peter Daszak
President

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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: Jonna Mazet <jkmazet@ucdavis.edu>
To: Andrew Clements <aclements@usaid.gov>
Sent: 5/31/2017 8:54:43 AM
Subject: Re: Request for update on Predict transition in SL and G

Thanks,
J

On Wed, May 31, 2017 at 1:34 AM, Andrew Clements <aclements@usaid.gov> wrote:
Just sent the Guinea mission an email to update them on the transition and included your offer to discuss by phone. I will let you know if they would to take you up on that offer.

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 1:30 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Hi Andrew -- I have added these questions to our MT call agenda, but in advance of that discussion, here are some details for you. UC Davis will be assuming leadership in both countries. The transition will be necessarily slow, only because the permissions to operate in both countries are in Metabiota's name only. That means that we must keep Metabiota in play while we work out permitting transitions to ensure that we don't have a break in project operations. We also want to make things as fair and easy on in-country staff as possible, so we will be retaining most of the staff -- some for the long-term and some for the next couple of months while we evaluate their capacities.
The transition process could take weeks to months, but we plan to continue operations as we transition. We had a call with Nathan and new Metabiota CEO Bill Rossi today, and all appears to be back on track, amicable, and progressing appropriately.

Sierra Leone:

- Global Lead will be Brian Bird, with extensive operational experience in Sierra Leone, including deployments during the most recent outbreak while working for CDC.

Brian H. Bird DVM, MSPH, PhD

One Health Institute

1089 Veterinary Medicine Dr.

School of Veterinary Medicine

University of California, Davis

bhbird@ucdavis.edu

- We are working on a laboratory capacity plan that can help to address the concerns in the MOH/ MAFFS letter. Our Country PI and Country Coordinator are involved in that process. It should be complete in 2 weeks and will be shared with DC and the Mission in advance of the official response. We can discuss the impetus of the letter from the GoSL on the MT call. Our goal is to have a scaled lab capacity plan ready to discuss in advance and during the USAID visit m id-June. It will be scaled based on current financial obligations and planned for further steps as incremental funding is obligated.
- Field sampling will be continued; however, we would like to make sure next steps are scientifically-sound based on

the results of the testing from the second shipment of samples (which is in process) and based on the desires of the Mission and the communities in response to the communication roll-out. We believe the communication piece should be the subject of the June visit, rather than field sampling.

- Brian will be able to attend the mid-June USAID/DC visit, should schedules continue to align.
- We are hopeful that introductions and coordination with the in-country communication team could be done together with the USAID/DC visitors mid-June. Is that possible? If not, and we need to move ahead separately, a planning session for roll-out of the finding would be most useful.
- There has been mention of a high-level delegation visit to MOH and MAHHS being desired to get the release of the finding rolling faster. This delegation might be perfect for that, and we would have the capacity building plan ready for delivery by this delegation if you believe that such visits are possible/advantageous.
- The lab is about a 4.5 hour drive from Freetown. Is the USAID/DC team planning on a two-day excursion to see the lab? Not sure a short spin through a lab is worth that trip, but we will accommodate if desirable.
- Now that UCD is working directly with the in-country team, we will reach out ASAP to do a joint call with the Mission, just as we did with Zandra.

Guinea:

- Global Lead will be Corina Monagin, who has extensive operational experience inGuinea and helped to initiate Predict work there when she was working for Metabiota.

Corina Monagin, MPH, DrPH
Project Scientist, PREDICT Project of USAID
One Health Institute
School of Veterinary Medicine
University of California Davis
1089 Veterinary Medicine Drive
Davis, CA 95616, USA
Mobile: +1.415.741.6996

- Corina is beginning in-county team interaction later this week, but we can probably expect several months of transition depending on what is required for transfer of permits (if transfer is even needed), just as in Sierra Leone.
- 3 full time in-country PREDICT staff and 22 field team staff will be covered at least until end of June.
    - 11 field staff in Conakry (these staff may eventually be let go if we concentrate collection in the forest region)
    - 11 field staff in N'Zérékoré (these should be kept, given the current sampling plan)
- The in-country team and MB have not had contact with the Mission about the transition. Please advise how you would like to proceed with that, but our plan is to schedule a joint reach-out to introduce the transition and answer questions ASAP. Corina is in Senegal currently, but a call may be possible while she is there. In any case, it can be accomplished soon.

Looking forward to discussing further, and please let us know if you have further questions/concerns,
Jonna

On Fri, May 26, 2017 at 8:35 AM, Andrew Clements <aclements@usaid.gov> wrote:
Hi Jonna,

Sorry to pile more on your plate.

The mission in Sierra Leone is apparently getting confusing information about the Predict management transition and they are unclear about what happens to the existing staff. I told them to try to ignore the noise and that I would provide them with an update. I'm assuming the same might also happen in Guinea.

So, can you let me know:

* what is the planned timing of the management transitions in SL and G?

* which Predict partner(s) will assume management responsibility in SL and G and what person(s) will be the primary backstop(s) for these countries?

* do you know if the local staff in SL and G will be retained?

(Perhaps it would make sense to have a call with the 2 missions like we did this week for Zandra. Thoughts?)

Two other issues for SL:

1. What is the status of Predict sending a response to the letter from MAFFS? With the various pieces that have fallen into place in the last few days regarding the budget, are you feeling more comfortable (or at least less uncomfortable) committing to capacity building in SL? It would be nice, if possible, to have this issue taken care of before the USAID team visits in mid-June.

2. Are you also feeling more comfortable in moving ahead with more field sampling in SL (and Guinea and Liberia)?

Thanks!

Andrew

P.S. Not sure whether or not there are any opportunities for the visiting USAID to see some of Predict's work in SL. Kendra thought they were planning on going to the lab. Is there anything else nearby they could see or observe while in the neighborhood?

P.P.S. We should plan on proactively reaching out to missions in all other countries where Metabiota is either being replaced or its scope reduced so that we don't have unnecessary confusion for the missions and local staff.

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: Leilani Francisco <francisco@ecohealthalliance.org>
Sent: Tue, 29 Aug 2017 17:46:36 -0400
Subject: RE: P2-wide M&A cocktail hour, Sept 11!
To: Kevin Olival <olival@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>, Jonna Mazet <jkmazet@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Damien Joly <djoly@metabiota.com>, Simon Anthony <sja2127@columbia.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>
Cc: Anna Willoughby <willoughby@ecohealthalliance.org>, Brooke Genovese <bgenovese@ucdavis.edu>, Molly Turner <turner@ecohealthalliance.org>

Hi Kevin,
I'd be happy to join.
Best,
Leilani

From: Kevin Olival, PhD [mailto:olival@ecohealthalliance.org]
Sent: Tuesday, August 29, 2017 5:10 PM
To: Peter Daszak <daszak@ecohealthalliance.org>; Jonna Mazet <jkmazet@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@ucdavis.edu>; Damien Joly <djoly@metabiota.com>; Simon Anthony <sja2127@columbia.edu>; Tracey Goldstein <tgoldstein@ucdavis.edu>; Leilani Francisco <francisco@ecohealthalliance.org>
Cc: Anna Willoughby <willoughby@ecohealthalliance.org>; Brooke Genovese <bgenovese@ucdavis.edu>; Molly Turner <turner@ecohealthalliance.org>
Subject: P2-wide M&A cocktail hour, Sept 11!

Dear Simon, Tracey, and Leilani,

Peter, Jonna, CKJ, Damien and I are planning to meet up in person on Sept 11th (1st day of PREDICT NYC meeting) in lieu of a P2-wide Modeling & Analytics phone call. The plan would be to gather after the end of the first day, around 5pm, and meet before we all head over to dinner. We thought it would be a great idea to invite you all (lab and behavior leads) so that we could more broadly discuss M&A activities that cut across the project, and brainstorm the most useful M&A activities and projects for our respective teams going forward.

Peter would also like to go over our M&A slides for the next day so we can make any additional tweaks as needed.

Please let me know if you're available, and I'll follow up w a good place for us to meet.

Cheers,
Kevin

Kevin J. Olival, PhD
Vice President for Research

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New York, NY 10001

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From: Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
To: Ryland Marbray <rmarbray@usaid.gov>
Cc: Andrew Clements <aclements@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, "predictmgt@usaid.gov" <predictmgt@usaid.gov>
Subject: RE: New PREDICT-2 Motor Vehicle Purchase Request Y4 #2
Sent: Fri, 23 Mar 2018 17:23:06 +0000

Thank you, Ryland!

Elizabeth Leasure
Financial Operations Manager
One Health Institute
REDACTED *(cell)*
530-754-9034 (office)
Skype: ealeasure

From: Ryland Marbray [mailto:rmarbray@usaid.gov]
Sent: Friday, March 23, 2018 10:14 AM
To: Elizabeth Leasure
Cc: Andrew Clements; Alisa Pereira; Jonna Mazet; David John Wolking; predictmgt@usaid.gov
Subject: Re: New PREDICT-2 Motor Vehicle Purchase Request Y4 #2

Hi Elizabeth,

Please find attached an approval letter for a Toyota Hilux as requested.

On Tue, Mar 13, 2018 at 2:11 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:
Hi Andrew and Ryland. Please find attached a request to purchase one (1) new motor vehicle to facilitate implementation of PREDICT-2 activities in Sierra Leone. Vendor quotes are included in the purchase request document, and a manufacture waiver request is also attached. Please let me know if you need anything else to proceed with approving this request.

Thanks,
Liz

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

--

Ryland Marbray
Agreements/Contracting Officer

USAID Office of Acquisition & Assistance
M/OAA/E3
1300 Pennsylvania Ave., NW,
Rm. 567-B, SA-44
Washington, DC 20523

Phone: (202) 567-5328|rmarbray@usaid.gov

From: Ariful Islam <arif@ecohealthalliance.org>
To: Jonna Mazet <jkmazet@ucdavis.edu>
CC: Charles Kumakamba <ckumakamba@metabiota.com>;Nistara Randhawa <nrandhawa@ucdavis.edu>;Tracey Goldstein <tgoldstein@ucdavis.edu>;Jon Epstein <epstein@ecohealthalliance.org>;Karen Saylors <ksaylors@metabiota.com>
Sent: 5/23/2018 3:32:16 AM
Subject: Re: Invitation to participate in a special plenary session at IOHC Saskatoon

Dear Jonna:
Thank you so much for inviting us for this important event in the congress; it's my pleasure to attend in the plenary session .
The Nipah topic looks fine to me. I will work with Jon to finalize the slides and then share with you.
Jon, do you other suggestion regarding Nipah topic?

With best regards,
Arif

On Wed, May 23, 2018 at 8:23 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
Dear Arif, Charles & Nistara,
I would like to invite you to make a brief presentation (approx. 10 minutes each) and to be available for audience questions during a special plenary session at IOHC on Saturday 23rd Jun 12:30-14:00.

I am pleased to be able to offer you this opportunity to highlight our work in this important venue to an international audience, and I would appreciate, as would the listeners, your contributions greatly.

I think the following topics would be good -- do you agree? I am happy to work with you on the presentations in advance of the conference.

Changing the Future of Epidemic Response & Pandemic Prevention

- Shifting the response paradigm from reactive to proactive -- Jonna AK Mazet
- Rapid response & control lessons from Ebola in DRC -- Charles Kumakamba
- Nipah in Bangladesh: when epidemics become endemic
- Accurately forecasting viral spread -- Nistara Randhawa
- Strategy to understand new high consequence viral species -- Tracey Goldstein
- The Global Virome Project: assessing & mitigating risk from emerging zoonotic threats -- Jonna AK Mazet

Please let me know if you agree to participate & if you want any changes to the details above.
Thank you for considering,
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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+1-530-752-3630
onehealthinstitute.net

For scheduling and logistical issues, please contact:
Ms. Brooke Genovese
bgenovese@ucdavis.edu
+1-530-752-3630

From: Hannah <hannah@sciani.com>
To: [redacted]
Cc: Jonna Mazet <jkmazet@ucdavis.edu>, Cara Chrisman <cchrisman@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>
Subject: RE: SciAni call-in details
Sent: Mon, 22 Oct 2018 08:41:00 +0000

Thanks [redacted] – yes, 31st (8am your time/4pm UK time) would work very well.

I look forward to speaking with you then.

Best regards,

Hannah Fraser
Animation Editor
Sci Ani

T: +44 (0)1453 827934
W: www.sciani.com
E: hannah@sciani.com

From: [redacted]
Sent: 18 October 2018 21:59
To: Hannah <hannah@sciani.com>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>; Cara Chrisman <cchrisman@usaid.gov>; Dennis Carroll <dcarroll@usaid.gov>
Subject: RE: SciAni call-in details

Dear Hannah,

Would Oct 31 at 8am or Nov 1 at 8am CA time work for you?

Best,
[redacted]

[redacted]
Fellow
One Health Institute
School of Veterinary Medicine
University of California, Davis

From: Hannah [mailto:hannah@sciani.com]
Sent: Thursday, October 18, 2018 10:50 AM
To: [redacted]

Cc: Jonna Mazet <jkmazet@ucdavis.edu>; Cara Chrisman <cchrisman@usaid.gov>; Dennis Carroll <dcarroll@usaid.gov>
Subject: RE: SciAni call-in details

Thank you for being so understanding.

I look forward to hearing from you again soon.

Best regards,

Hannah Fraser
Animation Editor
Sci Ani

T: +44 (0)1453 827934
W: www.sciani.com
E: hannah@sciani.com

From: REDACTED
Sent: 18 October 2018 15:56
To: Hannah <hannah@sciani.com>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>; Cara Chrisman <cchrisman@usaid.gov>; Dennis Carroll <dcarroll@usaid.gov>
Subject: Re: SciAni call-in details

Dear Hannah,

I'm sorry to hear REDACTED of course we can reschedule. Next week we will be traveling internationally, so I will get back to you with other suggested dates.

Take care,
REDACTED

Sent from my iPhone, please excuse any typos.

From: Hannah <hannah@sciani.com>
Sent: Thursday, October 18, 2018 7:33:32 AM
To: REDACTED
Cc: Jonna Mazet; Cara Chrisman; Dennis Carroll
Subject: RE: SciAni call-in details

Hi REDACTED

Apologies for my delay in getting back to you.

Would it be possible to rearrange/reschedule our call for next week?

[redacted] but I will be back in the office as normal next week to ensure we can get started as soon as possible?

I do apologies again for any inconvenience caused and I look forward to speaking with you soon. Please do let me know a date/time that suits.

Best regards,

Hannah Fraser
Animation Editor
Sci Ani

T: +44 (0)1453 827934
W: www.sciani.com
E: hannah@sciani.com

From: [redacted]
Sent: 18 October 2018 00:24
To: Hannah <hannah@sciani.com>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>; Cara Chrisman <cchrisman@usaid.gov>; Dennis Carroll <DCarroll@usaid.gov>
Subject: SciAni call-in details

Hi Hannah,

Here are our call-in details for tomorrow. Please do not hesitate to let me know if you need to reschedule - I completely understand.
I'm cc'ing some my colleagues in case they are able to join.
>>
Thursday Oct 18, 8am CA time, 4pm UK time

Join from PC, Mac, Linux, iOS or Android: [redacted]

Or iPhone one-tap :
US: +16699006833,, [redacted] or +16468769923, [redacted]
Or Telephone:
Dial(for higher quality, dial a number based on your current location):

US: +1 669 900 6833 or +1 646 876 9923
Meeting ID: REDACTED
International numbers available: REDACTED

Best,
REDACTED

REDACTED
Fellow
One Health Institute
School of Veterinary Medicine
University of California, Davis

From: Ben Oppenheim <boppenheim@metabiota.com>
Sent: Fri, 17 Jan 2020 15:17:45 -0800
Subject: Re: Question re. BCA
To: Jonna Mazet <jkmazet@ucdavis.edu>, Stefano M Bertozzi <sbertozzi@berkeley.edu>
Cc: Cara Chrisman <cchrisman@usaid.gov>, Peter Daszak <daszak@ecohealthalliance.org>, REDACTED REDACTED Nita Madhav <nmadhav@metabiota.com>, Dean Jamison <djamison@uw.edu>, Dennis Carroll Nicole Stephenson <nstephenson@metabiota.com>, Samtha Maher <maher@ecohealthalliance.org>, Kierste Miller <kmiller@metabiota.com>

Stef mentioned that the UC Washington DC building (UCDC). That seems ideal to me.. very well located, and I remember there being a few good medium-sized conference rooms.
Jonna / Stef: would it be possible for either of you to book via your institutions? I'm also happy to reach out, but not sure if non-UC people can make a booking request

On Thu, Jan 16, 2020 at 11:19 AM Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> National Academies (Keck Center) is an option, but we will have to pay for the room. It would be worth you checking into options for room rental at a hotel or flex space, as well. I don't think CDC is a great option, just because we don't have major involvement from them on this piece at this point.
> Let me know what option you and costs

On Wed, Jan 15, 2020 at 2:36 PM Ben Oppenheim <boppenheim@metabiota.com> wrote:

> hi Cara
> I think we're looking at approx. 10-12 people in person, with 3-4 people dialing in remotely.

All: any suggestions re: backup locations? UCDC and the Nat'l Academies come to mind
all the best,
Ben

On Wed, Jan 15, 2020 at 2:30 PM Cara Chrisman <cchrisman@usaid.gov> wrote:

> Hi All,
> My apologies, the logistics have been a bit of a challenge with finding a room within USAID. Could you confirm the exact time and expected number of attendees? As folks are still moving into this new building, we don't yet have access to some of the larger rooms and there are some issues with the rooms being booked for partial days. While I continue to look at this, I would suggest we also consider backup options just in case I can't find something.

Best,
Cara

Cara J. Chrisman, PhD
Deputy Division Chief
Emerging Threats Division
Office of Infectious Disease, Bureau for Global Health
U.S. Agency for International Development (USAID)
Desk: (202) 916-2065
Cell: (202) 674-3231
E-mail: cchrisman@usaid.gov

On Wed, Jan 15, 2020 at 5:28 PM Peter Daszak <daszak@ecohealthalliance.org> wrote:

Great – thanks.

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: Ben Oppenheim [mailto:boppenheim@metabiota.com]
Sent: Wednesday, January 15, 2020 5:03 PM
To: Peter Daszak
Cc: [REDACTED] Nita Madhav; Dean Jamison; Dennis Carroll; Jonna Mazet; Nicole Stephenson; Cara Chrisman; nwolfe@metabiota.com; Samtha Maher; erubin@metabiota.com; Kierste Miller
Subject: Re: Question re. BCA

Absolutely, yes. I believe that USAID will be hosting, but would ask our USAID colleagues to confirm if that's correct

all the best,

Ben

On Wed, Jan 15, 2020 at 1:59 PM Peter Daszak <daszak@ecohealthalliance.org> wrote:

> Just wanted to check in with everyone – are we still having an in-person BCA meeting on the 12th Feb in DC?
>
> 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
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> 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: Ben Oppenheim [mailto:boppenheim@metabiota.com]
Sent: Wednesday, January 8, 2020 12:16 AM
To: [redacted] Nita Madhav; Dean Jamison; Dennis Carroll; Jonna Mazet; Nicole Stephenson; Cara Chrisman; nwolfe@metabiota.com; Samtha Maher; Peter Daszak; erubin@metabiota.com; Kierste Miller
Subject: Re: BCA updates and two requests

Dear GVP colleagues

Happy new year -- I hope that you all had a wonderful holiday and start to 2020.

We would of course be happy to prepare a short brief about the BCA activities, as well as a few slides, around the end of January. Please let us know if you have an exact deadline, or any specs we should bear in mind (e.g., how much background would be needed on methodologies employed, such as catastrophe modeling).

Since the last meeting we have made progress on several fronts, including:

Exceedance probability estimates

- Built on existing data sets and compiled additional data on losses from historical epidemics (cases, deaths), to provide an actuarial view of risk
- Developed preliminary baseline ("no GVP") estimates for Infrequent spillover / moderate R_0 pathogens (e.g., filoviruses) and respiratory non-influenza viruses (e.g., coronaviruses), with continuing development work on other catalogs
- Developed methodology for modeling GVP impacts on exceedance probability curves (e.g., via reduced spark risk, improved time to intervention)

Characterization of GVP impact

- Research into PREDICT-driven capacity building improvements, with preliminary indications of improvement to response time.
- Synthesized research (e.g. new key informant interviews) on potential GVP benefits for new product development

Economic losses

- Finalized methodology for estimating statistical value of lives lost (saved)
- Compiled revised dataset on shocks to national income from historical epidemics

Looking forward to our call next week,

Ben (and colleagues)

On Wed, Dec 18, 2019 at 2:58 PM Eri Togami <etogami@ucdavis.edu> wrote:

Hi Dean, Ben, and Nita,

I am reaching out with updates and two requests related to BCA. Recently, a 501(c)3 non-profit organization was formed for the Global Virome Project, and GVP will be holding its first Board meeting in mid-February 2020. During the meeting, we would like to brief board members about the BCA group's great activities to date.

Would you be able to develop **a short brief about the BCA group's activities (1-2 page max), and a couple of slides**? Our timeline would likely be around the end of January, prior to the BOD meeting. My colleagues copied here can follow up with an exact deadline.

In addition to the request above, would you be able to share quick updates (some bullet points in an email to the group cc'ed here) about the progress of the analysis since our last meeting?

Please send your response to my colleagues copied here, as I will be handing my GVP work over. Thank you very much for your hard work.

Best wishes,

Eri

--

Ben Oppenheim, PhD

Director, Product Development // Senior Scientist

510.501.1097

--

Ben Oppenheim, PhD

Director, Product Development // Senior Scientist

510.501.1097

--
Ben Oppenheim, PhD
Director, Product Development // Senior Scientist

510.501.1097

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Ben Oppenheim, PhD
Director, Product Development // Senior Scientist

510.501.1097

From: Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
To: Andrew Clements <aclements@usaid.gov>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>, predict Sympa List <predict@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>, Alisa Pereira <apereira@usaid.gov>, Amalhin Shek <ashek@usaid.gov>, Cara Chrisman <cchrisman@usaid.gov>
Subject: RE: PREDICT Y6Q1 Expend by Country/Category Report
Sent: Tue, 18 Feb 2020 21:07:59 +0000

Yes.

Elizabeth Leasure
Financial Operations Manager
One Health Institute
REDACTED *(cell)*
530-754-9034 (office)
Skype: ealeasure

From: Andrew Clements <aclements@usaid.gov>
Sent: Tuesday, February 18, 2020 12:53 PM
To: Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>; predict Sympa List <predict@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>; Alisa Pereira <apereira@usaid.gov>; Amalhin Shek <ashek@usaid.gov>; Cara Chrisman <cchrisman@usaid.gov>
Subject: Re: PREDICT Y6Q1 Expend by Country/Category Report

On track to complete by 3/31/20?

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 Tue, Feb 18, 2020 at 6:22 PM Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:
Hi Andrew. As of the Y6Q1 report, we have $108K left in cost share to certify in order to fulfill our LOP cost share obligation of $3.7M for PREDICT.

Thanks,
Liz

Elizabeth Leasure
Financial Operations Manager
One Health Institute
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530-754-9034 (office)
Skype: ealeasure

From: Andrew Clements <aclements@usaid.gov>
Sent: Saturday, February 15, 2020 12:54 AM
To: Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>; predict Sympa List <predict@ucdavis.edu>; Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>; Alisa Pereira <apereira@usaid.gov>; Amalhin Shek <ashek@usaid.gov>; Cara Chrisman <cchrisman@usaid.gov>
Subject: Re: PREDICT Y6Q1 Expend by Country/Category Report

Thanks, Liz.

Can you provide a status update on Predict's progress meeting the cost share? (I don't regularly get the standard form that includes this 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 Feb 14, 2020, at 10:47 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

> Hi Andrew. Please find attached the PREDICT Y6Q1 Expenditure by Country and Category report for October-December 2019. If you have any questions, please let me know.
>
> Thanks,
> Liz
>
> *Elizabeth Leasure*
> *Financial Operations Manager*
> *One Health Institute*
> REDACTED *(cell)*
> *530-754-9034 (office)*
> *Skype: ealeasure*
>
> <PREDICT Quarterly Financial Report_By Country-Category_Y6Q1_final.pdf>

From:	David J Wolking <djwolking@ucdavis.edu>
To:	Simon Anthony <sja2127@columbia.edu>
CC:	Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Prof. Jonna Mazet <jkmazet@ucdavis.edu>;Kevin Olival <Olival@ecohealthalliance.org>;Peter Daszak <daszak@ecohealthalliance.org>;predict@ucdavis.edu <predict@ucdavis.edu>
Sent:	7/17/2020 2:34:11 PM
Subject:	P2 Emerging Disease Insight - Requested review

Hey Simon,

As we are finalizing all P2 content for the final report, our UCD team had another look at the Emerging Disease Insights and think they need a careful senior review to see if any updates or revisions are needed.

Could you please take a look at the attached EDI: Improving Viral Sampling...?
These are short so hopefully not a big lift. They were already online and shared with USAID, so we are hoping for a relatively quick turnaround on feedback, by the end of the month of possible.

Thanks and please let me know if you have any questions,

David

--
David J. Wolking
Senior Manager, Global Programs, One Health Institute
Global Operations Officer, PREDICT Project of USAID Emerging Threats Division
Senior Manager, PREEMPT Project
School of Veterinary Medicine
University of California, Davis

Improving Viral Sampling & Discovery: Viral Accumulation Curves

The USAID PREDICT project conducts viral surveillance in wildlife, domestic animals, and humans at a global scale. PREDICT teams in >30 countries worldwide have collected and tested samples from wildlife species and have discovered over 1,000 viruses from viral families known to threaten human health. Wildlife species are prioritized for surveillance based on existing scientific knowledge about the likelihood of viral spillover from these hosts to humans [1]. PREDICT aims to characterize viral diversity in mammals, which may represent hundreds of thousands of unknown viral species [2], before they emerge in people or domestic animals.

CHALLENGE: How many samples do we need to collect and test to find most of the viruses in a given host?

PREDICT seeks to discover currently unknown viruses in wildlife species that have been poorly sampled prior to this project. We need tools to tell us when we have discovered a majority of the viruses naturally circulating in a species so that we can stop sampling that species and move on to others.

SOLUTION: Viral accumulation curves

The PREDICT team uses statistical modeling techniques to solve this problem. Specifically, we are applying species richness estimation methods to determine when a wildlife species has been comprehensively sampled [3]. These estimates, typically used in ecological studies and modified here for viral discovery, can be expressed visually as viral accumulation curves.

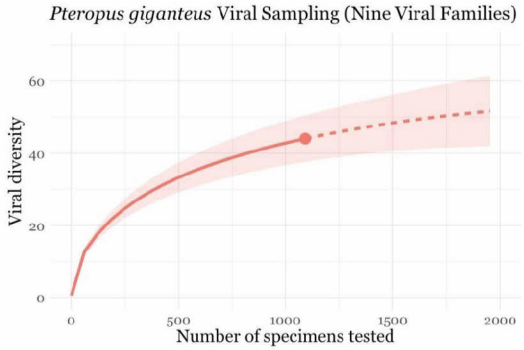

Figure 1: Viral accumulation curve for the bat species Pteropus giganteus, adapted from Anthony et al. [4]. The x-axis of the graph shows the number of specimens, or samples, tested for nine viral families, and the y-axis indicates the number of unique viruses disovered in those samples. The solid line represents observed data, and the dashed portion represents statisticallyderived estimates of viral diversity if sampling of P. giganteus is continued. The upward trend of the dashed line suggests that P. giganteus likely harbors more than the 44 viruses that were observed in this particular viral sampling effort.

The theory underlying these methods is that if sampling efforts repeatedly result in detection of a similar set of viruses, then sampling is likely to be near completion (i.e., most of the species present have been observed). In contrast, if sampling continues to generate observations of new viruses, then the pathogen community likely has many species yet to be observed. Early work by the PREDICT project used these techniques to estimate that the bat species Pteropus giganteus hosts a total of 58 viruses across nine viral families (Fig. 1) [4] and that 58 viruses rhesus macaques (Macaca mulatta) host 283 viruses across 14 viral families [5].

These pilot studies provide a proof-of-concept that has now been applied to other PREDICT data (Fig. 2). In addition to their usefulness in helping guide sampling strategies, comparison among accumulation curves can identify host species that consistently carry high viral diversity, potentially making them more important viral reservoirs. Viral observations can also be aggregated at coarser levels of host taxonomy to allow comparison of host genera or families, for example.

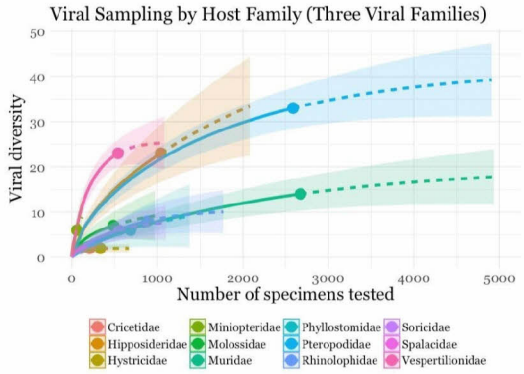

Figure 2: Viral accumulation curve for the bat species Pteropus giganteus, adapted from Anthony et al. [4]. The x-axis of the graph shows the number of specimens, or samples, tested for nine viral families, and the y-axis indicates the number of unique viruses disovered in those samples. The solid line represents observed data, and the dashed portion represents statisticallyderived estimates of viral diversity if sampling of P. giganteus is continued. The upward trend of the dashed line suggests that P. giganteus likely harbors more than the 44 viruses that were observed in this particular viral sampling effort.

CONCLUSIONS

- Species accumulation curves are a statistical method used to estimate the amount of unobserved diversity in a biological sample. For PREDICT, we have applied these techniques to our viral discovery data obtained from wildlife hosts.
- Application of viral accumulation curves using data from the PREDICT project, which is collected and tested in a consistent manner across species and countries, can improve our knowledge of which host taxa carry particularly rich viral assemblages and which host taxa require additional sampling efforts.
- These analytical tools support the overarching goals of PREDICT: to standardize global viral surveillance, more completely characterize novel viruses in reservoir host populations, and generate critical baseline knowledge to help prevent viral spillover.

REFERENCES

1. Olival KJ, Hosseini PR, Zambrana-Torrelio C, Ross N, Bogich TL, et al. (2017) Host and viral traits predict zoonotic spillover from mammals. Nature 546: 646–650. doi:10.1038/nature22975
2. Carroll D, Daszak P, Wolfe ND, Gao GF, Morel CM, et al. (2018) The Global Virome Project. Science 359: 872-874. doi: 10.1126/science.aap7463
3. Chao A, Chiu C-H. (2016) Species Richness: Estimation and Comparison. Wiley StatsRef: Statistics Reference Online. 1–26. doi: 10.1002/9781118445112.stat03432.pub2
4. Anthony SJ, Epstein JH, Murray KA, Navarrete-Macias I, Zambrana-Torrelio CM, et al. (2013) A strategy to estimate unknown viral diversity in mammals. mBio 4: e00598-13. doi:10.1128/mBio.00598-13
5. Anthony SJ, Islam A, Johnson C, Navarrete-Macias I, Liang E, et al. (2015) Non-random patterns in viral diversity. Nature Communications 6: 8147. doi: 10.1038/ncomms9147

From: David J Wolking <djwolking@ucdavis.edu>
To: Ava Sullivan <sullivan@ecohealthalliance.org>
CC: David Wolking <djwolking@ucdavis.edu>;Peter Daszak <daszak@ecohealthalliance.org>;Aleksei MacDurian <chmura@ecohealthalliance.org>;Johnson Christine Kreuder (ckjohnson@ucdavis.edu) <ckjohnson@ucdavis.edu>;Jonna Mazet <jkmazet@ucdavis.edu>;Eunah Regina Cho <eecho@ucdavis.edu>
Sent: 9/8/2020 8:44:48 AM
Subject: Re: China files for PREDICT report

Great, thanks!

On Tue, Sep 8, 2020, 7:45 AM Ava Sullivan <sullivan@ecohealthalliance.org> wrote:
Hi David,
The team thinks the report looks great! We agree that this pubs listed can be called 'Publications' rather than 'References,' and need not be linked in the reports. We are happy with this as the final.

Thanks,
Ava

Ava Sullivan
Project Manager and Research Assistant

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www.ecohealthalliance.org

EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation

On Sep 7, 2020, at 7:23 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi Peter and team,

Just making sure you received this message and understand the urgency. We really need to wrap up the country volume to dedicate our team to the final push for the global report.

Thanks, we really appreciate your efforts for a quick turnaround,

David

On Fri, Sep 4, 2020 at 10:54 AM David J Wolking <djwolking@ucdavis.edu> wrote:
Hi Peter and Ava,

Here is the proof of the China report and the two special features. The report has an extensive reference list but these are not linked in the report text. If you could read through and let us know where to put them, that would be great, otherwise perhaps we just rename them from references to "Publications" or something if they are all China specific?

If you have any other changes please let us know ASAP. We plan to book this with the other reports in our volume 2 package and want to share with USAID early next week to complete the CoAg report requirements.

Thanks,

David

On Fri, Aug 28, 2020 at 8:13 AM David J Wolking <djwolking@ucdavis.edu> wrote:
Thanks Peter, received.

David

On Thu, Aug 27, 2020 at 10:34 PM Peter Daszak <daszak@ecohealthalliance.org> wrote:

Apologies for delay – just digging through the pile to get to it eventually

Cheers,

Peter

Peter Daszak

President

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USA

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EcoHealth Alliance develops science-based solutions to prevent pandemics and promote conservation

--
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--
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Senior Manager, Global Programs, One Health Institute
Global Operations Officer, PREDICT Project of USAID Emerging Threats Division
Senior Manager, PREEMPT Project

From: Cara Chrisman <cchrisman@usaid.gov>
Sent: Thu, 5 Jan 2017 14:39:13 -0500
Subject: GVP - 2 Follow-up Questions
To: Jonna Mazet <jkmazet@ucdavis.edu>, Elizabeth S Chase <eschase@ucdavis.edu>
Cc: Dennis Carroll <dcarroll@usaid.gov>
SOW.governance.9.27.16.docx

Hi Jonna & Liz,
We had two other items which there wasn't time to discuss on today's call and wanted to check in regarding your thoughts and updates:

1) RFP - We wanted to see what the thinking and/or progress was on UC Davis issuing an RFP for the GVP. In case it's helpful, the SOW for the governance work that Dennis developed is attached.

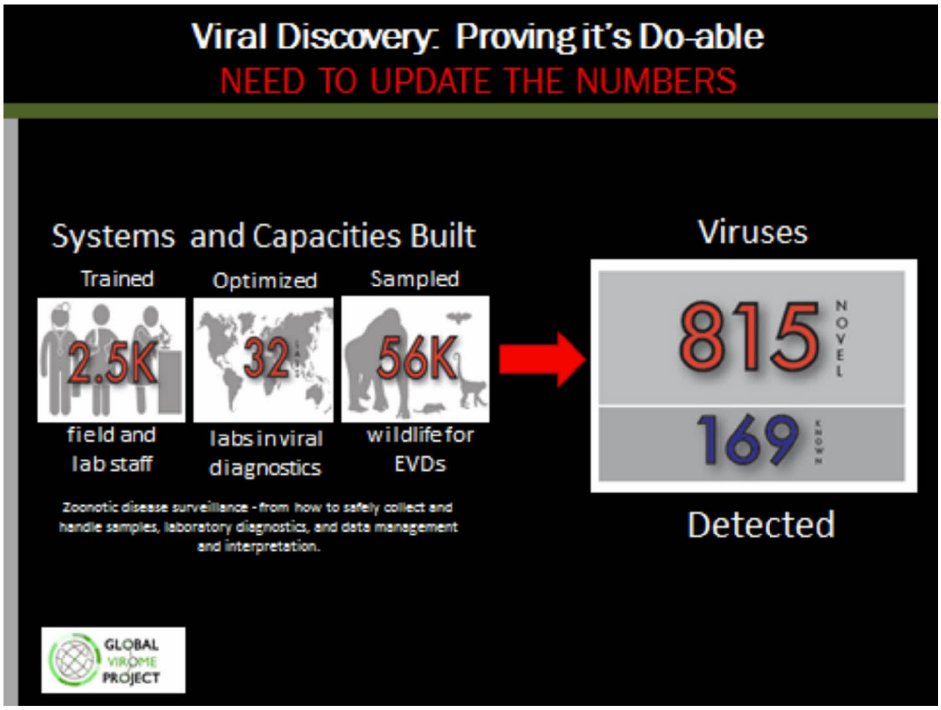
2) Pitch deck - We were hoping to include the slide below in the GVP pitch deck and wanted to check in to see if you had updated numbers?

Thanks!
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

---------- Forwarded message ----------
From: **Dennis Carroll** <dcarroll@usaid.gov>
Date: Thu, Jan 5, 2017 at 2:17 PM
Subject:
To: Cara Chrisman <cchrisman@usaid.gov>



--
Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

Developing a Governance Structure for the Global Virome Project
Consultancy Terms of Reference

Summary

The Global Virome Project (GVP) is envisioned as a highly interoperable global partnership involving multiple stakeholders spanning national governments, the commercial sector, non-governmental organizations, international organizations, donors and foundations. The governance of the GVP requires a framework that enables a partnership that is globally coordinated while nationally implemented. The consultant(s) will review Global Virome Project documents, interview key stakeholders and assess past and current models for governance to develop recommendations for governance options for GVP.

Background

The Global Virome Project is envisioned as a global partnership that, within 10 years, will develop of a comprehensive data-base on the planet's zoonotic viral threats in order to develop informed surveillance, preparedness, and prevention and encouraging countermeasure development well in advance of future epidemic events.

The GVP is committed to achieving this vision through core principles that:

- Embrace an international scope, while simultaneously fostering local ownership
- Promote equitable access to data and benefits
- Foster transparency
- Build country capabilities on an unprecedented scale

The GVP is being developed with the recognition that there is an urgency in generating a product over a finite time where the progress towards completion can be clearly assessed.

The success of GVP will be measured by its deliverables, which in the course of its 10 year lifespan will include:

- Detecting & identifying at least 99% of unknown zoonotic viral threats from wildlife and livestock hosts that can jump to people and into the food supply
- Characterizing the host range of the detected viruses (reservoirs and transmission hosts)
- Determining the geographic scope of nearly all zoonotic viruses to inform on risk and surveillance
- Monitoring the movement of detected viruses across hosts and regions

- Assessing the risk of spillover and epidemic potential by using data on detected viruses, including virologic characteristics, as well as behavioral, epidemiologic, and ecologic circumstances documented during sampling
- Prioritizing high-risk viruses for further characterization, surveillance targeting, research, and mitigation development
- Establishing a global surveillance network through local and global capacity enhancements (e.g. surveillance, field biology, lab proficiencies, biosafety)
- Strengthening in-country/regional laboratory and surveillance capacities to monitor for high-risk viruses across animal-human interfaces
- Establishing sample biobank(s) for further research
- Creating open-access database that includes sequence and metadata
- Making data and samples available for public health risk assessments and mitigation, as well as further detailed pathogen studies
- Providing new insights into virus and host biology and ecology
- Identifying markers for transmission and pathogenicity for high-risk viruses
- Establishing ethical and legal frameworks for sample, data, information, and benefit sharing, including authorship and intellectual property

Like the Human Genome Project, the Global Virome Project has the big science potential to be truly transformative – triggering advances in science and global health beyond its targeted scope. Characterizing the global zoonotic viral diversity and ecology would also result in a wide range of advances in human and animal health, including the development of critical new technologies and diagnostics, risk mitigation strategies, and eventually vaccine advances.

The Global Virome Project requires a strategic approach that fosters global ownership. The initiative will need to build an alliance of partners that is reflective of an inclusive global venture while harnessing a diverse pool of technical, operational and financial resources. GVP will also need to ensure that there are transparent and equitable agreements in place for sharing of viral samples and their likely products, including vaccines and therapies. These will build on the CBD Nagoya Protocol and The Pandemic Influenza Products Framework, negotiated by WHO to address concerns about benefits derived from influenza research.

Consultancy Objectives

The primary objective of the consultancy is to develop a conceptual framework for the resolution of governance issues through the creation of appropriate governance mechanisms. Specifically the framework must:

- articulate the scope of technical/operational governance and its relationship to enclosing institutional governance processes and realities;

- detail key aspects of the operational/technical governance, including legal issues, as it relates to GVP as an enabling and integration tool for operational infrastructures within national jurisdictions and regional or international collaborations;
- highlight and make recommendations regarding critical priority governance issues that need to be addressed and associated roles for major actors.

Consultancy deliverables

The principle deliverables from the consultancy are:

a. A document describing the GVP Governance Framework, including an executive summary.
b. A guidance note which will help the Chair of the Governance Working Group to conduct a structured discussion and decision making process on priority issues and the way to address them.
c. A draft project work plan for the development of the GVP technical architecture. The outline of a project plan will be prepared for the GVP Advisory Board. This document will be more fully fleshed out based on the deliberations of the GVP Advisory Board.

Consultancy approach

Overview

The approach of the consultancy will be to examine, with the aid of specific examples of needs, the interoperability requirements implied by the scope of GVP. Taking a broad view, with practicalities in mind, an overall governance framework will be derived, through which the development of specific governance and technical interoperability arrangements can be facilitated. Although the details of such arrangements are beyond the scope of this consultancy, specific examples need be included in the final document to explain the simplifying abstractions of the conceptual framework. It should be noted the detail of these examples is purely illustrative, and not proscriptive, since there is no intention to preclude meaningful stakeholder participation or technical validation processes.

Breaking the scope of the problem into more manageable pieces is a key aspect of the approach. This can be further refined using a formal system modelling approach, with emphasis on identifying key components at the global and national level. Best practice in the GVP architecture provides a basic separation of concerns, whereby the problem can be broken down into a set of issues with minimal interdependence.

Stakeholder engagement

Scope of Work

1. To provide a description of the governance arrangements of the selected sample of international partnerships, with a focus on but not limited to Global Health partnership (GHP) with particular reference to the following organizational features and processes:

    a. Organizational structures of governing bodies including size and roles of executive, advisory and consultative (e.g., Partners Forum or association) and/or other bodies, including technical working groups

    b. Representation/participation in governing bodies at the global level. This will include information on which organizations are represented and the basis of decision-making. Special attention would be paid to representation and participation of developing country governments, civil society and the private sector, with illustrations of mechanisms to enable direct member inputs as well as any arrangements that have been developed to facilitate networks through which constituencies can be represented indirectly. This component will also characterize the nature of commercial and civil society representation and participation on governing bodies;

    c. Relationship to national level governing bodies that may oversee and manage in- country operations linked to the Global agenda;

    d. Accountability: (i) of Secretariats to members (indicator: appointment and line management of senior secretariat staff); (ii) of members to Secretariat (legal obligations and sanctions); (iii) of members to one-another (indicator: systems which encourage member compliance with governing body decisions); and (iv) of GHP to international governance structures;

    e. Transparency would be described in relation to proxy indicators consisting of Internet availability and timeliness of: (i) strategic plans or equivalent; (ii) annual performance report; (iii) data on funding sources; (iv) annual expenditures; and (v) minutes of governing bodies; governance and appointment processes;

    f. Oversight will be assessed by using the proxy of policy and practice of screening potential commercial partners for social corporate responsibility (based on information on Internet site).

Methodology

This SOW will be achieved through the following methods: (i) a review of GHP (and other relevant non-health global partnerships) articles of incorporation or equivalent documents including standing orders of committees and bodies; (ii) reviews of evaluations and existing studies; (iii) interviews with key stakeholders.

1. To elicit the perspectives of experts (i.e., evaluators) and stakeholders on the governance issues and concerns which arise in relation to the above-mentioned governance variables. More specifically, to seek views on why some seemingly 'bad' practice exists and how to encourage good practice in relation to representation; accountability; transparency; and oversight. Furthermore, this component will also canvas views on good practice within the governing bodies of the sample of global partnerships in relation to: (i) incorporating the views of developing country stakeholders; (ii) facilitating participation of developing country representation; (iii) modifying procedures to compensate for capacity constraints among partners from resource poor settings or efforts to develop capacity to enable potential partners from resource constrained environments to be involved in global partnerships; (iv) countering domination of the governing body by individual partners; (v) facilitating improved bilateral participation; (vi) facilitating input from country level representatives of northern partners; and (vii) accountability to international governance structures and coordination with relevant international programs.
    a. This objective would be achieved by: (i) synthesizing concerns raised and best practice identified in various evaluations and literature; and (ii) polling a sample of stakeholders of the selected GHP and other relevant partnerships (e.g., secretariats and partner organizations) on their views of governance issues and practices good and bad. GHPs and informants would be selected on the basis of an evaluation or the above descriptive exercise having turned up good or poor practice. The poll would be conducted on the basis of a short questionnaire instrument emailed to 15-20 respondents followed up by brief phone interview with a sub-sample to elicit their views on governance practices.

2. An exploration of the governance features which encourage positive partnering processes and outcomes in the selected global partnerships. In particular, to synthesize existing information and stakeholder perspectives on what accounts for good or bad: (i) information sharing; (ii) common goal and strategy specification coordination; (iii) agreed, explicit and complementary roles and responsibilities (i.e., coordination); and (iv) skills transfer.
    a. This objective would be achieved by: (i) synthesizing information in existing GHP evaluations; and (ii) polling the views of a sample of stakeholders of the selected GHPs (these questions would be included on the above-mentioned questionnaire instrument).

3. Stakeholder input to the governance framework is central to this process. Drawing on best practice and prioritised action areas allows the consultation to focus on critical issues and identifying gaps in the needs analysis. While developing the governance framework, targeted stakeholder engagement is critical to capture representative stakeholder requirements.
    a. This objective would be achieved by (i) interviewing representative stakeholders in GVP from national governments, international and donor organizations, commercial sector, foundations, and academia.

Deliverables/Outputs

The following is the schedule for submission of deliverables:

a. Produce and submit presentation of recommended themes and preliminary operational considerations for the draft development framework for the "Governance Structure": Two weeks after start of contract;

b. Present the draft GVP "Governance Structure" for comments to two weeks after the initial draft document;

c. Finalize and submit the GVP "Governance Structure" by ensuring all comments and suggestions incorporated that were made during interview/discussion/focus group discussion in both electronic and hard copy formats at the completion of the assignment XX months from the start of the consultancy.

d. Produce and present an operational document outlining the next steps/action items that should be taken. Present a draft of the operational document two weeks after the GVP "Governance Structure" has been initially reviewed and conceptually approved.

e. Finalize and submit the operational document ensuring that all comments and suggestions were incorporated in both electronic and hard copy formats at the completion of the assignment XX months from the start of the consultancy.

Sent: Mon, 9 Jan 2017 14:22:58 -0800
Subject: Re: GVP - 2 Follow-up Questions
From: Jonna Mazet <jkmazet@ucdavis.edu>
To: Cara Chrisman <cchrisman@usaid.gov>
Cc: Elizabeth S Chase <eschase@ucdavis.edu>, Dennis Carroll <dcarroll@usaid.gov>

Hi Cara,
We are working on a new slide for you with updated numbers. Stay tuned!
Regarding the RFP, I haven't been able to work on that with our business contracts office yet, as we just green-lighted through UCD before the holidays. We've been a huge reporting push, as you know.

Before I can go very far, I'll need to know if you have a dollar ceiling in mind and from where, how, and when the funds will come Any ideas on those?

See you tomorrow,
Jonna

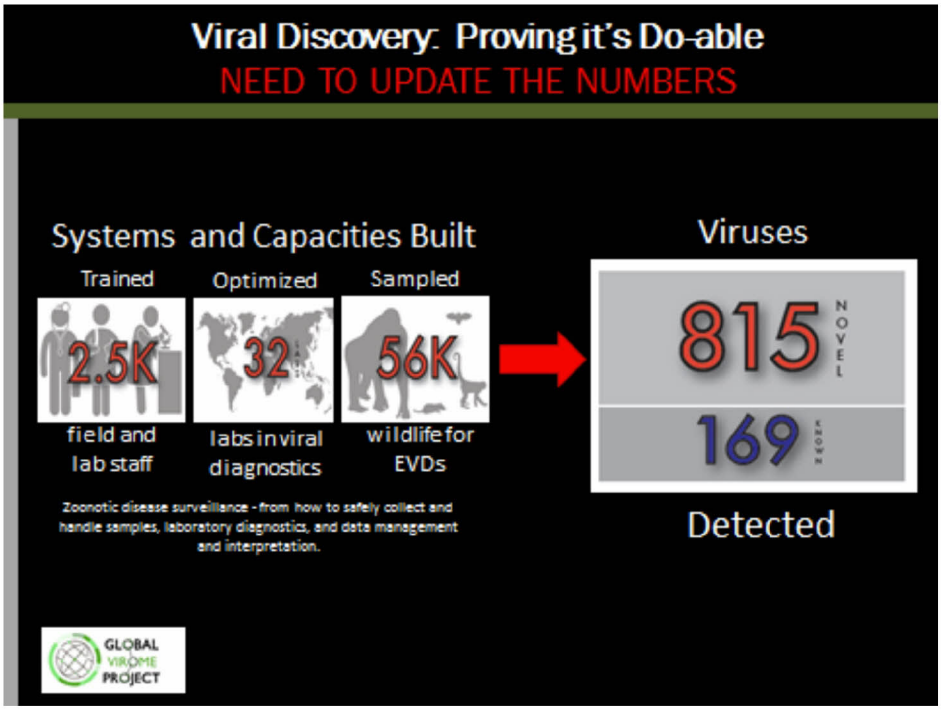
On Thu, Jan 5, 2017 at 11:39 AM, Cara Chrisman <cchrisman@usaid.gov> wrote:

> Hi Jonna & Liz,
> We had two other items which there wasn't time to discuss on today's call and wanted to check in regarding your thoughts and updates:
>
> 1) RFP - We wanted to see what the thinking and/or progress was on UC Davis issuing an RFP for the GVP. In case it's helpful, the SOW for the governance work that Dennis developed is attached.
>
> 2) Pitch deck - We were hoping to include the slide below in the GVP pitch deck and wanted to check in to see if you had updated numbers?
>
> Thanks!
> 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

---------- Forwarded message ----------
From: **Dennis Carroll** <dcarroll@usaid.gov>
Date: Thu, Jan 5, 2017 at 2:17 PM
Subject:
To: Cara Chrisman <cchrisman@usaid.gov>



--
Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

From: Elizabeth Leasure <ealeasure@ucdavis.edu>
To: Andrew Clements <aclements@usaid.gov>, Alisa Pereira <apereira@usaid.gov>
Cc: Cassandra Louis Duthil <clouisduthil@usaid.gov>, Cara Chrisman <cchrisman@usaid.gov>, David John Wolking <djwolking@ucdavis.edu>, "Jonna Mazet" <jkmazet@ucdavis.edu>, Katherine Leasure <kaleasure@ucdavis.edu>
Subject: PREDICT International Travel - GVP Beijing Update
Sent: Fri, 13 Jan 2017 01:11:33 +0000

Hi Andrew. Please note that **Jaime Sepulveda** and **Nathan Wolfe** have cancelled their participation in the Beijing meeting due to scheduling conflicts.

I have also been advised of an update to the ITA of participant, Gian Luca Burci. He will depart from Geneva, Switzerland rather than Washington, DC, as that is where he is now based. Lastly, I have included a new ITA for Danielle Anderson, who was recommended to the GVP Beijing meeting by another who was not able to attend (LinFa Wang; not included in original ITA).

1. Burci (China): $1,700 airfare/$377 (Beijing) max daily per diem
2. Anderson (China): $1,200 airfare/$377 (Beijing) max daily per diem

Travel requests:

1. UC Davis would like to request approval for Gian Luca Burci to travel from Geneva, Switzerland to Beijing, China from February 4-8, 2017 for a Global Virome Project Working Group meeting to take place February 5-7, 2017.

Trip purpose: Mr. Burci is an invited participant of the Global Virome Project. The meeting will provide an opportunity for working groups to meet and collaborate on project strategies development. There will also be a press event to announce the China National Virome Project.

2. UC Davis would like to request approval for Danielle Anderso to travel from Singapore to **Beijing, China** from February 4-8, 2017 for a Global Virome Project Working Group meeting to take place February 5-7, 2017.

Trip purpose: Ms. Anderson is an invited participant of the Global Virome Project. The meeting will provide an opportunity for working groups to meet and collaborate on project strategies development. There will also be a press event to announce the China National Virome Project.

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

From:	Andrew Clements <aclements@usaid.gov>
To:	Jonna Mazet <jkmazet@ucdavis.edu>
CC:	Alisa Pereira <apereira@usaid.gov>;Kramer, Lisa <lkramer@usaid.gov>;Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Brian Bird <bhbird@ucdavis.edu>;Tracey Goldstein <tgoldstein@ucdavis.edu>;Kirsten Gilardi <kvgilardi@ucdavis.edu>;David J Wolking <djwolking@ucdavis.edu>
Sent:	1/19/2017 3:07:27 AM
Subject:	Re: Update from Rwanda

Thanks. Please continue to pass along any updates you get from the field.

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 Jan 19, 2017, at 1:52 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

FYI -- update from Julius below,
Jonna

The ROHSC met this morning (Rwanda Agriculture Board,Rwanda Biiomedical Center (Ministry of Health), P&R,and PREDICT) and left Kigali for Rusizi. Both Julius and Jean Claude are part of the team (along with Jean Felix Kinani working for P&R, and a senior technician from RBC). At 4 pm they were interviewed by Voice of America Radio (Kinyarwanda version) for an hour, with locals calling in and ROHSC members helping Isidore Gafarasi, Director of Veterinary Services for RAB, to respond to questions. They got to Rusizi late this evening, and Gafarasi did another interview with National Radio of Rwanda (Rusizi Branch) with the District Veterinary Officer in Rusizi. Tomorrow morning early they will head out to the Bugarama sector of the Rusizi River to investigate reported wild birds mortalities.

PS: No new updates from Uganda today.

From: Andrew Clements <aclements@usaid.gov>
Sent: Thu, 19 Jan 2017 21:14:05 +0100
Subject: Re: Uganda update
To: Jonna Mazet <jkmazet@ucdavis.edu>
Cc: Alisa Pereira <apereira@usaid.gov>, "Kramer, Lisa" <lkramer@usaid.gov>, David J Wolking <djwolking@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Brian Bird <bhbird@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 Jan 19, 2017, at 8:58 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

FYI,
J

---------- Forwarded message ----------
From: **Kirsten Gilardi** <kvgilardi@ucdavis.edu>
Date: Thursday, January 19, 2017
Subject: Fwd: AI update?
To: Jonna Mazet <jkmazet@ucdavis.edu>, "predict@ucdavis.edu" <predict@ucdavis.edu>
Cc: Mike Cranfield <REDACTED>, Benard Ssebide <REDACTED>

Jonna and David, sharing this update from Benard on what's going on in Uganda with the influenza outbreak in wild birds. -Kirsten

Begin forwarded message:

From: Benard Ssebide <REDACTED>
Subject: Re: AI update?
Date: January 19, 2017 at 1:27:57 AM PST
To: Kirsten Gilardi <kvgilardi@ucdavis.edu>
Cc: Mike Cranfield <REDACTED>

Dear Kirsten,

The N1 declaration was in error and CDC/UVRI expects to have the exact strain early next week. The NOHP has sent 3 teams to the 3 affected districts to ascertain the extent of deaths in wild fowls and to find out if there are any domestic fowls involved. There has been other reports of massive deaths of pigs in one of the affected districts and MAAIF suspects ASF. MAAIF is working with FAO to put up a plan and budget to investigate the reported domestic animal deaths. Otherwise the national response plan is not yet shared. The NOHTWG worked on it yesterday and expect to share it by the end of today. Basically the NOHP wanted one response plan developed and partners would pick or choose areas of their interest and or mandate that they may want to support.

Dr Benard Jasper Ssebide
Country Head Veterinarian
GORILLA DOCTORS - UGANDA
www.gorilladoctors.org *Saving a Species One Gorilla at a Time*

Uganda Country Coordinator
USAID Grantee | PREDICT-2 Project | Emerging Pandemic Threats (EPT) Program

Wildlife Department, College of Veterinary Medicine, Makerere University Campus
P O Box 72901 Kampala Uganda
T: +256-(0)77-291-8413
E: REDACTED

On Thu, Jan 19, 2017 at 3:20 AM, Kirsten Gilardi <kvgilardi@ucdavis.edu> wrote:

> Benard, any updates on the Uganda NOHP's meeting for sharing its response plan with partners?

We've now learned that it has not yet been confirmed as N1 — that it may well be N8. Any intell?

Please let us know what you know.

Thanks,

Kirsten

From: Lisa Kramer <lkramer@usaid.gov>
Sent: Fri, 20 Jan 2017 08:56:41 +0300
Subject: Re: Uganda update
To: Jonna Mazet <jkmazet@ucdavis.edu>
Cc: "AOTR/Grant Manager Andrew Clements" <AClements@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, David J Wolking <djwolking@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>

Many thanks Jonna and team!

Lisa Kramer
Regional Emerging Pandemic Threats Advisor
USAID/Kenya and East Africa
+254-20-862-2107 (O)
+ REDACTED

On Thu, Jan 19, 2017 at 10:58 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

FYI,
J

---------- Forwarded message ----------
From: **Kirsten Gilardi** <kvgilardi@ucdavis.edu>
Date: Thursday, January 19, 2017
Subject: Fwd: AI update?
To: Jonna Mazet <jkmazet@ucdavis.edu>, "predict@ucdavis.edu" <predict@ucdavis.edu>
Cc: Mike Cranfield REDACTED, Benard Ssebide REDACTED

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Begin forwarded message:

From: Benard Ssebide < REDACTED
Subject: Re: AI update?
Date: January 19, 2017 at 1:27:57 AM PST
To: Kirsten Gilardi <kvgilardi@ucdavis.edu>
Cc: Mike Cranfield REDACTED

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Dr Benard Jasper Ssebide

Country Head Veterinarian
GORILLA DOCTORS - UGANDA
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Wildlife Department, College of Veterinary Medicine, Makerere University Campus
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T: +256-(0)77-291-8413
E: REDACTED

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We've now learned that it has not yet been confirmed as N1 — that it may well be N8. Any intell?

Please let us know what you know.

Thanks,

Kirsten

From: Anna Willoughby <willoughby@ecohealthalliance.org>
Sent: Mon, 23 Jan 2017 12:39:59 -0500
Subject: P2-wide M&A Call, Thursday February 2nd
To: Jonna Mazet <jkmazet@ucdavis.edu>, Kevin Olival <olival@ecohealthalliance.org>, Peter Daszak <daszak@ecohealthalliance.org>, Chris Johnson <ckjohnson@ucdavis.edu>, Damien Joly <djoly@metabiota.com>
Cc: Elizabeth S Chase <eschase@ucdavis.edu>, Alison Andre <andre@ecohealthalliance.org>

Dear all,
Next week we will have the P2-wide M&A call on Thursday February 2nd at 9 am PST/12 pm EST. The [REDACTED] 719-457-[REDACTED] (password [REDACTED]). Please send any agenda items you would like to discuss, particularly any follow-up items from the semi-annual meeting.

This will begin standard monthly calls on the first Thursday of the month, with the next planned for March 2nd.

Thank you,
Anna

--

Anna Willoughby
Research Assistant

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

1.646.868.4713 (direct)
1.212.380.4465 (fax)
770.355.0690 (cell)

www.ecohealthalliance.org

From: Elizabeth S Chase <eschase@ucdavis.edu>
To: Cara Chrisman <cchrisman@usaid.gov>, " (dcarroll@usaid.gov)" <dcarroll@usaid.gov>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>
Subject: FW: GVP - 2 Follow-up Questions
Sent: Thu, 26 Jan 2017 22:35:27 +0000
GVP Slide with updated graphics.pptx

Hello Cara,
Here are the graphics with updated numbers you requested earlier this month. I apologize for the delay and hope it is not too late for their timely use. As I did not have the original slide, I have recreated it. And of course the graphics are attached as well.

If any additional adjustments are required, I stand ready to revise.
Best, Liz

From: Justin Cox
Sent: Wednesday, January 11, 2017 1:27 PM
To: Elizabeth S Chase <eschase@ucdavis.edu>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>
Subject: Re: GVP - 2 Follow-up Questions

Hi Liz,

Here are the updated numbers broken into individual files. Feel free to crop out the text if it's not needed. The latest numbers can be found in the updated graphic on this page. My plan is to work with David to update this periodically throughout the year. Let me know if this isn't what you were looking for.

Thanks!

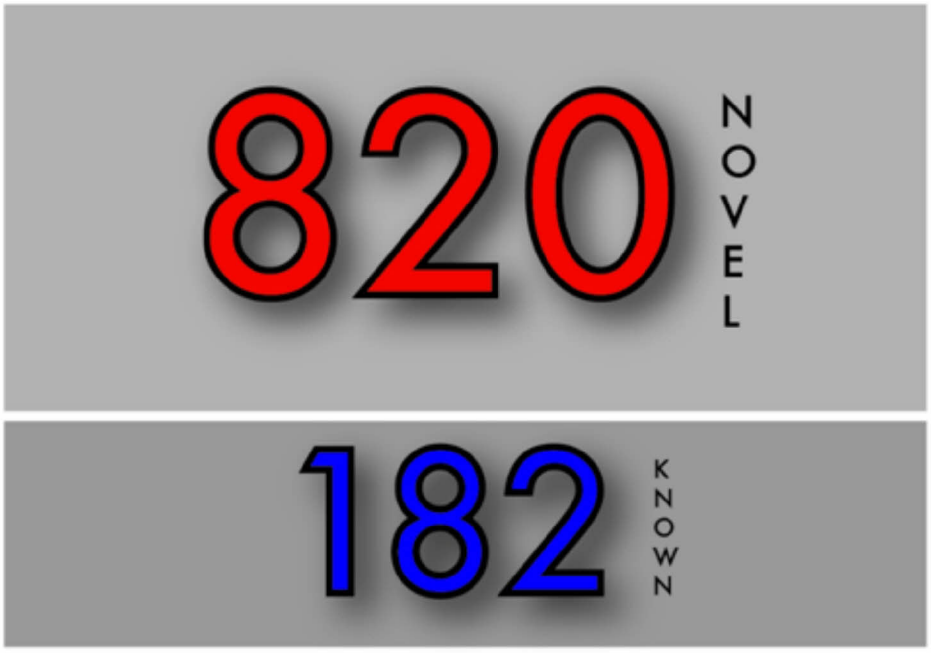
SAMPLED 74,000+ at-risk people, live- stock, and wildlife (nonhuman primates, bats, rodents, and other wild animals (including bushmeat samples) at human-animal interfaces with high-risk and opportunity for viral spillover.

TRAINED 3,300 government personnel, physicians, veterinarians, resource managers, laboratory technicians, and students in One Health skills including biosafety, surveillance, lab techniques, and disease outbreak investigation.

DEVELOPING & OPTIMIZING

low-cost methods for the detection of viral threats like Ebola and influenza and for the discovery of new viruses with 60 labs including those in national lab systems in up to 30 countries around the world.

DETECTING more than 1,000 unique viruses in animals and humans: 820 novel viruses and 182 known viruses (including Ebola and SARS) – the most comprehensive viral detection and discovery effort to date.



--
Justin Cox
Content Marketing Manager
UC Davis One Health Institute
Karen C. Drayer Wildlife Health Center
c: 530-219-5227

On Jan 11, 2017, at 12:48 PM, Elizabeth S Chase <eschase@ucdavis.edu> wrote:

Hi Justin,
We are in the process of updating the slide seen below and I am sending this along to you for new graphics. Some of the new graphics we recently purchased may be useful.
If you have questions, please let me know.
Thanks, Liz

From: [redacted] **On Behalf Of** Jonna Mazet
Sent: Monday, January 09, 2017 1:49 PM
To: Elizabeth S Chase <eschase@ucdavis.edu>
Subject: Fwd: GVP - 2 Follow-up Questions

Hi Liz,
So this is the kind of thing you could start to trouble shoot by getting current numbers from David. The numbers in Cara's slide are out of date. David can give new ones based on annual report, and Justin can

provide new graphics. I'll respond to Cara that we're working on an updated slide for them.
Thanks,
J

---------- Forwarded message ----------
From: **Cara Chrisman** <cchrisman@usaid.gov>
Date: Thu, Jan 5, 2017 at 11:39 AM
Subject: GVP - 2 Follow-up Questions
To: Jonna Mazet <jkmazet@ucdavis.edu>, Elizabeth S Chase <eschase@ucdavis.edu>
Cc: Dennis Carroll <dcarroll@usaid.gov>

Hi Jonna & Liz,

We had two other items which there wasn't time to discuss on today's call and wanted to check in regarding your thoughts and updates:

1) RFP - We wanted to see what the thinking and/or progress was on UC Davis issuing an RFP for the GVP. In case it's helpful, the SOW for the governance work that Dennis developed is attached.

2) Pitch deck - We were hoping to include the slide below in the GVP pitch deck and wanted to check in to see if you had updated numbers?

Thanks!
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)

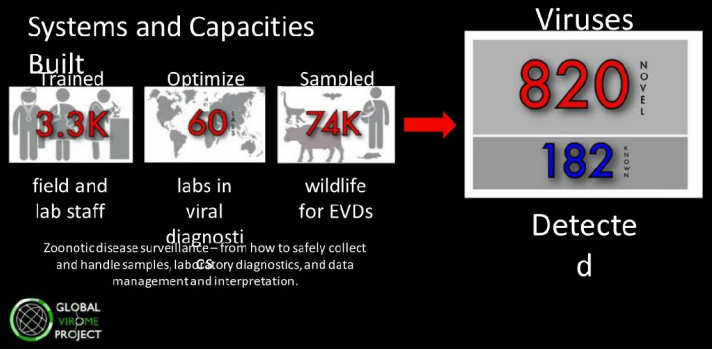
Desk: (202) 712-1161
Cell: REDACTED
E-mail: cchrisman@usaid.gov

---------- Forwarded message ----------
From: **Dennis Carroll** <dcarroll@usaid.gov>
Date: Thu, Jan 5, 2017 at 2:17 PM
Subject:
To: Cara Chrisman <cchrisman@usaid.gov>

--
Dr. Dennis Carroll
Director, Emerging Threats Program
Bureau for Global Health
U.S. Agency for International Development

Office: 202-712-5009
Mobile: REDACTED

<SOW.governance.9.27.16.docx>



From: Andrew Clements <aclements@usaid.gov>
To: Jonna Mazet <jkmazet@ucdavis.edu>
Sent: 1/27/2017 1:26:52 AM
Subject: Re: [predict] Continued issues with PREDICT transition

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 Jan 27, 2017, at 7:03 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Dear Zandra, Alisa, and Andrew,
As a follow-up to Karen's email detailing all of the issues regarding Marie-Josiane's employment issues, I want to confirm that I am in receipt of the invoice that she submitted to Metabiota for her hours in January, slated to be paid on her regular pay day (at the end of the month). There has been no break in employment or compensation, though she did receive a termination letter in order to proceed with her hiring at IPCI.
Of course, this begs the question as to why she would engage or complain about her situation at all. I remain distressed about communication issues and have been assured that she will be deterred from disturbing you in the future. I would appreciate your assistance in dissuading inappropriate communications regarding her employment situation with anyone other than her employer and any other unprofessional behavior. If any such behavior continues, we will have no choice but to question her ability to communicate professionally and represent the project in any capacity.
I also remain in constant contact with Metabiota and am monitoring their communication strategies and management plan in this difficult transition.
Thank you for your support,
Jonna

From: Alisa Pereira <apereira@usaid.gov>
Sent: Tue, 31 Jan 2017 12:55:27 -0500
To: Elizabeth Leasure <ealeasure@ucdavis.edu>, Shana Gillette <sgillette@usaid.gov>, "Andrew (GH/HIDN) Clements" <AClements@usaid.gov>, Predict inbox <predict@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>
Subject: [predict] Fwd: Please review: Clarification regarding required approvals for subawards and subcontracts (PREDICT-2)

Liz,

I am also looping in Shana. For the time being, she will need to do all AOR-type approvals (including travel, subawards/contracts, modifications,technical direction, and approvals, etc).

thanks
alisa

Alisa Pereira
Deputy Director
Emerging Threats Division
Global Health Bureau, USAID/Washington
Telephone: 202-712-5221
Cell: 202-997-9966
e-mail: apereira@usaid.gov

---------- Forwarded message ----------
From: **Elizabeth Leasure** <ealeasure@ucdavis.edu>
Date: Tue, Jan 31, 2017 at 12:50 PM
Subject: Please review: Clarification regarding required approvals for subawards and subcontracts (PREDICT-2)
To: Ryland Marbray <rmarbray@usaid.gov>
Cc: Andrew <aclements@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>

Hi Ryland. Below is a summary of several phone conversations and various email with Deborah to clarify the various approvals required for new subawards and new subcontracts with foreign governmental and non-foreign governmental entities. Now that PREDICT-2 has been transferred from Deborah's portfolio to yours, I would like to get your input regarding the accuracy of the summary below. Can you please review and let me know if any of the information is incorrect? We anticipate a large volume of new subaward and new subcontract requests in the next few months, and this information will really help us streamline our requests and facilitate speedy approvals to ensure maximum efficiency.

Also, can you please clarify what the process is for raising the ceiling for a subaward that was previously approved?

Thanks!

Liz

Elizabeth Leasure

One Health Institute

University of California, Davis

530-754-9034 (office)

REDACTED (cell)

From: Elizabeth Leasure
Sent: Friday, December 09, 2016 3:35 PM
To: 'Deborah Adeola'
Subject: Please review: Clarification regarding required approvals for subawards and subcontracts (PREDICT-2)

Hi Deborah. After our various discussions regarding new subaward and subcontract approvals, I drafted a summary of the information (see below) to share with subrecipients and clear up any confusion regarding who must approve subaward and subcontract requests for different types of entities. Would you mind reading through my summary and letting me know if anything is incorrect? When I refer to an "abbreviated process" I mean the email format worked out previously (see bottom of this email for format). Thank you again for taking the time to work through all of this with me. I really appreciate it.

Cheers,

Liz

Subawards with foreign governmental entities or parastatals (i.e. national labs, public universities or hospitals, etc.)

- Requires full review and approval by the Agreement Officer (AO) at USAID, regardless of the amount.
- A Determinations & Findings (D&F) is not required.

Subawards with non-foreign governmental entities (i.e. private universities or hospitals, non-profits, etc.)

- If less than $2,500,000, can be approved by the Agreement Officer Representative (AOR).
- If over $2,500,000, the AO must approve but an abbreviated process can be used. If you have such a request in the works, please follow up with me for details.
- A D&F is not required.

Subcontracts with foreign governmental entities or parastatals

- Requires full review and approval by the AO, regardless of the amount.
- Subcontracts with foreign government entities or parastatals to procure goods or services must be fixed price (see ADS 302.3.3.c).
- Because subcontracts with foreign governmental entities and parastatals must be fixed price and project budgets are developed and approved by USAID on an annual basis, we can only request new subcontracts for work to be completed during the current fiscal year. For example, a request for a new subcontract for molecular diagnostic testing services should only provide for testing to be completed through September 30, 2017. Once we get closer to the next fiscal year, we will then need to submit a request to extend and add funding/scope to the previously approved subcontract for work to be completed during the next budget period. I will follow up with details on the subcontract modification process when we get closer to the start of Year 4.

- A D&F will be required (see ADS 302.3.3.d). While the D&F process must be completed by the operating unit at USAID, reading through the requirements to make sure the various elements are addressed and/or the necessary information provided at the time of submission would be most helpful in expediting the process as much as possible. Unfortunately, we've been advised that the D&F process can take a while, so please plan accordingly.

- D&F's are specific to each proposed subcontract, so if you propose multiple subcontracts with a particular foreign government entity or parastatal, multiple D&F's would be required. A new D&F will not be required to amend approved subcontracts as described in the 3rd bullet above.

Subcontracts with non-foreign governmental entities

- If $150,000 or more, the subcontract must be approved by the Agreement Officer, but an abbreviated process can be used. If you have such a request in the works, please follow up with me for details.

- If under $150,000, prior approval is not required from USAID or UC Davis.

Abbreviated process:

Reference: Cooperative Agreement No. AID-OAA-A-14-00102; PREDICT-2

Subject: **[Insert name of proposed subrecipient] subaward**

Through: Andrew Clements, Agreement Officer's Representative;

Cc: Alisa Pereira, Senior Public Health Advisor

Dear Ms. Adeola:

On behalf of [insert partner organization name] and the Regents of the University of California, Davis campus, please see below a request for concurrence/approval to issue a subagreement to [insert name of proposed subrecipient] in [insert location of proposed subrecipient]. In developing its budget, [insert name of proposed subrecipient] in [insert location of proposed subrecipient] sought to offer exceptional value to USAID by combining realistic and reasonable cost estimates that reflect the complexity and needs of the program.

Subawardee: [insert name of proposed subrecipient] in [insert location of proposed subrecipient]

Subaward Program Title: PREDICT-2

Purpose: [Insert brief scope of work]

Anticipated Subaward POP: [insert subaward start date] through [insert subaward end date]

Subaward Ceiling: [insert not to exceed subaward ceiling]

Award Type: Subagreement

Elizabeth Leasure

One Health Institute

University of California, Davis

530-754-9034 (office)

REDACTED (cell)

From:	Andrew Clements <aclements@usaid.gov>
To:	Jonna Mazet <jkmazet@ucdavis.edu>;djwolking@ucdavis.edu <djwolking@ucdavis.edu>;ealeasure@ucdavis.edu <ealeasure@ucdavis.edu>
CC:	Alisa Pereira <apereira@usaid.gov>;sgillette@usaid.gov <sgillette@usaid.gov>
Sent:	1/31/2017 8:36:58 PM
Subject:	Predict AOR update

Apologies if there has already been an email or phone call on this subject. I'm still catching up on email while on TDY.

While I'm trying to find my AOR certificate in order to be officially switched back to Predict AOR, Shana will be acting AOR. Continue to send things to the Predict management list as usual.

Apologies for yet another AO change and the glitch with this and thanks for your infinite patience.

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:	Elizabeth S Chase <eschase@ucdavis.edu>
To:	Alison Andre <andre@ecohealthalliance.org>;Peter Daszak <daszak@ecohealthalliance.org>;William B. Karesh" <karesh@ecohealthalliance.org>
CC:	Jonna Mazet <jkmazet@UCDAVIS.EDU>;Amanda Fuchs <fuchs@ecohealthalliance.org>;Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>;Tracey Goldstein <tgoldstein@UCDAVIS.EDU>;David John Wolking <djwolking@UCDAVIS.EDU>;Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
Sent:	2/7/2017 2:07:20 PM
Subject:	RE: EcoHealth/UCDavis meeting in New York

Thank you Alison,
We look forward to your reply.
Cheers, Liz Chase

From: Alison Andre [mailto:andre@ecohealthalliance.org]
Sent: Tuesday, February 07, 2017 1:26 PM
To: Elizabeth S Chase ; Peter Daszak ; William B. Karesh
Cc: Jonna Mazet ; Amanda Fuchs ; Christine Kreuder Johnson ; Tracey Goldstein ; David John Wolking ; Elizabeth Leasure
Subject: Re: EcoHealth/UCDavis meeting in New York

Hi Liz,

EHA has an event in DC on April 6th so April 7th wouldn't work for us here. Let me check the availability of the folks here and I'll get back to you as soon as possible.

Best,
Alison

Alison Andre
Program Assistant

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 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 S Chase <eschase@ucdavis.edu>
Date: Friday, February 3, 2017 at 12:48 PM
To: Peter Daszak <daszak@ecohealthalliance.org>, "William B. Karesh" <karesh@ecohealthalliance.org>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>, Amanda Fuchs <fuchs@ecohealthalliance.org>, Alison Andre <andre@ecohealthalliance.org>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Elizabeth Leasure <ealeasure@ucdavis.edu>
Subject: EcoHealth/UCDavis meeting in New York

Greetings,
Jonna has asked me to find a time for the UCDavis group to travel to New York to meet with EcoHealth Alliance for a country-by-country review. The plan would be for UCDavis to meet at your convenience throughout the day with the country representatives you designate. Currently we have Jonna Mazet, Tracey

Goldstein, Christine Kreuder Johnson, David Walking and Liz Leasure hoping to attend.

The proposed date for the meeting is April 7, 2017. Is that date be a possibility for your EcoHealth group? If you have different dates to suggest, kindly consider dates after April 7, as this is the earliest that the UCDavis group could gather. I look forward to scheduling at a meeting time convenient for all.

Sincerely, Liz Chase

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

530-752-3630
eschase@ucdavis.edu

From: "Ogawa, V. Ayano" <VOgawa@nas.edu>
To: [redacted], "'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'>, "'eduardo.gotuzzo@upch.pe'" <'eduardo.gotuzzo@upch.pe'>, "'Jennifer.gardy@bccdc.ca'" <'Jennifer.gardy@bccdc.ca'>, "'Hughes, James M'" <jmhughe@emory.edu>, "'William B. Karesh'" <karesh@ecohealthalliance.org>, 'Gail Hansen' [redacted] "'Barton Behravesh, Casey (CDC/OID/NCEZID)'" <dlx9@cdc.gov>
Cc: "Mundaca-Shah, Ceci" <CMundaca@nas.edu>, "Tran, Thu Anh" <TTran@nas.edu>, 'Stephanie Calderone' <Stephanie.Calderone@asu.edu>, 'Elizabeth S Chase' <eschase@ucdavis.edu>
Sent: Mon, 13 Feb 2017 10:35:11 -0500
Subject: One Health WG Call #2 and #3

Dear One Health Work Group,

Thank you for your continued engagement in this important activity. We are excited about the launch of the work group, and are pleased to announce that Drs. Casey Barton Behravesh, Gail Hansen, and William Karesh are now part of the core group!

To continue our discussions, please fill out the following doodle polls below by **Thursday, Feb 16** so that we can schedule the next two conference calls. Please be sure to select the correct TIME ZONE (should be on the right side of the doodle page) before submitting your responses.

- Call #2 in March: http://doodle.com/poll/wrzw7uc4eyiw3yc5
- Call #3 in May: http://doodle.com/poll/hzfiazyn25ugwitc

As always, please let me know if you have any questions or concerns.

Best regards,
Ayano

V. Ayano Ogawa, S.M.
Associate Program Officer, Forum on Microbial Threats
Board on Global Health | Health and Medicine Division
The National Academies of Sciences, Engineering, and Medicine
500 Fifth Street, NW
Washington, DC 20001
Phone: 202.334.1349
http://www.nationalacademies.org/hmd/

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

From:	Jonna Mazet <jkmazet@ucdavis.edu>
To:	Kevin Olival, PhD <olival@ecohealthalliance.org>
CC:	Peter Daszak <daszak@ecohealthalliance.org>;Alison Andre <andre@ecohealthalliance.org>;predict@ucdavis.edu <predict@ucdavis.edu>;Anthony Ramos <ramos@ecohealthalliance.org>
Sent:	2/23/2017 10:53:39 PM
Subject:	Re: The Next Pandemic Could Be Dripping On Your Head : Goats and Soda : NPR

Do I have a copy of your reply to Andrew, etc?
J

On Thu, Feb 23, 2017 at 10:52 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
I know -- that happens,
J

On Thu, Feb 23, 2017 at 6:31 PM, Kevin Olival, PhD <olival@ecohealthalliance.org> wrote:
Thanks Jonna, we have dealt with this already earlier today and already replied to Andrew. Anthony, our EHA director of communications, is reaching out to NPR. Unfortunately, while NPR knew we were funded by USAID, it wasn't included in the second story, as it was (with a link to the UCD Predict site) in the first story. We are trying to correct this with NPR now for the second story, but unfortunately had no editorial control with the stories they put together and did not see them before they came out.

Cheers,
Kevin

On Feb 23, 2017, at 8:40 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Please draft a response to Andrew ASAP,
J

---------- Forwarded message ----------
From: **Andrew Clements** <aclements@usaid.gov>
Date: Thu, Feb 23, 2017 at 1:52 AM
Subject: The Next Pandemic Could Be Dripping On Your Head : Goats and Soda : NPR
To: Jonna Mazet <jkmazet@ucdavis.edu>, ealeasure@ucdavis.edu, djwolking@ucdavis.edu
Cc: Alisa Pereira <apereira@usaid.gov>, sgillette@usaid.gov, ashek@usaid.gov

There should have been a mention this work was funded by USAID.

http://www.npr.org/sections/goatsandsoda/2017/02/21/508060742/the-next-pandemic-could-be-dripping-on-your-head

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: Elizabeth Leasure <ealeasure@ucdavis.edu>
To: Andrew Clements <aclements@usaid.gov>
Cc: Jonna Mazet <jkmazet@UCDAVIS.EDU>, David John Wolking <djwolking@UCDAVIS.EDU>, Alisa Pereira <apereira@usaid.gov>, Amalhin Shek <ashek@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, Peter Daszak <daszak@ecohealthalliance.org>
Subject: RE: Follow up on IDEEL-like activity in Indonesia
Sent: Wed, 1 Mar 2017 18:32:28 +0000

Great, thanks! Monday the 13th it is.

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

From: Andrew Clements [mailto:aclements@usaid.gov]
Sent: Wednesday, March 01, 2017 10:06 AM
To: Elizabeth Leasure
Cc: Jonna Mazet; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette; Peter Daszak
Subject: Re: Follow up on IDEEL-like activity in Indonesia

Monday is fine.

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 Mar 1, 2017, at 6:07 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

> Hi Andrew. Can we schedule a call to touch base on this? We could discuss IDEEAL right after the 30 minute SMT call on 3/13, or we could try to schedule a 30 minute call tomorrow morning (8 am PST might work). Our preference would be 3/13 (since Jonna will just be getting back from Ghana later today), but please let us know how you would like to proceed.
>
> Thanks,
>
> Liz
> Elizabeth Leasure
> One Health Institute
> University of California, Davis
> 530-754-9034 (office)
> REDACTED (cell)
>
> ---
>
> **From:** Andrew Clements [mailto:aclements@usaid.gov]
> **Sent:** Wednesday, March 01, 2017 2:55 AM
> **To:** Elizabeth Leasure
> **Cc:** Jonna Mazet; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette
> **Subject:** Re: Follow up on IDEEL-like activity in Indonesia
>
> Thanks, Liz.
>
> *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 24, 2017, at 11:50 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

Hi Andrew. Jonna is in the field and likely unable to respond until next week, but I can give you a quick status update. We have a draft work plan and budget for the additional $200K we received through the P2 cooperative agreement that we are in the process of reviewing/finalizing as we speak. I expect that we will be able to finish processing fairly quickly once Jonna is back in Davis next week (barring any unforeseen distractions, that is ☺).

Thanks,
Liz

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

From: Andrew Clements [mailto:aclements@usaid.gov]
Sent: Friday, February 24, 2017 12:42 PM
To: Jonna Mazet
Cc: Elizabeth Leasure; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette
Subject: Re: Follow up on IDEEL-like activity in Indonesia

Hi team,

Can we get a status update on this?

Dan said he spoke with Peter and Tom about this in early December and that a plan had been made to connect the Indonesia mission and INDOHUN with the modeling team to ensure the approach in Indonesia was well synched with what is occurring in Malaysia. Tim says hasn't seen anything so far and they've been warned that if the companion USAID/Enviroment funding doesn't get spent soon because of further delays (it's been 4 months since I sent the email below) that funding is in danger of getting pulled back and used elsewhere. If that happens, then we'd have to question using the $200,000 of EPT funding for this activity.

Thanks!

Andrew

On Thu, Oct 20, 2016 at 4:45 PM, Andrew Clements <aclements@usaid.gov> wrote:
Hi Jonna,

I'm writing to let you know that within the budget number provided to you recently by August there is $200,000 earmarked for the to-be-determined Ideel-like work in Indonesia.

Our expectation is that PREDICT Indonesia will work with the Indonesia mission and PREDICT/HQ to develop an appropriate work plan for that amount of money. There is no particular deadline at this point in time for developing the work plan for the $200,000. August or I will approve the work plan when it had been finalized by your team.

I have already let the Indonesia mission know about the money and that they have to help develop the work plan.

Please let me know if you have any questions.

Andrew

--

Andrew 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
E-mail: aclements@usaid.gov

For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2

From: Andrew Clements <aclements@usaid.gov>
Sent: Fri, 3 Mar 2017 20:18:44 +0100
Subject: Re: current status of IDEEAL-like activity in Indonesia
To: Peter Daszak <daszak@ecohealthalliance.org>
Cc: Elizabeth Leasure <ealeasure@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Alisa Pereira <apereira@usaid.gov>, Amalhin Shek <ashek@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, Thomas Hughes <tom.hughes@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>

Truth be told, I consulted Wikipedia. However, I did know he was Welsh.

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 Mar 3, 2017, at 6:07 PM, Peter Daszak <daszak@ecohealthalliance.org> wrote:

> Wow – Andrew you really do know your British high-culture references – pretty impressive….
>
> Cheers,
>
> Peter
>
> **Peter Daszak**
> *President*
>
> EcoHealth Alliance
> 460 West 34th Street – 17th Floor
> New York, NY 10001
>
> +1.212.380.4473 (direct)
> +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 [mailto:aclements@usaid.gov]
> **Sent:** Thursday, March 2, 2017 3:44 PM
> **To:** Peter Daszak
> **Cc:** Elizabeth Leasure; Jonna Mazet; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette; Thomas Hughes; Evelyn Luciano
> **Subject:** Re: current status of IDEEAL-like activity in Indonesia
>
> Thanks, Peter. I'll let Tim know where things stand.
>
> While Sir Thomas John Woodward would have been a nice addition, I believe Tom Hughes is already proudly representing Wales on the Predict team.
>
> 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 Mar 2, 2017, at 8:31 PM, Peter Daszak <daszak@ecohealthalliance.org> wrote:

Dear All,

Just cc'ing Tom Hughes into this email chain, and removing 'Tom Jones', who's a famous Welsh singer as well as an amphibian disease scientist and is the one my auto-correct went to!

Please reply to this message and not the previous one…

Cheers,

Peter

Peter Daszak
President

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

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www.ecohealthalliance.org

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From: Peter Daszak
Sent: Wednesday, March 1, 2017 8:50 PM
To: 'Andrew Clements'; Elizabeth Leasure
Cc: Jonna Mazet; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette; Tom Jones (tjones@azgfd.gov); Evelyn Luciano
Subject: current status of IDEEAL-like activity in Indonesia
Importance: High

Hi Andrew – given that I might not be able to make the call with Monday 13th (might be on a flight to Davis!) I thought I'd just fill you in with what's happening on this collaboration. Apologies also but we didn't realize they were under pressure from their other funding source to get this collaboration moving rapidly.

That said, I did reach out to Tim and the Indohun team on December 20th to set up an initial call to scope out these activities. I think, with the holidays and then travel for some of our key team members, as well as Tim relocating for some time to Hawaii it's just been hard to get a time for a call. We have been progressing by putting together an initial plan of action from our end, and work out how this would fit in

with the IDEEAL extension, which we now have.

The latest news is that Tom reached back out to the INDOHUN group on Feb 10th, and I got an email from Prof. Wiku (INDOHUN) on the 24th Feb with a request for a phone call. I spoke with Tom and Dan about this yesterday and already emailed Prof Wiku to set up a call within the next 2 weeks to get the ball rolling.

I hope this helps and apologies if this hasn't been as rapid as you would like. We are committed to making this a useful collaboration and I'm sure you and Tim will see progress once we get our scoping call underway.

Cheers,

Peter

Peter Daszak
President

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

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From: Andrew Clements [mailto:aclements@usaid.gov]
Sent: Wednesday, March 1, 2017 1:06 PM
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Cc: Jonna Mazet; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette; Peter Daszak
Subject: Re: Follow up on IDEEL-like activity in Indonesia

Monday is fine.

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
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> Liz

Elizabeth Leasure
One Health Institute
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530-754-9034 (office)
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To: Elizabeth Leasure
Cc: Jonna Mazet; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette
Subject: Re: Follow up on IDEEL-like activity in Indonesia

Thanks, Liz.

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
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On Feb 24, 2017, at 11:50 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

> Hi Andrew. Jonna is in the field and likely unable to respond until next week, but I can give you a quick status update. We have a draft work plan and budget for the additional $200K we received through the P2 cooperative agreement that we are in the process of reviewing/finalizing as we speak. I expect that we will be able to finish processing fairly quickly once Jonna is back in Davis next week (barring any unforeseen distractions, that is ☺).
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> Thanks,
> Liz
>
> Elizabeth Leasure
> One Health Institute
> University of California, Davis
> 530-754-9034 (office)
> REDACTED (cell)
>
> **From:** Andrew Clements [mailto:aclements@usaid.gov]
> **Sent:** Friday, February 24, 2017 12:42 PM
> **To:** Jonna Mazet
> **Cc:** Elizabeth Leasure; David John Wolking; Alisa Pereira; Amalhin Shek; Shana Gillette
> **Subject:** Re: Follow up on IDEEL-like activity in Indonesia
>
> Hi team,
>
> Can we get a status update on this?
>
> Dan said he spoke with Peter and Tom about this in early December and that a plan had been made to connect the Indonesia mission and INDOHUN with the modeling team to ensure the approach in Indonesia was well synched with what is occurring in Malaysia. Tim says hasn't seen anything so far and they've been warned that if the companion USAID/Enviroment funding doesn't get spent soon because of further delays (it's been 4 months since I sent the email below) that funding is in danger of getting pulled back and used elsewhere. If that happens, then we'd have to question using the $200,000 of EPT funding for this activity.

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Please let me know if you have any questions.

Andrew

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Andrew Clements, Ph.D.
Senior Scientific Adviser
Emerging Threats Division/Office of Infectious Diseases/Bureau for Global Health
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E-mail: aclements@usaid.gov

For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2

From: Christine Kreuder Johnson <ckjohnson@ucdavis.edu>
To: PREDICTMGT <predictmgt@usaid.gov>
Cc: Jonna Mazet [redacted] Peter Daszak <daszak@ecohealthalliance.org>, Leilani Francisco <francisco@ecohealthalliance.org>, Megan M Doyle <mmdoyle@UCDAVIS.EDU>, Emily Hagan <hagan@ecohealthalliance.org>, David John Wolking <djwolking@UCDAVIS.EDU>, Elizabeth Leasure <ealeasure@UCDAVIS.EDU>
Subject: PREDICT activities update
Sent: Sat, 4 Mar 2017 04:10:36 +0000
PREDICT country activities tracker March 3 2017.xlsx

Dear Andrew, Alisa, and Shana,
Attaching here our summary of PREDICT in country activities to date. We have a new format because we're transitioning to using the EIDITH database for tracking surveillance activities.
Let us know if this works for you or if there's anything else you need.
Special thanks to all cc'd who contributed to this.
Chris

Christine Kreuder Johnson, VMD, PhD
Surveillance | Emerging Pandemic Threats PREDICT Program
Professor of Epidemiology
One Health Institute
School of Veterinary Medicine
University of California
Davis, CA 95616
+1-530-752-1238

Produced in Native Format

From: Christine Kreuder Johnson <ckjohnson@ucdavis.edu>
To: Jonna Mazet <jkmazet@ucdavis.edu>, Andrew Clements <aclements@usaid.gov>, Elizabeth Leasure <ealeasure@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>
Cc: Shana Gillette <sgillette@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Elizabeth S Chase <eschase@ucdavis.edu>
Subject: Re: Call to discuss future of surveillance with change to FAO scope
Sent: Tue, 7 Mar 2017 00:47:56 +0000

Thanks Jonna, sounds good.
/ckj

From: Jonna Mazet [REDACTED] on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
Date: Monday, March 6, 2017 at 3:12 PM
To: Andrew Clements <aclements@usaid.gov>, Christine Kreuder Johnson <ckjohnson@UCDAVIS.EDU>, Elizabeth Leasure <ealeasure@UCDAVIS.EDU>, David John Wolking <djwolking@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>
Cc: Shana Gillette <sgillette@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Elizabeth S Chase <eschase@ucdavis.edu>
Subject: Re: Call to discuss future of surveillance with change to FAO scope

Hi all,
I didn't see an email with a call-in number, so let's use the regular Predict line:
I'm slated to arrive at USAID at 9:30, so I'm guessing start time will be between 6:30 and 7 am Pacific. I will text when we get on if you want to confirm whether or not you will be joining.If there is another plan from the USAID team, please advise.See you/talk in the morning,Jonna
[REDACTED], Access code [REDACTED]

On Wed, Mar 1, 2017 at 3:50 AM, Andrew Clements <aclements@usaid.gov> wrote:
Hi Jonna,

Hope your trip to Africa went well.

When you are caught up, can we schedule a call with the people on this email to talk about how Predict moves forward with surveillance following the proposed changes to FAO's scope in Africa. This would include EHP and triangulated surveillance (but not MERS since we don't expect that to be affected).

Let us know when you and your team are available. Thursday and Friday this week work for me, but next week is also good.

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:	David J Wolking <djwolking@ucdavis.edu>
To:	Abel Ekiri <abekiri@ucdavis.edu>
CC:	Jonna Mazet <jkmazet@ucdavis.edu>;Woutrina A Smith <wasmith@ucdavis.edu>;William Karesh <karesh@ecohealthalliance.org>;Christine Kreuder Johnson <ckjohnson@ucdavis.edu>;Taylor Gabourie <tagabourie@ucdavis.edu>
Sent:	3/9/2017 12:26:30 PM
Subject:	Re: FAO-TZ stakeholder consultation meeting on re-orientation of activities

Thanks Abel,

Odd that there is a focus on the "5 priority zoonotic diseases" a few weeks before the CDC-led One Health zoonotic disease prioritization workshop eh? Please advocate for our interests in the discussions at the meeting (diplomatically of course as you so excellently do in these forums).

Looking forward to hearing about it next week and safari njema.

David

On Thu, Mar 9, 2017 at 8:32 AM, Abel Ekiri <abekiri@ucdavis.edu> wrote:

Hi David,

FYI - heading to Dar this evening to attend a 1-day meeting organised by FAO tomorrow Friday: *National Stakeholders Consultation Meeting on Re-orientation of the Endemic Pandemic Threat phase 2 Work Plan to GHSA Priorities*. Will be representing Prof, invited as one of the key in-country OH stakeholders. Meeting details in agenda and invitation attached.

From: David J Wolking <djwolking@ucdavis.edu>
Sent: Mon, 20 Mar 2017 15:55:27 -0700
Subject: Reminder: PREDICT EB Call - Wednesday March 23, 2017 @ 9:00AM PDT/12:00PM EDT
To: Amanda Fine [redacted] Brian Bird [redacted], Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Damien Joly <djoly@metabiota.com>, Eddy Rubin <erubin@metabiota.com>, Elizabeth Leasure <ealeasure@ucdavis.edu>, Jon Epstein <epstein@ecohealthalliance.org>, Karen Saylors <ksaylors@metabiota.com>, Leilani Francisco <francisco@ecohealthalliance.org>, "Murray, Suzan" <MurrayS@si.edu>, Peter Daszak <daszak@ecohealthalliance.org>, "Prof. Jonna Mazet" <jkmazet@ucdavis.edu>, "Prof. Woutrina Smith" <wasmith@ucdavis.edu>, Sarah Olson [redacted] Simon Anthony <sja2127@columbia.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, William Karesh <karesh@ecohealthalliance.org>
Cc: Alison Andre <andre@ecohealthalliance.org>, Amanda Fuchs <fuchs@ecohealthalliance.org>, Ava Sullivan <sullivan@ecohealthalliance.org>, Evelyn Luciano <luciano@ecohealthalliance.org>, Emma Lane <lane@ecohealthalliance.org>, Molly Turner <turner@ecohealthalliance.org>, Megan Doyle <mmdoyle@ucdavis.edu>, Dawn Zimmerman <Zimmermand@si.edu>, Taylor Elnicki <telnicki@metabiota.com>

Hi there,
Just a reminder about this week's PREDICT EB call: Wednesday March 23, 2017 @ 9:00AM PDT/12:00PM EDT.

The call-in information is the same as always: [redacted]; Access code: [redacted]

I'll follow-up with an agenda shortly, so please feel free to share any items for discussion.

David

From: Kirsten Gilardi <kvgilardi@ucdavis.edu>
To: Anthony, Simon J. <sja2127@cumc.columbia.edu>
CC: Jonna Mazet <jkmazet@ucdavis.edu>;Baric, Ralph S <rbaric@email.unc.edu>
Sent: 3/21/2017 1:23:48 PM
Subject: Re: mBio press release

Great Simon, no problem!

On Mar 21, 2017, at 12:25 PM, Anthony, Simon J. <sja2127@cumc.columbia.edu> wrote:

Dear all -

Just spoke to a science writer who is doing a piece for mBio on the MERS-like paper. I recommended she (Karen Blum) contact each of you to get insights for into the sample collection (Kirsten), PREDICT (Jonna) and the reverse genetics (Ralph). Hope that is ok.

Cheers
S.

Simon J Anthony, D.Phil
Assistant Professor, Department of Epidemiology
Center for Infection and Immunity, Columbia University

722 West 168th Street, 17th Floor
NY, NY, 10032

Email: sja2127@cumc.columbia.edu
Mobile: 760-500-4639
Office: 212-342-0558

From: Andrew Clements <aclements@usaid.gov>
Sent: Thu, 23 Mar 2017 13:12:51 +0100
Subject: Re: Monkeypox outbreak in ROC
To: Jonna Mazet <jkmazet@ucdavis.edu>
Cc: PREDICTMGT <predictmgt@usaid.gov>, "predict@ucdavis.edu" <predict@ucdavis.edu>

thanks!

On Thu, Mar 23, 2017 at 5:20 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

FYI,
J

---------- Forwarded message ----------
From: **Karen Saylors** <ksaylors@metabiota.com>
Date: Wed, Mar 22, 2017 at 8:13 AM
Subject: Re: Monkeypox outbreak in ROC
To: "predict-outbreak@ucdavis.edu" <predict-outbreak@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>
Cc: David John Wolking <djwolking@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>

Hello everyone.
I would like to provide you with an update from our Country Coordinator today on the MPX outbreak.
At Monday's MOH DGMLM meeting on March 20, the working group reviewed and validated the epidemic report dated March 9, 2017 (attached). The Country Coordinator will send us the most updated report as soon as it is corrected and disseminated.

This report is in French but to summarize salient points:
—up through March 8, there had been 20 suspected cases and 3 deaths in the administrative districts of Bétou, Enyellé, Dongou et Impfondo.
—they've provided an epi age and sex breakdown of 10 of these cases on p.2. Apparently, information on the the 10 cases from Manfouété (Dongou) was inadequate to be able to ascertain age/sex, so they are not included.
—On p 4 we have a map of where suspected and confirmed MPX cases were located, as well as deaths/survivors.
—On the last page, you have a list of needs for the response effort, but it is not clear whether certain materials have been requested/provided by specific organizations yet.

A joint mission "CDC - Experts Congo" traveled today to the department of Likouala. The DGELM has requested "biosecurity material" from PREDICT, which I assume means PPE, but I have requested a specific list of what they are requesting, which I hope to have and share tomorrow.

Thanks,
Karen

From: <[redacted]> on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
Date: Friday, March 17, 2017 at 2:51 PM
To: Karen Saylors <ksaylors@metabiota.com>
Cc: "preduict-outbreak@ucdavis.edu" <preduict-outbreak@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>
Subject: Re: Monkeypox outbreak in ROC

Thanks, Karen.
Keep us posted if you receive more info or requests for support.
Jonna

On Fri, Mar 17, 2017 at 11:43 AM, Karen Saylors <ksaylors@metabiota.com> wrote:

Good morning.

I received some follow up from our Country Coordinator this morning regarding MPX in Congo. The MoH General Director, Head of Epi and Disease Control, has called a meeting with country partners for Monday, March 20th.

Mostly Congolese entities have been convoked, as well as UNICEF and UN, but not projects like PREDICT specifically. CC will follow up with action items on Monday.

Please find attached and translated below the Technical Update that Col Bagamboula provided to MOH Epi and Disease Control Department today, in his role as Military Health Technical Director, not as PREDICT CC:

In the Likouala Department, the first cases of the disease were reported in 2003, and since then, training took place in our country with the support of the US CDC for the recognition and surveillance of this disease.

To date, partial investigations in the district of Enyelle and Betou, as well as cases from the Manfouete village in the district of Dongou and those notified in Impfondo, equate to twenty (20) for the number of people suffering from this disease. Patients ages varies between 4 and 40 years. Of these 20 cases, three deaths have been verified: two deaths in the camp of Dignonga (in Manfouete, district of Dongou) and one in Mouale (district of Enyelle). Difficult access to certain areas of the Department limits investigation capacity and thus knowledge of the situation in remote areas. In parallel, an outbreak of measles has also been declared in the same Department.

In response to these two epidemic threats, the Directorate General of Epidemiology and Disease Control (DGELM), the World Health Organization (WHO) and the Office of the High Commissioner for Refugees (UNHCR) Techniques at the central level, sent delegates to support the department in investigating and preparing the response: a national response plan against Monkeypox and measles was developed. The international NGO "Land Without Borders", which is a UNHCR medical partner, has provided personnel for the investigation and notification of cases in Enyellé, Bétou and Dongou.

Formal instructions were given to the Chief of the Military Zone of Defense No. 6 Impfondo, who must ensure the awareness and protection of law enforcement officers and their families against these two outbreaks. The latter works in collaboration with the Departmental Director of Health of Likouala.

For your information, the following measures have been taken to reduce the mortality and morbidity associated with Monkeypox and measles in Likouala:

- Coordination: set up and operationalize a local epidemic management committee

- Epidemiological surveillance: reporting and investigating 100% of suspect cases that meet operational definitions;

- Responsive vaccination against measles: vaccinate at least 95% of the target population in all districts;

- Communication and community mobilization: informing at least 90% of the population about the two threats and the prevention measures;

- Case management: to take charge, according to national protocols, of 100% of cases examined in health centers;

- Control of infection: apply general hygiene measures in all health facilities;

- Logistical support: provide logistical support to contain the infection;

- Post-epidemic surveillance: take all necessary measures to end the epidemic to learn lessons and avoid a resurgence of cases.

--
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/CAO5tDrFRDoqBxwTv87iYBQtAEeaW91W5oWGWudswc5bwkKAt0A%40mail.gmail.com.

--

Andrew 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
E-mail: aclements@usaid.gov

For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2

From: Peter Daszak <daszak@ecohealthalliance.org>
To: Cara Chrisman <cchrisman@usaid.gov>, "Kevin Olival, PhD" <olival@ecohealthalliance.org>
Cc: Brooke Watson <watson@ecohealthalliance.org>, Yasha Feferholtz <feferholtz@ecohealthalliance.org>, "George F Gao (gaof@im.ac.cn)" <gaof@im.ac.cn>, "Jonna Mazet (jkmazet@ucdavis.edu)" <jkmazet@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Nathan Wolfe <nwolfe@metabiota.com>, "Dennis Carroll (DCarroll@usaid.gov)" <DCarroll@usaid.gov>, Alison Andre <andre@ecohealthalliance.org>
Subject: RE: GVP targeting abstract for PMAC
Sent: Thu, 30 Mar 2017 03:37:59 +0000

Great suggestions – will edit these in. Prob will need to show some numbers otherwise it might seem vague, but I'll re-hash them to hedge our bets a bit…

Cheers,

Peter

Peter Daszak
President

EcoHealth Alliance
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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: Cara Chrisman [mailto:cchrisman@usaid.gov]
Sent: Wednesday, March 29, 2017 5:20 PM
To: Kevin Olival, PhD
Cc: Peter Daszak; Brooke Watson; Yasha Feferholtz; George F Gao (gaof@im.ac.cn); Jonna Mazet (jkmazet@ucdavis.edu); Eddy Rubin; Nathan Wolfe; Dennis Carroll (DCarroll@usaid.gov); Alison Andre
Subject: Re: GVP targeting abstract for PMAC

Hi Peter,

Thanks for pulling this together and sharing. Dennis and I are happy to be included as authors and our names & affiliations look good (although, if easy enough, could you add my middle initial? Cara J. Chrisman).

In the process of reviewing, we had two items of feedback for your consideration before submitting:

1) Given when this will be presented (2018), we thought it might be helpful to, instead of including the current numbers, discuss the strategies which you are currently undertaking related to modeling all of this and state that the updated numbers will be shared at the meeting during the presentation. As it stands, these numbers may be out-of-date to some extent and don't indicate the whole story.

2) It would be helpful if documents such as this include not only the impact on human health, but the destructive impact on livestock/animal health. Especially considering the intent to include the food security angle in PMAC, and our outreach to those folks related to the GVP overall, including that would be much appreciated.

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

On Wed, Mar 29, 2017 at 3:38 PM, Kevin Olival, PhD <olival@ecohealthalliance.org> wrote:
Looks great Peter, no edits and happy to be coauthor.

Cheers,
Kevin

Kevin J. Olival, PhD
Associate Vice President for Research

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On Mar 29, 2017, at 3:27 PM, Peter Daszak <daszak@ecohealthalliance.org> wrote:

Hi everyone – Abstracts for PMAC are due tomorrow by mid-afternoon US Eastern time. I've drafted one on the Modeling and Analytics WG's efforts to target the GVP program to get maximum impact.

Please have a quick look at it and let me know if it's ok to include you as authors. I'm not looking for major edits, but if there are typos, or address problems, please let me know that as well. The max. word count is 300 and this is 290.

Cheers,

Peter

Peter Daszak

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<PMAC GVP targeting.docx>

From: Peter Daszak <daszak@ecohealthalliance.org>
To: Jonna Mazet <jkmazet@ucdavis.edu>, Cara Chrisman <cchrisman@usaid.gov>
Cc: "Kevin Olival, PhD" <olival@ecohealthalliance.org>, Brooke Watson <watson@ecohealthalliance.org>, Yasha Feferholtz <feferholtz@ecohealthalliance.org>, "George F Gao (gaof@im.ac.cn)" <gaof@im.ac.cn>, Eddy Rubin <erubin@metabiota.com>, Nathan Wolfe <nwolfe@metabiota.com>, "Dennis Carroll (DCarroll@usaid.gov)" <DCarroll@usaid.gov>, Alison Andre <andre@ecohealthalliance.org>
Subject: GVP numbers...
Sent: Thu, 30 Mar 2017 04:31:40 +0000

By the way – I know the numbers in the abstract are slightly different from the ones we've been using up to now. This follows reviewer's comments on the paper, which ask for us to put another viral family in. I'll explain on the call tomorrow so you all feel comfortable about them.

We also now have a standard error for all the estimates – something the reviewer asked for. The good news is that the estimates of viral diversity aren't radically different from the ones we've been using (1.7 million vs. 1.3). The costs for the total 100% mammalian virome is not actually higher, but our value of $7.5 billion now includes all mammals, water birds (not just anatidae) and limited domestic animal sampling. The good news is that we now have a much more palatable cost when we go to an 85% coverage of around $1.69 billion ($169 million annually for 10 years).

Even better than that – given the current political climate, we can go to Russia to cover much of the work on influenzas because that's where the water birds breed….

Cheers,

Peter

Peter Daszak
President

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From: [redacted] **On Behalf Of** Jonna Mazet
Sent: Wednesday, March 29, 2017 5:34 PM
To: Cara Chrisman
Cc: Kevin Olival, PhD; Peter Daszak; Brooke Watson; Yasha Feferholtz; George F Gao (gaof@im.ac.cn); Eddy Rubin; Nathan Wolfe; Dennis Carroll (DCarroll@usaid.gov); Alison Andre
Subject: Re: GVP targeting abstract for PMAC

Hi Peter,
Thanks for including -- happy to be a co-author.
My main comment is consistent with Cara's. I'm concerned with using these prices and numbers as they are quite escalated compared to those we have prepared for publication and have been discussing with donors. While they may be true, and we need to evaluate that further, I don't think we, as a group, have come to a consensus on that, and I would hate to be contradicting ourselves so much with what we are putting out in other (especially peer-reviewed) venues.
Maybe a softer approach to avoid a last minute or rushed discussion over this topic would be to avoid the specific numbers

and use orders of magnitude, such as "billions" and "less than the cost of response to one major incident or epidemic" or "less than a tenth of the cost of a high-consequence pandemic".
Have a nice evening,
Jonna

On Wed, Mar 29, 2017 at 2:19 PM, Cara Chrisman <cchrisman@usaid.gov> wrote:
Hi Peter,

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Best,
Cara

Cara J. Chrisman, PhD
Senior Infectious Diseases Technical Advisor
Emerging Threats Division
Office of Infectious Disease
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Desk: (202) 712-1161
Cell: (REDACTED
E-mail: cchrisman@usaid.gov

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Kevin

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Associate Vice President for Research

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Cheers,

Peter

Peter Daszak
President

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<PMAC GVP targeting.docx>

From:	Andrew Clements <aclements@usaid.gov>
To:	Jonna Mazet <jkmazet@ucdavis.edu>
CC:	Katherine Leasure <kaleasure@ucdavis.edu>;PREDICTMGT <predictmgt@usaid.gov>;David J Wolking <djwolking@ucdavis.edu>
Sent:	3/31/2017 4:32:46 AM
Subject:	Re: PREDICT International Travel Requests

Hi Katie,

Mazet/New Zealand travel approved.

Mazet/India travel approved subject to mission concurrence.

Kenya travel: based on the last email exchange I saw between Dawn and Lisa Kramer, Dawn notified Lisa that there was a delay,but had not submitted new dates so as far as I can tell Lisa has not provided the required pre-approval for this travel. Please have Dawn get the pre-approval from Lisa. Once that happens, you will automatically have my approval (no need to re-submit the request to me).

Andrew

On Fri, Mar 31, 2017 at 4:03 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
They may want the name of the conference. In case they do, it's: **3rd International Conference on Animal Health Surveillance**
Thanks,
J

On Thu, Mar 30, 2017 at 4:59 PM, Katherine Leasure <kaleasure@ucdavis.edu> wrote:

Please find below international travel requests for your review and approval. Please let me know if you have any questions. Thanks!!

1. Zimmerman (Kenya): $1,500 airfare/$410 (Nairobi) max daily per diem

2. Mazet (India, New Zealand): $12,000 airfare (*business class required due to medical need)*/ $474 (Bangalore), $400 (Delhi) $259 (Rotorua) max daily per diems

Travel Requests:

1. The Smithsonian Institution would like to request travel approval for Dr. Dawn Zimmerman to travel from Washington, DC, USA to Nairobi, Kenya for the period April 23 to May 5, 2017 to help with sample collection and meet with partners. **Revised ITA for postponed travel; previously submitted February 10 for travel to Kenya March 17 to April 3, 2017.*

Trip purpose: Dr. Zimmerman will participate in an animal sampling trip in Turkana, as well as attend meetings with partners, including: International Livestock Research Institute, Department of Veterinary Services, Kenya Wildlife Service, Insect Physiology and Ecology (ICIPE), Mpala Ranch, and the Institute of Primate Research.

2. UC Davis would like to request travel approval for Dr. Jonna Mazet to travel from Davis, California, USA to Bangalore and Delhi, India from April 24 to May 1, 2017 to meet with PREDICT project partners and discuss ongoing and future project strategies. From Delhi, India, she will travel to Rotorua, New Zealand from May 2-5, 2017 to serve as keynote speaker at the 2017 International Conference on Animal Health Surveillance.

Trip purpose: India – Dr. Mazet will travel to India in order to meet with PREDICT partners to discuss ongoing activities in country, as well as coordinate the implementation of future sampling, surveillance, and diagnostic strategies. New Zealand – Dr. Mazet will serve as keynote speaker, with her talk on "Moving from a reactive to preventive paradigm for infectious disease surveillance." **Airfare cost for travel to India will be split with other UC Davis funds, as part of Dr. Mazet's travel will be related to a smaller research project. A travel allowance from conference organizers will cover a portion of the travel costs associated with Dr. Mazet's travel to New Zealand.*

Katherine Leasure

HR/Payroll/Financial Assistant

One Health Institute

University of California, Davis

530-752-7526

530-752-3318 FAX

kaleasure@ucdavis.edu

--

Andrew 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
E-mail: aclements@usaid.gov

From: Catherine Machalaba <machalaba@ecohealthalliance.org>
To: Latoya Armstrong <Laarmstrong@usaid.gov>
Cc: "predict@ucdavis.edu" <predict@ucdavis.edu>, "William B. Karesh" <karesh@ecohealthalliance.org>
Sent: Tue, 4 Apr 2017 16:20:12 +0000
Subject: [predict] JEE Revision & Health Security Planning Process
Form for Collection of Edits for JEE Tool- Karesh.docx
ATT00001.htm
JEE_suggested additions- Karesh.docx
ATT00002.htm

Hi LaToya,
It was great seeing you in Geneva a few weeks ago! I am sorry that we did not have more time to catch up. We wanted to share the comments we submitted on the JEE to inform the upcoming revision (Billy was invited to provide input as he had participated in previous JEE missions)- particularly aimed at strengthening wildlife/environmental dimensions.

We are disseminating information to EPT-2 partners about the JEE and health security planning process (by my count 19 EPT-2 countries are prioritized for this year!) It is great to hear several PREDICT country teams are already involved.

Please let us know if we may assist with any next steps for these processes. Many thanks!

Kind regards,
Catherine

Catherine Machalaba, MPH
Health and Policy Program Coordinator

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New York, NY 10001

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www.ecohealthalliance.org

Science Officer, Future Earth oneHEALTH Project

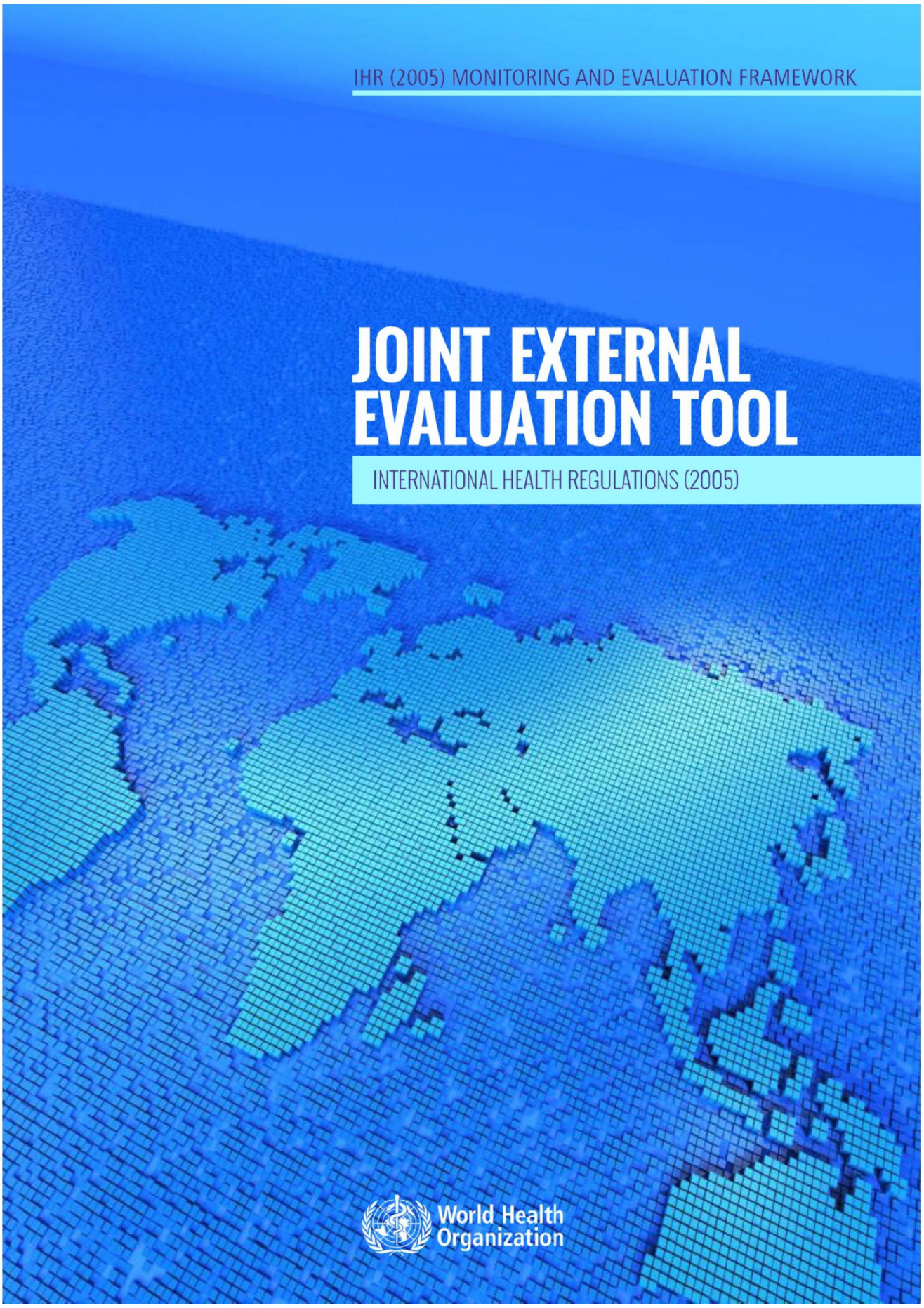
Chair, Veterinary Public Health Special Primary Interest Group, American Public Health Association

Program Officer, IUCN SSC Wildlife Health Specialist Group

IHR (2005) MONITORING AND EVALUATION FRAMEWORK

JOINT EXTERNAL EVALUATION TOOL

INTERNATIONAL HEALTH REGULATIONS (2005)



World Health Organization

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Contents

Acronyms

AMR	antimicrobial resistance
APSED	Asia Pacific Strategy for Emerging Infectious Diseases
BSC	biosafety cabinet
CLSI	Clinical and Laboratory Standards Institute
DTP	diphtheria tetanus pertussis
EBS	event-based surveillance
EOC	Emergency Operation Centre
EPI	Extended Programme on Immunization
EQA	external quality assessment
EUCAST	European Committee on Antimicrobial Susceptibility Testing
FAO	Food and Agriculture Organization
FELTP	field epidemiology and laboratory training programme
FETP	field epidemiology training programme
GLEWS	Global Early Warning System
GPHIN	Global Public Health Information Network
HCAI	health care associated infections
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
IHR NFP	National IHR Focal Point
ILO	International Labour Organization
INFOSAN	International Food Safety Authority Network
INTERPOL	International Criminal Police Organization
IPC	infection prevention and control
JEE	joint external evaluation
MMR	measles mumps rubella
MoH	ministry of health
MoU	memorandum of understanding
NGO	non-governmental organization
OIE	World Organisation for Animal Health
PHEIC	public health emergency of international concern
PoE	point of entry

PPE	personal protective equipment
PVS	performance of veterinary services
RRT	rapid response team
SAICM	Strategic Approach to International Chemicals Management
SOP	standard operating procedure
ToR	terms of reference
UNECE	United Nations Economic Commission for Europe
UNSGM	United Nation Secretary General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons
WAHIS	World Animal Health Information System
WHO	World Health Organization

Background

THE INTERNATIONAL HEALTH REGULATIONS (2005)

In May 2005, the Fifty-eighth World Health Assembly (WHA) adopted the International Health Regulations (2005) [IHR (2005)] which subsequently entered into force on 15 June 2007. The purpose and scope of the IHR (2005) are "to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade". State Parties are required by the IHR (2005) to develop certain minimum core public health capacities.

IHR capacity requirements are defined in Article 5 as "the capacity to detect, assess, notify and report events"; in Annex 1A on "Core capacity requirements for surveillance and response"; and in Annex 1B on "Core capacity requirements for designated airports, ports and ground crossings". In addition, the core capacity monitoring framework has a checklist and indicators which should be used for monitoring progress in the development of IHR Core Capacities in States Parties (http://www.who.int/ihr/publications/checklist/en/).

As stated in Annex 1 A.2, each State Party shall assess the ability of existing national structures and resources to meet the minimum requirements described in Annex 1. As a result of such assessment, States Parties shall develop and implement plans of action to ensure that these core capacities are present and functioning throughout their territories.

In 2012, the World Health Assembly (WHA65.23) urged States Parties to take the necessary steps to prepare and carry out appropriate national implementation plans in order to ensure the required strengthening, development and maintenance of the core public health capacities as provided for in the International Health Regulations (2005).

The IHR Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation (WHA 68/22 Add.1) suggested that '*…, and with a longer term vision, the Secretariat should develop through regional consultative mechanisms options to move from exclusive self-evaluation to approaches that combine self-evaluation, peer review and voluntary external evaluations involving a combination of domestic and independent experts. These additional approaches should consider, amongst other things, strategic and operational aspects of the IHR, such as the need for high level political commitment, and whole of government / multi-sectoral engagement. Any new monitoring and evaluation scheme should be developed with the active involvement of WHO regional offices and subsequently proposed to all States Parties through the WHO governing bodies' process.*'

The call for the move from 'exclusive self-evaluation' to external evaluation comes from the recognition that transparency and mutual accountability in the international community are essential in implementing IHR collectively. A technical consultation meeting on the IHR Monitoring and Evaluation Framework post-2015 was organised in Lyon in October 2015, and suggested the development of processes and a tool to conduct joint external evaluation.

The tool below is arranged according to following core elements:

- Preventing and reducing the likelihood of outbreaks and other public health hazards and events defined by IHR (2005) is essential.
- Detecting threats early can save lives.
- Rapid, effective response requires multi-sectoral, national and international coordination and communication.

PURPOSE OF THE JOINT EXTERNAL EVALUATION

The Joint External Evaluation Tool - International Health Regulations (2005) is intended to assess country capacity to prevent, detect, and rapidly respond to public health threats independently of whether they are naturally occurring, deliberate, or accidental. The purpose of the external evaluation process is to measure country specific status and progress in achieving the targets. This will require a sustainable and flexible process to allow for additional countries and regular evaluation visits. The first time the external evaluation is conducted, it will establish a baseline measurement of the country's capacity and capabilities. Subsequent evaluations are necessary to identify progress made and ensure any improvements in capacity are sustained.

Joint external evaluations share a number of important features, including: voluntary country participation; a multisectoral approach by both the external teams and the host countries; transparency and openness of data and information sharing; and the public release of reports. It also refers to the joint process during an external evaluation (envisioned to take place approximately every five years) where a team of national experts first prepares a self-assessment supplied to the external team prior to the on-site visit, and the external team uses the same tool for their independent evaluation, working together with the national team in interactive sessions.

The external evaluation allows countries to identify the most urgent needs within their health security system, to prioritize opportunities for enhanced preparedness, response and action, and to engage with current and prospective donors and partners to target resources effectively. Transparency is an important element in order to attract and direct resources to where they are needed most.

PROCESS

The first stage of the evaluation is a country survey completed by the country using self-reported data for the various indicators on the joint external evaluation tool. This information is then given to the joint external evaluation team comprised of national and international subject matter experts. Review of this self-assessment data provides the team members with a baseline understanding of the country's health security capabilities. These subject matter experts will then visit the country for facilitated in-depth discussion of the self-reported data as well as structured site visits and meetings organized by the host country. The evaluation team will use findings of various relevant evaluation and assessments like World Organisation for Animal Health: Performance of Veterinary Services (OIE PVS) pathway, monitoring and evaluation of disaster risk reduction and others.

After conducting the evaluation visit, the evaluation team will draft a report to identify status levels for each indicator, as well as an analysis of the country's capabilities, gaps, opportunities and challenges. This information will be shared with the host country and, with permission of the host country, various other stakeholders in order to facilitate international support of country implementation efforts, share best practices and lessons learned, promote international accountability, engage stakeholders, and inform and guide IHR implementation both in the host country and internationally.

FORMAT

Every indicator in the evaluation tool has attributes that reflect various levels of capacity with scores of 1-5 (1 indicates that implementation has not occurred; 5 indicates that implementation has occurred, is tested/reviewed/exercised and that the country has a high level of capability for the indicator). For each indicator, a country will receive a single score based on their current capacity. The Technical Area Questions will help the evaluators determine the appropriate score. Most of the measures are descriptive and qualitative.

Countries will be asked to provide documentation for some if these items in addition to the responses. The documentation and responses will be reviewed by the evaluators, and will then be discussed during the external assessment. Final report will include scores as well as report narrative identifying existing capacities, gaps, and challenges. The results of the JEE are to guide IHR implementation in the country.

The tool was developed to provide an external mechanism to evaluate a country's IHR capacity for ensuring health security. This tool draws on the original IHR core capacities and incorporates valuable content and lessons learned from tested external assessment tools and processes of several other multilateral and multisectoral initiatives that have supported the building of capacity to prevent, detect, and respond to infectious disease threats.

COLOUR SCORING SYSTEM

While overlaps exist among the capacity sections of the tool, each will be considered separately in the evaluation exercise. The implementation status of each core capacity will be delineated by a level of advancement or scoring, which reflects the capacity to be institutionalized and sustainable. Following describes the level of advancement or scoring with colour coding.

1. **No Capacity :** Attributes of a capacity are not in place Colour Code:

Red

2. **Limited Capacity :** Attributes of a capacity are in development stage (some are achieved and some are undergoing; however, the implementation has started). Colour Code:

Yellow

3. **Developed Capacity :** Attributes of a capacity are in place; however, there is the issue of sustainability and measured by lack of inclusion in the operational plan in National Health Sector Planning (NHSP) and/or secure funding. Colour Code:

Yellow

4. **Demonstrated Capacity :** Attributes are in place, sustainable for a few more years and can be measured by the inclusion of attributes or IHR (2005) core capacities in the national health sector plan. Colour Code:

Green

5. **Sustainable Capacity :** Attributes are functional, sustainable and the country is supporting other countries in its implementation. This is the highest level of the achievement of implementation of IHR (2005) core capacities. Colour Code:

Green

1. Without achievement of all attributes at prior capacity levels, a country cannot progress to the adjacent levels (for instance, in order to reach demonstrated capacity, one has to meet all the attributes of developing and demonstrated capacity).
2. All responses should be supported by documentable evidence.


Country Evaluation Tool

PREVENT

NATIONAL LEGISLATION, POLICY AND FINANCING

Targets: States Parties should have an adequate legal framework to support and enable the implementation of all of their obligations and rights to comply with and implement the IHR (2005). In some States Parties, implementation of the IHR (2005) may require new or modified legislation. Even where new or revised legislation may not be specifically required under the State Party's legal system, States may still choose to revise some legislation, regulations or other instruments in order to facilitate their implementation and maintenance in a more efficient, effective or beneficial manner. State parties should ensure provision of adequate funding for IHR implementation through national budget or other mechanism.

Desired Impact: Legislation, laws, regulations, administrative requirements, policies or other government instruments and budget in place sufficiently support IHR implementation.

Score	Indicators - National Legislation, Policy and Financing	
	P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR.	**P.1.2 The state can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with the IHR (2005)**
No Capacity – 1	Assessment of relevant legislation, regulation, administrative requirements and other government instruments for IHR (2005) implementation not carried out	Legislation, regulation, administrative requirements and other government instruments are not in place for the implementation of the IHR (2005)
Limited Capacity – 2	Assessment of relevant legislation, regulation, administrative requirements and other government instruments for IHR (2005) implementation has been carried out	Assessment of relevant legislation, regulation, administrative requirements and other government instruments for IHR (2005) implementation has been carried out and adjustment needs have been identified
Developed Capacity – 3	Recommendations following assessment of relevant legislation, regulations, administrative requirements and other government instruments are implemented	The country can demonstrate the existence and use of relevant laws and policies in the various sectors involved in the implementation of the IHR[2]
Demonstrated Capacity – 4	Policies to facilitate IHR NFP core and expanded functions and to strengthen core capacities	The country has legislation references and/or administrative requirements for specific areas (e.g. current legislation specifically address IHR NFP designation and operations)
Sustainable Capacity – 5	Policies to facilitate IHR NFP core and expanded functions and to strengthen core capacities incorporated within the national health sector plan (NHSP)	The country ensures coordination of the legal and regulatory frameworks between sectors

[2] For the Animal Health Sector, this information can be found in the country PVS report, Critical Competencies cards IV-1: preparation of legislation and regulation & IV-2: Implementation of legislation and regulation and compliance thereof

Notes:

t National legislation, policy and financing: These questions should be answered by legal or legislative advisers, experts at the MoH or other relevant government office/ NFP. Please ask to see the relevant documents.

Contextual questions: N/A Technical

Questions:

P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR.

1. Is there legislation or are there regulations or administrative requirements, or other governmental instruments3 governing public health surveillance and response?
2. Has an assessment of relevant4 legislation, regulations or administrative requirements, and other governmental instruments been carried out (to determine if they facilitate full implementation of the IHR)?
3. Cross-border agreements, protocols or memoranda of understanding (MoUs) with neighbouring countries with regard to public health emergencies

P.1.2 The state can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with the IHR (2005)

1. Does the assessment also identify adjustment needs for relevant legislation, regulation, administrative requirements and other government instruments for IHR (2005) implementation?
2. Show the evidence of using relevant legislation and policies in various sectors involved in the implementation of IHR.
3. Does the country legislation or any references addresses other specific areas other than NFP function (designation and its operation) if yes, what are those areas covered?
4. How the country does ensure coordination of the legal and regulatory frameworks between sectors? (show the evidence)

[3] Legislation: state constitutions, laws, decrees, ordinances or similar legal instruments.

[4] Relevant areas include: public health, environment, points of entry (international ports, airports, and ground crossings including quarantine), food safety, agriculture (including animal health), radiation safety, chemical safety and transportation (including dangerous goods).

IHR COORDINATION, COMMUNICATION AND ADVOCACY

Targets: The effective implementation of the IHR (2005) requires multisectoral/multidisciplinary approaches through national partnerships for effective alert and response systems. Coordination of nationwide resources, including the sustainable functioning of a National IHR Focal Point (NFP), which is a national centre for IHR (2005) communications, is a key requisite for IHR (2005) implementation. The NFP should be accessible at all times to communicate with the WHO IHR Regional Contact Points and with all relevant sectors and other stakeholders in the country. States Parties should provide WHO with contact details of NFPs, continuously update and annually confirm them.

Expected Impact: A mechanism for multisectoral/multidisciplinary coordination, communication and partnerships is functional to detect, assess and respond to any public health event or risk. The NFP is accessible at all times to communicate with the WHO IHR Regional Contact Points and with all relevant sectors and other stakeholders in the country.

Score	Indicators - IHR Coordination, Communication and Advocacy
	P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR.
No Capacity – 1	Coordination mechanism between relevant ministries is not in place
Limited Capacity – 2	Coordination mechanism between relevant ministries is in place National Standard Operating Procedures (SOPs) or equivalent exists for the coordination between IHR NFP and relevant sectors
Developed Capacity – 3	A multisectoral, multidisciplinary body, committee or task force addressing IHR requirements on surveillance and response for public health emergencies of national and international concern is in place and participated in latest event
Demonstrated Capacity – 4	Multisectoral and multidisciplinary coordination and communication mechanisms are tested and updated regularly through exercises or through the occurrence of an actual event Action plan developed to incorporate lessons learnt of multisectoral and multidisciplinary coordination and communication mechanisms
Sustainable Capacity	Annual updates on the status of IHR implementation to stakeholders across all relevant sectors conducted

Notes:

Additional information can be used from following indicators:

1. D.3.1 System for efficient reporting to WHO, FAO and OIE
2. D.3.2 Reporting network and protocols in country
3. R.3.1 Public Health and Security Authorities, (e.g. Law Enforcement, Border Control, Customs are linked during a suspect or confirmed biological event)

Contextual Questions: N/A Technical

questions:

P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR

1. Is there coordination within relevant ministries on events that may constitute a public health event or risk of national or international concern?
2. Are SOPs or guidelines available for coordination between NFP and other relevant sectors?
3. Have functional mechanisms for intersectoral collaborations that include animal and human health surveillance units and laboratories been established?
4. Is there timely and systematic information exchange between domestic and wild animal surveillance units, laboratories, human health surveillance units and other relevant sectors regarding potential zoonotic risks and urgent zoonotic events?
5. Is a multi-sectoral, multidisciplinary coordination and communication mechanisms updated and tested regularly?
6. Do you have action plans developed to incorporate lessons learnt of multi-sectoral/disciplinary coordination and communication mechanism?
7. Are the updates of IHR implementation shared with other relevant sectors?
8. Have the functions of the IHR NFP been evaluated for effectiveness?

Documentation or Evidence for Level of Capability:

- OIE Reports (World Animal Health Information System - WAHIS)
- IHR reports to the World Health Assembly
- Legislation, protocols or other policies related to reporting to WHO
- Please provide any plans that have been drafted that cover response to possible biological events (move to documentation)

ANTIMICROBIAL RESISTANCE (AMR)

Target: Support work being coordinated by WHO, FAO, and OIE to develop an integrated global package of activities to combat antimicrobial resistance, spanning human, animal, agricultural, food and environmental aspects (i.e. a one-health approach), including: a) Each country has its own national comprehensive plan to combat antimicrobial resistance; b) Strengthen surveillance and laboratory capacity at the national and international level following agreed international standards developed in the framework of the Global Action plan, considering existing standards and; c) Improved conservation of existing treatments and collaboration to support the sustainable development of new antibiotics, alternative treatments, preventive measures and rapid, point-of-care diagnostics, including systems to preserve new antibiotics. As Measured by: (1)Number of comprehensive plans to combat antimicrobial resistance agreed and implemented at a national level, and yearly reporting against progress towards implementation at the international level. (2)Number of countries actively participating in a twinning framework, with countries agreeing to assist other countries in developing and implementing comprehensive activities to combat antimicrobial resistance, including use of support provided by international bodies to improve the monitoring of antimicrobial usage and resistance in humans and animals.

Desired Impact: Decisive and comprehensive action to enhance infection prevention and control activities to prevent the emergence and spread of AMR, especially among drug-resistant bacteria. Nations will strengthen surveillance and laboratory capacity; ensure uninterrupted access to essential antibiotics of assured quality; regulate and promote the rational use of antibiotics in human medicine and in animal husbandry and other fields as appropriate; and support existing initiatives to foster innovations in science and technology for the development of new antimicrobial agents.

Score**	Indicators-Antimicrobial Resistance (AMR)*			
	P3.1 Antimicrobial resistance (AMR) detection	P3.2 Surveillance of infections caused by AMR pathogens	P3.3 Healthcare associated infection (HCAI) prevention and control programs	P3.4 Antimicrobial stewardship activities
pacity	No national plan for detection and reporting of priority AMR pathogens has been approved	No national plan for surveillance of infections caused by priority AMR pathogens has been approved	No national plan for HCAI programs has been approved	No national plan for antimicrobial stewardship has been approved
Limited Capacity – 2	National plan for detection and reporting of priority AMR pathogens has been approved	National plan for surveillance of infections caused by priority AMR pathogens has been approved	National plan for HCAI programs has been approved	National plan for antimicrobial stewardship has been approved
Developed Capacity – 3	Designated laboratories are conducting detection and reporting of some priority AMR pathogens	Designated sentinel sites are conducting surveillance of infections caused by some priority AMR pathogens	Designated facilities are conducting some HCAI programs	Designated centres are conducting some antimicrobial stewardship practices
Demonstrated Capacity – 4	Designated laboratories have conducted detection and reporting of all priority AMR pathogens for at least one year	Designated sentinel sites have conducted surveillance of infections caused by all priority AMR pathogens for at least one year	Designated facilities have conducted all HCAI programs for at least one year	Designated centres have conducted all antimicrobial stewardship practices for at least one year

Sustainable Capacity – 5	Designated laboratories have conducted detection and reporting of all priority AMR pathogens for five years with a system for continuous improvement	Designated sentinel sites have conducted surveillance of infections caused by all priority AMR pathogens for five years with a system for continuous improvement	Designated facilities have conducted all HCAI programs for five years with a system for continuous improvement	Designated antimicrobi five years w improveme

* Antimicrobial resistance in bacteria, including tuberculosis AMR, is covered by this section. Viral, other non-bacterial pathogen and vector resistance is out of scope, unless integrated in national policies, standards or guidelines

** For full scores, capabilities should be separately evaluated both in the human and animal sectors and mechanisms for regular comparison and joint policy-development in a One-Health fashion should be in place. For final scores, the average should be taken

Notes:

- Priority AMR pathogens may include some, all, or more than the seven selected pathogens listed by the World Health Organization (E. coli, K. pneumonia, S. aureus, S. pneumoniae, Salmonella spp., Shigella spp, N. gonorrheae). Other priority pathogens may be added by national authorities based on country needs including Mycobacterium tuberculosis.
- The number of designated laboratories for AMR detection/reporting, sentinel sites for surveillance of infections caused by AMR pathogens, facilities for IPC programs, and centres for antimicrobial stewardship will be decided by national authorities.
- Detection of AMR should occur by recommended standards such as CLSI or EUCAST.
- Each activity should occur in both veterinary and human sectors. The scope of activities in these two sectors should be decided by national authorities.
- Healthcare associated infection prevention and control programs might include training, audit and feedback components for personnel in addition to environmental controls such as disinfection and waste management.
- Antimicrobial stewardship might include uninterrupted access to high-quality medicines to treat bacterial infections, measurements of antibiotic use, regular updates to local antibiograms to inform empiric treatment of infections, and audit-feedback to prescribers of antibiotics to encourage appropriate use.

Contextual question

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P31 Antimicrobial resistance (AMR) detection

1. Is there a national plan for laboratory testing of WHO priority pathogens?
2. Does a national plan for the detection and reporting of AMR pathogens exist? How often is the plan updated and reviewed?
   a. Is there a national AMR lab in the country?
   b. How many laboratories within the nation are able to conduct AMR detection and reporting? Of these, how many will be designated laboratories for AMR detection and reporting?
   c. Which AMR pathogens are the designated laboratories able to test for?
   d. How are these data validated?

e. Have laboratory methods been verified and the quality monitored, such as through external quality assurance?
f. What types of reports are generated? Who receives these reports?

P32 Surveillance of infections caused by AMR pathogens

1. Does a national plan for surveillance of infections caused by AMR pathogens exist? How often is the plan updated and reviewed?
   a. How many hospitals are in the country? Of these, how many are (will be) sentinel sites for surveillance of infections caused by AMR pathogens among humans?

b. How many farms with livestock are in the country? Of these, how many are (will be) sentinel sites for surveillance of infections caused by AMR patho- gens in livestock?
c. How many of these sentinel sites are operational?
d. How are data validated? What types of reports are generated? Who receives these reports?

P33 Healthcare associated infection prevention and control programs

1. Is there a national plan for HCAI? How often is the plan updated and reviewed?
   a. How many facilities are involved in the national HCAI?
   b. What components of HCAI are implemented?
2. Availability of functioning IPC policy, operational plan and SOPs at all health facilities.
3. Availability of isolation units at tertiary hospitals.
4. Availability of guidelines for the protection of health care workers from health care associated infection.
5. Availability of surveillance within high risk groups to promptly detect cluster of health care associated infection.
6. Availability of designated trained IPC professionals in all tertiary hospitals.
7. Availability of system to regularly evaluate the effectiveness of infection control measures and publish results.

P34 Antimicrobial stewardship activities

1. Does a national plan for antimicrobial stewardship exist? Is there national guidance on appropriate antibiotic use? How often is the plan updated and reviewed?
   a. Has a survey on the proper administration of antibiotics been implemented?
   b. How many centres are assessing antibiotic use patterns? How is antimicrobial usage monitored?
   c. How many centres adhere to national guidance on appropriate antibiotic use (if known)?
2. Is a prescription required for antibiotic use in humans?
3. Is a prescription required for antibiotic use in domestic and wild animals? When is a prescription not required?
4. Is there national guidance on proper disposal for antibiotic use in domestic animals, wildlife and humans to avoid environmental contamination?

Documentation or Evidence for Level of Capability:

t Dated versions of plans for AMR detection/reporting, surveillance of infections caused by AMR pathogens, HCAI programs, and antimicrobial stewardship programs

- Copy of reports measuring:
  - proportion of AMR pathogens among specimens or isolates
  - results from participation in international external quality assessment (EQA) rounds of the national reference laboratory
  - incidence of infections caused by AMR pathogens at sentinel sites (community and hospital acquired, respectively)
  - proportion of facilities adhering to best practices for HCAI (if known)
  - percentage of antibiotics administered appropriately (if surveyed)
- Documentation of review process, including participating agencies or sectors

Glossary:

Designated centres: Facilities or organizations, which on a regularly basis are involved in the described control programs

References:

- WHO Global AMR Action Plan
- OIE recommendations

ZOONOTIC DISEASE

Target: Adopted measured behaviours, policies and/or practices that minimize the transmission of zoonotic diseases from animals into human populations.

As Measured by: Identify the five zoonotic diseases/pathogens of greatest national public health concern and strengthen existing surveillance systems for prioritized zoonoses.

Desired Impact: Implementation of guidance and models on behaviours, policies and practices to minimize the spill over, spread, and full emergence of zoonotic disease into or out of human populations prior to the development of efficient human-to-human transmission. Nations will develop and implement operational frameworks— based on international standards, guidelines, and successful existing models—that specify the actions necessary to promote One Health approaches to policies, practices and behaviours that could minimize the risk of zoonotic disease emergence and spread.

Score**	Indicators - Zoonotic Disease*		
	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	P.4.2 Veterinary or Animal Health Workforce	P.4.3 Mechanisms for respon zoonoses and potential zoon and functional
No Capacity -1	No zoonotic surveillance systems exist	Country has no animal health workforce capacity capable of conducting one health activities.	No mechanism in place
Limited Capacity - 2	Country has determined zoonotic diseases of greatest national public health concern but does not have animal zoonotic surveillance systems in place	Country has animal health workforce capacity within the national public health system.	National policy, strategy or plan f zoonotic events is in place
Developed Capacity - 3	Zoonotic surveillance systems in place for 1-4 zoonotic diseases/ pathogens of greatest public health concern	Animal health workforce capacity within the national public health system and less than half of sub-national levels.	A mechanism for coordinated res zoonotic diseases by human, anir established
Demonstrated Capacity - 4	Zoonotic surveillance systems in place for five or more zoonotic diseases/ pathogens of greatest public health concern	Animal health workforce capacity within the national public health system and more than half of sub-national levels.	Timely[4] and systematic informati animal/wildlife surveillance unit surveillance units and other relev potential zoonotic risks and urge
Sustainable Capacity - 5	Zoonotic surveillance systems in place for five or more zoonotic diseases/ pathogens of greatest public health concern with system in place for continuous improvement	Animal health workforce capacity within the national public health system and at all sub-national levels. This includes a plan for animal health workforce continuing education	Timely[5] (as defined by national st more than 80% of zoonotic event and international concern

* Refers to zoonotic infections shared by domestic and wild animals and humans

** For full scores, capabilities should be separately evaluated both in the human and animal (livestock, companion animal and wildlife) sectors and mechanisms for regular comparison and joint policy-development in a One-Health fashion should be in place. For final scores, the average should be taken.

[5] Timeliness is judged and determined by each country.

[6] "Timely" referred to here is the time between detection and response

Notes:

- The indicator refers to zoonotic disease surveillance capacity for the country.
- Surveillance systems for zoonotic disease should include:
  - The system of surveillance for major zoonotic diseases covers 80% of level 3 administrative units in the country (to be considered "nationwide")
  - Regular reports to relevant authorities both in human and animal health leadership.
- Linkages between Ministry of Health, Ministry of Agriculture, and relevant ministries with wildlife specialists to promote the sharing of information and data. Linkage should also exist on the regional and local level.
- The Ministry of Agriculture (or other relevant agency) can provide an accurate estimate of animal population within the country and within each administrative unit.
- Reports from OIE PVS pathway need to be used to inform the performance of veterinary services, including for the assessment of Workforce Development (Detect 4).

Contextual Questions:

1. What zoonotic diseases are of greatest public health concern within the country?
2. Is there a formal policy for "one health" in the country?
3. Within the past two years, has an exercise been conducted or real event occurred, involving Ministries of Health, Agriculture, and appropriate wildlife Ministry to practice and test skills of both human and animal public health workers to investigate and respond to a zoonotic event?
   a. Please describe the exercise or real event which occurred.
   b. What were the most significant lessons learned from the exercise/real event?
4. How are estimates of animal population within the country determined?
   a. How often are these estimates developed?
   b. What department or agency is responsible for developing these estimates?
5. Can you list the zoonotic diseases for which control policies exist with the purpose of reducing spill over of zoonotic disease into human populations?
   a. Please describe the progress in implementing these policies
   b. Is there a plan in place to encourage reporting of domestic and wild animal disease (may include indemnities paid)?
   c. Is there a plan in place to address factors which might prevent farmers/owners from reporting animal disease (may include lack of familiarity with reporting process, lack of indemnity, social stigma)?

Technical Questions:

P.A1 Surveillance systems in place for priority zoonotic diseases/pathogens

1. Does the country have a mechanism in place to identify priority zoonotic diseases and novel pathogens that pose a national health risk?
2. Does the country have a surveillance system in place for relevant animal populations?
3. Is there surveillance of sentinel health events that may signal a zoonotic disease spillover risk?
4. Please describe partnerships between ministry of health, ministry of agriculture and wildlife specialists as they relate to zoonotic disease detection and response
   a. Are situational awareness reports or reports of potential disease outbreaks shared between the agencies?
5. Are public health laboratories, domestic animal and wildlife health laboratories linked?
   a. Is there a process for sharing specimens between public health and animal health laboratories?
   b. Is there a process for sharing laboratory reports between public health and animal health laboratories?
   c. Are these reports shared on a regular basis, or only when zoonoses are discovered or suspected?
6. Describe reports produced from animal surveillance systems for zoonotic disease
   a. What ministries receive reports produced by the domestic and wild animal surveillance systems on zoonotic diseases?
   b. How is animal surveillance systems linked to surveillance systems used for human pathogens?
   c. Is there a mechanism or mechanisms for establishing interagency response teams in the event of a suspected zoonotic outbreak?
   d. Is there a process for sharing surveillance reports between public health and animal health laboratories?
   e. How do these systems pick up emerging diseases versus endemic diseases?

P.A2 Animal Health and Veterinarian Workforce

1. Describe public health training offered to domestic and wild animal health veterinary staff within the country.
   a. Describe what training in controlling zoonotic disease in animal populations is offered to public health staff within the country.

2. Are domestic and wild animal health experts and veterinarians included in country FETP or other equivalent training program?
3. What is the current animal population for the country, including farm and agricultural animals?
4. Are wild animal species and distribution data available for the country?

PA3 Mechanisms for responding to infectious zoonoses are established and functional

1. Describe the policy, strategy or plan for the response to zoonotic events in the country.
   a. Is there a joint planning or strategy which exists between animal health, human health and wildlife sectors?
   b. Is there any memorandum of understanding between sectors for the management of zoonotic events?
2. Describe how the latest zoonotic events were managed, for example:
   a. How the information is shared between sectors?
   b. How often do the sectors meet at the technical level?
   c. Do you have outbreak investigation and response report on the latest zoonotic events?
3. Describe the roles and responsibilities of animal health, human health and wildlife sectors on these recent zoonotic events.
4. Do you consider that country has capacity to respond to more than 80% of zoonotic events on time? What is the timeliness at present?

Documentation or Evidence for Level of Capability:

- List of zoonotic priority pathogens for public health
- Descriptions of existing zoonotic surveillance systems
- OIE Country PVS report
- OIE Country PVS Gap Analysis Report

References:

- OIE PVS Pathway
- Handbook for the assessment of capacities at the human animal interface, WHO & OIE, 2015.
- www.who.int/ihr/publications/handbook_OMS_OIE/en/
- Publication Related to Food Safety: http://www.who.int/foodsafety/publications/all/en/

FOOD SAFETY

Target: States Parties should have surveillance and response capacity for food and waterborne disease risk or events. It requires effective communication and collaboration among the sectors responsible for food safety and safe water and sanitation.

Desired Impact: Timely detection and effective response of potential food-related events in collaboration with other sectors responsible for food safety

Score	Indicator - Food Safety
	P.5.1 Mechanisms are established and functioning for detecting and responding to foodborne disease and food contamination.
No Capacity – 1	No mechanism in place
Limited Capacity – 2	Focal points are identified in relevant stakeholders (food safety sector, human health sector, surveillance and response staffs, animal health
Developed Capacity – 3	Operational links are established between surveillance and response staffs, food safety, animal health and laboratories
Demonstrated Capacity – 4	Staff responsible for surveillance and response, food safety, laboratories and agriculture work together to consider the risks and intervention
Sustainable Capacity – 5	There is an effective (formal or informal) mechanism for rapid information exchange during suspected foodborne disease outbreak investig stakeholders / relevant sectors

Notes:

- Indicators refer to detection and responding to the food-related events and enabling environment for putting food safety control mechanism in place with appropriate legislation, laws, or policy and with the involvement of multiple sectors.
- Detection capacity includes surveillance but also the laboratory capacity required for the verification of any events.

Contextual Questions:

1. Does the country have the national or international food safety standard available?
2. How often food safety-related events happen in the country per year?
3. Describe the latest food-related events including food poisoning or foodborne disease outbreak? How do you evaluate the response to that event?
4. Is the country participating with International Food Safety Authority Network (INFOSAN)?

Technical Questions:

P.5.1 Mechanisms for multisectoral collaboration are established to ensure rapid response to food safety emergencies and outbreaks of foodborne diseases

Have appropriate people been nominated at the national level to take part in outbreak response teams?

1. Are the people identified to take part in the outbreak response teams trained to undertake outbreak investigations of foodborne diseases?
2. During each event /outbreak response, does the outbreak response team:
   a. Interview people affected with the disease using a standardised questionnaire?
   b. Develop and apply a case definition?
   c. Describe the number of cases using a line list?
   d. Provide some descriptive comments about the syndrome and possible source of the illness?
   e. Collect appropriate clinical specimens from symptomatic cases?
3. Does the surveillance and response staff know who the focal points are for food safety, domestic and wild animal health and the key laboratories that would be required to test clinical and/or food samples collected during an event?
4. What systems are in place for foodborne illness deriving from wild animals (either farmed or free-ranging)?
5. Is there an effective (formal or informal) mechanism for rapid information exchange during suspected foodborne disease outbreak investigations between all the stakeholders / relevant sectors?
6. Is there a multisectoral involvement in risk profiling of food safety problems to help identify opportunities for authorities to implement appropriate risk management strategies?
7. Is a communication mechanism between food safety stakeholders in the country in place and functioning? This includes agreement on:
   a. What information is to be shared?
   b. When does the information need to be shared?
   c. Who needs to know the information?
8. How is the information to be shared? Are there communication mechanism and materials in place to deliver information, education, and advice to stakeholders across the farm-to-fork continuum?
9. Have food safety control management systems been implemented?

References:

t Publication Related to Food Safety: http://www.who.int/foodsafety/publications/all/en/

BIOSAFETY AND BIOSECURITY

Target: A whole-of-government national biosafety and biosecurity system is in place, ensuring that especially dangerous pathogens are identified, held, secured and monitored in a minimal number of facilities according to best practices; biological risk management training and educational outreach are conducted to promote a shared culture of responsibility, reduce dual use risks, mitigate biological proliferation and deliberate use threats, and ensure safe transfer of biological agents; and country- specific biosafety and biosecurity legislation, laboratory licensing, and pathogen control measures are in place as appropriate.

As Measured by: Number of countries who have completed/Completion of a national framework and comprehensive oversight system for pathogen biosafety and biosecurity, strain collections, containment laboratories and monitoring systems that includes identification and storage of national strain collections in a minimal number of facilities.

Desired Impact: Implementation of a comprehensive, sustainable and legally embedded national oversight program for biosafety and biosecurity, including the safe and secure use, storage, disposal, and containment of pathogens found in laboratories and a minimal number of holdings across the country, including research, diagnostic and biotechnology facilities. A cadre of biological risk management experts possesses the skillset to train others within their respective institutions. Strengthened, sustainable biological risk management best practices are in place using common educational materials. Rapid and culture-free diagnostics are promoted as a facet of biological risk management. The transport of infectious substances will also be taken into account.

Score	Indicators - Biosafety and Biosecurity	
	P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal, and agriculture facilities	**P.6.2 Biosafety and biosecurity training and pr**
No Capacity - 1	No elements of a comprehensive national biosafety and biosecurity system are in place	No biological biosafety and biosecurity training or pla
Limited Capacity - 2	Some, but not all, elements of a comprehensive biosafety and biosecurity system are in place; country is: Starting the process to monitor and develop an updated record and inventory of pathogens within facilities that store or process dangerous pathogens and toxins and what they house Developing, but has not finalized, comprehensive national biosafety and biosecurity legislation Developing laboratory licensing Developing pathogen control measures, including standards for physical containment and operational handling and failure reporting systems Not consolidating dangerous pathogens and toxins into a minimum number of facilities Not employing diagnostics that preclude culturing dangerous pathogens Not implementing oversight monitoring and enforcement mechanisms	Country has conducted a training needs assessment and id and biosecurity training but has not yet implemented com common training curriculum General lack of awareness among the laboratory workforc and biosecurity best practices for safe, secure and responsil Country does not yet have sustained academic training in who maintain or work with dangerous pathogens and toxi
Developed Capacity - 3	Comprehensive national biosafety and biosecurity system is being developed; country is: Finalizing the process to support the active monitoring and maintaining of up-to-date records and pathogen inventories within facilities that store or process dangerous pathogens and toxins Finalizing the development and implementation of comprehensive national biosafety and biosecurity legislation Finalizing the development and implementation of laboratory licensing Finalizing the development and implementation of pathogen control measures, including standards for physical containment and operational handling , and containment failure reporting systems Starting the consolidation of dangerous pathogens and toxins into a minimum number of facilities Starting to put into place tools and resources to support diagnostics that preclude culturing dangerous pathogens Starting to put into place oversight monitoring and enforcement mechanisms	Country has a training program in place with common curr implementation Country has a training program in place at most facilities h dangerous pathogens and toxins Training on biosafety and biosecurity has been provided t facilities that maintain or work with dangerous pathogens Country is developing, or has not yet implemented, a train biosafety Country is developing sustained academic training for tho with dangerous pathogens and toxins

Demonstrated Capacity - 4	Biosafety and biosecurity system is developed, but not sustainable; country is: Actively monitoring and maintaining an updated record and inventory of pathogens within facilities that store or process dangerous pathogens and toxins Implementing enacted comprehensive national biosafety and biosecurity legislation Implementing laboratory licensing Implementing pathogen control measures, including standards for physical containment and operational handling and containment failure reporting systems. Completed consolidating dangerous pathogens and toxins into a minimum number of facilities. Employing diagnostics that preclude culturing dangerous pathogens Implementing oversight monitoring and enforcement activities	Country has a training program in place with common curr trainers program Country has a training program in place at all facilities hou dangerous pathogens and toxins Training on biosafety and biosecurity has been provided to maintain or work with dangerous pathogens and toxins Country is implementing a train-the-trainers program Country has in place sustained academic training in institu maintain or work with dangerous pathogens and toxins Country has limited ability to self-sustain all of the above
Sustainable Capacity - 5	Sustainable biosafety and biosecurity system is in place; country is: Compliant with numbers one through six under "Demonstrated Capacity" plus: Ministries have made available adequate funding and political support for the comprehensive national biosafety and biosecurity system, including maintenance of facilities and equipment	Country has a sustainable training program, train-the and common curriculum. Staff are tested at least ann conducted on biological risk protocols Country is compliant with numbers one through five u Capacity" and has funding and capacity to sustain all Review of training needs assessment is conducted anr training on need areas conducted annually Training on emergency response procedures provided

Notes: N/A

Contextual Question

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P.6.1 Whole-of-government biosafety and biosecurity system is in place for human, animal, and agriculture facilities

1. Actively monitoring and developing an updated record and inventory of pathogens within facilities that store or process dangerous pathogens and toxins.

a. Does the country have in place an updated record of where and in which facilities dangerous pathogens and toxins are housed?

    i. Have collections of pathogens and toxins been identified?

2. Implementing enacted comprehensive national biosafety and biosecurity legislation.

    a. Does the country have biosecurity legislation and/or regulations in place? Are they being implemented?

b. Does the country have biosafety legislation and/or regulations in place? Are they being implemented?

c. Please provide a copy of the country's national biosecurity legislation, regulations or frameworks, and a copy of the country's biosafety legislation, regulations or frameworks.

   i. Please describe how this information is shared with laboratories at subnational levels within the country.

   ii. Are regulations and/or guidelines for biosecurity followed by laboratories within the country? What about for biosafety?

   iii. Describe biosecurity monitoring activities. Describe biosafety monitoring activities

   iv. Has a third party assessed biosecurity at national laboratory facilities? What about biosafety?

      1. When?

      2. Have the recommendations from that biosecurity assessment been put into place? What about for biosafety?

   v. What type of laboratory requires a licence in the country?

   vi. Are there common licence conditions/safety and security requirements for all licensed labs? If so, what are they?

   vii. How is laboratory licensing monitored within the country?

   viii. Is there adequate availability of funding to support biosecurity programs/initiatives and their oversight and enforcement at the ministry level? What about for biosafety?

   ix. Is there a mechanism for biosecurity oversight of dual use research and responsible code of conduct for scientists? This may include a biosafety commit- tee or other review committee

3. Implementing laboratory licensing and pathogen control measures including requirements for physical containment and operational practices and containment and failure reporting systems.

   a. Physical Security: are appropriate security measures in place to minimize potential inappropriate removal or release of biological agents (e.g. theft, earthquake, flood)?

   b. Information Security: is access to sensitive information (e.g. inventory of agents and toxins) controlled by adequate policies and procedures?

   c. Transportation Security: are procedures for a safe and secure transport of culture, specimens, samples and other contaminated materials established and followed?

   d. Personnel Security: is there a mechanism to determine which personnel are authorized to access pathogens of security concern?

   e. Biosafety and biosecurity practices at facilities housing or working with dangerous pathogens:

      i. Are site-specific biosafety and biosecurity management programs and supporting documents (manuals, SOPs, job aides, records) available to include biosafety, biosecurity, incident response and emergency plans (e.g. in case of explosion, fire, flood, worker exposure, accident or illness, major spillage)?

ii. Are roles and responsibilities related to biosafety and biosecurity management defined and documented (biosafety officer, security manager)?

iii. Have the biosafety and biosecurity risks been assessed and categorized?

iv. Are biosafety and biosecurity control measures described in an action plan?

v. Are there mechanisms to ensure that personnel is suitable and competent (e.g. best practices) in human resources management (e.g., verification of prior education and employment, periodic performance reviews), successful completion of training, mentorship programs, ability to work unsupervised)?

f. Is there a system in place to conduct audits of laboratory facilities?

i. If so, are audits performed regularly?

ii. What organization conducts these audits? Within the government or external?

iii. Which types of laboratories are subject to these audits?

g. Do laboratories have appropriate ISO accreditation? If so, which ISO accreditations do the facilities have?

h. Do any of the national laboratories have other relevant classifications? (i.e. WHO Collaborating Centre, OIE Reference Laboratory, FAO Reference Laboratory/ Collaborating Centre)

4. Completed consolidating dangerous pathogens and toxins into a minimum number of facilities.

a. Has the country considered consolidating the locations for dangerous pathogens and toxins and, if so, has that been implemented?

i. If not, will consolidation be considered?

b. Have collections of dangerous pathogens been consolidated into a minimum number of facilities?

5. Employing diagnostics that preclude culturing dangerous pathogens.

a. Does the country utilize diagnostic tests that eliminate the need for culturing dangerous pathogens?

6. Implementing oversight and enforcement mechanism, and ministries have made available adequate funding to support the comprehensive national biosafety and biosecurity system.

a. Are there mechanisms for oversight, enforcement and attribution for biosecurity legislation, regulations and/or guidelines? What about for biosafety?

b. Does the country have funding for these activities? Is the funding source sustainable?

P.6.2 Biosafety and biosecurity training and practices

1. Country has a training program in place at all facilities housing or working with dangerous pathogens and toxins.
   a. Is biosecurity training in place across all facilities housing or working with dangerous pathogens? What about biosafety training?
   b. Is a common curriculum used for biosecurity training across all facilities housing or working with dangerous pathogens? What about for biosafety?
2. Training on biosafety and biosecurity has been provided to staff at all facilities that maintain or work with dangerous pathogens and toxins.
   a. Does your country conduct needs assessments for biosafety and biosecurity trainings? How often?
   b. How often is staff trained on biosecurity procedures? What about biosafety?
   c. How often is staff tested or exercised on biosecurity procedures? What about biosafety?
   d. How are these exercises monitored and assessed?
   e. Do these exercises include a process to document successes and areas for improvement?
   f. Are there corrective action plans in place?
3. Country is implementing a train-the-trainers program.
   a. Does the country have a train-the-trainer program for biosafety and biosecurity?
4. Country has in place sustained academic training in institutions that train those who maintain or work with dangerous pathogens and toxins.
   a. Do academic institutions in the country have biosafety training programs in place for those training to work with dangerous pathogens?
5. Country has funding and capacity to sustain biosafety and biosecurity training.
   a. Does the country have funding for these activities? Is the funding source sustainable?

Questions for facilities and biosafety equipment maintenance

1. Are the new facilities planned with long-term commitment of resources for operation and maintenance and formally commissioned before opening?
2. Can the biosafety cabinets (BSC) be serviced locally?
3. Are there sufficient national resources (budget and human) to ensure proper and timely maintenance of facilities and equipment?

Additional questions:

1. Is there induction and refresher training for all laboratory staff on biosafety and biosecurity?
2. Is there an appropriate waste management policy?
3. Is there a mechanism to ensure and monitor staff competence and proper training at all laboratories?

4. Does each facility have sufficient PPE based upon the local risk assessment?
5. Is there a framework to document, report, investigate and address any incidents and accidents at the facility and national levels?
6. Are national regulations in place and up-to-date for the transport of infectious substances (Categories A and B)?
   a. If yes, do local carriers ensure the transport of infectious substances according to the national regulations?
   b. Do the people responsible for the shipment of specimens have access to training on infectious substance transport?
      i. If yes, are these trainings in line with United Nations regulations on the transport of infectious substances?
7. Do laboratory personnel have equal access to occupational/worker health services in all facilities?
8. Is there a specific vaccination policy (pre-exposure prophylaxis) for laboratory personnel (Hepatitis B and other relevant diseases)?
9. Is post-exposure prophylaxis treatment provided to laboratory workers in all facilities?

Documentation or Evidence for Level of Capability:

- Documentation of dangerous pathogen collections housed in the country
- Establishment, enactment and enforcement of any relevant national legislation on biosafety & biosecurity
- Biosafety officers certified and stationed at all laboratories that have the potential to handle dangerous pathogens
- Policy document for biorisk or biosafety management in a facility is a written policy statement that is signed and reviewed annually
- Membership in good standing of a regional or international biosafety association
- OIE Country PVS report (also included for Prevent 2- Zoonoses)
- OIE Country PVS Gap Analysis report (also included for Prevent 2- Zoonoses)
- OIE Country PVS Laboratory Mission Report

Glossary:

- Biosafety: Laboratory biosafety describes the containment principles, technologies and practices that are implemented to prevent the unintentional exposure to pathogens and toxins, or their accidental release.
- Biosecurity: Laboratory biosecurity describes the protection, control and accountability for valuable biological materials within laboratories as well as information related to these materials and dual-use research, in order to prevent their unauthorized access, loss, theft, misuse, diversion or intentional release.
- Dangerous Pathogens and toxins: As an example, the informal Australia Group provides a List of Human and Animal Pathogens and Toxins for Export Control (http:// www.australiagroup.net/en/human_animal_pathogens.html)

IMMUNIZATION

Target: A functioning national vaccine delivery system—with nationwide reach, effective distributions, access for marginalized populations, adequate cold chain, and ongoing quality control—that is able to respond to new disease threats.

As Measured by: 90% -95% coverage of the country's twelve-month-old population with at least one dose of measles-containing vaccine as demonstrated by coverage surveys or administrative data.

Desired Impact: Effective protection through achievement and maintenance of immunization against measles and other epidemic-prone vaccine-preventable diseases (VPDs). Measles immunization is emphasized because it is widely recognized as a proxy indicator for overall immunization against VPDs. Countries will also identify and target immunization to populations at risk of other epidemic-prone VPDs of national importance (e.g., cholera, Japanese encephalitis, meningococcal disease, typhoid, and yellow fever). In the case of some diseases that are transferable from cattle to humans, such as anthrax and rabies, animal immunization should also be taken into account.

Score	Indicators - Immunization	
	P.7.1 Vaccine coverage (measles) as part of national program	P.7.2 National vaccine access and delivery
No Capacity - 1	Less than 50% of the country's 12-month-old population has received at least one dose of measles containing vaccine, as demonstrated by coverage surveys or administrative data; plan is in place to improve coverage, including supplemental immunization activities	No plan is in place for nationwide vaccine delivery OR plans have been dra throughout the country to target populations but not implemented; inade procurement and forecasting lead to regular stock outs at the central and c
Limited Capacity - 2	50-69% of the country's 12-month-old population has received at least one dose of measles containing vaccine, as demonstrated by coverage surveys or administrative data; plan is in place to reach 90% within the next five years to include supplemental immunization activities	Implementation has begun to maintain cold chain for vaccine delivery, bu than 40% of districts in country OR vaccine delivery (maintaining cold cha than 40% of the target population in the country; inadequate vaccine pro lead to occasional stock outs at the central and district level
Developed Capacity - 3	70-89% of the country's 12-month-old population has received at least one dose of measles containing vaccine, as demonstrated by coverage surveys or administrative data; plan is in place to reach 90% within the next three years	Vaccine delivery (maintaining cold chain) is available in 40-59% of distric Vaccine delivery (maintaining cold chain) is available to 40-59% of the ta country; vaccine procurement and forecasting leads to no stock outs of va occasional stock outs at district level
Demonstrated Capacity - 4	90% of the country's 12-month-old population has received at least one dose of measles containing vaccine, as demonstrated by coverage surveys or administrative data. 80% of all sub-national (districts/provinces) units covered.	Vaccine delivery (maintaining cold chain) is available in 60-79% of distric Vaccine delivery (maintaining cold chain) is available in 60-79% of the ta country; functional vaccine procurement and forecasting lead to no stock and rare stock outs at the district level.
Sustainable Capacity - 5	95% of the country's 12-month-old population has received at least one dose of measles containing vaccine, as demonstrated by coverage surveys or administrative data; or 90% of the country's 12-month-old population has received at least one dose of measles containing vaccine and the trajectory of progress, plans and capacities are in place to achieve 95% coverage by 2020. More than 80% of all sub-national (districts/provinces) units are covered.	Vaccine delivery (maintaining cold chain) is available in greater than 80% country OR Vaccine delivery (maintaining cold chain) is available to mor target population; systems to reach marginalized populations using cultur are in place; vaccine delivery has been tested through a nationwide vaccir exercise; functional procurement and vaccine forecasting results in no stoc

Notes:

N/A

Contextual Questions:

- Please describe if there are nationally important other immunizations outside the scope of the WHO Global Vaccine Action Plan (e.g., cholera, Japanese encephalitis, meningococcal disease, typhoid, and yellow fever or any other)
- Is public perception monitored on the topic of immunizations? Do vaccination campaigns address perception issues?

Technical Questions:

P.7.1 Vaccine coverage (measles) as part of national program

1. Does the country have a national-level immunization program or plan?
   a. What vaccine preventable diseases are covered by this program or plan?
   b. Please list the target rates for coverage for each of these vaccines.
   c. Is the country's national vaccine action plan aligned with the WHO Global Vaccine Action Plan?
   d. Does the country's plan take into account zoonoses of national concern?
   e. Is immunization mandatory or voluntary?

2. What programs or incentives are in place to encourage/support routine vaccination?
3. What factors discourage/hinder routine vaccination?
4. Please describe the systems used to monitor vaccine coverage.
   a. Is the % coverage with MCV and DTP tracked for the population?
   b. Which offices or agencies are involved in monitoring vaccine coverage for the country?
   c. How often is vaccine coverage measured?
   d. What is the source and quality of the data used as denominator in coverage estimates?
   e. Which systems do you have in place to monitor the quality of coverage data?
5. Is there specific support (monetary and staffing) for data gathering /reporting?

P.7.2 National vaccine access and delivery

1. Please describe how national systems ensure continuous cold chains as necessary for vaccine delivery throughout the country.
2. What is the structure and mechanisms which are in place to ensure sustainable supply to enable a successful program?
3. Please describe the most recent national vaccine campaign(s) or any recent functional exercises geared towards vaccine distribution and/or administration in the country.
4. Is there specific support (monetary and staffing) for immunization delivery?

Documentation or

Evidence for Level of

Capability: N/A

References:

- WHO EPI Program: http://www.who.int/immunization/programmes_systems/supply_chain/benefits_of_immunization/en/
- WHO Measles and Polio eradication programs
- WHO Global Vaccine Action Plan http://www.who.int/immunization/global_vaccine_action_plan/en/

DETECT

NATIONAL LABORATORY SYSTEM

Target: Real-time biosurveillance with a national laboratory system and effective modern point-of-care and laboratory-based diagnostics.

As Measured by: A nationwide laboratory system able to reliably conduct at least five of the 10 core tests on appropriately identified and collected outbreak specimens transported safely and securely to accredited laboratories from at least 80 percent of intermediate level/districts in the country.

Desired Impact: Effective use of a nationwide laboratory system capable of safely and accurately detecting and characterizing pathogens causing epidemic disease, including both known and novel threats, from all parts of the country. Expanded deployment, utilization and sustainment of modern, safe, secure, affordable and appropriate diagnostic tests or devices established.

Score*	Indicators - National Laboratory System			
	D.1.1 Laboratory testing for detection of priority diseases	**D.1.2 Specimen referral and transport system**	**D.1.3 Effective modern point of care and laboratory based diagnostics**	**D.1.4 Lab**
No Capacity – 1	National laboratory system is not capable of conducting any core tests.	No system is in place for transporting specimens from intermediate level/ districts to national laboratories, only ad hoc transporting.	No evidence of use of rapid and accurate point of care and laboratory based diagnostics. No tier specific diagnostic testing strategies are documented.	There are n quality sta
Limited Capacity – 2	National laboratory system is capable of conducting 1-2 core tests	System is in place to transport specimens to national laboratories from less than 50% of intermediate level/districts in country for advanced diagnostics	Minimal, laboratory diagnostic capability exists within the country, but no tier specific diagnostic testing strategies are documented. point of care diagnostics being used for country priority diseases	National q developed verifying tl
Developed Capacity – 3	National laboratory system is capable of conducting 3-4 core tests	System is in place to transport specimens to national laboratories from 50- 80% of intermediate level/districts within the country for advanced diagnostics	Tier specific diagnostic testing strategies are documented, but not fully implemented. Country is proficient in classical diagnostic techniques including bacteriology, serology and PCR in select labs but has limited referral and confirmatory processes. Country is using point of care diagnostics for country priority diseases, and at least one other priority disease.	A system o laboratorie to a nationa but it is vol ment for al
Demonstrated Capacity – 4	National laboratory system is capable of conducting five or more of the ten core tests	System is in place to transport specimens to national laboratories from at least 80% of intermediate level/districts within the country for advanced diagnostics	Country has tier specific diagnostic testing strategies documented and fully implemented, a national system of sample referral and confirmatory diagnostics culminating in performance of modern molecular or serological techniques at national and/or regional laboratories. Country is using point of care diagnostics according to tier specific diagnostic testing strategies for diagnosis of country priority diseases	Mandatory laboratorie mity to a na required.

Sustainable Capacity – 5	In addition to achieving "demonstrated capacity", country has national system for procurement and quality assurance	Demonstrated capability plus, transport specimens to/from other labs in the region; specimen transport is funded from host country budget	Country has sustainable capability for performing modern molecular and serological techniques as part of a national system of sample referral and confirmatory diagnostics. Country is using rapid and accurate point of care diagnostics as defined by tier specific diagnostic testing strategies. Country is also engaging formally other reference laboratories for testing capacity not available in country where needed to supplement the national diagnostic testing strategies for seven or more of ten lab tests required for priority diseases Country is able to sustain this capability on its own (no more than 20% dependence on donor funding).	Mandatory laboratorie to an intern required.

* For full scores, capabilities should be separately evaluated both in the human and animal livestock sectors and mechanisms for regular comparison and joint policy-development in a One- Health fashion should be in place. For final scores, the average should be taken.

Notes:

- The indicators refer to national laboratory capacity for the country.
- The national laboratory system should include:
  - Ability to conduct at least five of the ten core tests defined under the glossary in this section (see page 39);
  - Ability to transport specimens safely and quickly from 80% or more of intermediate levels/districts to national laboratory facilities for advanced diagnostics;
  - Ability to conduct higher level diagnostic testing at national laboratories or agreements with regional networks to ensure testing is available.
- Core tests can include local priority tests determined by country-selected indicator pathogens on the basis of major national public health concern.

Contextual Questions:

1. Which of the ten core tests is the country capable of conducting? Does the country have access to laboratories able to detect novel or previously unknown pathogens?
2. Please describe structure of the laboratory system, including number of labs, at local, intermediate levels/district, and national level.
   a. How many reference labs exist and for which microbes?
   b. Do local clinicians have the custom of using the laboratory system? Are there national guidelines for clinicians on which microbiological tests should be taken in specific syndromes like severe pneumonia, severe diarrhoea or suspected meningitis (for example)

c. What systems exist for getting laboratory results back to practitioners? How long does this take?
d. What percentage of the population has access to laboratory services for the ten priority diseases?

3. Have national laboratories been accredited?
   a. If yes, to what standard?
   b. Are guidelines and protocols for quality management system enforced and in use by public and animal health laboratories?
   c. Is there a national body that oversees Internal Quality Controls and External Quality Assessment schemes for public health laboratories at all levels?
   d. Are all laboratories enrolled in EQA program for the tests they perform to detect any of the ten priority diseases?
4. How is laboratory data on zoonotic diseases shared between human and animal health laboratories? Are the two data systems interoperable? (please see related questions for Prevent 2-Zoonotic Disease)
5. Is Personal Protective Equipment available for laboratory staff?
   a. How is availability of PPE tracked for laboratories?
   b. Please describe training procedures for PPE use in national laboratories
6. What biosecurity/biosafety training is provided to laboratory workers? (please see related technical questions for Prevent - Biosafety and Biosecurity)

Technical Questions:

D.1.1 Laboratory testing for detection of priority diseases

1. Is there a set of national diagnostic algorithms for performance of core laboratory tests that has been aligned with international standards (i.e. WHO, CLSI, OIE)?
2. How many of the core tests for ten priority diseases are implemented effectively across the tiered laboratory network?
   a. Of the tests that cannot be conducted, are there plans and timelines in place to gain this capacity within the next year?
   b. Are there official agreements with labs outside of the country for specialized testing not available in country?
3. Do labs have required equipment (based on the testing appropriate for the level in the tiered lab network) to support performance of core laboratory tests? Are maintenance contracts in place for key equipment and preventive maintenance implemented regularly?
4. How does the country ensure standardization of testing? Do national laboratories send out samples for testing validation of more local/regional labs?
5. Are labs authorized, capable and willing for testing of samples from wild animals?

D.1.2 Specimen referral and transport system

1. Is the specimen referral network documented for each of the tests necessary to detect and confirm etiologies of ten priority diseases?
2. Is there proof of functioning referral system available? For example, data on the number of isolates/samples submitted to national reference lab for key disease(s) per 100000 population.

3. Please describe the system for specimen transport from intermediate/district levels to reference laboratories and national laboratories.
   a. Are standardized SOPs in place for specimen collection, packaging, and transport?
   b. Is the specimen transport, eg, courier contracts supported by MOH or partners?
4. Does the host country participate in a regional (international) laboratory network?

D.1.3 Effective modern point of care and laboratory based diagnostics

1. Is there a plan in place to improve the availability of point of care diagnostics at clinical sites in the country?
2. Does the MoH/MoA have in-country production and/or procurement processes for acquiring necessary media and reagents for performance of core laboratory tests?

D.1.4 Laboratory Quality System

1. Is there a national body in charge of laboratory licensing?
2. Is there a national body in charge of laboratory inspection?
   a. If yes, please describe the inspection mechanism (frequency, procedures, sanctions, etc.)
3. Is there a national body in charge of laboratory certification (e.g. using ISO 9001)?
   a. If yes, please provide name(s).
4. Is there a national body in charge of laboratory accreditation (e.g. using ISO 15189)?
   a. If yes, please provide name(s).
   b. If no, do laboratories use services of foreign national or regional accreditation bodies?
   c. If yes, please provide name(s).
5. Are some laboratories accredited for disease-specific testing by WHO (e.g. polio, measles, HIV genotyping)?
6. Please provide number of laboratories certified or accredited and specify to which standard.
7. Is there a specific national document which describes the registration procedure for in vitro diagnostic medical devices (IVD, i.e. kits and reagents)?
8. Is there a national regulatory authority responsible for in vitro diagnostic device (e.g. reagents) qualification or registration?
   a. If yes, please provide a summary of the qualification or registration mechanisms.
9. Besides the inspection, certification or accreditation detailed above is any other kind of supervision organized?
   a. If yes or partial, describe the supervision plan and procedures (e.g. through specific networks like TB control programme or surveillance programmes)
10. Are there standardized supervision checklists or procedures?
11. When supervised, do the laboratories receive a report after each supervision?

12. Are there indicators to measure the progress in laboratory test quality? Please list these indicators
13. Does your country have a national EQA programme (proficiency-testing or rechecking) in the following areas:
    a. Bacteriology?
    b. Virology?
    c. Serology?
    d. Parasitology?
    e. Biochemistry
    f. Haematology?
    g. Anatomical pathology?
    h. Cytogenetic?
    i. Transfusion medicine?
14. Please describe the national EQA programme/s organization by providing for each: name of the programme, contact person/s, one line of description.
15. If applicable, is participation in national EQA programmes/s mandatory for public laboratories?
16. If applicable, is participation in national EQA programmes/s mandatory for private laboratories?
17. Percentage of public laboratories participating in the national EQA scheme (EQAS)?
18. Percentage of private laboratories participating in the national EQAS?
19. Are corrective actions organized when assessment result is poor?

Documentation or Evidence for Level of Capability:

- National Laboratory Strategic Plan defining tiered laboratory network
- National Laboratory Policy
- Documented list of top ten priority diseases and three core syndromes for targeted improvement of prevention, detection and response
- Certificates of accreditation for national laboratories and/or EQA results within previous six months for core tests
- Documented specimen referral routes for detection/confirmation of top ten priority diseases
- Plan for transporting specimens safely throughout the country

References:

- International Health Regulations: What Gets Measured Gets Done (includes listing of the 10 core tests) http://wwwnc.cdc.gov/eid/article/18/7/12-0487-t2
- WHO Laboratory Assessment Tool. WHO/HSE/GCR/LYO/2012.2 http://www.who.int/ihr/publications/laboratory_tool/en/

Glossary:

- 10 core tests: The list of 10 core tests in each country includes six testing methods selected according to the IHR immediately notifiable list and the WHO Top Ten Causes of Death in low-income countries: polymerase chain reaction (PCR) testing for Influenza virus; virus culture for poliovirus; serology for HIV; microscopy for mycobacterium tuberculosis; rapid diagnostic testing for plasmodium spp.; and bacterial culture for Salmonella enteritidis serotype Typhi. These six methods are critical to the detection of epidemic-prone and emerging diseases, and competency in these methods is indicated by the successful testing for the specific pathogens listed. The remaining four tests should be selected by the country on the basis of major national public health concerns.
- Transport 'system': accurately collect and maintain specimen integrity and is written in SOP
- 'Ad hoc' transport system: no SOP on how to transport sample
- Rapid: Diagnostic test performed and result obtained within 12-48 hours or otherwise timely for triggering and guiding control measures
- Modern: Novel molecular and cellular methods capable of prompt and accurate identification of pathogens in time-saving and cost-effective manner.

REAL TIME SURVEILLANCE

Target: Strengthened foundational indicator- and event-based surveillance systems that are able to detect events of significance for public health, domestic and wild animal health and health security; improved communication and collaboration across sectors and between sub-national (local and intermediate), national and international levels of authority regarding surveillance of events of public health significance; improved country and intermediate level/regional capacity to analyse and link data from and between strengthened, real-time surveillance systems, including interoperable, interconnected electronic reporting systems. This can include epidemiologic, clinical, laboratory, environmental testing, product safety and quality, and bioinformatics data; and advancement in fulfilling the core capacity requirements for surveillance in accordance with the IHR and the OIE standards.

As Measured by: Surveillance for at least three core syndromes indicative of potential public health emergencies conducted according to international standards.

Desired Impact: A functioning public health surveillance system capable of identifying potential events of concern for public health and health security, and country and intermediate level/regional capacity to analyse and link data from and between strengthened real-time surveillance systems, including interoperable, interconnected electronic reporting systems. Countries will support the use of interoperable, interconnected systems capable of linking and integrating multi-sectoral surveillance data and using resulting information to enhance the capacity to quickly detect and respond to developing biological threats. Foundational capacity is necessary for both indicator- based (including syndromic) surveillance and event-based surveillance, in order to support prevention and control activities and intervention targeting for both established infectious diseases and new and emerging public health threats. Strong surveillance will support the timely recognition of the emergence of relatively rare or previously undescribed pathogens in specific countries.

Score	Indicators - Real Time Surveillance			
	D.2.1 Indicator and event based surveillance systems	**D.2.2 Interoperable, interconnected, electronic real-time reporting system**	**D.2.3 Analysis of surveillance data**	**D.2.4 Syndrom**
No Capacity - 1	No indicator or event-based surveillance systems exist	No interoperable, interconnected, electronic real-time reporting system exists	No reports related to data collection	No syndromic su
Limited Capacity - 2	Indicator and event-based surveillance system(s) planned to begin within a year	Country is developing an interoperable, interconnected, electronic real-time reporting system, for either public health or veterinary (domestic and wild animal)	Sporadic reports related to data collection with delay	Syndromic surve within the next y to allow for synd
Developed Capacity - 3	Indicator OR event-based surveillance system(s) in place to detect public health threats	Country has in place an inter-operable, inter-connected, electronic reporting system, for either public health or veterinary surveillance systems. The system is not yet able to share data in real-time.	Regular reporting of data with some delay; ad-hoc teams put in place to analyse data	Syndromic surve 1-2 core syndron emergencies
Demonstrated Capacity - 4	Indicator and event-based surveillance system(s) in place to detect public health threats	Country has in place and interoperable, interconnected, electronic real-time reporting system, for public health and/or veterinary surveillance systems. The system is not yet fully sustained by the host government.	Annually or monthly reporting; attributed functions to experts for analysing, assessing and reporting data	Syndromic surve three or more co health emergenc
Sustainable Capacity - 5	In addition to surveillance systems in country, using expertise to support other countries in developing surveillance systems and provide well-standardized data to WHO and OIE for the past five years without significant external support	Country has in place an inter-operable, interconnected, electronic real-time reporting system, including both the public health and veterinary surveillance systems which is sustained by the government and capable of sharing data with relevant stake-holders according to country policies and international obligations.	Systematic reporting; dedicated team in place for data analysis, risk assessment and reporting	In addition to sur using expertise t developing surve

International Health Regulations (2005)

Notes:

- The indicator refers to surveillance capacity for the country.
- The real-time surveillance system should include:
  - ability to conduct surveillance for at least three core syndromes indicative of a public health emergency;
  - ability to provide reports and data to high level public health decision makers in country, and feedback to lower levels implementing control programs;
  - linkages to laboratory and other information systems to provide a complete surveillance picture.
- Event-based surveillance is the organized and rapid capture of information about events that are a potential risk to public health. This information can be rumours and other ad-hoc reports transmitted through formal channels (i.e. established routine reporting systems) and informal channels (i.e. media, health workers and nongovernmental organizations reports) and can supplement traditional syndromic surveillance

Contextual Questions:

1. Does the country have a list of notifiable diseases?

Technical Questions:

D.2.1 Indicator and event based surveillance systems

1. Describe event-based surveillance in-country.
   a. Describe sources utilized by event based surveillance systems and mechanisms of collecting data (paper, fax, electronic, phone?).
   b. Does event based surveillance exist at any subnational (intermediate and local) levels?
   c. Describe indicator based surveillance system(s) and mechanisms of collecting data.
2. Describe data validation and quality assurance systems/efforts.

D.2.2 Interoperable, interconnected, electronic real-time reporting system

1. How is public health staff trained on disease surveillance systems?
2. How is clinical staff trained to report on notifiable diseases?
3. Does the public health staff on intermediate levels/regional and/or national levels have the skills to analyse the surveillance data to create information triggering/ supporting action?
4. How does the country utilize electronic reporting systems for notifiable diseases for human health and animal health?
5. Are these systems shared between sectors, or independent?
6. If no electronic reporting systems exist in the country, are there plans to implement electronic reporting in the future?
7. Describe the reporting feedback to intermediate levels/regional and local levels.

8. Describe reporting to national and intermediate levels/regional stakeholders.
9. Describe public reporting.

D.2.3 Integration and analysis of surveillance data

1. Describe how laboratory data feeds into the surveillance systems.
   a. Does the surveillance system collect ongoing/real time laboratory data that is connected to MoH systems?
   b. Are standardized forms (electronic or otherwise) available to collect this data?
   c. Does the MoH share laboratory data with other ministries/agencies?
   d. Is there a centrally located mechanism for integrating data from clinical case reporting and data from clinical or reference microbiological laboratories?

D.2.4 Syndromic surveillance systems

1. Describe syndromic surveillance systems that are in place within the country:
   - Describe various syndromes and pathogens that are detected and reported.
   - Describe how many sites participate in each surveillance system.
   - Describe how data is validated.
   - Describe any syndromic surveillance systems that utilize electronic reporting.
   - Describe reports that are produced by each surveillance system and how they are used by public health decision makers. Are these reports shared with any other Ministries within the country?
   - Please describe any linkages that exist between systems at a national level.

Additional questions on indicator- based surveillance:

1. Describe indicator-based surveillance system(s) and mechanisms of collecting data.
   a. List of priority disease, conditions and case definitions.
   b. Completeness and timeliness of reporting from at least 80% of all reporting units.
2. Describe data validation and quality assurance systems/efforts.

Documentation or evidence for level of capability:

- Samples of surveillance reports used by public health decision-makers in country
- Listing of core syndromes indicative of public health emergency
- Plans for enhancing syndromic surveillance
- Plans for developing or enhancing event-based surveillance
- OIE Reports (World Animal Health Information System - WAHIS)

References:

t WHO Guide to Establishing Event Based Surveillance
http://apps.who.int/iris/bitstream/10665/112667/1/WHO_HSE_GCR_LYO_2014.4_eng.pdf?ua=1

t International Health Regulations (2005) Includes lists of disease that have "…demonstrated ability to cause serious public health impact "http://whqlibdoc.who.int/ publications/2008/9789241580410_eng.pdf

t OIE Terrestrial Animal Health Code - Section 1

t OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals: http://www.oie.int/en/international-standard-setting/terrestrial-manual/access-online/

Glossary:

t Real-time surveillance: Daily or max weekly collection, consolidation and evaluation of public health and/or veterinary data

t Three Core Syndromes: Internationally recognized standards for syndromic surveillance are available for the following five syndromes: severe acute respiratory syndrome, acute flaccid paralysis, acute haemorrhagic fever, acute watery diarrhoea with dehydration, and jaundice with fever. The three syndromes will be chosen depending on national disease control priorities. These surveillance systems should include early warning surveillance data and laboratory findings, which should be analysed by trained epidemiologists

t Interoperable: Describes the extent to which systems and devices can exchange data, and interpret that shared data. For two systems to be interoperable, they must be able to exchange data and subsequently present that data such that it can be understood by a user (definition by Healthcare Information and Management Systems Society).

REPORTING

Target: Timely and accurate disease reporting according to WHO requirements and consistent coordination with FAO and OIE.

As Measured by: Number of countries trained for reporting of potential public health events of international concern to WHO and to other official reporting systems such as OIE-WAHIS. (and/or) Number of National IHR Focal Points connected to the learning package on reporting to WHO.

Desired Impact: Countries and their National IHR Focal Points, OIE Delegates, and WAHIS National Focal Points will have access to a toolkit of best practices, model procedures, reporting templates, and training materials to facilitate rapid (within 24 hours) notification of events that may constitute a PHEIC to WHO / listed diseases to OIE and will be able to rapidly (within 24/48 hours) respond to communications from these organizations.

Score	Indicators - Reporting	
	D.3.1 System for efficient reporting to WHO, FAO and OIE	D.3.2 Reporting network and protocols in country
No Capacity - 1	No national IHR focal point, OIE Delegate and/or WAHIS National Focal Point has been identified and / or identified focal point/delegate does not have access to learning package and best practices as provided by WHO, OIE and FAO.	Country does not have protocols or processes for reporting to WHO, OI plans to establish within the next year plans and protocols for reportir
Limited Capacity - 2	Country has identified National IHR Focal Point, OIE delegates and WAHIS National Focal Points; focal point is linked to learning package and best practices as provided by WHO, OIE and FAO	Country is in the process of developing and establishing protocols, pro or legislation governing reporting to start implementation within a ye
Developed Capacity - 3	Country has demonstrated ability to identify a potential PHEIC and file a report to WHO based on an exercise or real event, and similarly to the OIE for relevant zoonotic disease	Country has established protocols, processes, regulations, and/or legis ting and processes for multisectoral coordination in response to a poten the OIE for relevant zoonotic disease.
Demonstrated Capacity - 4	Country has demonstrated ability to identify a potential PHEIC and file a report to WHO within 24 hours and similarly to the OIE for relevant zoonotic disease, based on an exercise or real event	Country demonstrates timely reporting of a potential PHEIC to WHO a zoonotic disease in alignment with national and international standar diate levels (districts or regions), based on an exercise or real event.
Sustainable Capacity - 5	Country has demonstrated ability to identify a potential PHEIC and file a report within 24 hours, and similarly to the OIE for relevant zoonotic disease, and has a multisectoral process in place for assessing potential events for reporting	Country demonstrates timely reporting of a potential PHEIC to the W and international level and to the OIE for relevant zoonotic disease (l event); country has a sustainable process for maintaining and impro nication capabilities and communication mechanisms are backed by (e.g. protocols, regulations, legislation.)

Notes:

- Not all countries will have reported a potential PHEIC to the WHO or reported to the OIE for relevant zoonotic disease
- NOTE: all questions should be answered to reflect human and zoonotic animal diseases

Contextual questions:

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D.3.1 System for efficient reporting to WHO, FAO and OIE

1. Which ministry or office within the country has been identified and notified to the WHO as the IHR NFP?
   a. Is the IHR national focal point currently operational?
   b. Is there an operational OIE contact point? Is there an operational OIE Focal Point for Wildlife?
   c. Are food safety issues due to microbiological origin reported through the IHR NFP and to the OIE?
   d. Is there a mechanism to ensure that the IHR NFP and OIE contact points exchange information when needed (e.g. for zoonotic diseases)?
   e. Please describe the training that the IHR NFP/OIE contact point responsible person(s) have undergone for this specific role
   f. Please list the ministries that these focal points represents towards the WHO/OIE and who report through the NFP (e.g. ministry of health, ministry of agricul- ture).
2. What are the mechanisms for public health, animal health and security authorities to make decisions on reporting?
3. Please describe if the country has multilateral regional (international) or bilateral neighbouring country reporting requirements. If yes, specify.
4. Is there anything which limits the performance of the IHR NFP? (may include quality and timeliness of information received, obstacles caused by coordination with other levels and sectors)
   a. Does the IHR NFP use the informal consultation mechanisms with WHO under Article 8 of the IHR?
   b. Does the IHR NFP use the bilateral exchange mechanisms with other IHR NFPs?

D.3.2 Reporting network and protocols in country

1. Please describe most recent exercise (or event) that tested the country's systems to identify and report on a potential public health emergency of international concern (PHEIC).
   a. How was the health event identified? What surveillance systems were linked?
   b. How were public health decision-makers and other leadership consulted in the decision-making process?

c. Which ministries were engaged in the exercise or event? (ministry of health? defense? agriculture? environment?)

d. If the country has not yet exercised PHEIC reporting, please identify if there are any plans to do so within the next year.

2. Has the country passed legislation or other policies related to procedures and/or approvals for reporting on a potential PHEIC to the WHO? If so, please describe the parties involved in approvals as well as the major steps in approvals. If possible, please provide a copy of relevant legislation or policies.

3. Does the country have standard operating procedures in place for approving and reporting on a potential PHEIC to WHO?

Documentation or Evidence for Level of Capability:

- OIE Reports (World Animal Health Information System - WAHIS)
- IHR reports to the World Health Assembly
- Legislation, protocols or other policies related to reporting to WHO, OIE or FAO
  - World Animal Health Information Systems (WAHIS)

References:

- WHO IHR Annex 2
- OIE Terrestrial Animals and Health Code – Section 1
- European Union Decision 1082/EU/2013, Early Warning and Response System

WORKFORCE DEVELOPMENT

Target: State parties should have skilled and competent health personnel for sustainable and functional public health surveillance and response at all levels of the health system and the effective implementation of the IHR (2005). A workforce includes physicians, animal health or veterinarians, biostatisticians, laboratory scientists, farming/ livestock professionals, with an optimal target of one trained field epidemiologist (or equivalent) per 200,000 population, who can systematically cooperate to meet relevant IHR and PVS core competencies.

As Measured by: A workforce including physicians, animal health or veterinarians, biostatisticians, laboratory scientists, farming/livestock professionals, with an optimal target of one trained field epidemiologist (or equivalent) per 200,000 population, who can systematically cooperate to meet relevant IHR and PVS core competencies.

Desired Impact: Prevention, detection, and response activities conducted effectively and sustainably by a fully competent, coordinated, evaluated and occupationally diverse multi-sectoral workforce.

Score	Indicators - Workforce Development		
	D.4.1 Human resources are available to implement IHR core capacity requirements	**D.4.2 Applied epidemiology training program in place such as FETP**	**D.4.3 Workforce strategy**
No Capacity - 1	Country doesn't have multidisciplinary HR capacity required for implementation of IHR core capacities	No FETP or applied epidemiology training program established	No health workforce strategy e
Limited Capacity - 2	Country has multidisciplinary HR capacity (epidemiologists, veterinarians, clinicians and laboratory specialists or technicians) at national level	No FETP or applied epidemiology training program is established within the country, but staff participate in a program hosted in another country through an existing agreement (at Basic, Intermediate and/or Advanced level)	A healthcare workforce strateg include public health professic veterinarians and laboratory te
Developed Capacity - 3	Multidisciplinary HR capacity is available at national and intermediate level	One level of FETP (Basic, Intermediate, or Advanced) FETP or comparable applied epidemiology training program in place in the country or in another country through an existing agreement	A public health workforce stra larly reviewed, updated, or imp
Demonstrated Capacity - 4	Multidisciplinary HR capacity is available as required at relevant levels of public health system (e.g. epidemiologist at national level and intermediate level and assistance epidemiologist (or short course trained epidemiologist) at local level available)	Two levels of FETP (Basic, Intermediate and/or Advanced) or comparable applied epidemiology training program(s) in place in the country or in another country through an existing agreement	A public health workforce stra implemented consistently; stra and reported on annually
Sustainable Capacity - 5	Country has capacity to send and receive multidisciplinary personnel within country (shifting resources) and internationally	Three levels of FETP (Basic, Intermediate and Advanced) or comparable applied epidemiology training program(s) in place in the country or in another country through an existing agreement, with sustainable national funding	"Demonstrated Capacity" has b health workforce retention is t place to provide continuous ed mote qualified workforce with

International Health Regulations (2005)

Notes

- The indicator refers to public health workforce capacity for the country.
- Public health workforce planning should include:
  - epidemiologists, biostatisticians, information systems specialists, veterinarians, and other public health personnel;
  - indication of trainings that have been provided at a national level or are available to staff from a partner entity;
  - description of long-term training programs that are available to help expand the pipeline of qualified public health professionals within the country.
- FETP Basic Level Training: For local health staff, it consists of limited classroom hours interspersed throughout 3–5 month on the job field assignments to build capacity in conducting timely outbreak detection, public health response, and public health surveillance.
- FETP Intermediate Level Training: For intermediate levels (district/regions) epidemiologists, it consists of limited classroom hours interspersed throughout 6- 9 month on the job mentored field assignments to build capacity in conducting outbreak investigations, planned epidemiologic studies, and public health surveillance analyses and evaluations.
- FETP Advanced Level Training: with a national focus for advanced epidemiologists, it consists of limited classroom hours interspersed throughout 24-month mentored field assignments to build capacity in outbreak investigations, planned epidemiologic studies, public health surveillance analyses and evaluations, scientific communication and evidence-based decision making for development of effective public health programming.
- Workforce development is a crosscutting element, and many other aspects of IHR implementation will depend on strong public health workforce.

Contextual question

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D.4.1 Human resources are available to implement IHR core capacity requirements

1. Describe current HR capacity in the country.
   a. What is the existing capacity on epidemiologists, clinicians, biostatisticians, information systems specialists, veterinarians, social scientists, laboratory techni- cians/specialists and other public health personnel for different level of the health system (local, intermediate and national).
   b. To what extent are these capacities available (only at national levels or below)?
   c. Does each local and/or intermediate level have some capacity on epidemiology, case management, laboratory etc.?
2. Describe how these multi-disciplinary team is formed and communicated to each other (at national level, intermediate level and peripheral levels)
   a. How are multi-disciplinary teams organized?
   b. Discuss the individual HR capacities:
      a. Epidemiology (including field epidemiology short and long term)
      b. Clinicians and clinical assistants

c. Nursing

d. Laboratory specialist and technicians
e. Information specialists and assistants
f. Social scientist
g. Veterinarians and veterinary technicians
h. Wildlife experts
i. Other relevant public health personnel

Additional questions on field epidemiology capacity

1. Describe current field epidemiology capacity in-country.
   a. Describe the training program for field epidemiologists. Who conducts this training?
   b. How is field epidemiology capacity tracked in-country?
2. Describe how epidemiologists at the national, intermediate, and local levels communicate on a regular basis. Are there standard reporting connections between these levels?
3. Describe how epidemiologists at the national, intermediate, and local levels communicate during an infectious disease outbreak. Are there standard reporting connections between these levels during outbreaks?
4. How many trained field epidemiologists are available to support investigations throughout the country?
5. Does each intermediate level/district (or other similar administrative division) have field epidemiology capacity?

D.4.2 Field Epidemiology Training Program or other applied epidemiology training program in place

1. Is there an FETP or other standard Field Epidemiology Training Program in-country?
   a. Does the field epidemiology training program target current members of the public health workforce? Academic students? Both?
   b. Please provide measures on the number of FETP graduates in the country.
   c. Please describe the mentorship program for FETP residents.
   d. Is there a partnership with other countries in the region to share FETP graduates during emergency events?
2. Please describe any other long-term training programs that are available to help expand the pipeline of qualified public health professionals within the country
   a. For physicians (public health and/or clinical care)?
   b. For nurses (public health and/or clinical care)?
   c. For veterinarians (public health, agricultural, wildlife, and/or private practice)?
   d. For biostatisticians?
   e. For laboratory assistants and specialists?
   f. For farming/livestock professionals?

D.4.3 Workforce strategy

1. Please describe which career tracks are included in the workforce strategy (epidemiologists, veterinarians, laboratory assistants and specialists, doctors, nurses, other)?
2. What is the median number of years public health personnel have been on staff within the ministry and/or national institutes?
   a. Is attrition a concern for the national public health system (may be caused by aging employees, staff departures or other reasons)?
3. How is the workforce strategy being implemented and tracked?
   a. Please provide a copy of the strategy, if available.
   b. Please provide a copy of workforce strategy tracking report, if available.
4. Are there incentives in place to maintain the existing public health workforce within the country?
   a. Please describe efforts to retain the public health workforce.
   b. Are there specific incentives for any workforce specialties (may include physicians, nurses, veterinarians, biostatisticians laboratory assistants and specialists, or animal health professionals)?
5. How is the national public health workforce financed within the country?

Documentation or Evidence for Level of Capability:

- Sample field epidemiology training curriculum used in the country
- Public health workforce strategy, if available
- Annual reports based on workforce strategy

RESPOND

PREPAREDNESS

Targets: Preparedness includes the development and maintenance of national, intermediate and local or primary response level public health emergency response plans for relevant biological, chemical, radiological and nuclear hazards. This covers mapping of potential hazards, identification and maintenance of available resources, including national stockpiles and the capacity to support operations at the intermediate and local or primary response levels during a public health emergency.

Desired Impact: Emergency response operation up to sub-national (local and intermediate) level during public health emergency is successfully conducted in line with the emergency response plan with adequate support of resources and capacities.

Score	Indicators - Preparedness	
	R.1.1 Multi-hazard national public health emergency preparedness and response plan is developed and implemented	**R.1.2 Priority public health risks and resources ar**
No Capacity – 1	National public health emergency preparedness and response plan is not available to meet the IHR core capacity requirements. (Annex 1A Article 2)	Public health risk and resources mapping is not done
Limited Capacity – 2	A multi-hazard national public health emergency preparedness and response plan to meet IHR core capacity requirements has been developed (Annex 1A Article 2)	A national risk assessment has been conducted to identif health events' and resource mapping has been done
Developed Capacity – 3	National public health emergency response plan(s) incorporates IHR related hazards and Points of Entry AND Surge capacity to respond to public health emergencies of national and international concern is available	National resources have been mapped (logistics, experts, relevant hazards and priority risks and plan for manage national stockpiles is in place
Demonstrated Capacity – 4	Procedures, plans or strategy in place to reallocate or mobilize resources from national and intermediate levels to support action at local response level (including capacity to scaling up the level of response)	National profiles on risks and resources developed and r annual basis and stockpiles (critical stock levels) for resp cal, chemical and radiological events and other emergen
Sustainable Capacity – 5	The national public health emergency response plan(s) is implemented /tested in actual emergency or simulation exercises and updated as needed.	The national risk profile and resources are assessed regul emerging threats.

Note: N/A

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R.1.1 Multi-hazard national public health emergency preparedness and response plan is developed and implemented

1. Does the country have a national public health emergency preparedness and response plan?
   a. Does the plan have multi-hazard whole of society approach'?
   b. Does the plan cover the IHR core capacity requirements of Annex 1A Article 2

2. Does the plan incorporate other IHR-related hazards?
3. Does the plan incorporate points of entry?
4. Is surge capacity available to respond to public health emergencies of national and international concern?
5. Describe the procedures, plans to relocate or mobilize resources from national and intermediate levels to support response at local level.
    a. What are those procedures and plans?
    b. What are the resources available and status of stockpiling?
    c. What is the mechanism to address the resource gaps?
6. Is the plan implemented or tested?
    a. Has the review been done after implementation and testing?
    b. What are the key findings (SWOT analysis)?
    c. Is the plan updated accordingly?
    d. Is the plan tested after revision or update?

R.1.2 Priority public health risks and resources are mapped and utilized

1. Describe public health risk and resource mapping?
    a. When it was done and who was involved?
    b. What are the findings of the national risk assessment?
2. Describe the findings of the resources mapping.
    a. Does this mapping address IHR relevant hazards and priority risks?
    b. What is the status of logistics for these mapped risks?
    c. Do the stockpiles also ensure provisions for response to other IHR-related hazards?
    d. What is the status of experts?
    e. How the funding is ensured?
3. How often are national profiles on risk and resources reviewed and updated?
4. How often are national risk profile and resources assessed to accommodate?

References:

- Monitoring and Evaluation for Disaster Risk Reduction - http://www.un-spider.org/risks-and-disasters/sendai-framework-drr
- Sendai Framework for Disaster Risk Reduction 2015-2030

EMERGENCY RESPONSE OPERATIONS

Target: Countries will have a public health emergency operation centre (EOC) functioning according to minimum common standards; maintaining trained, functioning, multi-sectoral rapid response teams and "real-time" biosurveillance laboratory networks and information systems; and trained EOC staff capable of activating a coordinated emergency response within 120 minutes of the identification of a public health emergency.

As Measured by: Documentation that a public health EOC meeting the above criteria is functioning.

Desired Impact: Effective coordination and improved control of outbreaks as evidenced by shorter times from detection to response and smaller numbers of cases and deaths.

Score	Indicators - Emergency Response Operations			
	R.2.1 Capacity to Activate Emergency Operations	**R.2.2 Emergency Operations Centre Operating Procedures and Plans**	**R.2.3 Emergency Operations Program**	**R.2.4 Case are implem hazards.**
No Capacity - 1	No identified procedures have been developed to determine when to activate public health emergency operations	No EOC plans/procedures for Incident Management Structure (or equivalent) are in place	No exercises have been completed	No case mana available for p diseases[7]
Limited Capacity - 2	EOC point of contact is available 24/7 to guide response	EOC plans/procedures describing incident management structure (IMS) or equivalent structure are in place; plan describes key structural and operational elements for basic roles (including Incident management or command, Operations, Planning, Logistics and Finance)	Table top exercise has been completed to test systems and decision making	Case manage lable for priori
Developed Capacity - 3	EOC staff team is trained in emergency management and PHEOC standard operating procedures and is available for response when necessary	In addition to meeting requirements of "limited capacity", EOC plans are in place for functions including public health science (epidemiology, medical and other subject matter expertise), public communications, partner liaison	Functional exercise has been completed to test operations capabilities but EOC has not yet been activated for a response. System is not yet capable of activating a coordinated emergency response within 120 minutes of the identification of a public health emergency	Case manage IHR relevant relevant healt are available and transport patients in the
Demonstrated Capacity - 4	In addition to activities for "developed capacity", there is dedicated EOC staff that has received training and can activate a response within two hours	In addition to meeting "developed capacity", the following EOC plans are in place: concept of operations; Forms and templates for data collection, reporting, briefing; Role descriptions and job aids for EOC functional positions	EOC activated a coordinated emergency response or exercise within 120 minutes of the identification of a public health emergency; response utilized operations, logistic and planning functions	Case manage and transport and transport patients are i guidelines an

[7] For the animal health sector, this information can be found in the country PVS report, Critical Competency card: II-6: Emergency response

[8] Nuclear, chemical, zoonotic and food safety

[9] As specified in Article 57, 2(d) IHR (2005)

Sustainable Capacity - 5	In addition to activities for "demonstrated capacity", exercises are conducted two or more times per year to test EOC activation	In addition to meeting "demonstrated capacity", response plans are in place that describe scaled levels of response with resource requirements for each level and procedures for acquiring additional resources	In addition to achieving demonstrated capacity, a follow up evaluation was conducted and corrective action plan was developed and implemented	In addition to appropriate st defined by the management emergencies

Notes

- The indicator refers to public health emergency operations for the country.
- The EOC should include:
  - information systems to connect public health decision makers to appropriate data sources;
  - communications equipment;
  - staff that are trained and capable of coordinating an emergency response.
- Emergency operations plans should be developed that can be scalable and flexible to address emerging disease threats.
- Exercises should test the capacity of the emergency operations systems and staff to coordinate a large response affecting multiple communities, and involving multi- sectoral coordination.
- Functional exercises should be held on an annual basis; additional drills, table-top exercise and simulations can supplement the functional exercises.

Contextual Questions:

1. Please describe the physical structure of the current public health emergency operations centre (EOC) at the national level, if applicable.
   a. If there is an EOC, please provide a floor plan and description of equipment.
   b. What is the total staff capacity for the EOC? Is there a plan in place to accommodate additional staff, if necessary?
   c. Is there a reliable power source for the EOC?
   d. Is there reliable communications structure for the EOC? Does this include internet, email, and phone capabilities?
   e. Is the organization able to convene participants from ministries and other national and multinational partners as appropriate?
2. During an emergency, is there a process for sharing scientific data and recommendations with policy makers and national leaders?
3. Is there a multisectoral commission or a multidisciplinary emergency response department for public health/animal health?
   a. Does this combine security, public health, veterinary, wildlife, and other experts?
   b. Has this team received public communication training?
   c. How often do these groups meet to discuss cross cutting issues?

4. How do subnational (intermediate and local) entities manage emergency response activities?
    a. Is there a role for public health, or is this a civil defence activity?
5. How do localities manage emergency response activities?
    a. Is there a role for public health, or is this a civil defence activity?
6. Is there a hotline people/clinicians can call for help on handling a disease of unknown origin?
    a. Is there a comparable system for animal disease support?

Technical Questions:

R.2.1 Capacity to Activate Emergency Operations

1. Describe scenarios or triggers for EOC activation. Are there multiple levels of EOC activation?
    a. Who decides the change of level?
2. Please describe roles for staff that have been identified to support EOC functions.
    a. Is there 24/7 coverage for emergency operations?
3. Please describe how EOC staff have been trained on emergency operations principles.
    a. How have response teams been trained?
    b. Is there a training program for EOC staff?
    c. Is there an emergency operations training curriculum for staff who support EOC functions?
    d. How are surge staff identified? Is there training available to surge staff in advance of a response? Is there "just in time" training available?

R.2.2 Emergency Operations Centre Operating Procedures and Plan

1. Please describe procedures that are in place for emergency operations.
    a. How often are procedures updated?
    b. How are records of procedures maintained and distributed?
    c. Is there a procedure in place for decision making?
2. When there is a national public health emergency, who serves as the Incident Manager for the EOC?
3. Describe the availability/dissemination for different target groups of the situational awareness and reports.

R.2.3 Emergency Operations Program

1. Please describe public health emergency operations exercises or activations that have been conducted within the past year.
   a. Please describe functional exercises that have been completed within the last year.
   b. Please describe table-top exercises that have been completed within the last year.
   c. Please describe any emergency activation within the last year.
   d. Please provide summary of any improvement plans, after action reports, or lessons learned documents that were completed as a result of these exercises or activations.
   e. How many times has the emergency operations centre been operated in the past five years?

R.2.4 Case management procedures are implemented for IHR relevant hazards

1. Availability of case management guidelines for priority diseases and IHR relevant hazards at all health system levels.
2. Availability of SOPs (accordingly to national or international guidelines) for the management and transport of potentially infectious patients in the local level and point of entry.
3. Availability of patient referral and transportation mechanism with adequate resources (designated ambulances and SOPs).
4. Availability of appropriate staff trained in case management of IHR related emergencies.

Documentation or Evidence for Level of Capability:

- Floor plan of the EOC, and listing of available equipment
- Training plans for emergency operations staff
- Exercise plan, including evaluation and corrective action plan if available
- Activation plan for emergency response including e.g. roster of emergency operations staff and role

References:

- WHO EOC NET: http://www.who.int/ihr/eoc_net/en/
- Monitoring and Evaluation for Disaster Risk Reduction - http://www.un-spider.org/risks-and-disasters/sendai-framework-drr
- Sendai Framework for Disaster Risk Reduction 2015-2030

LINKING PUBLIC HEALTH AND SECURITY AUTHORITIES

Target: In the event of a biological event of suspected or confirmed deliberate origin, a country will be able to conduct a rapid, multisectoral response, including the capacity to link public health and law enforcement, and to provide and/or request effective and timely international assistance, including to investigate alleged use events.

As Measured by: Evidence of at least one response within the previous year that effectively links public health and law enforcement, OR a formal exercise or simulation involving leadership from the country's public health and law enforcement communities.

Desired Impact: Development and implementation of a memorandum of understanding (MOU) or other similar framework outlining roles, responsibilities, and best practices for sharing relevant information between and among appropriate human and animal health, law enforcement, and defence personnel and validation of the MOU through periodic exercises and simulations. In collaboration with FAO, International Criminal Police Organization (INTERPOL), OIE, WHO, individual Biological and Toxin Weapons Convention States Parties (and where appropriate the Implementation Support Unit), the United Nations Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM), and other relevant regional and international organizations as appropriate, countries will develop and implement model systems to conduct and support joint criminal and epidemiological investigations to identify and respond to suspected biological incidents of deliberate origin.

Score	Indicator - Linking Public Health and Security Authorities
	R.3.1 Public Health and Security Authorities, (e.g. Law Enforcement, Border Control, Customs) are linked during a suspect or con biological event
No Capacity – 1	No legal background, relationships, protocols, MOUs or other agreements exist between public health, animal health and security authorities
Limited Capacity - 2	Points-of-contact and triggers for notification and information sharing have been identified and shared between public health, animal health and
Developed Capacity - 3	Memorandum of Understanding (MOU) or other agreement (i.e., protocol) exists between public health and security authorities within the cou formally accepted
Demonstrated Capacity - 4	At least 1 public health emergency response or exercise within the previous year that included information sharing with Security Authorities using other agreement (i.e., protocol)
Sustainable Capacity - 5	Public health and security authorities exchange reports and information on events of joint concern at national, intermediate and local levels usi other agreement (i.e., protocol) public health and security authorities engage in a joint training program to orient, exercise, and institutionalize I other agreements

Notes:

t Multisectoral collaboration is key to engaging in effective public health emergency response. Security Authorities may include law enforcement, border control officers, defence and/or customs enforcement. Effective multisectoral collaboration should also include food safety inspectors and animal health authorities.

Contextual questio

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R.3.1 Public Health and Security Authorities, (e.g. Law Enforcement, Border Control, Customs) are linked during a suspect or confirmed biological event

1. Is there a memorandum of understanding or other agreement between public health and Security Authority entities at the national level?
    - Which security authority organizations are covered by a memorandum of understanding or other agreement? Law enforcement? Border control? Customs enforcement? Food safety inspectors? Other?
    - If not, is there a memorandum of understanding or other agreement between public health and another sector (agriculture, defence, foreign affairs) that could be used as a sample agreement to promote information sharing and collaboration during emergency events?
    - Are there agreements between public health and security authorities at any intermediate and/or local levels?

2. Have trainings been conducted jointly (at an intermediate level (regional) or national level) including both public health and security authorities on topics related to information sharing and joint investigations/responses?
3. Are there SOPs or agreements in place for coordination of joint response to public health and other emergencies at official locations such as points of entry where both public health and security authorities have operational safety and health security responsibilities?
4. Are there SOPs or agreements in place for a joint/shared risk assessment during events of public health and security significance?
5. Is there legislation in place which allows the government to detain/quarantine an individual who presents a public health risk?
6. How are potential biological events or other public health events that may have deliberate motives identified in the country? Please provide any plans that have been drafted that cover response to possible biological events.
7. Are public health experts involved in emergency response linked to the Biological and Toxins Weapons Convention (BTWC)?
8. Has the country participated in an exercise, simulation, or response within the past year that involves leadership from both public health and security authorities? If so, please describe the exercise, simulation or response.
    - Describe any corrective actions that were recommended for how the public health organization should coordinate with security authorities.
9. Are informational reports regularly shared between public health and any security authorities within the country? Is there a mechanism in place to encourage regular reporting?
    - What types of reports are shared from public health entities to security authorities regularly?
    - What types of reports are shared from security authorities to the public health system regularly?
10. Is there a country-specific joint investigations curriculum in place to train public health and law enforcement entities on joint investigations?
11. Describe how the national government is connected to Interpol. What ministry is charged with interacting with Interpol?

Documentation or Evidence for Level of Capability:

- SOPs or emergency response plans that would include security authorities
- Informational reports that are regularly shared with security authorities

References:

- WHO-OIE Operational Framework for Good governance at the human-animal interface: Bridging WHO and OIE tools for the assessment of national capacities/http://www.oie.int/fileadmin/Home/fr/Media_Center/docs/pdf/WHO_OIE_Operational_Framework_Final2.pdf
- OIE Terrestrial Animal Health Code – Veterinary Legislation – Chapter 3.4: http://www.oie.int/index.php?id=169&L=0&htmfile=chapitre_vet_legislation.htm

MEDICAL COUNTERMEASURES AND PERSONNEL DEPLOYMENT

Target: A national framework for transferring (sending and receiving) medical countermeasures and public health and medical personnel among international partners during public health emergencies.

As Measured by: Evidence of at least 1 response to a public health emergency within the previous year that demonstrates that the country sent or received medical countermeasures and personnel according to written national or international protocols, OR a formal exercise or simulation that demonstrates these things.

Desired Impact: Countries will have the necessary legal and regulatory processes and logistical plans to allow for the rapid cross-border deployment and receipt of public health and medical personnel during emergencies. Regional (international) collaboration will assist countries in overcoming the legal, logistical and regulatory challenges to deployment of public health and medical personnel from one country to another.

Score	Indicators - Medical Countermeasures and Personnel Deployment	
	R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency	**R.4.2 System is in place for sending and receiving hea public health emergency**
No Capacity - 1	No national countermeasures plan has been drafted	No national personnel deployment plan has been drafted
Limited Capacity - 2	Plans have been drafted that outline system for sending and receiving medical countermeasures during public health emergencies	Plans have been drafted that outline system for sending and during public health emergencies
Developed Capacity - 3	Table-top exercise(s) has been conducted to demonstrate sending or receiving of medical countermeasures during a public health emergency	Table-top exercise(s) has been conducted to demonstrate dec for sending or receiving health personnel from another coun emergency
Demonstrated Capacity - 4	At least one response OR a formal exercise or simulation within the previous year in which medical countermeasures were sent or received by the country	At least one response OR formal exercise or simulation withi health personnel were sent or received by the country
Sustainable Capacity - 5	Country participates in a regional/international partnership or has formal agreement with another country or international organization that outlines criteria and procedures for sending and receiving medical countermeasures AND has participated in an exercise or response within the past year to practice deployment or receipt of medical countermeasures	Country participates in a regional/international partnership with another country or international organization that outli for sending and receiving health personnel AND has particip ponse within the past year to practice deployment or receipt

Notes:

t If country has a stockpile of medical countermeasures, country will not be asked to provide a list or formulary.

Contextual questions:

N/A

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R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency

1. Does the country have a plan in place that identifies procedures and decision making related to sending and receiving medical countermeasures during a public health emergency?
   a. Does the plan address regulatory concerns of receiving drugs or devices from an international source?
   b. Does the plan address logistic concerns related to sending, receiving and distributing medical countermeasures during a public health emergency?
   c. Does the plan address security concerns that may emerge related to sending/receiving/distributing medical countermeasures during a shortage?
2. Has the country exercised plans for sending or receiving medical countermeasures within the past year?
   a. If yes, please describe the exercise and specific outcomes.
3. Does the country have a stockpile of medical countermeasures for national use during a public health emergency?
   a. Does the country have capacity to produce i.e. antibiotics, vaccines, laboratory supplies/equipment or others?
4. Does the country have agreements in place with manufacturers or distributors to procure medical countermeasures during a public health emergency? Please describe.
5. Is the country part of any regional/international countermeasure procurement agreements? Please describe.
6. Is the country part of any regional/international countermeasure sharing agreements? Please describe.
7. Is the country part of any regional/international countermeasure distributing agreements? Please describe.
8. Are there dedicated resources/staffing identified for logistics related to delivery and receipt of countermeasures?
9. Are there dedicated resources/staffing identified for tracking and distribution of countermeasures?
10. Does the country have a Pandemic Preparedness Plan that addresses countermeasures? Please describe.
11. Does the country have a plan, procedure or legal provision in place for procuring animal countermeasures? Please describe.
12. Does the country have a plan, procedure or legal provision in place for distributing animal countermeasures? Please describe.

R.4.2 System is in place for sending and receiving health personnel during a public health emergency

1. Does the country have a plan in place that identifies procedures and decision-making related to sending and receiving health personnel during a public health emergency?
   a. Does the plan address regulatory and licensure concerns of receiving health personnel from an international source?
   b. Does the plan identify training criteria and standards for health personnel who will be sent or received during a public health emergency?
   c. Does the plan address liability concerns for using medical personnel during an international deployment?
   d. Does the plan address safety concerns for health personnel during an international deployment?
   e. Does the plan address financial concerns for health personnel during an international deployment?
   f. Are other sectors (i.e. security authorities, domestic and wild animal health) included in plans for sending/receiving personnel during an emergency?
2. Do plans for surge staffing for public health emergency response activations include triggers for requesting personnel from other countries?
   a. Have training procedures and materials been developed to orient arriving personnel into the organization?
3. Has the country exercised plans for sending or receiving health personnel within the past year?
   a. If yes, please describe the exercise and specific outcomes.
4. Is the country part of any regional/international personnel deployment agreements such as WHO-GOARN? Please describe
   a. Are policies and resources in place to ensure that technical institutions and networks are able to be active partners in the Global Outbreak Alert and Response Network (GOARN)? Please describe.
   b. Does the country have a Pandemic Preparedness Plan or other Emergency Preparedness Plan that addresses personnel deployments? Please describe.

Documentation or Evidence for Level of Capability:

- Countermeasures deployment plan
- Personnel deployment plan
- Pandemic Preparedness Plan (if applicable)

RISK COMMUNICATION

Target: States Parties should have risk communication capacity which is multi-level and multi-faced, real time exchange of information, advice and opinion between experts and officials or people who face a threat or hazard to their survival, health or economic or social well-being so that they can take informed decisions to mitigate the effects of the threat or hazard and take protective and preventive action. It includes a mix of communication and engagement strategies like media and social media communication, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement and community engagement.

Desired Impact: Responsible entities effectively communicate and actively listen and incorporate the publics' and communities' concerns through the media, social media, mass awareness campaigns, health promotion, social mobilization, stakeholder engagement and community engagement for increased risk awareness to reduce and mitigate the expected impact of the health hazard before during and after public health events.

Score	Indicators - Risk Communication		
	R.5.1 Risk Communication Systems (plans, mechanisms, etc.)	**R.5.2 Internal and Partner Communication and Coordination**	**R.5.3 Public Communication**
No Capacity – 1	No formal government risk communication arrangement	No coordination platform and mechanisms for internal and partner communication for engaging key national, intermediate, local and international stakeholders (including health care workers)	No central unit or locus for public ad hoc media outreach
Limited Capacity – 2	Formal government arrangement including a national multi-hazard emergency risk communication plan (reviewed within past 24 months) in place and a dedicated core team responsible for this area of work established; but significant gaps in capacity in human resources, platforms, and resources to deal with a large-scale emergency	Some ad hoc communication coordination such as meetings with some partners and/or irregular information-sharing	Public communication unit or tea spokesperson identified and trair communication in place
Developed Capacity – 3	Formal government arrangements and systems in place with standard operating procedures and capacity with multisectoral and multi-stakeholder involvement, but insufficient allocation and alignment of human and financial resources	Communication coordination exists but with limited partner and stakeholder engagement including health care workers, civil society organizations, private sector and other non-state actors	Level 2 (limited capacity) plus pr a mix of platforms (newspapers, r web) as appropriate according to rences; and in relevant national a otherwise understandable to pop relevant technologies for public c phones, etc.)
Demonstrated Capacity – 4	Fully operational national system established meeting criteria of all previous levels, with reasonable skilled and/or trained personnel and volunteers, and financial resources and arrangements for scale-up as evidenced by a simulation exercise or tested by a real health emergency	Effective, regular communication coordination with all partners required by all preceding levels, and their coordination tested by a simulation exercise or tested by a real health emergency	There is planned communicatior gement and proactive media outr media briefings) guided by risk c tices and achieves comprehensiv evidenced by regular coverage of relevant languages; as well as by activity during an emergency.

RESPOND

Sustainable Capacity – 5	Lessons learnt from capacity level 4 integrated into the revision of the national plans and the continuous strengthening of the system. Regular allocation of resources to maintain and grow the system	Effective, regular and inclusive communication coordination with partners and stakeholders including definition of roles, sharing of resources and joint action plans	The government, partners and d engaged in robust and increasing tion to provide health advice, inc concerns and rumours; and addre

Score	Indicators – Risk Communication	
	R.5.4 Communication Engagement with Affected Communities	**R.5.5 Dynamic Listening and Rur**
No Capacity – 1	No arrangement exists to systematically engage populations at community level for emergencies. There may be social mobilization, health promotion or community engagement on health risks for maternal child health, immunization, malaria, TB and HIV/AIDS, polio, NTDs and other develop-mental programmes but these are not systematically used for emergencies.	No system exists to identify or respon misinformation; nor to understand an and fears
Limited Capacity – 2	Community level engagement system is semi-formed with mapping of existing processes, programmes, partners and stakeholders. Social mobilization, behaviour change communication and community engagement are included in the national risk communication strategy in the context of health emergencies. Some key stakeholders in this domain are identified at national and intermediate (provincial/regional) level.	Ad hoc systems for listening and rum ding through health care workers, bu the response
Developed Capacity – 3	Stakeholders mapped at intermediate and local levels, decentralized system (including financial and human resources) in place for community engagement involving community and religious leaders, community based organisations (CBOs), and other decentralized teams. Standard practice of developing information education communication (IEC) materials with the involvement of community and key stakeholders. Community consultation mechanisms are in place (e.g. hotline, surveys, etc.).	Routine and event-based systems for management or ongoing system with influence on the response
Demonstrated Capacity – 4	Regular briefing, training and engagement of social mobilization and community engagement teams including volunteers. Mechanisms to harness scale up capacity exist and are operational. Feedback loop from listening (Domain 5) into community engagement is operational.	Strong system for listening and rumo permanent basis which is integrated i and response actions for public comm 3), communication engagement with (Domain 4), as well as for internal ar tions (Domain 2)
Sustainable Capacity – 5	Communities are equal partners in risk communication process as evidenced by the review of a simulation exercise or tested by a real health emergency.	Misinformation and rumours have litt because risk communication is effect cial health advice; and desired behavi where appropriate

Notes:

1. Under the current IHR (2005) capacity assessment framework, only one element of the key components of risk communication – public communication – was assessed. The elements assessed focused predominantly on outputs of public communications activities. The revised framework proposed here addresses risk communications outcomes. The framework builds on the existing IHR capacity assessment content, and draws on an evidence-based "logic model" for evaluating emergency risk communication outcomes developed jointly by WHO and Harvard School of Public Health in 2014.
2. Domain 5 (Dynamic listening and rumour management) should be assessed independently as well as in relation to domains 2 (Internal and partner communication and coordination), 3 (Public communication) and 4 (Communication engagement with affected communities)

Contextual Questions:

N/A

Technical Questions:

R.5.1 Risk Communication Systems (plans, mechanisms, etc.)

1. Is there a function for risk communication in your national response plan?
2. Are there communications personnel or government departments that informally respond to public information needs during emergencies?
3. Is there a permanent or surge staff dedicated to risk communication during emergencies?
4. Are the roles and responsibilities of the risk communication staff articulated in a response plan?
5. Are there significant improvements that could be made in the staffing, platforms, financial resources or other factors to improve communications with the public and partners during emergencies?
6. Are there shared communication plans, agreements and/or standard operating procedures between other response agencies such as public safety, law enforcement, hospitals, emergency response, Red Cross/Crescent and/or government agencies such as ministries of defence, agriculture, food/drug, wildlife and environment, etc.?
7. Is there a dedicated budget line for communications personnel, materials and activities for emergencies?
8. Does communication to the public during an emergency automatically revert to another government agency besides or in conjunction with the ministry of health?
9. Are the plans tested on at least a yearly basis?
10. Is training provided to the risk communications personnel for response to local hazards?
11. Is there an agreement internal to your agency for clearance of messaging to the public?
12. Have alterations been made to response plans based on lessons learnt from exercises or actual responses?
13. Have communications response staff been made aware of and/or trained on response plan alterations?
14. Is there a dedicated budget for the communications system to be sustained and to grow?

RESPOND

Additional Information - Availability of following related to R.5.1 (documentation)

a. National response plans–communication sections
b. Organizational Chart
c. Emergency risk communication staff plans
d. Job description for communication staff members
e. Shared agreements with response agencies
f. Emergency response budget sample
g. Various meeting notes
h. Exercise plans and results
i. Training workshops objectives/results
j. Message clearance plan
k. Plan alterations
l. Mechanism of sharing plan alteration
m. Long-term budget plan

R.5.2 Internal and Partner Communication and Coordination

1. Is there a mechanism informally or formally to coordinate communication internal to your agency during an emergency?
2. Is there a mechanism informally or formally to coordinate communication among national stakeholders and response agencies during an emergency?
3. Is there a mechanism informally or formally to coordinate communication among international stakeholders and response agencies during an emergency?
4. Have there been incidents where stakeholder/partner agencies have released information that was inconsistent or contradicted your agency's information during an emergency?
5. Have there been incidents where valuable time was taken because of a lack of agreement regarding which agency would respond during an emergency?
6. Do you have an example of an emergency or event that could have been better coordinated between partner agencies?
7. Is there a formal mechanism to coordinate communication with the hospital and healthcare sector during an emergency?
8. Is there a formal mechanism to coordinate communication among civil society organizations during an emergency?
9. Is there a formal mechanism to coordinate communication with the private sector during an emergency?
10. Has your organization conducted exercise testing communication coordination with partner organizations?

11. Has your organization responded in an actual emergency that tested communication coordination with partner organizations?
12. Does your organization regularly develop communication response plans together with external partner and stakeholders?
13. Does your organization have a coordinated budget for communications response with external partners and stakeholders?

Additional Information - Availability of following related to R.5.2 (documentation)

a. Internal and external coordination events
b. Response reports
c. News stories during past emergencies
d. Plans for communication coordination with external agencies
e. After action reports from exercises or emergency responses
f. Agreed upon response plan and coordinated budget plan for emergency communication

R.5.3 Public Communication

1. Does your organization have a formalized function to communicate with the public?
2. Does your organization have a designated and trained public spokesperson?
3. Does your organization have a communication team dedicated to media and social media outreach?
4. Do your organization conduct target audience analyses to better understand audience language, trusted information resources and preferred communication channels?
5. Does your organization have a communication strategy that proactively reaches out to a variety of media platforms such as newspapers, radio, TV, social media, web in order to target communication messages to specific audiences?
6. Does your organization provide information in local languages as needed by the audience?
7. Does your organization conduct media research to determine message reach among target audience members?
8. Does your organization alter public health messaging according to geographic location, language and media preference?
9. During emergencies or exercises, does your organization provide regular media briefings and updates through mass and social media?
10. Does your organization contribute to an evidence base of what communications methods best enabled target audiences to change behaviour during emergencies?
11. Does your organization share experience and new strategies with partner organizations to continually improve communication response?
12. Does your organization monitor for rumours and misinformation and when found address the issues rapidly?

Additional Information- Availability of following related to R.5.3 (documentation)

a. Organizational chart
b. Media department strategy
c. Community outreach plans
d. Media response plans
e. Community outreach plans
f. Communication research protocols and publications (formal/informal)
g. Examples of rumours and methods for handling them

R.5.4 Communication Engagement with Affected Communities

1. Does your organization have a social mobilization, health promotion or community engagement department or working group that is used for communication response during emergencies?
2. Does your organization have a social mobilization, health promotion or community engagement department or working group that regularly works with a media department or focal person within your organization?
3. Does your organization have a social mobilization, health promotion or community engagement department or working group that reaches out to the affected or at risk populations during health emergencies?
4. Is social mobilization, health promotion or community engagement included in the national response plan?
5. Does your organization have a social mobilization, health promotion or community engagement functions working at intermediate (district/provincial) levels?
6. Do intermediate (district/provincial) level community engagement functions work in vertical fashion that enables national level leadership to both learn from intermediate levels and share lessons learned with other intermediate levels?
7. Do community outreach programs regularly conduct information education communication (IEC) materials testing with members of the target audience?
8. Does your organization regularly provide information sharing or training opportunities between experienced community engagement experts and volunteers or potential surge capacity to be used during emergencies?
9. Does your organization have a plan to scale up existing community engagement capacities to be deployed during emergencies?
10. Is there an ongoing and functioning feedback loop between at-risk or affected populations and response agencies?
11. Does your organization regularly and rapidly change messaging to address audience feedback, misinformation and questions?
12. During the last actual emergency or exercise was there a clear function to receive audience feedback or questions?

Additional Information- Availability of following related to R.5.4 (documentation)

a. Organizational charts
b. Reports on local at-risk populations
c. Risk assessments that address most likely local public health threats
d. National response plan – communication section
e. Materials testing protocols
f. Communication campaign strategy examples
g. National response plan – communication section
h. Surge capacity plan
i. Data from public health hotline (relevant questions from the public, etc.)
j. Community outreach plan
k. After action report from actual emergency or exercise

R.5.5 Dynamic Listening and Rumour Management

1. Does your organization have a formal communication function to monitor and address rumours and misinformation?
2. Does your organization have ad hoc methods in which to hear about some rumours regarding public health issues (health care workers, hotline information, etc.)?
3. Does your organization have a method for addressing rumours and misinformation?
4. Does your organization monitor the effectiveness of methods or messages used to disprove a rumour or correct misinformation?
5. Does your organization regularly collect rumours and misinformation, the methods and messages to address them and shares them with partners to ensure message consistency?
6. Does your organization consider communication feedback including rumours and misinformation from the public in its decision making process to improve communication response?
7. Does your organization regularly evaluate its communication response and ability to address rumours and misinformation to determine that actions changed behaviour and/or stopped the rumour from spreading?

Additional Information - Availability of following related to R.5.5 (documentation)

a. Media response plans
b. Data from public health hotline (relevant questions from the public, etc.)

Other IHR-related hazards and Points of Entry (PoE)

POINTS OF ENTRY (POE)

Targets: States Parties should designate and maintain the core capacities at the international airports and ports (and where justified for public health reasons, a State Party may designate ground crossings) which implement specific public health measures required to manage a variety of public health risks.

Desired Impact: Timely detection and effective response of any potential hazards that occur at PoE.

Score	Indicators – Points of Entry (PoE)	
	PoE.1 Routine capacities are established at PoE.	**PoE.2 Effective Public Health Response at Points of**
No Capacity – 1	No capacity at PoE for appropriate medical services	No National public health emergency contingency plan ex public health emergencies occurring at points of entry.
Limited Capacity – 2	Designated PoE have access to appropriate medical services including diagnostic facilities for the prompt assessment and care of ill travellers and with adequate staff, equipment and premises (Annex 1B, 1a)	National public health emergency contingency plan in pla public health emergencies occurring at points of entry, int response plans, covering all relevant sectors and services a disseminated to all key stakeholders
Developed Capacity – 3	Designated PoE can provide access to equipment and personnel for the transport of ill travellers to an appropriate medical facility	Facilities for assessing potentially contaminated/ infected either onsite or through liaison with local PH services avai for the assessment and quarantine of suspect travellers
Demonstrated Capacity – 4	Inspection program to ensure safe environment at PoE facilities functioning. A functioning programme for the control of vectors and reservoirs in and near PoE exists (Annex 1b, Art. 1e)	Referral system and transport for the safe transfer of ill tra medical facilities in place with regular updating and testin health emergency contingency plan with published repor
Sustainable Capacity – 5	Trained personnel for the inspection of conveyances are available at designated PoE (Annex 1b, Art. 1c)	Evaluation and publication of effectiveness in responding

Notes: N/A

Contextual questions:

N/A

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PoE.1 Routine capacities are established at PoE

1. Do the designated PoE have access to appropriate medical services including diagnostic facilities for the prompt assessment and care of ill travellers and with adequate staff, equipment and premises (Annex 1B,1a)?
2. Do these PoE provide access to equipment and personnel for the transport of ill travellers to an appropriate medical facility?
3. Do these PoE carry out inspection program to ensure safe environment at PoE facilities?
4. Do you have evidence of control of vectors and reservoirs in and near PoE (Annex 1b, Art. 1e)? Do you have specific programs on this?
5. Does the country have trained personnel for the inspection of conveyances available at designated PoE (Annex 1b, Art. 1c)? If not, is there a mechanism to bring them from outside?
6. Do PoE have adequate capacity for the detection of infections of zoonotic diseases in imported wild or domestic animals?

PoE.2 Effective Public Health Response at Points of Entry

1. Is the national public health emergency contingency plan for responding to public health emergencies occurring at points of entry, integrated with other PH response plans, covering all relevant sectors and services at PoE, and developed and disseminated to all key stakeholders?
2. Is the plan integrated with other response plans for responding to public health emergencies occurring at points of entry and PH emergencies for all hazards and covering relevant services at POE (e.g. immigration, transportation, security, media etc.) disseminated to all stakeholders?
3. Is a referral system and transport for the safe transfer of ill travellers to appropriate medical facilities in place?
4. Is there a system in place for safe referral and transfer of ill travellers to appropriate medical facilities, with MoUs, SOPs, trained staff, equipment and regular exchange of information between PoE, health authorities and facilities for all designated PoE?
5. Has the country evaluated the effectiveness of PoE in responding to PH Events at PoE? If yes, is it published?

Documentation or Evidence for Level of Capability:

1. Documented, regular-updated, tested national guidelines and SOPs to reflect all relevant technical and operational guidance tools for PoE in place and disseminated to all relevant sectors including for:
   a. the detection, reporting and response to event related to travel and transport;
   b. the application of Public Health measures to be applied at PoE, that may be recommended by WHO (e.g. exit/entry screening, isolation, quarantine, contact tracing, etc.); and

c. the application of other PH measures that could affect international travel and transport.

2. Documentation available for all relevant technical and operational guidance for PoE Annex 1 B, 1, e "to provide as far as practicable a programme and trained personnel for the control of vectors and reservoirs in and near points of entry".
3. Documentation available on, regularly-updated and tested national guidelines and SOPs to reflect all relevant technical and operational guidance tools for PoE in place and same disseminated to all relevant sectors including application of recommended measures to disinsect, derat, disinfect, decontaminate or otherwise treat baggage, cargo, containers, conveyances, goods or postal parcels including, when appropriate, at locations specially designated and equipped for this purpose.
4. Documentation on systematic collection with standardized tools, analysis and dissemination of data on PH events occurring at PoE, with updated list of priority conditions for notification, baseline data trends, and thresholds for alert and action, timely (ie. per national standards) reporting (using standard reporting formats and tools), and providing timely and regular feedback disseminated on surveillance data and trends to relevant stakeholders using standardized feedback formats (e.g. Epibulletins, electronic summaries, newsletter, surveillance reports, etc.).
5. Documentation of regular receipt of PoE findings by national surveillance unit is available.

Additional Tools

- PoE checklist Core Capacity Requirements Assessment Tools for Designated Airports, Ports and Ground Crossings http://www.who.int/ihr/ports_airports/PoE/en/ index.html

CHEMICAL EVENTS

Target: States Parties should have surveillance and response capacity for chemical risk or events. This requires effective communication and collaboration among the sectors responsible for chemical safety, industries, transportation and safe disposal.

Expected Impact: Timely detection and effective response of potential chemical risks and/or events in collaboration with other sectors responsible for chemical safety, industries, transportation and safe disposal.

Score	Indicators – Chemical Events	
	CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies.	**CE.2 Enabling environment is in place for man chemical Events**
No Capacity – 1	No mechanism in place	National policies or plans or legislation for chemical and response do not exist
Limited Capacity – 2	Guidelines or manuals on the surveillance, assessment and management of chemical events, intoxication and poisoning are available	National policies or plans or legislation for chemical and response exist
Developed Capacity – 3	Surveillance is in place for chemical events, intoxication, and poisonings with laboratory capacity or access to laboratory capacity to confirm priority chemical events	An emergency response plan that defines the roles a vant agencies in place including inventory of major h
Demonstrated Capacity – 4	Timely and systematic information exchange between appropriate chemical units[11], surveillance units and other relevant sectors about urgent chemical events and potential chemical risks and their response	Functional mechanisms for multisectoral collaborati are in place including involvement in international ch networks. E.g. INTOX?
Sustainable Capacity – 5	Adequately resourced poison centre (s) are in place[12]	A chemical event response plan has been tested thro event or through simulation exercise and is updated

[10] Elements of alert include SOPs for coverage, criteria of when and how to alert, duty rosters etc.

[11] E.g. chemical surveillance, environmental monitoring and chemical incident reporting.

[12] E.g. clinical toxicology, 7/24 hotline, material data sheet, safety data sheet, and contact details of chemical manufactures.

Notes:

- Indicators refer to detection and responding to the chemical events and enabling environment for management of chemical events in place with appropriate legislation, laws, or policy and with involvement of multi-sectors.
- Detection capacity also includes not only surveillance but also the laboratory capacity required for the verification of any events.

Contextual Questions:

1. Have there been chemical safety assessments in the past five years? If applicable, please describe outcome/provide report.
2. Have there been baseline public health assessments with regard to chemical safety in the past five years, for example considering morbidity, mortality and biomarkers?
3. Have there been any major chemical incidents in the past five years?
4. Are any international chemical conventions/agreements ratified/implemented?
5. Is the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals in International Trade ratified?
6. Is the Stockholm Convention on Persistent Organic Pollutants ratified?
7. Is the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal ratified?
8. Is the Strategic Approach to International Chemicals Management (SAICM) implemented?
9. Is the United Nations Economic Commission for Europe (UNECE) Convention on the Transboundary Effects of Industrial Accidents ratified?
10. Is the International Labour Organization (ILO) Convention 174 on Prevention of Major Industrial Accidents ratified?
11. Is the International Labour Organization (ILO) Convention 170 on Safety in the Use of Chemicals at Work ratified?

Technical Questions:

CE.1 Mechanisms are established and functioning for detecting and responding to chemical events or emergencies

1. Are guidelines or manuals on the surveillance, assessment and management of chemical events, intoxication and poisoning available?
   a. Are these implemented?
   b. Are these updated after events or following exercises (or updated regularly)?
   c. Does this surveillance also have monitoring activities to support chemical safety?
2. Is there chemical incident surveillance?
3. Is there an authority/institute/agency with primary responsibility for chemicals and surveillance/monitoring?
4. Is there an efficient information flow in chemicals surveillance/monitoring?

5. Is there surveillance of sentinel health events that may signal a hazardous chemical exposure?
6. Is there environmental monitoring (water, air, soil, sediment) with regard to chemical hazards?
7. Is there monitoring of consumer products (e.g. foodstuffs and good) with regard to chemical hazards?
8. Are there procedures for risk assessment in chemicals surveillance/monitoring, to trigger/mount a response of suitable composition and magnitude?
9. Is the laboratory capacity is available for systematic analysis?
10. Are current human resources sufficient to meet the needs for chemical safety?
11. Are current financial resources sufficient to meet the needs for chemical safety?
12. Are investigation reports produced in the chemicals surveillance/monitoring?
13. Is there regular (e.g. weekly, monthly or yearly) feedback of data and response activities in chemicals surveillance/monitoring?
14. Is there an inventory of reference health care facilities for chemical safety?
15. Are there protocols/guidelines for case management with regard to chemical hazards?
16. Are there poison centre(s)?

CE.2 Enabling environment is in place for management of chemical events

1. Is there a strategic plan for chemical safety, e.g. a National Chemicals Management Profile? Is it up-to-date and implemented?
2. Does chemicals legislation provide comprehensive coverage?
   Some areas may be covered by legislation not specific for chemicals. The following areas could be considered:
   a. Hazardous sites registration
   b. Control of hazardous sites, e.g. through safety reports and safety management systems
   c. On-site emergency plans
   d. Off-site emergency plans
   e. Siting and land use planning
   f. Control of procedures and sites for disposal of hazardous waste
   g. Control of contaminated land, water (drinking and other), crops, foodstuffs
   h. National and international transport/trade of dangerous goods or substances
   i. Hazardous substances registration
   j. Control of labelling and accompanying safety information for hazardous substances

k. Inspection/monitoring and enforcement
l. Public communication
m. Incident documentation and reporting
n. Incident investigation
o. Epidemiological and medical follow-up
p. Occupational health

3. Is there a national coordinating body/committee with regard to chemical safety?
4. Is there a public health plan for chemical incidents/emergencies?
5. Does a public health plan for chemical incidents/emergencies consider the range of functions required in a crisis? If applicable, please describe. Please consider availability of resources and standard operating procedures (SOP). The plan should consider the following aspects:
   a. Roles and responsibilities
   b. Public communication
   c. Referral, transport and treatment of large numbers of affected individuals
   d. Stockpiling of equipment and medication
   e. Follow-up of patients
   f. Decontamination of people, premises and environment
   g. Regular evaluation/revision of plan
   h. Restrictions, evacuation
   i. Emergency funds
   j. Exercises organized on a regular basis to test and revise the plan
6. Are there mulltisectoral/interdisciplinary coordination mechanisms with regard to chemical safety? If applicable, please describe mechanisms and indicate shortcomings. Coordination mechanisms could consider:
   a. Health
   b. Environment
   c. Agriculture
   d. National IHR Focal Point
   e. All public health levels (local, intermediate and national)

f. Emergency preparedness
g. Emergency services (fire, police, ambulance, medical responders)
h. Consumer safety
i. Administrative/political authorities at all levels (local, intermediate, national)
j. Hazardous sites
k. Meteorological services
l. Points of entry (ports, airports, ground crossings), in particular those designated under the IHR
m. Transport
n. Private sector/industry
o. Poison centre(s)
p. National surveillance institute(s) with regard to chemical safety
q. Reference laboratory/ies with regard to chemical safety
r. Reference health care facilities with regard to chemical safety

7. In the event of a public health emergency of chemical origin, could a budget be mobilized to meet additional demands?
8. Is there an audit/evaluation system for exercises/responses?
9. Is there involvement in international chemical/toxicological networks, e.g. INTOX?
10. Is there a chemical database available at all times, e.g. INCHEM, INTOX, Poisindex?

RADIATION EMERGENCIES

Target: States Parties should have surveillance and response capacity for radio-nuclear hazards/events/emergencies. This requires effective communication and collaboration among the sectors responsible for radio-nuclear management.

Desired Impact: Timely detection and effective response of potential radio-nuclear hazards/events/emergencies in collaboration with other sectors responsible for radio- nuclear management.

	Indica tors – Radiat	
Score	**RE.1 Mechanisms are established and functioning for detecting and responding to radiological and nuclear emergencies.**	**RE.2 Enabling environment is in place for mar Emergencies**
No Capacity – 1	National policies, strategies or plans for the detection, assessment, and response to radiation emergencies are not established	No coordination and communication mechanism be responsible for radiological and nuclear events with IHR NFP
Limited Capacity – 2	National policies, strategies or plans for the detection, assessment, and response to radiation emergencies are established and radiation monitoring mechanism exists for radiation emergencies that may constitute a public health event of international concern	National authorities responsible for radiological and designated focal point for coordination and commur of health and/or IHR NFP
Developed Capacity – 3	Technical guidelines or SOPs developed, evaluated and updated for the management of radiation emergencies (including risk assessment, reporting, event confirmation and notification, and investigation)	A radiation emergency response plan exists (could b gency response plan) and national policies, strategie and international transport of radioactive material, gement including those from hospitals and medical
Demonstrated Capacity – 4	Systematic information exchange between radiological competent authorities and human health surveillance units about urgent radiological events and potential risks that may constitute a public health emergency of international concern	Functional coordination[13] and communication mech national competent authorities responsible for nucle safety, and relevant sectors[15].

[13] Note that these cross-references with legislation, policy and financing (core capacities 1 and 2), and these attributes for this component should be also fully addressed under those core capacities. They are under this hazard for coherence, flow, and triangulation where this is administered to the hazard expert.

[14] Information-sharing, meetings, SOPs developed for collaborative response etc.

[15] Coordination for risk assessments, risk communications, planning, exercising, monitoring and including coordination during urgent radiological events and potential risks that may constitute a public health emergency of international concern.

Sustainable Capacity – 5	A mechanism is in place to access[12] health facilities with capacity to manage patients of radiation emergencies	Radiation emergency response drills carried out regu requesting of international assistance (as needed) ar tion

Notes:

- Indicators refer to detection and responding to the radiation emergencies and enabling environment for management of radiation events in place with appropriate legislation, laws, or policy and with involvement of multi-sectors.
- Detection capacity also includes not only surveillance but also the laboratory capacity required for the verification of any events with collaboration with laboratory network outside and inside the country.

Contextual Questions:

1. Have there been radiation safety assessments in the past five years? If applicable, please describe outcome/provide report.
2. Have there been baseline public health assessments with regard to radiation safety in the past five years, for example considering morbidity, mortality?
3. Have there been any major radiation emergencies in the past five years?
4. Are any international conventions signed or ratified for radio-nuclear?

Technical Questions:

RE.1 Mechanisms are established and functioning for detecting and responding to radiological and nuclear emergencies

1. Are there national policies, strategies or plans for the detection, assessment, and response to radiation emergencies available?
   a. Are these implemented?
   b. Are these updated after events or following exercises (or updated regularly)?
2. Is there an authority/institute/agency with primary responsibility for radiation and surveillance/monitoring?
3. Is there monitoring of consumer products (e.g. foodstuffs and good) with regard to radiation hazards?
4. Are there procedures for risk assessment in radio-nuclear surveillance/monitoring, to trigger/mount a response of suitable composition and magnitude?
5. Is the laboratory capacity or access to laboratory capacity available for systematic analysis?
6. Are current human resources sufficient to meet the needs for radiation safety?
7. Are current financial resources sufficient to meet the needs for radiation safety?

[16] Have agreements, established arrangements and mechanisms to access these capacities in relevant collaborating institutions in country or in other countries.

8. Is there an inventory of reference health care facilities for radiation emergencies?
9. Are there protocols/guidelines for case management with regard to radio-nuclear hazards?

RE.2 Enabling environment is in place for management of chemical events

1. Is there a strategic plan for radiation safety? Is it up-to-date and implemented?
2. Is there a national coordinating body/committee with regard to radiological and nuclear events?
3. Is there an emergency response plan exist for radiation emergencies?
4. Does an emergency response plan consider the range of functions required in a crisis? If applicable, please describe. Please consider availability of resources and standard operating procedures (SOP). The plan should consider the following aspects:
   a. Roles and responsibilities
   b. Public communication
   c. Referral, transport and treatment of large numbers of affected individuals
   d. Stockpiling of equipment and medication
   e. Follow-up of patients
   f. Decontamination of people, premises and environment
   g. Regular evaluation/revision of plan
   h. Restrictions, evacuation
   i. Emergency funds
   j. Exercises organized on a regular basis to test and revise the plan
5. Are there multisectoral/interdisciplinary coordination mechanisms with regard to radiation safety? If applicable, please describe mechanisms and indicate shortcomings. Coordination mechanisms could consider:
   a. Health
   b. Environment
   c. Nuclear plant (if existing)
   d. Hospitals
   e. National IHR Focal Point
   f. All public health levels (local, intermediate, national)

g. Emergency preparedness
h. Emergency services (fire, police, ambulance, medical responders)
i. Consumer safety
j. Administrative/political authorities at all levels (local, intermediate, national)
k. Hazardous sites
l. Meteorological services
m. Points of entry (ports, airports, ground crossings), in particular those designated under the IHR
n. Transport
o. Private sector/industry
p. Poison centre(s)
q. National surveillance institute(s) with regard to radio-nuclear safety
r. Reference laboratory(ies) with regard to radio-nuclear safety
s. Reference health care facilities with regard to radio-nuclear safety

6. In the event of a radiation emergency, could a budget be mobilized to meet additional demands?
7. Is there an audit/evaluation system for exercises/responses?
8. Are their radiation emergency response drills carried out regularly? Describe the last drill.
9. Are there plans for national and international transport of radioactive material, samples and waste management including those from hospitals and medical services is/are established? Describe in detail.

Appendix 1: Glossary

Note: *these terms and definitions have been provided for use within the context of this tool and may differ from those used in other documents.*

Biosafety: the maintenance of safe conditions in biological research to prevent harm to workers, non-laboratory organisms, or the environment.

Case: a person who has the particular disease, health disorder, or condition which meets the case definitions for surveillance and outbreak investigation purposes. The definition of a case for surveillance and outbreak investigation purpose is not necessarily the same as the ordinary clinical definition *(adapted from Last JM, ed. A Dictionary of Epidemiology, 2001).*

Case definition: a set of diagnostic criteria that must be fulfilled for an individual to be regarded as a case of a particular disease for surveillance and outbreak investigation purposes. Case definitions can be based on clinical criteria, laboratory criteria or a combination of the two with the elements of time, place and person. (In the IHR, case definitions are published on the WHO website for the four diseases for which all cases must be notified by States Parties to WHO, regardless of circumstances, under the IHR as provided in Annex 2).

Chemical event: a manifestation of a disease or an occurrence that creates a potential for a disease as result of exposure to or contamination by a chemical agent

Cluster: an aggregation of relatively uncommon events or diseases in space and/or time in amounts that are believed or perceived to be greater than could be expected by chance *(adapted from Last JM, ed. A Dictionary of Epidemiology, 2001*).

Communicable disease (infectious disease): an illness due to a specific infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal, or reservoir to a susceptible host, either directly or indirectly through an intermediate plant or animal host, vector, or the inanimate environment *(Last JM, ed. A Dictionary of Epidemiology, 2001).*

Community surveillance: starting point for event notification at the community level, generally done by a community worker; it can be active (looking for cases) or passive (reporting cases). It may be particularly useful during an outbreak and where syndromic case definitions can be used (the identification of community cases of Ebola virus infection by community workers was an example of active community surveillance).

Competent authority: an authority responsible for the implementation and application of health measures under the IHR.

Contamination: the presence of an infectious or toxic agent or matter on a human or animal body surface, in or on a product prepared for consumption or on other inanimate objects, including conveyances that may constitute a public health risk. (IHR)

Decontamination: a procedure whereby health measures are taken to eliminate an infectious or toxic agent or matter on a human or animal body surface, in or on a product prepared for consumption or on other inanimate objects, including conveyances that may constitute a public health risk.

Disease: an illness or medical condition, irrespective of origin or source that presents or could present significant harm to humans.

Disinsection: the procedure whereby health measures are taken to control or kill the insect vectors of human diseases present in baggage, cargo, containers, conveyances, goods and postal parcels.

Early warning system: in disease surveillance, a specific procedure to detect as early as possible any abnormal occurrence or any departure from the usual or normally observed frequency of phenomena (e.g. one case of Ebola fever). An early warning system is only useful if linked to mechanisms for early response *(adapted from Last JM, ed. A Dictionary of Epidemiology, 2001)*.

Epidemic: the occurrence in a community or region of cases of an illness, specific health related behaviour, or other health-related events clearly in excess of normal expectancy. The community or region and the period in which the cases occur are specified precisely. The number of cases indicating the presence of an epidemic varies according to the agent, size, and type of population exposed, previous experience or lack of exposure to the disease, and time and place of occurrence *(adapted from Last JM, ed. A Dictionary of Epidemiology, 2001)*.

Event: a manifestation of disease or an occurrence that creates a potential for disease

Event based surveillance: the organized and rapid capture of information about events that are a potential risk to public health. This information can be rumours and other ad hoc reports transmitted through formal channels (i.e., established routine reporting systems) and informal channels (i.e., the media, health workers and reports from NGOs), including events related to the occurrence of disease in humans and events related to potential human exposure.

Feedback: the regular process of sending analyses and reports about surveillance data back through all levels of the surveillance system so that all participants can be informed of trends and performance.

Ground crossing: a point of land entry into a State Party, including those utilized by road vehicles and trains.

Hazard: the inherent capability of an agent or situation to have an adverse effect. A factor or exposure that may adversely affect health (similar concept to the risk factor).

Health-care worker: any employee in a health-care facility who has close contact with patients, patient-care areas or patient-care items; also referred to as 'health-care personnel.'

Health event: any event relating to the health of an individual, e.g., the occurrence of a case of a specific disease or syndrome, the administration of a vaccine or an admission to hospital.

Health measure: a procedure applied to prevent the spread of disease or contamination; a health measure does not include law enforcement or security measures.

Incidence: the number of instances of illness commencing, or of persons falling ill, during a given period in a specified population *(Prevalence and Incidence. WHO Bulletin, 1966, 35: 783-784)*.

Indicator based surveillance: the routine reporting of cases of disease, including notifiable diseases surveillance systems, sentinel surveillance, laboratory based surveillance, etc. This routine reporting is commonly health-care facility based with reporting done on a weekly or monthly basis.

Infection: the entry and development or multiplication of an infectious agent in the body of humans and animals that may constitute a public health risk.

Infection control: measures practiced by health-care personnel in health-care facilities to decrease transmission and acquisition of infectious agents (e.g., proper hand hygiene; scrupulous work practices; and the use of personal protective equipment such as masks, respirators, gloves, gowns, and eye protection. Infection control measures are based on how an infectious agent is transmitted and include standard, contact, droplet, and airborne precautions.

Infectious disease *see* **Communicable disease.**

International Health Regulations (2005) (IHR or the Regulations): a legally-binding instrument of international law which has its origin in the International Sanitary Conventions of 1851, concluded in response to increasing concern about the links between international trade and the spread of disease (cross-border health risks).

Isolation: separation of ill or contaminated persons or affected baggage, containers, conveyances, goods or postal parcels from others in such a manner as to prevent the spread of infection or contamination.

Legislation: the range of legal, administrative or other governmental instruments which may be available for States Parties to implement the IHR. This includes legally binding instruments, e.g., state constitutions, laws, acts, decrees, orders, regulations, and ordinances; legally non-binding instruments, e.g., guidelines, standards, operating rules, administrative procedures or rules; and other types of instruments, e.g., protocols, resolutions, and inter-sectoral or inter-ministerial agreements. This encompasses legislation in all sectors, e.g., health, agriculture, transportation, environment, ports and airports, and at all applicable governmental levels, e.g., national, intermediate, local etc.

National legislation *see* **Legislation**

National IHR Focal Point (IHR NFP): the national centre, designated by each State Party, which shall be accessible at all times for communications with WHO IHR contact points under the IHR.

Notifiable disease: a disease that, by statutory/legal requirements, must be reported to the public health or other competent authority in the pertinent jurisdiction when the diagnosis is made *(adapted from Last JM, ed. A Dictionary of Epidemiology, 2001)*.

Notification: the processes by which cases or outbreaks are brought to the knowledge of the health authorities. In the context of the IHR, notification is the official communication of a disease/health event to the WHO by the health administration of the Member State affected by the disease/health event.

Other governmental instruments: agreements, protocols, and resolutions of any government authority or body.

Outbreak: an epidemic limited to localised increase in the incidence of a disease, e.g., in a village, town or closed institution *(adapted from Last JM, ed. A Dictionary of Epidemiology, 2001)*.

Personal protective equipment (PPE): specialized clothing and equipment designed to create a barrier against health and safety hazards; examples include goggles, face shields, gloves and respirators.

Point of entry (PoE): a passage for international entry or exit of travellers, baggage, cargo, containers, conveyances, goods and postal parcels, and the agencies and areas providing services to them upon entry or exit.

Port: a seaport or a port on an inland body of water where ships on an international voyage arrive or depart.

Public health emergency of international concern (PHEIC): an extraordinary event which is determined, as provided in the IHR (i) to constitute a public health risk to other States through the international spread of disease and (ii) to potentially require a coordinated international response.

Public health risk: the likelihood of an event that may adversely affect the health of human populations, with an emphasis on whether it may spread internationally or present a serious and direct danger.

Quarantine: the restriction of activities and/or separation from others of suspect persons who are not ill or of suspect baggage, containers, conveyances or goods in such a manner as to prevent the possible spread of infection or contamination.

Rapid response team (RRT): a group of trained individuals that is ready to respond quickly to an event. The composition and terms of reference are determined by the country concerned.

Regulations or administrative requirements: all regulations, procedures, rules and standards.

Risk communication: risk communication for public health emergencies includes the range of communication capacities required through the preparedness, response and recovery phases of a serious public health event to encourage informed decision making, positive behaviour change and the maintenance of trust.

Surveillance: the systematic ongoing collection, collation and analysis of data for public health purposes and the timely dissemination of public health information for assessment and public health response, as necessary.

Syndrome: a symptom complex in which the symptoms and/or signs coexist more frequently than would be expected by chance on the assumption of independence *(Last JM, ed. A Dictionary of Epidemiology, 2001)*.

Trained staff: individuals that have educational credentials and/or have received specific instruction that is applicable to a task or situation.

Urgent event: a manifestation of a disease or an occurrence that creates a potential for disease which has a serious public health impact and/or unusual or unexpected nature, with high potential for spread. Note: the term 'urgent' has been used in combination with other terms (e.g., infectious event, chemical event) in order to simultaneously convey both the nature of the event and the characteristics that make it 'urgent' (i.e., serious public health impact and/or unusual or unexpected nature with high potential for spread).

Vector: an insect or other animal that normally transports an infectious agent that constitutes a public health risk.

Verification: the provision of information by a State Party to WHO, confirming the status of an event within the territory or territories of that State Party.

WHO IHR contact point: the unit within WHO that is accessible at all times for communications with the NFP.

Zoonosis: any infection or infectious disease that is naturally transmissible from vertebrate animals to humans. (WHO web site http://www.who.int/topics/zoonoses/en)

Zoonotic event: a manifestation of a disease in animals that creates a potential for a disease in humans as result of human exposure to the animal source.

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FORM FOR COLLECTING EDITS FOR JEE TOOL

Name: William B. Karesh **Date:** 8 March 2017

JEE Mission: Tanzania

Technical Area (Please Specify indicator number, then if comment is on the attribute or technical questions	**Suggested Language for the specific section for indicator(s)**	**Suggested language for attributes and capacity levels for given indicator(s)**	**Suggested language for technical questions**
P.2.1. A. 4 Technical question			Modify to read: Is there timely and systematic information exchange between domestic and wild animal surveillance units
P.3.4.3 Technical question			Modify to read: Is a prescription required for antibiotic use in domestic and wild animals? When is a prescription not required?
P.3.4. Technical question			Add question: Is there national guidance on proper disposal for antibiotic use in domestic animals, wildlife and humans to avoid environmental contamination?
P.4 Indicator and attributes	After asterisk, modify to read: Refers to zoonotic infections shared by domestic and wild animals and humans	Under notes, modify to read: Linkages between Ministry of Health, Ministry of Agriculture, and relevant ministries with wildlife specialists to promote the sharing of information and data. Linkage should also exist on the regional and local level Under Contextual Questions, modify to read: Within the past two years, has an exercise been conducted or real event occurred, involving Ministries of Health, Agriculture, and appropriate wildlife Ministry to practice and test skills of both human and animal public health workers to investigate and respond to a zoonotic event? Under 5.b, modify to read: Is there a plan in place to	

FORM FOR COLLECTING EDITS FOR JEE TOOL

		encourage reporting of domestic and wild animal disease (may include indemnities paid)?	
P.4.1 Technical questions			Under P.4.1.1, modify to read: Does the country have a mechanism in place to identify priority zoonotic diseases and novel pathogens that pose a national health risk? Add question: Is there surveillance of sentinel health events that may signal a zoonotic disease spillover risk? Under P. 4.1.4, modify to read: Are public health laboratories, domestic animal and wildlife health laboratories linked? Under P.4.1.5.a, modify to read: What ministries receive reports produced by the domestic and wild animal surveillance systems on zoonotic diseases?
P.4.2 Technical questions			Modify to read: 4.2.1 Describe public health training offered to domestic and wild animal health veterinary staff within the country. Modify to read: 4.2.2 Are domestic and wild animal health experts and veterinarians included in country FETP or other equivalent training program? Add question: Are wild animal species and distribution data available for the country?

FORM FOR COLLECTING EDITS FOR JEE TOOL

P.5.1 Technical questions			Modify to read: P.5.1.3 Does the surveillance and response staff know who the focal points are for food safety, domestic and wild animal health and the key laboratories that would be required to test clinical and/or food samples collected during an event? Add question: What systems are in place for foodborne illness deriving from wild animals (either farmed or free-ranging)?
D.1.1 Contextual question			Add sub-question: D.1.1.2 Does the country have access to laboratories able to detect novel or previously unknown pathogens?
D.1.1 Technical question			Add question: Are labs authorized, capable and willing for testing of samples from wild animals?
D.2 Target and Indicator	Modify Target to read: systems that are able to detect events of significance for public health, domestic and wild animal health	Modify Indicator D.2.2 to read: Country is developing an interoperable, interconnected, electronic real-time reporting system, for either public health or veterinary (domestic and wild animal)	
D.3.1 Technical question			Under D.3.1.1.b, add: Is there an operational OIE Focal Point for Wildlife?
D.3.2 Technical questions			Under D.3.2.1. modify to read: Which ministries were engaged in the exercise or event? (ministry of health? defense? agriculture? environment?)
D.4.1.2 Technical questions			Add: i. Wildlife experts

FORM FOR COLLECTING EDITS FOR JEE TOOL

D.4.2.2 Technical questions			Under D.4.2.2.c, modify to read: For veterinarians (public health, agricultural, wildlife, and/or private practice)?
R.4.2.1 Technical questions			Under R.4.2.1.f, modify to read: Are other sectors (i.e. security authorities, domestic and wild animal health) included in plans for sending/receiving personnel during an emergency?
R.5.1.6 Technical questions			Under R.5.1.6, modify to read: Are there shared communication plans, agreements and/or standard operating procedures between other response agencies such as public safety, law enforcement, hospitals, emergency response, Red Cross/Crescent and/or government agencies such as ministries of defence, agriculture, food/drug, wildlife and environment, etc.?
PoE.1. Technical question			Add question: Do PoE have adequate capacity for the detection of infections of zoonotic diseases in imported wild or domestic animals?
Comments: These edits reinforce the importance of capacity to address known and unknown health risks relevant to wildlife/environment for prevention, early detection and effective control of zoonotic disease. Similarly, relevant authorities should be consulted on potential control measures that may potentially have detrimental health impacts (e.g. pesticide use), as well management strategies for possible sources of environmental contamination.			

From: Carlos Morel [REDACTED]
Sent: Tue, 04 Apr 2017 16:35:33 +0000
To: Cara Chrisman <cchrisman@usaid.gov>, Dennis Carroll <dcarroll@usaid.gov>, Eddy Rubin <erubin@metabiota.com>, "George F Gao (gaof@im.ac.cn)" <gaof@im.ac.cn>, Jonna Mazet [REDACTED] Peter Daszak <daszak@ecohealthalliance.org>

Dear colleagues,
Take a look at this:
http://www.nature.com/news/brazilian-scientists-reeling-as-federal-funds-slashed-by-nearly-half-1.21766?WT.mc_id=FBK_NatureNews&sf67635182=1

Best,

Carlos

--
--
Carlos M. Morel MD DSc
Director
National Institute of Science and Technology for Innovation in Neglected Diseases (INCT-IDN)
Centre for Technological Development in Health (CDTS)
Oswaldo Cruz Foundation (Fiocruz)
Building "Expansão", 8th floor room 814
Av. Brasil 4036 - Manguinhos
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Brazil

Tel +55-21-3882-9234 Fax +55-21-2290-0494
Email morel@cdts.fiocruz.br or [REDACTED]
Twitter @cmmorel
http://www.researcherid.com/rid/B-4079-2009

Sent: Fri, 07 Apr 2017 13:05:57 -0700
Subject: REMINDER: PREDICT Sierra Leone, Guinea, Libera (EHP) CALL Thursday April 13 11AM Pacific-2PM Eastern
From: Brian Bird <bhbird@ucdavis.edu>
To: David J Wolking <djwolking@ucdavis.edu>, Christine Kreuder Johnson <ckjohnson@ucdavis.edu>, Tracey Goldstein <tgoldstein@ucdavis.edu>, Jonna Mazet <jkmazet@ucdavis.edu>, "Anthony, Simon J." <sja2127@cumc.columbia.edu>, "William B. Karesh, D.V.M" <karesh@ecohealthalliance.org>, Jon Epstein <epstein@ecohealthalliance.org>, Matthew LeBreton <mlebreton@metabiota.com>, Damien Joly <djoly@metabiota.com>, Manjunatha N Belaganahalli <mbelaganahalli@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>, Jason Euren <jeuren@metabiota.com>, Frantz Jean Louis <fjeanlouis@metabiota.com>, Emma Lane <lane@ecohealthalliance.org>, Emily Hagan <hagan@ecohealthalliance.org>
Cc: "(andre@ecohealthalliance.org)" <andre@ecohealthalliance.org>, Katherine Leasure <kaleasure@ucdavis.edu>, Elizabeth S Chase <eschase@ucdavis.edu>, Amanda Fuchs <fuchs@ecohealthalliance.org>
PREDICT-CDC Guinea responses to USAID 29 March 2016__AC edits JM (1).docx

PREDICT Sierra Leone, Guinea, Liberia

"EBOLA HOST PROJECT"
COORDINATION CALL
Thursday April 13: 11AM Pacific, 2PM Eastern.
Toll-free number: [redacted]
Access Code: [redacted]
International Dial-in number: [redacted] (toll charges apply)

Hi all just a reminder,

Here's a tentative agenda. Please let me know if you have any other agenda items and I'll get them added… and I'll send out a final and reminder on Wednesday next week with an updated specimen collection tracker tool.

Please let me know if you have any additions you'd like to discuss and I'll add them to this agenda.

Items on the agenda:

1. **Funding and USAID HQ communications (Jonna, all)**
2. **Country Specific Mission Communications and Challenges (Karen, Jon)**
   a. Country specific updates/plans
   b. Update on Sierra Leone Moa Wharf pig "outbreak" and impact on activities
   c. Guinea CDC communications (*covered in last EB call; but attached here again for reference*)

3. **Livestock sampling (All)**
   a. FAO offer of assistance; implications for lab testing and budgets? How to manage expectations?
   b. How much longer do the livestock remain relevant scientifically? Do we set a cap on livestock numbers and locations then stop sampling those taxa?
3. **Field sampling team updates (Frantz/Karen, Jon)**
   a. Sierra Leone: update on LN2 generator situation
   b. Guinea: USG and GoG MOU on Ebola outbreak specimens; Guinean Ethics committee submission update
   c. Liberia: Update from new site in Foya county. Status of MOUs or agreements with NRL-LIBR?
4. **Laboratory updates (Tracey, Simon, Manju)**
   a. Update on Dx assay development (Molecular and Serology)

6. **Human behavioral work updates (Karen, Jon)**
   a. IRB Updates and implementation plans

7. **Last call's discussion on animal morphometric data vs. animal target numbers**
   a. Last call consensus was to be take representative detailed measurements from a subset only. Do we want to formalize that or have more discussion etc.?
7. **Other partner updates (Billy)**

Happy Friday everyone!

-b

1. Specimen that have been received for this animal study have been stored in a -20 freezer that is different from the -80 freezer that contains human blood Ebola samples. This is good news from a safety perspective. The -80 freezer with Ebola specimen is locked and should not be opened as it contains positive samples that have not been neutralized. Predict might want to quickly acquire a -80 freezer (recommended temperature for blood samples for better conservation) to ensure proper storage of their samples.

This is being addressed. We are happy that Dr. Magassouba could assist us in arranging a temporary storage solution for the PREDICT specimens that is separate from the human outbreak specimen collection. We agree that -80C storage is preferable, and the team has purchased two -80C freezers to upgrade the ultra-cold storage capacity at the VHF laboratory for all PREDICT specimens, which will remain locked with very limited key access at all times. These should be delivered during the second week of April. Action item: the PREDICT team will notify the mission when the freezers arrive in-country.

Until that time, storage at -20C will be adequate for our primary diagnostic specimens which are stored ***inactivated*** in Trizol (guanidine isothiocyanate and phenol) as this will not affect the results of any subsequent molecular testing. Short term storage at -20C of our secondary specimens in virus-transport media, while not ideal, will be sufficient for potential subsequent analyses if necessary, especially since these will be transferred to the new, locked -80C freezer soon.

2. Dr. Magassouba did not seem to have total clarity of what Predict would provide (freezer/generator) or the specifics of the study. I would recommend meeting with him, go over supplies and study, and do the same with Dr. Sakoba and Prof. Lamine.

This is being addressed. The purpose of the global PREDICT team's visit was to explore in-country capabilities and possibilities for collaboration for testing of Predict samples in Guinea. Dr. Magassouba and our PREDICT country coordinator (Professor Camara) recently reviewed and reached an agreement (currently with the University of California Davis for final PREDICT approvals) that more clearly states exactly what each partner is responsible for in terms of sample storage and equipment for this purpose. In this document, it is clear that PREDICT will supply the two -80C freezers (due for delivery in April) and cost share the fuel for the generators required for this equipment. We will be happy to provide Dr. Sakoba and Professor Lamine an update to clarify their concerns or questions as soon as desirable. Plans for testing in Guinea are currently being developed and are dependent on resources available. The plans are being discussed with Professor Camara and Dr. Magassouba to assess feasibility. The PREDICT team offered to share PREDICT testing protocols with Dr. Magassouba in the interim, so that he may have them available to pilot with pre-PREDICT samples in his archive. Action item: the PREDICT team will follow up further with Professor Camara and Dr. Magassouba.

Here are some additional recommendations

1. Predict should have a Memorandum of Understanding (MOU) signed by the MOH and Ministry of Livestock that explains the method used to ensure proper handling, neutralization, storage, and shipping of specimen. This was requested by the GoG for the human samples and is a hot topic of conversation right now because of direct safety concerns expressed by both the President and the Minister of Health.

This is being addressed. The PREDICT team was granted permits for our work by the Ministry of Environment, Water, and Forests and the Ministry of Livestock and Animal Production prior to the initiation of any work in Guinea. These permits were granted in part because the team utilizes standardized protocols used by PREDICT teams project-wide to train staff on these issues including the safe collection, handling, storage, and shipping of specimens. As an added step specifically for Guinea, we are also following the recommendation of Dr. Sakoba to have our approved animal sampling Institutional Animal Care and Use (IACUC) protocol (which includes further details on sampling and safe

handling of animals and specimens) be reviewed and approved through the joint Guinean Ethics Committee that also includes members of the Ministry of Health. We are in the process of translating this master document into French for submission to this committee. We look forward to addressing any concerns they may have to ensure their concurrence with our activities. Action item: the PREDICT team is following up with the GEC.

2. The principal investigator on the ground should also be able to demonstrate that proper measures are being taken to ensure the prevention of human infection from potentially infected animal blood. In addition to PPE, proper training, and Trizol being used at the collection sites, it might be advisable to consider additional measures. No vaccine is available at this time. Possible measures:

a. daily temperature monitoring of all collectors and their immediate family

b. use of a sheet that records who collected which sample and link lab results to this line list of collectors after confirmation of PCR test in California. This should be regularly shared with MOH and time between collection and testing minimized as much as possible for rapid confirmation.

c. Field incidents (needle pricks, bites from bats, spill of test tubes or fluids should be well documented and shared

Already addressed; no action required. The PREDICT teams are trained to follow well-established biosafety and animal and specimen handling protocols that have been used over the past 7 years in a variety of settings and including work with animal reservoirs of other high-consequence pathogens, such as Nipah, Lassa, SARS-like, and MERS viruses. The single greatest risk to PREDICT staff is rabies virus infection, and all staff are required to obtain rabies vaccination before beginning any field work activities. An additional and very significant threat to the health of our staff is venomous snake bite. It would be very informative to hear if the CDC has any guidance or availability of anti-venoms that could be obtained by the in-country teams on an emergency basis if needed.

For the additional concerns:

a) It is highly unlikely that PREDICT team members, as part of their routine activities, are at increased risk of exposure to pathogens from the animals being sampled above the background level of the local community who actively hunt and consume many of the animal species being sampled. In the absence of a specific high-risk exposure, daily temperature monitoring of ecological field staff, where appropriate PPE and adherence to biosafety protocols have been maintained, does not seem warranted and is not standard practice, even for CDC teams collecting similar animal samples in neighboring countries. However, if a more significant exposure risk occurs (such as an animal bite that penetrates all layers of PPE), enhanced monitoring may be warranted on a case-by-case basis (see c below).

b) During each day/night of work, a record is generated of who participated in the sampling activities. However, PREDICT does not, by design, operate as a rapid response diagnostic laboratory, but is rather at its core a capacity building effort. The turnaround time from field-collection to virus detection and confirmation in animal samples could range from weeks to several months. As in-country laboratory testing capacity continues to build, we anticipate these turn-around times to shorten, but they will almost certainly always be beyond the short incubation time of most viral and bacterial infections. However, if there is a subsequent positive test for a known or suspected pathogen, we can use the log of participants from the animal sampling to follow up on the participants' health status.

c) Adverse incidents (e.g., bites, scratches, needle sticks) are recorded by the PREDICT team as part of our on-going occupational health program and are reported to the supervisor of the injured employee. Staff members and partners are also required to train on immediate response procedures for all such incidents. Consistent with best practices in public health, if any illness is reported by or observed in a staff member by a supervisor, individuals are encouraged to not participate in any team activities until their illness is resolved. When an illness occurs subsequent to an adverse event, the situation is brought to the attention of the staff member's employer for implementation of their occupational health program, as well as to the PREDICT country coordinator and the global team for further action. If a significant illness does occur

that may require immediate rule-out testing, the PREDICT team will contact the MoH and our CDC partners for guidance.

3. More clarification should be given as to why one aliquot is kept in Guinea. For what research will the samples be used? By whom? These should be captured in a research protocol shared with both MOH and Ministry of Livestock.

Already addressed; no action required. As standard best practice, PREDICT teams across the world archive aliquots with the in-country government to build up local bio-banks of specimens. For example, this practice is also followed by the CDC Viral Special Pathogens teams doing similar work as PREDICT in Sierra Leone. It is at the discretion of the host country government, in conjunction with PREDICT staff, to determine what research plans they have with the specimens, as these aliquots are necessarily the biological and intellectual property of the country. This best practice is outlined as part of the agreement between PREDICT and the host country government. PREDICT strives to leave behind in-country technical expertise and a collection of specimens so that every country has the capacity to engage in further research work with other partners long after the PREDICT program has ended. We also encourage best practices and training in biosafety and security, as well as report any positive samples that should be transported, according to the in-country government protocols, to the most biosecure facility in the country if the sample is considered high-risk to human health or livestock.

4. The chain of custody, etc should be documented in an SOP.

Already addressed; no action required. PREDICT already has SOPs for maintaining records and inventories of the collected PREDICT specimens, which includes freezer map locations, and all specimens stored in locked freezers. The SOPs also state that if a potential high-consequence pathogen is detected, any remaining potentially infectious specimen will be transferred as soon as possible to the appropriate national or international reference laboratory, depending on the pathogen and the in-country capacity, with host-government approval and concurrence.

5. All of these items should be discussed openly with the MOH and the Ministry of Livestock

Already addressed; no action required. Our team reports having already discussed these items with both Ministries, and Predict POCs from Ministry of Livestock (Dr. Ramadan Diallo) and from MOH (Dr. Alpha Mamadou Diallo) are always invited and/or have participated already with the team in our community engagement and sampling activities. As a rule, the PREDICT teams in all countries where the project is implemented strive to have open and transparent communication with all relevant government Ministries. Without their continued approval and support the goals of the PREDICT program would not be possible. If necessary, the PREDICT team in Guinea is happy to discuss these issues further with the appropriate government representatives.

From:	Elizabeth S Chase <eschase@ucdavis.edu>
To:	apereira@usaid.gov <apereira@usaid.gov>;aclements@usaid.gov" <aclements@usaid.gov>
CC:	Jonna Mazet <jkmazet@ucdavis.edu>
Sent:	4/18/2017 11:34:21 AM
Subject:	Meeting with Jonna

Greetings Andrew and Alisa,
Jonna is going to be in New Zealand during the next PREDICT SMT call scheduled for May 1 and the next EB call scheduled for May 3. We are planning to cancel the calls, but she does want to be available to speak with the two of you. We might have to reschedule for a time that suits your calendars but also considers the time difference. (New Zealand is 16 hours ahead of DC.)

I am sharing the plan to keep you looped into the current thinking and will work with you or your assistants to set times for a call.

Respectfully, Liz Chase

Liz Chase
Executive Assistant to Dr. Jonna Mazet
One Health Institute, University of California, Davis
530-752-3630

From: Andrew Clements <aclements@usaid.gov>
Sent: Thu, 20 Apr 2017 22:24:21 +0200
Subject: Re: New PREDICT-2 Motor Vehicle Purchase Request #1
To: Elizabeth Leasure <ealeasure@ucdavis.edu>
Cc: Ryland Marbray <rmarbray@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Helen C Thompson <hcthompson@ucdavis.edu>

Hi Ryland,

I've reviewed these vehicles requests and I provide AOR approval (if needed).

Andrew

On Tue, Apr 18, 2017 at 7:01 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

> Hi Andrew and Ryland. Please find attached a request to purchase four (4) new motor vehicles to facilitate implementation of PREDICT-2 activities in Jordan, Malaysia, and Senegal. Vendor quotes and a manufacture waiver for the Senegal vehicles are also attached. Please let me know if you need anything else to proceed with approving this request.
>
> Thanks,
>
> Liz
>
> Elizabeth Leasure
>
> One Health Institute
>
> University of California, Davis
>
> 530-754-9034 (office)
>
> REDACTED (cell)

--

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 REDACTED
E-mail: aclements@usaid.gov

For more information on USAID's Emerging Pandemic Threats program, see: http://www.usaid.gov/ept2

Sent: Mon, 8 May 2017 07:59:49 -0700
Subject: Re: Montreux meeting - 16-17 May - are you going?
From: Jonna Mazet <jkmazet@ucdavis.edu>
To: "Black, Peter (FAORAP)" REDACTED
Cc: Peter Daszak <daszak@ecohealthalliance.org>

Bummer -- sorry to miss it,
Jonna

On Fri, May 5, 2017 at 6:17 PM, Black, Peter (FAORAP) REDACTED wrote:

Vey sorry to miss you both – but will catch up at some stage.
Admin type stuff – my world is also full of this! - but unavoidable……
Best
peter
-Peter Black

Deputy Regional Manager

Emergency Center for Transboundary Animal Diseases (ECTAD)

Regional Office for Asia and the Pacific

Food and Agriculture Organization of the United Nations (FAO)

REDACTED

E-Mail : REDACTED

Skype REDACTED

From: Daszak Peter <daszak@ecohealthalliance.org>
Date: Saturday, 6 May 2017 2:30 am
To: Peter Black REDACTED Jonna Mazet <jkmazet@ucdavis.edu>
Subject: RE: Montreux meeting - 16-17 May - are you going?

Sadly can't be there – we'll both be in Davis doing admin type stuff…..very upset by this but have a great meeting!

Cheers,

Peter

Peter Daszak

President

EcoHealth Alliance

460 West 34th Street – 17th Floor

New York, NY 10001

+1.212.380.4473 (direct)

+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: Black, Peter (FAORAP) [mailto:[REDACTED]
Sent: Friday, May 5, 2017 3:38 AM
To: Jonna Mazet; Peter Daszak
Subject: FW: Montreux meeting - 16-17 May - are you going?

Dear Jonna and Peter

Just checking if you are going to the PMAC 2018 meeting in Montreux 16-17 May (which I plan to attend)

Hope to see you there – be great to catch up.

Best

Peter

From: Dennis Carroll [mailto:dcarroll@usaid.gov]
Sent: Thursday, April 27, 2017 4:53 AM
To: Sudarat Damrongwatanapokin <sdamrongwatanapokin@usaid.gov>
Cc: Prince Mahidol Award Conference <pmaconference@mahidol.ac.th>; Oanh Kim Thuy <okim@usaid.gov>; Juan Lubroth [REDACTED]>; Daniel Schar (RDMA/OPH) <dSchar@usaid.gov>
Subject: Re: Finalizing Sub-Theme 3 PMAC2018

Dear friends, my apologies for the tardy reply. As Sudarat mentioned I am traveling along the China-Vietnam border with limited connectivity. Fortunately I am now in a hotel with internet connection.

Per your request, there are no changes to the concept note for sub-theme 3 - so please use the last version I emailed you. The names, affiliations and emails for the session lead coordinators are below. Please note, I am still working with Juan Lubroth (who I have copied on this email) to identify the lead coordinator for session 4. Juan, please provide directly to the Secretariat.

Session #:

1. Douglas Webb, UNDP: Douglas.Webb@undp.org

2. Jonna Mazet, University of California at Davis: jkmazet@ucdavis.edu

3. Peter Daszak, EcoHealth Alliance: daszak@ecohealthalliance.org

4. Still negotiating with FAO

5. Peter Black, FAO: REDACTED

6. Katherine Bond, USP: REDACTED

7. Daniel Schar, USAID: dSchar@usaid.gov

All my best

d

Dr Dennis Carroll

Director, Emerging Threats Program

U.S. Agency for International Development

Office: (202) 712-5009

Mobile: REDACTED

On Apr 26, 2017, at 11:02 AM, Sudarat Damrongwatanapokin <sdamrongwatanapokin@usaid.gov> wrote:

Peter Black

Deputy Regional Manager

Emergency Center for Transboundary Animal Diseases (ECTAD)

Regional Office for Asia and the Pacific

Food and Agriculture Organization of the United Nations (FAO)

REDACTED

REDACTED

From: [redacted]
To: "Karesh@ecohealthalliance.org" <Karesh@ecohealthalliance.org>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>
Subject: Viral risk ranking assessment - Thank you for participating
Sent: Wed, 10 May 2017 22:59:27 +0000

Dear Dr. William Karesh,

Thank you for completing the viral risk ranking assessment, your contribution is extremely valuable, and very much appreciated. As previously stated, identifying information will not be linked to any future analysis. However, if desirable and your permission is given by return of this email, we would like to express our gratitude for your time and effort through acknowledgements in future associated publications.

Sincerely,

Prof. Jonna Mazet

Global Director, PREDICT USAID
Professor of Disease Ecology and Epidemiology
One Health Institute
School of Veterinary Medicine
University of California Davis
1089 Veterinary Medicine Drive
Davis, CA 95616, USA
jkmazet@ucdavis.edu

[redacted]

Project Scientist, PREDICT USAID
Postdoctoral Researcher in Disease Ecology
One Health Institute
School of Veterinary Medicine
University of California Davis
1089 Veterinary Medicine Drive
Davis, CA 95616, USA
[redacted]

From: Andrew Clements <aclements@usaid.gov>
To: Jonna Mazet <jkmazet@ucdavis.edu>;pmulembakani@metabiota.com <pmulembakani@metabiota.com>
CC: Alisa Pereira <apereira@usaid.gov>
Sent: 5/14/2017 12:41:17 PM
Subject: Heads up: another DRC outbreak

Please do not share this information:

From FAO, we have heard about a duck die-off on a poultry farm on the shores of Lake Albert (Joo in the Blukwa group, Djugu Territory). FAO staff present to investigate and conduct necropsy. Rapid test on 1 bird positive for H5 influenza A. Since ducks have died, the virus is presumably HPAI. I believe FAO sent N8 primers to all countries in Africa earlier this year. I'm guessing the main veterinary lab in DRC will already have N1 primers.

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: Ryland Marbray <rmarbray@usaid.gov>
Sent: Fri, 19 May 2017 15:38:48 -0400
Subject: Re: New PREDICT-2 Motor Vehicle Purchase Request #1
To: Elizabeth Leasure <ealeasure@ucdavis.edu>
Cc: Andrew Clements <aclements@usaid.gov>, Alisa Pereira <apereira@usaid.gov>, Shana Gillette <sgillette@usaid.gov>, Jonna Mazet <jkmazet@ucdavis.edu>, David John Wolking <djwolking@ucdavis.edu>, Helen C Thompson <hcthompson@ucdavis.edu>
Approval letter for 3 motor vehicles.pdf

Hi Elizabeth,

Please find attached an approval letter concerning the above subject line.
Best Regards,

Ryland Marbray
Contracting Officer

On Tue, Apr 18, 2017 at 1:01 PM, Elizabeth Leasure <ealeasure@ucdavis.edu> wrote:

> Hi Andrew and Ryland. Please find attached a request to purchase four (4) new motor vehicles to facilitate implementation of PREDICT-2 activities in Jordan, Malaysia, and Senegal. Vendor quotes and a manufacture waiver for the Senegal vehicles are also attached. Please let me know if you need anything else to proceed with approving this request.
>
> Thanks,
>
> Liz
>
> Elizabeth Leasure
>
> One Health Institute
>
> University of California, Davis
>
> 530-754-9034 (office)
>
> REDACTED (cell)

--

Ryland Marbray
Agreements/Contracting Officer

USAID Office of Acquisition & Assistance
M/OAA/E3
1300 Pennsylvania Ave., NW,
Rm. 567-B, SA-44
Washington, DC 20523

Phone: (202) 567-5328|rmarbray@usaid.gov

USAID
FROM THE AMERICAN PEOPLE

May 19, 2017

Elizabeth Leasure
University of California
One Health Institute
Davis, California 95616-8686

Subject: Cooperative Agreement No AID-OAA-A-14-00102 (Predict-2)
Request for the Procurement of two (2) Toyota Hilux and one (1) Chevy Silverado under AIDOAA-A-14-00102 for the Emerging Pandemic Threats-2 (EPT-2) PREDICT-2 Project with University of California, Davis

References: Predict-2 request letter dated April 18, 2017 plus supporting documents

Dear Ms. Leasure,

This letter has been generated to provide approval to the purchase of three (3) motor vehicles. One Toyota Hilux for Senegal, one Toyota Hilux for Malaysia and one Chevy Silverado for Jordan to support in-country work for the Emerging Pandemic Threats-2 (EPT-2) PREDICT-2 Project's and as described within the request letter referenced above and not to exceed the total amount of $79,527 USD.

Taking into consideration the circumstances outlined in your letter as well as the concurrence from the AOR, I agree with the use of the USAID Blanket Waiver for Right-Hand Drive (RHD) Motor Vehicles (ADS312.3.3.2.b.2) in the procurement of the one (1) Toyota Hilux out of Malaysia.

This approval is provided subject to the acceptability of the purchase terms and conditions and the availability of funding under the Prodict-2 cooperative agreement. This letter does not change the total estimated amount or the total obligated amount of the award.

If you should have any further questions or concerns, please contact via email at rmarbray@usaid.gov or by phone at 202-567-5328.

Sincerely,

Ryland C. Marbray
Agreement Officer

From:	Jonna Mazet <jkmazet@ucdavis.edu>
To:	PREDICTMGT <predictmgt@usaid.gov>;Angela Wang <awang@usaid.gov>;Sarah Paige <spaige@usaid.gov>
CC:	PREDICT-outbreak <predict-outbreak@ucdavis.edu>
Sent:	5/21/2017 1:38:24 PM
Subject:	Fwd: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update

Please see below and attached regarding what has been requested of Predict and what we believe we can offer. Note that we are concerned about both cold chain and the media into which samples are being collected in the field. We can test the samples, but there will likely be a reduction in sample quality that may impact analysis.
We will keep you posted, but please let us know if you have questions that we should pass to the in-country team.
Have a nice day,
Jonna

---------- Forwarded message ----------
From: **James Ayukekbong** <jayukekbong@metabiota.com>
Date: Sun, May 21, 2017 at 7:37 AM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>, Maria Makuwa <mmakuwa@metabiota.com>
Cc: Prime Mulembakani <pmulembakani@metabiota.com>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>, Damien Joly <djoly@metabiota.com>

Dear all,

Find attached the updated PREDICT Outbreak Rapid Report form regarding the current Ebola outbreak in DRC.

We are told the Minister of health would sign an official request for PREDICT to perform the following;

- To conduct a joined ecological research with FAO to look for Ebola virus among wild and domestic animals in Likati.

- To test all samples (including negatives) from these outbreak with the PREDICT panel.

Kind regards,

J.A Ayukekbong, PhD
Regional Coordinator /Central Africa
USAID PREDICT | Metabiota
Email: jayukekbong@metabiota.com
Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

PREDICT Outbreak or Health Event Rapid Report

Today's Date: *May 20th, 2017*
Working Title of Investigation: *Outbreak of Ebola Virus Disease in the Bas-Uele province, DR Congo*
Cumulative day of the outbreak investigation: 11

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

On 8 May 2017, an alert of 9 suspected cases of Human Viral Hemorrhagic Fever and 2 deaths in the Likati Health Zone, Bas-Uele Province was received from the Provincial Health Officer. Symptoms were fever, bloody vomiting, diarrhea, and bleeding from the nose.

Location	
Country:	*Democratic Republic of Congo*
District:	*Province of Bas-Uele, Health zone of Likati, north-west of Buta*
Village/Town:	*Village in the Nambwa health area, Territory of Aketi*
GPS Coordinates (if known):	
Date that first case(s) of illness occurred (if known or estimate):	*April 22nd, 2017*
Date that PREDICT was first notified of outbreak:	*On May 10th, 2017 the PREDICT CC was informed by the INRB staff working in the virology lab that they were notified of suspected cases of VHF in the Likati Health Zone and that samples were expected to arrive for confirmatory testing anytime.* *On May 11th, 2017 the PREDICT CC was informed that the samples arrived at INRB in early afternoon and are being tested for Ebola. The same day the PREDICT CC was informed by the EPT2 focal point at the mission who talked on the phone with the Bas-Uele provincial health officer about more details on this alert: 9 cases and 2 deaths.*

Key Information	**Description of Findings/Actions/Outcomes**			
How many affected individuals?		**Suspected:**	**Confirmed:**	**Deaths:**
	Humans	34	2	4
	Domestic Animals			
	Wild Animals			
How was outbreak first noticed?	*During 16th week, a 45 year old man (case 1), fisher and farmer, became sick with fever, then bloody vomiting, bloody stools and*			

	nosebleed in the fisher camp along the river Likati, in the Nambwa health area. He was brought to a traditional healer and then transported by moto with 2 relatives, case 2 (moto driver) and case 3 (his brother) to the Likati general hospital about 45 km away. But he died on the road. Then case 3 decided to return to their village with the corpse. He was buried in the Kapayi village, Nambwa health area. On 25th April, case 2 and 3 developed the disease with same symptoms. Case 2 died the same day, and case 3 recovered. From these 3 persons, 6 other close contacts were infected. Among them, a young boy who attended the burial of case 1 died on 11th May. The provincial health office has sent a team to the site to investigate and information is expected when they return as the area has no cell phone coverage.
Where was the first reported case? What is/was the extent of geographic spread? Include comments on the apparent speed of spread.	*For now the disease is located within four health centers: Nambwa (12 cases, 2 deaths), Muma (3 cases, 1 death), Ngayi (4 cases, 0 death) and Azande (1 case, 0 death), in the Likati Health Zone, Territory of Aketi in the Bas-Uele province, where the first reported case was treated at the health center. No case is reported outside this area.*
Has the country requested support from PREDICT (include date of request)?	*Yes, the INRB General Director asked PREDICT to retest the 5 samples that were received from the field using PREDICT protocols;*
If so, which government agency requested PREDICT support?	The Ministry of Health through the INRB which is the national Public Health Laboratory
When was PREDICT response initiated (date)?	Saturday, 13th May, 2017
Are other EPT partners involved in the response (which ones and how)?	*None for now*
What type of assistance did PREDICT initially provide? Which PREDICT personnel were involved?	Testing of 5 samples from the field using PREDICT protocols and primers for Filoviruses, by the PREDICT lab manager and lab technician
When was the first official acknowledgement of the outbreak (by which government agency or other reputable body and date)? When was a response initiated and by whom? Which agencies were involved? Who was in charge of the national response?	On May 9th, 2017, the Bas-Uele provincial office informed the MoH direction of disease surveillance of the alert. A team from Buta, the provincial health office was sent to the site to investigate. A team from the MoH direction of disease control, INRB, Hygiene and the Ministry of information travelled on Saturday morning to the field. They reached Likati (health zone office) on Sunday night at 10.00 PM. On Monday morning they had a meeting with the health zone staff and sent a first report to the national coordination committee via the Ministry of Health
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). *Note: Daily updates for ongoing laboratory testing should be entered in the Daily Activities/Timeline table below.*	Yes, the INRB virology laboratory tested 5 serum samples collected from patients admitted at the Nambwa health center and who were in contact with the diseased cases. They performed real-time PCR and found 2 positive results for Zaire Ebola virus. The tests were performed on 11th May and re-tested on 12th May, 2017 by the same staff. On Saturday, 13th May, the samples were re-tested by the PREDICT staff using the PREDICT protocol. They found one positive result on the 5

	samples, the same that was clearly positive by real-time PCR.
Where was the laboratory testing performed (name of laboratory)?	Samples were tested at the INRB virology laboratory
Number of days between initiation of government response and lab confirmation of laboratory results.	N/A

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: *Suspicion of VHF in the Bas-Uele province, DR Congo*

*Instructions: This is the timeline of all PREDICT team activities related to this event. Please fill out in detail any PREDICT team activity as they occur on a **daily** basis (e.g., sample collection, other field activities, laboratory testing, outbreak related meetings attended, communications with the Mission or Government, etc.) in addition to the key specific items listed below.*

*Add additional rows into the specific activities listed below **in chronological order** as needed. If a specific listed event has not yet occurred, please put "pending" or "not expected" in the date column.*

Key Events:

Date	Day #	Notification or Action Taken
5/10/2017	1	First notification of 9 suspected cases of Viral Hemorrhagic Fever in the Nambwa Health Area, Likati Health Zone, Bas-Uele Province;
5/11/2017	2	PREDICT Country coordinator (CC) notified of reception of samples from the suspected cases at the INRB; PREDICT CC notified PREDICT global team
5/12/2017	3	Two samples out of five tested positive for Ebola Zaire virus, and 3 were negative by real-time PCR at the INRB virology laboratory. PREDICT CC attended the National coordination committee meeting where the Minister and his team presented the situation: 9 cases and 2 deaths, and preparations are made of an investigation team composed of epidemiologists, medical biologists and lab technicians (from the MoH and INRB) to travel tomorrow from Kinshasa to support the local team, begin contact tracing and prepare the logistic for the outbreak response. The area of Nambwa is located 45 km from Likati but it takes about 5 days to reach by car and 2 days by motorcycle. The Minister and WHO have contacted the UN Mission to provide an helicopter to bring equipment to the site. The INRB will deploy the K-Plan mobile laboratory that was purchased through the USAID funds for Yellow Fever Outbreak in Nambwa.
5/13/2017	4	PREDICT CC attended the meeting of the National coordination committee, where the Ministry of Health updated partners of the situation on the ground: a total of 11 cases were reported since the beginning of the outbreak with 3 deaths in the 3 health areas of Nambwa (7 cases and 3 deaths), Mouma (3 cases and 0 death) and

		Ngayi (1 case and 0 death). The provincial investigation team was back to Likati and could send this update by phone via the provincial health office. A team of 9 persons left Kinshasa today for Nambwa, composed of 2 epidemiologist, 1 lab technician, 1 clinician, 1 data manager, 1 information specialist, 1 hygienist, 1 logistician and 1 psychologist. They are expected to reach Nambwa on Monday or Tuesday and will prepare the logistic for the local coordination committee and begin contact tracing and sensitization. Staffs from the WHO country office and the Ministry of health are working to prepare the list of needs for the outbreak response and a budget. A request was made to the MONUSCO to provide an air lift between Kinshasa and Likati for shipping all materials and equipment, including the K-Plan mobile laboratory from the INRB.
5/15/2017	6	On Saturday, 13th May, the General Director of INRB asked PREDICT to retest the 5 samples received from the field for Filovirus using the PREDICT protocol. The reason was to have a second diagnostic method. The INRB staff tested these samples on Friday and Saturday by real time PCR, using 3 different protocols: the first targeting the L gene returned 1 positive result; the second targeting the NP gene returned 2 positive results, and the 3rd targeting the Glycoprotein gene returned 1 positive result. Using the PREDICT protocols, the PREDICT staff tested the five samples which returned only one putative positive result on the gel, from the sample which tested positive from the 3 protocols used by the INRB staff. Amplicon from this sample will be send to GATC for sequencing per our protocol. This result was as expected as the PREDICT Filovirus protocols should be and are correct for detection of this virus but are also necessarily less sensitive as a result of conserved technique, resulting in weak or negative reactions in samples with low viral load. PREDICT CC and virologist attended the National Coordination meeting. Two points were discussed: 1) the plan and budget for the outbreak response: a group from the MoH direction of disease control, the INRB, WHO, UNOCHA and UKAID finalized the plan and budget on Monday morning. Main points are: strengthening of coordination, surveillance, hygiene and biosecurity, medical and psycho-social care, laboratory

		diagnostic, communication and rehabilitation of health centers and the Likati General Hospital in the Bas-Uele province. No decision of quarantine will be made. The INRB will deploy two mobile laboratories, one at Nambwa (epicenter) and a second in Buta with possibility to be deployed anywhere based on the epidemiologic situation of the outbreak. The total budget for the response is $8,072,636.00 and includes: coordination at national, provincial and local levels ($945,377), surveillance and laboratory ($1,685,265.00), communication ($505,000.00), materials and supplies ($1,605,000.00), medical and psychosocial care ($2,313,280.00), prevention ($ 477,839.00), Water, hygiene and sanitation ($540,675). Main Challenges are: transport of goods to the affected area (THE UN may help with a Helicopter), and transport of probable cases to the Ebola Treatment Center due to bad roads. 2) the situation on the field: now the total of cases has increased to 20, reported from 4 health areas: Nambwa with 12 cases and 2 deaths, Muma with 3 cases and 1 death, Ngayi with 4 cases and 0 death, Azande with 1 case and 0 death. Samples collected will all be shipped to the INRB because the committee decided not to wait for the mobile lab to be deployed. Right now all cases are being treated at home because there is no facility for handling Ebola cases. The Ebola Treatment Center is still under rehabilitation. The team has begun to disinfect the laboratory and health centers and the local radio broadcast is used for sensitization.
5/16/2017	7	PREDICT virologist attended the National Coordination Committee. A new case was reported from Nambwa, young girl 16 years old living in a house with a suspect case. Now the total number of reported cases are 21: Nambwa 13 cases, 2 deaths; Muma 3 cases, 1 death; Ngayi 4 cases, 0 death, Azande 1 case, 0 death. 3 teams are now deployed in the field in three different locations with the following objectives : active research of suspected cases, sample collection, contacts tracing and assessment of logistic needs. A fourth team led by the Ministry of Health will leave Kinshasa tomorrow with one mobile laboratory from the INRB, prepared to perform 100 tests. WHO has mobilized PPEs from the city of Kisangani to support the response.

		Seven committees were set up and will be meeting everyday; PREDICT was invited to be included in the committee in charge for laboratory and research. The first meeting will be on next Thursday to analyze all needs and make request to different partners. These committees will report to the National Coordination Committee daily. PATH, a CDC Implementing Partner in charge to support the country Emergency Operation Center – GHSA is partnering with DigitalGlobe and UCLA to get precise maps of the Likati health zone. They have provided cellphones with GPS to the team who will travel to the site tomorrow.
5/17/2017	8	The PREDICT Lab manager attended the National Coordination Committee meeting at the MoH: no new cases reported from Likati, still a total of 21 cases with 3 deaths, and 4 health areas affected; samples were collected from a total of 13 cases; 5 were shipped to Kinshasa and tested at the INRB, and 8 are kept in Aketi waiting to be tested on site. The investigation team has identified a total of 416 contacts to be followed. A team from the INRB travelled this morning with the 1st mobile laboratory which will be deployed in Nambwa. The 2nd mobile laboratory (K-Plan) will be transported to the field tomorrow and will be deployed in Likati. A fourth investigation team, led by the Minister of Health will travel to the site tomorrow. WHO has confirmed that PPEs (unknown number of kits) were deployed to Aketi from their stockpile in Kisangani PREDICT was requested by the Commission of Laboratory and Research to provide for the mobile laboratory: one glovebox, 1 Qiagen extraction kit and Ethanol.
5/18/2017	9	PREDICT CC and virologist attended the 1st meeting of the commission for laboratory and research, with staffs from the INRB, CDC, UCLA and FAO-ECTAD: - The mobile lab arrived and was deployed to Aketi with 4 INRB staffs; - The K-Plan laboratory travelled today and will be deployed to Buta, the provincial capital city; - INRB transmitted a list of reagents and supplies needed to perform lab tests in the field; the list was transmitted to the MoH and FAO. The team from FAO informed that they will

		provide the needed supplies according to what is available now at the Central Vet Lab PREDICT virologist attended the National Coordination Committee meeting: The Minister of Health reported on his trip to Aketi: the deployed team is performing active research of suspected cases and contacts; visited health facilities and traditional healers; ongoing data collected regarding burials in villages; sensitization of local communities; different opinion leaders are intensively collaborating with investigation teams; as well as challenges due to bad roads. Epidemiological update: Total of 29 suspected cases reported, and 3 deaths: Nambwa Health Area=11 cases and 2 deaths; Muma Health Area=3 cases and 1 death; Ngayi Health Area=14 cases and 0 death; Azande Health Area=1 case and 0 deaths. Registered contacts under follow up = 416. A total of 35 samples collected: 5 were shipped to Kinshasa and the remaining stored at Likati waiting to be tested on site. Four new alerts received, 2 from Azande and 2 from Ngabatal, under investigation Mobile lab expected to be operational tomorrow Discussion on vaccination: Director of the Expanded Program for Immunization presented a plan and proposal for the use of experimental vaccine that was used in West Africa which is made of recombinant ZEBOV-VZV. The vaccine is efficient in protecting chimpanzees from infection. It should be conserved at -60°C, conditioned in 10 doses/vial and after reconstitution could be conserved between +2 and +8°C for a maximum of 6 hours. The vaccine is administered via intramuscular injection. The Protocol of vaccination is ready and will be submitted this evening to the Ethical Committee at KSPH for approval and will be considered a clinical trial. The vaccine is not approved to be used in humans yet. If the DRC Government accept the use of this vaccine, nearly 12,000 doses could be provided to be administered to teams working in the field.
5/19/2017	10	PREDICT virologist attended 2nd meeting of the commission for laboratory and research with staff from the INRB, CDC, UCLA: The commission has transmitted the complete list of members and partners to Ministry of Health. The General Director of INRB presented the strategy for response to the

		outbreak: - The Mobile Laboratory should be operational for PCR, ELISA tests and rapid tests - As there are only 3 deaths reported till today there is a possibility that this current Ebola outbreak may be mask by another unknown pathogen – INRB will also deploy a team from the Parasitology and Bacteriology Laboratories to perform investigations and diagnosis on samples collected in the field (for example recently in Banalia - Shigella and Salmonella infections were responsible for several deaths) **Reagents for diagnosis:** - Two boxes of Ebola rapid tests are available at INRB Virology Laboratory - Another tests will be provided by Japanese Cooperation - The Ebola tests for Mobile Laboratory (Kaplan- Prof. Parisi) were sent to DRC via DHL - The Gene Expert machine with reagents will be received this Sunday and offered by UCLA project to INRB PREDICT virologist also attended the National Coordination Committee meeting: Epidemiological update: At the date of May 18, 2017 a total of 32 suspected cases were reported with 4 deaths: Nambwa-11 cases, 2 deaths, Mouma – 3 cases, 1 death, Ngayi – 14 cases, 1 death*, Azande-2 cases and Ngabatala – 2 cases. Concerning the 4th death* – young girl, 22 years old died with hemorrhagic symptoms, vomiting and fever on May 8, 2017 in a small village near Ngayi. She was the family member of the 3rd died case. The burial ceremony was done for her and this was only reported when the surveillance team visited the site. Four direct contacts were identified, they are sick and under the surveillance in the village. Registered contacts: 416 persons Samples collected: 35 The Mobile Laboratory was installed and the testing of samples will start this evening. In the reference Hospital in Likati, separate room for suspected cases and sick persons was prepared for safe medical follow –up of these persons. The General Director of INRB highlighted the importance of intensive research of new cases, the daily follow-up of all contacts (two times per day with measurement of corporal temperature). He also highlighted the importance to determine the “definition of case” by the medical team deployed in the field.

		The follow-up of contacts is very challenging/difficult to be implemented, there is a need for trained voluntaries (ex. members of Red Cross) to help. **Vaccination Program against Ebola:** The Government has approved the use of the Ebola vaccine in DRC during this Ebola outbreak. The Protocol of vaccination was submitted to Ethical Committee at KSPH for approval as a clinical trial. Several scenarios were proposed and will be discussed before starting the vaccination.
5/20/2017	11	PREDICT CC attended the meeting of the commission of Laboratory and Research: Results from the CIRMF laboratory in Gabon: The 2 positive samples for Zaire Ebola Virus out of the 5 that were tested at the INRB were retested and confirmed in CIRMF. The staff at CIRMF is performing whole sequencing of the virus and will send results on Monday or Tuesday with Phylogenetic analysis. The K-Plan mobile laboratory arrived in Kisangani pending transportation to Buta, the provincial capital city. The INRB staff sent to Likati have tested 22 samples collected from suspected cases, all tests (real-time PCR) returned negative results. The director of INRB would like PREDICT to test all negative results with PREDICT protocol for the 5 PREDICT viral families. The DRC PREDICT team is unsure about this as the current sample collection is not in conformity with PREDICT protocol. PREDICT samples should be stored at -80° C soon after collection in either Trizol or VTM which is not the case currently in the field. PREDICT CC attended the meeting of the National Coordination Committee: The following issues were raised: The data from the field need to be cleaned, waiting for more accurate data tomorrow; the generator of the mobile laboratory is not working, and the lab is using the generator from the Health Zone office; contact tracing is challenging due to bad roads; 2 health facilities were selected to be rehabilitated and transformed to Ebola Treatment Centers (ETC). The K-Plan reagents not arrived yet at the INRB as of this evening at 4.00

		PM The CDC will provide rapid tests for this outbreak It was proposed that the team in Likati prepares and sends a list of all cases and contacts, noting timeline of symptoms occurrence, date of sample collection, and clinical outcome in order to better follow the epidemiological curve and be more specific on contacts who can be considered to be removed from the list All commissions should prepare an operational action plan; all technical discussion should be prepared in the commissions, and each partner interested to support specific actions and activities should present this to the commission.
		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

In-Country Government Outbreak or Health Event Points of Contact

Public Health ministry or department:	
Name:	Benoit Kebela Ilunga
Email:	kebelailunga@gmail.com
Mobile Phone:	243 (0)81 997 2691 | 243 (0)90 282 1986

Livestock ministry or department:	
Name:	Leopold Mulumba
Email:	Leopold_mulumba@yahoo.com

Mobile Phone:	243 (0)81 509 1448 | 243 (0)84 200 0178

Wildlife/Environment ministry or department:	
Name:	Jeff Mapilanga
Email:	jeffmapilanga@gmail.com
Mobile Phone:	243 (0)99 810 1924

OIE focal point:	
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Email:	Dr_nlemba@yahoo.fr
Mobile Phone:	243 (0)81 512 6564 | 243 (0)99 990 2967

IHR focal point:	
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Email:	drbokenge@yahoo.fr
Mobile Phone:	

FAO:	
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Mobile Phone:	243 (0)82 961 6580

WHO:	
Name:	Ernest Dabire
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Mobile Phone:	

EPT ONE HEALTH WORKFORCE Project:	
Name:	Diafuka Saila Ngita
Email:	Diafuka.saila_ngita@tufts.edu
Mobile Phone:	243 (0)81 230 4310

EPT PREPAREDNESS and RESPONSE Project:	
Name:	
Email:	
Mobile Phone:	

Other Important Contacts:

v.16May2017

Organization:	
Name:	
Email:	
Mobile Phone:	

Organization:	
Name:	
Email:	
Mobile Phone:	

Organization:	
Name:	
Email:	
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Name:	
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From: Angela Wang <awang@usaid.gov>
Sent: Mon, 22 May 2017 09:10:11 -0400
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>
Cc: PREDICTMGT <predictmgt@usaid.gov>, Sarah Paige <spaige@usaid.gov>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>

Thanks Jonna! The mission sent an update yesterday saying, "Unfortunately, contact follow up has been slowed by a lack of thermometers available to the teams. They currently only have four functioning ThermoLasers. USAID is working through our partner PREDICT to determine whether we can provide immediate assistance in procuring additional thermometers."
Do you have any info on if PREDICT is procuring thermometers?

On Sun, May 21, 2017 at 4:38 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> Please see below and attached regarding what has been requested of Predict and what we believe we can offer. Note that we are concerned about both cold chain and the media into which samples are being collected in the field. We can test the samples, but there will likely be a reduction in sample quality that may impact analysis.
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> Have a nice day,
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> **J.A Ayukekbong, PhD**
> Regional Coordinator /Central Africa
> USAID PREDICT | Metabiota
> Email: jayukekbong@metabiota.com
> Mobile: +1 250-797-7755
> Website: www.metabiota.com
> Skype: ayukekbong.ayukepi

--
Angela Wang, MSPH
Public Health Advisor
Emerging Threats Division, Office of Infectious Disease

USAID/Washington, Bureau for Global Health
Phone: 202-712-1070 (O) | [redacted] (C) | [redacted]
Email: awang@usaid.gov

From: Sarah Paige <spaige@usaid.gov>
Sent: Mon, 22 May 2017 09:24:58 -0400
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Angela Wang <awang@usaid.gov>
Cc: Jonna Mazet <jkmazet@ucdavis.edu>, PREDICTMGT <predictmgt@usaid.gov>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>

Thank you for the update, Jonna!

Sarah Paige, PhD, MPH
Senior Infectious Disease Advisor
USAID Africa Bureau/Health Division
Desk: +1-202-712-1814
Mobile: +1-571-242-3896
E-mail: spaige@usaid.gov

On Mon, May 22, 2017 at 9:10 AM, Angela Wang <awang@usaid.gov> wrote:

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- To test all samples (including negatives) from these outbreak with the PREDICT panel.

Kind regards,

J.A Ayukekbong, PhD
Regional Coordinator /Central Africa

USAID PREDICT | Metabiota
Email: jayukekbong@metabiota.com
Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

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Angela Wang, MSPH
Public Health Advisor
Emerging Threats Division, Office of Infectious Disease
USAID/Washington, Bureau for Global Health
Phone: 202-712-1070 (O) | REDACTED (C) | REDACTED
Email: awang@usaid.gov

From: Angela Wang <awang@usaid.gov>
Sent: Mon, 22 May 2017 10:42:34 -0400
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>
Cc: PREDICTMGT <predictmgt@usaid.gov>, Sarah Paige <spaige@usaid.gov>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>

Thank you! Also, in the May 19 update, it says, "The Gene Expert machine with reagents will be received this Sunday and offered by UCLA project to INRB" Does this mean this machine will be used to test for Ebola at INRB? What UCLA project has this machine currently?
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> Do you have any info on if PREDICT is procuring thermometers?

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> Jonna

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From: **James Ayukekbong** <jayukekbong@metabiota.com>
Date: Sun, May 21, 2017 at 7:37 AM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>, Maria Makuwa <mmakuwa@metabiota.com>
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Sent: Mon, 22 May 2017 10:13:17 -0700
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Hi Angela,
The UCLA arrangement doesn't have anything to do with us, so you'd have to ask the Mission.
Sorry I don't have that info,
Jonna

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CC:	PREDICT-outbreak <predict-outbreak@ucdavis.edu>
Sent:	5/23/2017 9:56:07 AM
Subject:	Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update

Current update attached.
Have a nice day,
Jonna

On Sun, May 21, 2017 at 1:38 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
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PREDICT Outbreak or Health Event Rapid Report

Today's Date: *May 22nd, 2017*
Working Title of Investigation: *Outbreak of Ebola Virus Disease in the Bas-Uele province, DR Congo*
Cumulative day of the outbreak investigation: 13

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

On 8 May 2017, an alert of 9 suspected cases of Human Viral Hemorrhagic Fever and 2 deaths in the Likati Health Zone, Bas-Uele Province was received from the Provincial Health Officer. Symptoms were fever, bloody vomiting, diarrhea, and bleeding from the nose.

Location	
Country:	*Democratic Republic of Congo*
District:	*Province of Bas-Uele, Health zone of Likati, north-west of Buta*
Village/Town:	*Village in the Nambwa health area, Territory of Aketi*
GPS Coordinates (if known):	
Date that first case(s) of illness occurred (if known or estimate):	*April 22nd, 2017*
Date that PREDICT was first notified of outbreak:	*On May 10th, 2017 the PREDICT CC was informed by the INRB staff working in the virology lab that they were notified of suspected cases of VHF in the Likati Health Zone and that samples were expected to arrive for confirmatory testing anytime.* *On May 11th, 2017 the PREDICT CC was informed that the samples arrived at INRB in early afternoon and are being tested for Ebola. The same day the PREDICT CC was informed by the EPT2 focal point at the mission who talked on the phone with the Bas-Uele provincial health officer about more details on this alert: 9 cases and 2 deaths.*

Key Information	**Description of Findings/Actions/Outcomes**			
How many affected individuals?		**Suspected:**	**Confirmed:**	**Deaths:**
	Humans	43	2	4
	Domestic Animals			
	Wild Animals			
How was outbreak first noticed?	*During 16th week, a 45 year old man (case 1), fisher and farmer, became sick with fever, then bloody vomiting, bloody stools and nosebleed in the fisher camp along the river Likati,*			

	*in the Nambwa health area. He was brought to a traditional healer and then transported by moto with 2 relatives, case 2 (moto driver) and case 3 (his brother) to the Likati general hospital about 45 km away. B*ut he died on the road. Then case 3 decided to return to their village with the corpse. He was buried in the Kapayi village, Nambwa health area. On 25th April, case 2 and 3 developed the disease with same symptoms. Case 2 died the same day, and case 3 recovered. From these 3 persons, 6 other close contacts were infected. Among them, a young boy who attended the burial of case 1 died on 11th May. The provincial health office has sent a team to the site to investigate and information is expected when they return as the area has no cell phone coverage.
Where was the first reported case? What is/was the extent of geographic spread? Include comments on the apparent speed of spread.	*For now the disease is located within four health centers: Nambwa (12 cases, 2 deaths), Muma (3 cases, 1 death), Ngayi (4 cases, 0 death) and Azande (1 case, 0 death), in the Likati Health Zone, Territory of Aketi in the Bas-Uele province, where the first reported case was treated at the health center. No case is reported outside this area.*
Has the country requested support from PREDICT (include date of request)?	*Yes, the INRB General Director asked PREDICT to retest the 5 samples that were received from the field using PREDICT protocols;*
If so, which government agency requested PREDICT support?	The Ministry of Health through the INRB which is the national Public Health Laboratory
When was PREDICT response initiated (date)?	Saturday, 13th May, 2017
Are other EPT partners involved in the response (which ones and how)?	*None for now*
What type of assistance did PREDICT initially provide? Which PREDICT personnel were involved?	Testing of 5 samples from the field using PREDICT protocols and primers for Filoviruses, by the PREDICT lab manager and lab technician
When was the first official acknowledgement of the outbreak (by which government agency or other reputable body and date)? When was a response initiated and by whom? Which agencies were involved? Who was in charge of the national response?	On May 9th, 2017, the Bas-Uele provincial office informed the MoH direction of disease surveillance of the alert. A team from Buta, the provincial health office was sent to the site to investigate. A team from the MoH direction of disease control, INRB, Hygiene and the Ministry of information travelled on Saturday morning to the field. They reached Likati (health zone office) on Sunday night at 10.00 PM. On Monday morning they had a meeting with the health zone staff and sent a first report to the national coordination committee via the Ministry of Health

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). *Note: Daily updates for ongoing laboratory testing should be entered in the Daily Activities/Timeline table below.*	Yes, the INRB virology laboratory tested 5 serum samples collected from patients admitted at the Nambwa health center and who were in contact with the diseased cases. They performed real-time PCR and found 2 positive results for Zaire Ebola virus. The tests were performed on 11th May and re-tested on 12th May, 2017 by the same staff. On Saturday, 13th May, the samples were re-tested by the PREDICT staff using the PREDICT protocol. They found one positive result on the 5 samples, the same that was clearly positive by real-time PCR.
Where was the laboratory testing performed (name of laboratory)?	Samples were tested at the INRB virology laboratory
Number of days between initiation of government response and lab confirmation of laboratory results.	N/A

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: *Suspicion of VHF in the Bas-Uele province, DR Congo*

*Instructions: This is the timeline of all PREDICT team activities related to this event. Please fill out in detail any PREDICT team activity as they occur on a **daily** basis (e.g., sample collection, other field activities, laboratory testing, outbreak related meetings attended, communications with the Mission or Government, etc.) in addition to the key specific items listed below.*

*Add additional rows into the specific activities listed below **in chronological order** as needed. If a specific listed event has not yet occurred, please put "pending" or "not expected" in the date column.*

Key Events:

Date	Day #	Notification or Action Taken
5/10/2017	1	First notification of 9 suspected cases of Viral Hemorrhagic Fever in the Nambwa Health Area, Likati Health Zone, Bas-Uele Province;
5/11/2017	2	PREDICT Country coordinator (CC) notified of reception of samples from the suspected cases at the INRB; PREDICT CC notified PREDICT global team
5/12/2017	3	Two samples out of five tested positive for Ebola Zaire virus, and 3 were negative by real-time PCR at the INRB virology laboratory. PREDICT CC attended the National coordination committee meeting where the Minister and his team presented the situation: 9 cases and 2 deaths, and preparations are made of an investigation team composed of epidemiologists, medical biologists and lab technicians (from the MoH and INRB) to travel tomorrow from Kinshasa to support the local team, begin contact tracing and prepare the logistic for the outbreak response. The area of Nambwa is located 45 km from Likati but it takes about 5 days to reach by car and 2 days by motorcycle. The Minister and WHO have contacted the UN Mission to provide an helicopter to bring equipment to the site. The INRB will deploy the K-Plan mobile laboratory that was purchased through the USAID funds for Yellow Fever Outbreak in Nambwa.
5/13/2017	4	PREDICT CC attended the meeting of the National coordination committee, where the Ministry of Health updated partners of the situation on the ground: a total of 11 cases were reported since the beginning of the outbreak with 3 deaths in the 3 health areas of Nambwa (7 cases and 3 deaths), Mouma (3 cases and 0 death) and Ngayi (1 case and 0 death). The provincial investigation team was back to Likati and could send this update by phone via the provincial health office.

		A team of 9 persons left Kinshasa today for Nambwa, composed of 2 epidemiologist, 1 lab technician, 1 clinician, 1 data manager, 1 information specialist, 1 hygienist, 1 logistician and 1 psychologist. They are expected to reach Nambwa on Monday or Tuesday and will prepare the logistic for the local coordination committee and begin contact tracing and sensitization. Staffs from the WHO country office and the Ministry of health are working to prepare the list of needs for the outbreak response and a budget. A request was made to the MONUSCO to provide an air lift between Kinshasa and Likati for shipping all materials and equipment, including the K-Plan mobile laboratory from the INRB.
5/15/2017	6	On Saturday, 13th May, the General Director of INRB asked PREDICT to retest the 5 samples received from the field for Filovirus using the PREDICT protocol. The reason was to have a second diagnostic method. The INRB staff tested these samples on Friday and Saturday by real time PCR, using 3 different protocols: the first targeting the L gene returned 1 positive result; the second targeting the NP gene returned 2 positive results, and the 3rd targeting the Glycoprotein gene returned 1 positive result. Using the PREDICT protocols, the PREDICT staff tested the five samples which returned only one putative positive result on the gel, from the sample which tested positive from the 3 protocols used by the INRB staff. Amplicon from this sample will be send to GATC for sequencing per our protocol. This result was as expected as the PREDICT Filovirus protocols should be and are correct for detection of this virus but are also necessarily less sensitive as a result of conserved technique, resulting in weak or negative reactions in samples with low viral load. PREDICT CC and virologist attended the National Coordination meeting. Two points were discussed: 1) the plan and budget for the outbreak response: a group from the MoH direction of disease control, the INRB, WHO, UNOCHA and UKAID finalized the plan and budget on Monday morning. Main points are: strengthening of coordination, surveillance, hygiene and biosecurity, medical and psycho-social care, laboratory diagnostic, communication and rehabilitation of health centers and the Likati General Hospital in the Bas-Uele province. No decision of quarantine will be made. The INRB will deploy two mobile laboratories, one at Nambwa (epicenter) and a second in Buta with possibility to be deployed anywhere based on the epidemiologic situation of the outbreak. The total budget for the response is $8,072,636.00 and includes:

		coordination at national, provincial and local levels ($945,377), surveillance and laboratory ($1,685,265.00), communication ($505,000.00), materials and supplies ($1,605,000.00), medical and psychosocial care ($2,313,280.00), prevention ($ 477,839.00), Water, hygiene and sanitation ($540,675). Main Challenges are: transport of goods to the affected area (THE UN may help with a Helicopter), and transport of probable cases to the Ebola Treatment Center due to bad roads. 2) the situation on the field: now the total of cases has increased to 20, reported from 4 health areas: Nambwa with 12 cases and 2 deaths, Muma with 3 cases and 1 death, Ngayi with 4 cases and 0 death, Azande with 1 case and 0 death. Samples collected will all be shipped to the INRB because the committee decided not to wait for the mobile lab to be deployed. Right now all cases are being treated at home because there is no facility for handling Ebola cases. The Ebola Treatment Center is still under rehabilitation. The team has begun to disinfect the laboratory and health centers and the local radio broadcast is used for sensitization.
5/16/2017	7	PREDICT virologist attended the National Coordination Committee. A new case was reported from Nambwa, young girl 16 years old living in a house with a suspect case. Now the total number of reported cases are 21: Nambwa 13 cases, 2 deaths; Muma 3 cases, 1 death; Ngayi 4 cases, 0 death, Azande 1 case, 0 death. 3 teams are now deployed in the field in three different locations with the following objectives : active research of suspected cases, sample collection, contacts tracing and assessment of logistic needs. A fourth team led by the Ministry of Health will leave Kinshasa tomorrow with one mobile laboratory from the INRB, prepared to perform 100 tests. WHO has mobilized PPEs from the city of Kisangani to support the response. Seven committees were set up and will be meeting everyday; PREDICT was invited to be included in the committee in charge for laboratory and research. The first meeting will be on next Thursday to analyze all needs and make request to different partners. These committees will report to the National Coordination Committee daily. PATH, a CDC Implementing Partner in charge to support the country Emergency Operation Center – GHSA is partnering with DigitalGlobe and UCLA to get precise maps of the Likati health zone. They have provided cellphones with GPS to the team who will travel to the site tomorrow.

5/17/2017	8	The PREDICT Lab manager attended the National Coordination Committee meeting at the MoH: no new cases reported from Likati, still a total of 21 cases with 3 deaths, and 4 health areas affected; samples were collected from a total of 13 cases; 5 were shipped to Kinshasa and tested at the INRB, and 8 are kept in Aketi waiting to be tested on site. The investigation team has identified a total of 416 contacts to be followed. A team from the INRB travelled this morning with the 1st mobile laboratory which will be deployed in Nambwa. The 2nd mobile laboratory (K-Plan) will be transported to the field tomorrow and will be deployed in Likati. A fourth investigation team, led by the Minister of Health will travel to the site tomorrow. WHO has confirmed that PPEs (unknown number of kits) were deployed to Aketi from their stockpile in Kisangani PREDICT was requested by the Commission of Laboratory and Research to provide for the mobile laboratory: one glovebox, 1 Qiagen extraction kit and Ethanol.
5/18/2017	9	PREDICT CC and virologist attended the 1st meeting of the commission for laboratory and research, with staffs from the INRB, CDC, UCLA and FAO-ECTAD: - The mobile lab arrived and was deployed to Aketi with 4 INRB staffs; - The K-Plan laboratory travelled today and will be deployed to Buta, the provincial capital city; - INRB transmitted a list of reagents and supplies needed to perform lab tests in the field; the list was transmitted to the MoH and FAO. The team from FAO informed that they will provide the needed supplies according to what is available now at the Central Vet Lab PREDICT virologist attended the National Coordination Committee meeting: The Minister of Health reported on his trip to Aketi: the deployed team is performing active research of suspected cases and contacts; visited health facilities and traditional healers; ongoing data collected regarding burials in villages; sensitization of local communities; different opinion leaders are intensively collaborating with investigation teams; as well as challenges due to bad roads. Epidemiological update:

		Total of 29 suspected cases reported, and 3 deaths: Nambwa Health Area=11 cases and 2 deaths; Muma Health Area=3 cases and 1 death; Ngayi Health Area=14 cases and 0 death; Azande Health Area=1 case and 0 deaths. Registered contacts under follow up = 416. A total of 35 samples collected: 5 were shipped to Kinshasa and the remaining stored at Likati waiting to be tested on site. Four new alerts received, 2 from Azande and 2 from Ngabatal, under investigation Mobile lab expected to be operational tomorrow Discussion on vaccination: Director of the Expanded Program for Immunization presented a plan and proposal for the use of experimental vaccine that was used in West Africa which is made of recombinant ZEBOV-VZV. The vaccine is efficient in protecting chimpanzees from infection. It should be conserved at -60°C, conditioned in 10 doses/vial and after reconstitution could be conserved between +2 and +8°C for a maximum of 6 hours. The vaccine is administered via intramuscular injection. The Protocol of vaccination is ready and will be submitted this evening to the Ethical Committee at KSPH for approval and will be considered a clinical trial. The vaccine is not approved to be used in humans yet. If the DRC Government accept the use of this vaccine, nearly 12,000 doses could be provided to be administered to teams working in the field.
5/19/2017	10	PREDICT virologist attended 2nd meeting of the commission for laboratory and research with staff from the INRB, CDC, UCLA: The commission has transmitted the complete list of members and partners to Ministry of Health. The General Director of INRB presented the strategy for response to the outbreak: - The Mobile Laboratory should be operational for PCR, ELISA tests and rapid tests - As there are only 3 deaths reported till today there is a possibility that this current Ebola outbreak may be mask by another unknown pathogen – INRB will also deploy a team from the Parasitology and Bacteriology Laboratories to perform investigations and diagnosis on samples collected in the field (for example recently in Banalia - Shigella and Salmonella infections were responsible for several deaths) **Reagents for diagnosis:** - Two boxes of Ebola rapid tests are available at INRB Virology

		Laboratory - Another tests will be provided by Japanese Cooperation - The Ebola tests for Mobile Laboratory (Kaplan- Prof. Parisi) were sent to DRC via DHL - The Gene Expert machine with reagents will be received this Sunday and offered by UCLA project to INRB PREDICT virologist also attended the National Coordination Committee meeting: Epidemiological update**:** At the date of May 18, 2017 a total of 32 suspected cases were reported with 4 deaths: Nambwa-11 cases, 2 deaths, Mouma – 3 cases, 1 death, Ngayi – 14 cases, 1 death*, Azande-2 cases and Ngabatala – 2 cases. Concerning the 4th death* – young girl, 22 years old died with hemorrhagic symptoms, vomiting and fever on May 8, 2017 in a small village near Ngayi. She was the family member of the 3rd died case. The burial ceremony was done for her and this was only reported when the surveillance team visited the site. Four direct contacts were identified, they are sick and under the surveillance in the village. Registered contacts: 416 persons Samples collected: 35 The Mobile Laboratory was installed and the testing of samples will start this evening. In the reference Hospital in Likati, separate room for suspected cases and sick persons was prepared for safe medical follow –up of these persons. The General Director of INRB highlighted the importance of intensive research of new cases, the daily follow-up of all contacts (two times per day with measurement of corporal temperature). He also highlighted the importance to determine the "definition of case" by the medical team deployed in the field. The follow-up of contacts is very challenging/difficult to be implemented, there is a need for trained voluntaries (ex. members of Red Cross) to help. **Vaccination Program against Ebola:** The Government has approved the use of the Ebola vaccine in DRC during this Ebola outbreak. The Protocol of vaccination was submitted to Ethical Committee at

		KSPH for approval as a clinical trial. Several scenarios were proposed and will be discussed before starting the vaccination.
5/20/2017	11	PREDICT CC attended the meeting of the commission of Laboratory and Research: Results from the CIRMF laboratory in Gabon: The 2 positive samples for Zaire Ebola Virus out of the 5 that were tested at the INRB were retested and confirmed in CIRMF. The staff at CIRMF is performing whole sequencing of the virus and will send results on Monday or Tuesday with Phylogenetic analysis. The K-Plan mobile laboratory arrived in Kisangani pending transportation to Buta, the provincial capital city. The INRB staff sent to Likati have tested 22 samples collected from suspected cases, all tests (real-time PCR) returned negative results. The director of INRB would like PREDICT to test all negative results with PREDICT protocol for the 5 PREDICT viral families. The DRC PREDICT team is unsure about this as the current sample collection is not in conformity with PREDICT protocol. PREDICT samples should be stored at -80° C soon after collection in either Trizol or VTM which is not the case on the field. PREDICT CC attended the meeting of the National Coordination Committee: The following issues were raised: The data from the field need to be cleaned, waiting for more accurate data tomorrow; the generator of the mobile laboratory is not working, and the lab is using the generator from the Health Zone office; contact tracing is challenging due to bad roads; 2 health facilities were selected to be rehabilitated and transformed to Ebola Treatment Centers (ETC). The K-Plan reagents not arrived yet at the INRB as of this evening at 4.00 PM The CDC will provide rapid tests for this outbreak It was proposed that the team in Likati prepares and sends a list of all cases and contacts, noting timeline of symptoms occurrence, date of sample collection, and clinical outcome in order to better follow the epidemiological curve and be more specific on contacts who can be

		considered to be removed from the list All commissions should prepare an operational action plan; all technical discussion should be prepared in the commissions, and each partner interested to support specific actions and activities should present this to the commission.
21/05/2017	12	-
22/05/2017	13	PREDICT CC and Virologist attended the National Coordination Committee Meeting at the MoH **(all iterms are informational and do not reflect PREDICT activities)**: Situation in the field: - A total of 43 suspected cases with 4 deaths: Nambwa, 24 cases and 2 deaths; Muma, 4 cases and 1 death; Ngayi 10 cases and 1 death; Azande, 3 cases and Ngabatala, 2 cases. - A total of 419 contacts registered: 158 in Nambwa, 162 in Muma, 98 in Ngayi, 1 in Azande and 0 in Ngabatala. - Number of contacts followed=54; - A total of 38 samples collected to date, of which 5 were tested at INRB and 33 being tested in the field with the Mobile laboratory in Nambwa. -- All 33 samples were negative by PCR for the Zaire Ebola virus nucleoprotein. - The K-Plan mobile laboratory that was picked up from the INRB and thought to have left for Kisangani is still in Kinshasa waiting to be transported to Buta. - The INRB team who will work on this mobile lab is already in Buta. - Dr. Pierre Rollin from CDC arrived in Kinshasa with 250 OraSure (OraQuick) rapid tests and 100 Chembio Ebola-Paludism rapid tests. These tests will be used in the field by investigation teams working at places distant from the mobile laboratory. - UCLA in partnership with Dr. Gary Kobinger (a researcher at the University of Laval, Canada, formerly with the Public Health Agency of Canada) will provide the GeneExpert to be used at the Ebola Treatment Center.
		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

In-Country Government Outbreak or Health Event Points of Contact

Public Health ministry or department:	
Name:	Benoit Kebela Ilunga
Email:	kebelailunga@gmail.com
Mobile Phone:	243 (0)81 997 2691 | 243 (0)90 282 1986

Livestock ministry or department:	
Name:	Leopold Mulumba
Email:	Leopold_mulumba@yahoo.com
Mobile Phone:	243 (0)81 509 1448 | 243 (0)84 200 0178

Wildlife/Environment ministry or department:	
Name:	Jeff Mapilanga
Email:	jeffmapilanga@gmail.com
Mobile Phone:	243 (0)99 810 1924

OIE focal point:	
Name:	Honore N'Lemba Mabela
Email:	Dr_nlemba@yahoo.fr
Mobile Phone:	243 (0)81 512 6564 | 243 (0)99 990 2967

IHR focal point:	
Name:	Theophile Bokenge
Email:	drbokenge@yahoo.fr
Mobile Phone:	

FAO:	
Name:	Philippe Kone
Email:	Philippe.kone@fao.org
Mobile Phone:	243 (0)82 961 6580

WHO:	
Name:	Ernest Dabire

Email:	dabireer@who.int
Mobile Phone:	

EPT ONE HEALTH WORKFORCE Project:	
Name:	Diafuka Saila Ngita
Email:	Diafuka.saila_ngita@tufts.edu
Mobile Phone:	243 (0)81 230 4310

EPT PREPAREDNESS and RESPONSE Project:	
Name:	
Email:	
Mobile Phone:	

Other Important Contacts:

Organization:	
Name:	
Email:	
Mobile Phone:	

Organization:	
Name:	
Email:	
Mobile Phone:	

Organization:	
Name:	
Email:	
Mobile Phone:	

Organization:	
Name:	
Email:	
Mobile Phone:	

Organization:	
Name:	

Email:	
Mobile Phone:	

From: Andrew Clements <aclements@usaid.gov>
To: Jonna Mazet <jkmazet@ucdavis.edu>
Sent: 5/24/2017 2:55:13 AM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update

That's what I suspected. Oh well. It's good to dream.

No action for you then.

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 24, 2017, at 12:10 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

We'll see what we can do, but we're not testing them.
The information provided is just what is being reported out at a meeting by others ;)
J

On Tue, May 23, 2017 at 12:04 PM, Andrew Clements <aclements@usaid.gov> wrote:
Thanks, Jonna.

Is it possible for more precise terminology to be used in these reports regarding the samples tested? (Possibly not if the government is providing the information in a specific way.) I find it confusing for the reporting to mention number of samples collected and tested without any reference to how many cases these samples have come from. Is it as simple as "1 sample tested" = "1 case"? Or is that not necessarily the case?

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 23, 2017, at 6:59 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Current update attached.
Have a nice day,
Jonna

On Sun, May 21, 2017 at 1:38 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
Please see below and attached regarding what has been requested of Predict and what we believe we can offer. Note that we are concerned about both cold chain and the media into which samples are being collected in the field. We can test the samples, but there will likely be a reduction in sample quality that may impact analysis.
We will keep you posted, but please let us know if you have questions that we should pass to the in-country team.
Have a nice day,

Jonna

---------- Forwarded message ----------
From: **James Ayukekbong** <jayukekbong@metabiota.com>
Date: Sun, May 21, 2017 at 7:37 AM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>, Maria Makuwa <mmakuwa@metabiota.com>
Cc: Prime Mulembakani <pmulembakani@metabiota.com>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>, Damien Joly <djoly@metabiota.com>

Dear all,

Find attached the updated PREDICT Outbreak Rapid Report form regarding the current Ebola outbreak in DRC.

We are told the Minister of health would sign an official request for PREDICT to perform the following;

- To conduct a joined ecological research with FAO to look for Ebola virus among wild and domestic animals in Likati.

- To test all samples (including negatives) from these outbreak with the PREDICT panel.

Kind regards,

J.A Ayukekbong, PhD
Regional Coordinator /Central Africa
USAID PREDICT | Metabiota
Email: jayukekbong@metabiota.com
Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

--

Titre : Inactivation, Extraction et Amplification par qRT-PCR de l'ARN viral des échantillons des cas suspects de Fièvres Hémorragiques	
SOP #:	Date effective:

SOP rédigé par : ***Dr Placide Mbala***

Signature :

Dr Jimmy Kapetshi

Signature :

SOP lu et approuvé par : _____

Signature :

Titre : Inactivation, Extraction et Amplification par qRT-PCR de l'ARN viral des échantillons des cas suspects de Fièvres Hémorragiques	
SOP #:	Date effective:

But : Ce protocole décrit les différentes étapes à suivre pour inactiver et extraire l'ARN viral des échantillons des cas suspects de fièvres hémorragiques.

Responsabilité :

- Le responsable du laboratoire doit s'assurer que le technicien commis à cette tache est entrainé aux procédures de diagnostic en biologie moléculaire
- Le technicien de laboratoire doit suivre les procédures d'inactivation, d'extraction et d'amplification telles que reprises dans ce document.

Préalable : Evaluer les risques biologiques en présence pour choisir les équipements de protection individuelle appropriés.

Principe : Pour l'extraction de l'ARN, il est nécessaire de procéder d'abord à la lyse des cellules en mettant l'échantillon original en contact avec une solution fortement dénaturante, ce qui permet de supprimer l'infectivité du virus et aussi d'inactiver les RNAses contenu dans l'échantillon tout en laissant l'ARN intact.

Matériels et réactifs :

- Bulles de confinement
- Cabine de biosécurité (Hotte) de classe II
- Equipement de protection personnel (gants, blouse, masque, lunettes, bottes, écran de visage)
- Sacs poubelles autoclavables
- Désinfectants (Eau Javel à 0,5-1% ou autre désinfectant de laboratoire)
- Pulvérisateur (spray) pour le désinfectant.
- Papier essuie-tout
- Bocal contenant du désinfectant pour servir de poubelle (pour embouts, cryotubes et tubes de prélèvement) dans la hotte ou la bulle
- Micropipettes de 20-200µL et de 100-1000µL
- Embouts de 20-200µL et de 100-1000µL
- Ethanol Absolu
- Tampon AVL 31mL contenant 310µL de Carrier ARN et 100µL de MS2

Inactivation du virus :

1. Porter l'équipement de protection personnel approprié
2. Préparer les cryotubes des aliquotes (1 aliquote pour le laboratoire des FHV INRB et 1 aliquote pour le CIRMF) pour chaque échantillon en les numérotant correctement
3. Préparer 2 rangées de cryotubes pour les aliquotes des réactifs suivant le nombre des échantillons

   a. Première rangée : mettre 560µL de tampon AVL (supplémenté en carrier ARN et en MS2) dans chaque tube et les identifier en fonction des réactifs et des échantillons
   b. Deuxième rangée : mettre 560µL d'éthanol absolu dans chaque tube et les identifier en fonction des réactifs et des échantillons
4. Introduire dans la bulle 2 récipients contenant de l'eau de Javel à 0,5 ou 1%. Un récipient servira de poubelle (récipient-poubelle) et l'autre sera utilisé pour désinfecter les tubes d'aliquotes avant de les sortir de la hotte (récipient-échantillon)
5. Introduire au préalable dans la hotte du papier essuie-tout ou papier absorbant et l'étaler correctement sur le plan de travail
6. Prévoir un petit sac poubelle en plastic a utiliser dans la hotte pour les autres déchets solides
7. Introduire dans la bulle les aliquotes des réactifs ainsi que les tubes destinés à contenir les aliquotes des échantillons à conserver
8. Introduire une paire des gants dans la bulle
9. A l'extérieur de la bulle, décontaminer la boite (container extérieur) du triple emballage avec l'eau de Javel à 0,5 ou 1%, ouvrir et sortir l'emballage secondaire
10. Décontaminer l'emballage secondaire contenant l'échantillon avec l'eau de Javel à 0,5 ou 1%
11. Introduire l'emballage secondaire contenant l'échantillon dans la hotte ou dans la bulle de confinement par l'ouverture située dans la partie arrière de la bulle
12. Fermer l'ouverture arrière de la bulle et démarrer la batterie pour créer une pression négative à l'intérieur de la bulle. Attendre pendant 5 minutes.
13. Pour plus de sécurité, après avoir enfilé les gants de la bulle, enfiler une deuxième paire de gants avant de commencer la manipulation des échantillons
14. Sortir et décontaminer le récipient primaire contenant l'échantillon dans la bulle
15. Pour l'inactivation, mélanger 140µL de l'échantillon au 560µL d'AVL et incuber pendant 10 minutes à la température ambiante.
16. Préparer 2 aliquotes d'au moins 700µL/cryotube de l'échantillon original (1 aliquote à conserver au laboratoire de FHV à l'INRB et 1 aliquote à envoyer au CIRMF pour le contrôle de qualité)
17. Maintenir les tubes d'échantillons originaux ouvert et les plonger dans le récipient-poubelle contenant du désinfectant, en s'assurant que le désinfectant pénètre bien dans les tubes
18. Ajouter 560µL d'éthanol absolu dans le mélange échantillon-AVL et incuber pendant 10 minutes à la température ambiante.
19. Fermer hermétiquement tous les tubes (aliquotes et tubes pour extraction de l'ARN) et les plonger dans le récipient-échantillon pour désinfecter l'extérieur de ces tubes avant de les sortir de la bulle. **Les tubes doivent être hermétiquement fermés pour que les échantillons n'entrent pas en**

contact avec le désinfectant. Attendre 10 minutes.

20. Pendant les 10 minutes, mettre tous les déchets solides dans le sac poubelle
21. Désinfecter à l'aide du SPRAY l'intérieur de la bulle ainsi que les micropipettes, les portoirs pour tubes et les gants
22. Bien fermer le sac poubelle et à l'aide du SPRAY désinfecter soigneusement l'extérieur du sac
23. Sortir les déchets de la bulle et suivre les instructions sur la gestion des déchets.

Extraction de l'ARN viral :

1. Prendre les tubes contenant le mélange (AVL - échantillon - éthanol absolu)
2. Centrifuger pendant 15 secondes
3. Distribuer 630µl du mélange dans les colonnes disposées sur les tubes collecteurs de 2ml. Ensuite centrifuger à 14000rpm/min/1 minute /20-25°C, après centrifugation, éliminez le tube collecteur avec le filtrat.
4. Continuer l'étape 3 jusqu'à l'élimination de tout le mélange.
5. Ajouter sur la colonne 500µl de tampon AW1, centrifuger à 14000rpm/min/1 minute /20-25°C. Après centrifugation éliminez le tube collecteur avec le filtrat.
6. Répéter l'étape 5.
7. Placer la colonne dans un nouveau tube collecteur, ajouter sur la colonne 500µl de tampon AW2 et centrifuger à 14000rpm/min/3 minutes/20-25°C .
8. Eliminez le tube collecteur et placez la colonne dans un tube de 1,5ml et centrifuger à vide à 14000rpm/min/1 minute pour éliminer l'excès d'éthanol.
9. Pipeter 60µl de tampon AVE sur la membrane, laissez incuber environ 1 minute à la température ambiante puis centrifuger à 8000rpm/min/1 minute pour faire élution de l'ARN.
10. Congeler l'ARN extrait à 4 ou 8°C en cas d'usage immédiat et à -20°C ou -80°C pour une conservation de longue durée.

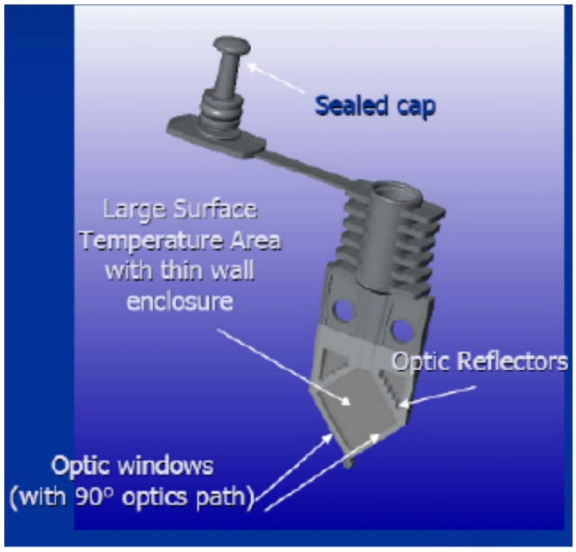
Amplification de l'ARN viral par qRT-PCR (Analyse multiplex)

1. Utiliser le kit Roche Lightcycler 480 RNA master hydrolysis probes (# Produit : 04991885001)
2. Préparer le Master Mix dans un tube Eppendorf de 1,5mL **(nombre de réactions + 2)**

	Réaction x1
Eau de PCR (tube #3)	7,55µL
Tampon (tube #1)	9,25µL
Activateur (tube #2)	1,6µL
Enhancer (tube #4)	1µL

Mélange des amorces	0,3µL
Mélange des sondes	0,3µL
Total	20µL

3. Pour chaque réaction 2 tubes de Master Mix seront préparés : 1 tube avec les amorces spécifiques pour les filovirus et 1 tube avec les amorces de MS2
4. Préparer les tubes de PCR Smartcycler Ceiphed (voir image ci-dessous) selon le nombre d'échantillons en multipliant par 2 en tenant compte du test avec le MS2.



NB : MS2 est un bactériophage utilisé comme Control Interne lorsqu'on réalise une RT-PCR

5. Ajouter un tube de PCR pour le control positif et un tube pour le control négatif
6. Ajouter 5µL de l'ARN extrait au 20µL de Master Mix par tube de PCR pour obtenir un total de 25µL par tube de PCR (dans les tubes pour échantillons)
7. Ajouter 5µL de control négatif (AVE ou eau de PCR) dans le tube de PCR pour control négatif
8. Ajouter 5µL de control positif dans le tube de PCR pour control positif
9. Fermer les tubes de PCR et centrifuger pendant 15 secondes
10. Condition d'amplification :

Température	Temps	Nombre de cycles	
61°C	3 minutes	1	RT
95°C	30 secondes	1	Activation
95°C	15 secondes	40	

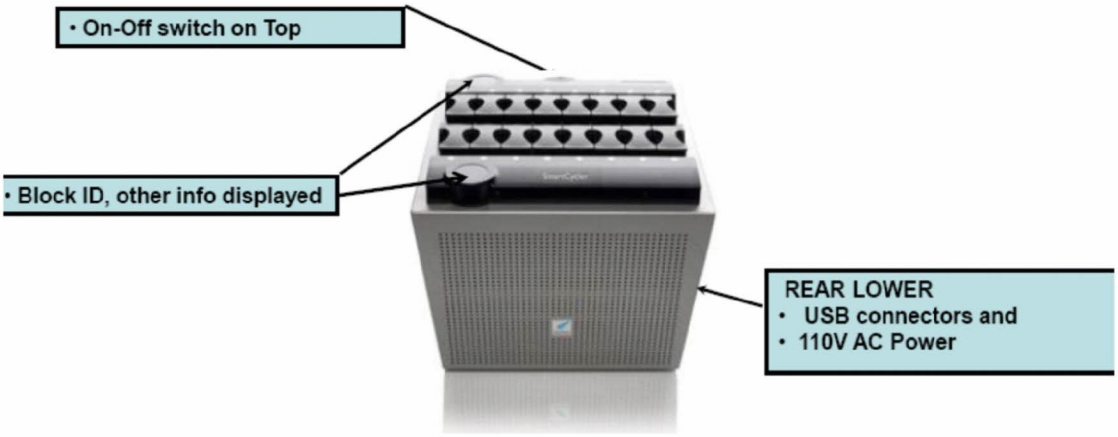
60°C	40 secondes	Acquisition

11. Utiliser le Smartcycler avec la configuration de Fluorochrome ("Dye Set") **FATA25**
12. Voici la liste ci-dessous des amorces, des sondes et des fluorochormes à utiliser

Nom des amorces	Nom de la sonde	Fluorochrome
BEBOV L PM	BEBOV L PB	Tx Red
BEBOV NP PM	BEBOV NP PB	FAM
SEBOV L PM	SEBOV L PB	Alexa 532
SEBOV GP PM	SEBOV GP PB	FAM
ZEBOV L PM	ZEBOV L PB	FAM
MARV L PM	MARV L PB	FAM
MS2	MS2 PB	FAM

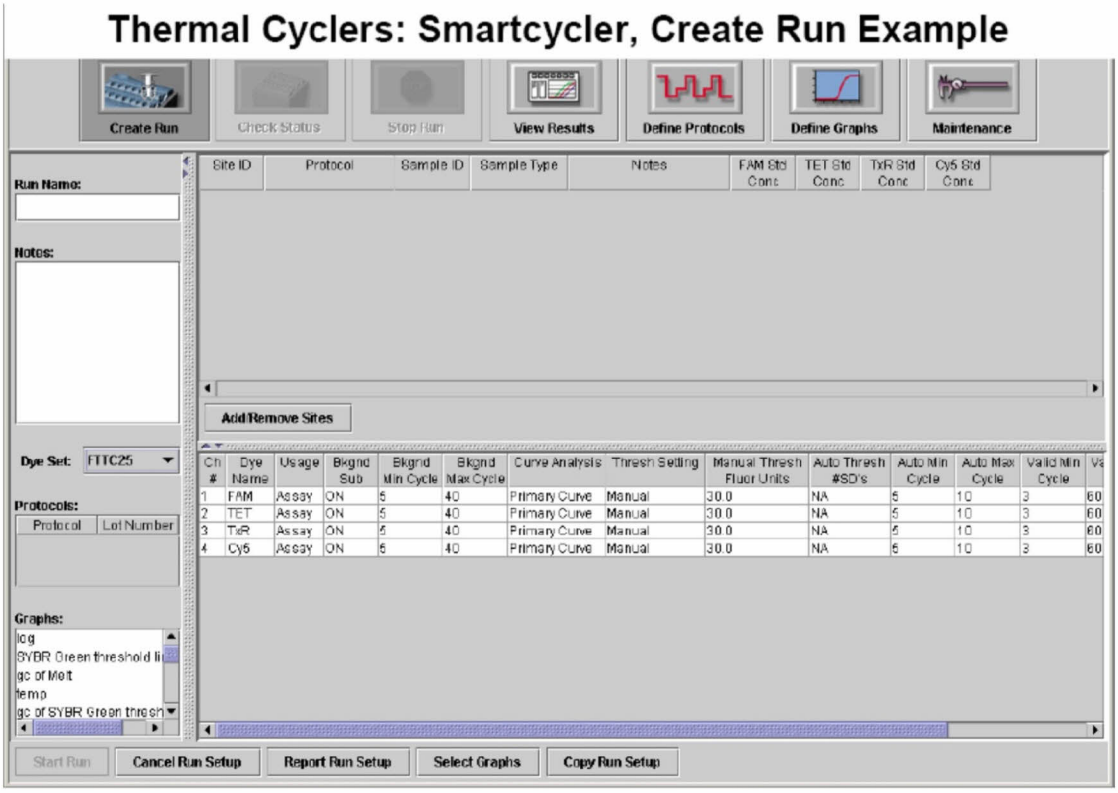
Procédure d'utilisation de l'ordinateur connecté à la machine Smartcycler :

La machine Smartcycler doit être connectée à un ordinateur qui contient le programme Smartcycler déjà installé et avec l'icône SMARTCYCLER visible sur le bureau.



1. Connecter l'ordinateur et le Smartcycler à une source de tension électrique
2. Allumer l'ordinateur
3. Allumer le Smartcycler (voir bouton ON/OFF à l'arrière de la machine)
4. Double clic sur l'icône SMARTCYCLER se trouvant sur le bureau (écran de l'ordinateur) pour obtenir l'image suivante :

Titre : Inactivation, Extraction et Amplification par qRT-PCR de l'ARN viral des échantillons des cas suspects de Fièvres Hémorragiques	
SOP #:	Date effective:



5. Insérer les tubes de PCR contenant les échantillons dans les cellules (cupules) de la machine
6. Cliquer sur **Define Protocol** pour vérifier le protocole à utiliser soit **MERT ROCHE** ou **BOENDE** en vérifiant les conditions d'amplification
7. **Si le protocole n'est pas installé dans la machine,** cliquer sur **New Protocol** pour insérer le protocole avec des conditions d'amplification reprises ci-haut.

Titre : Inactivation, Extraction et Amplification par qRT-PCR de l'ARN viral des échantillons des cas suspects de Fièvres Hémorragiques	
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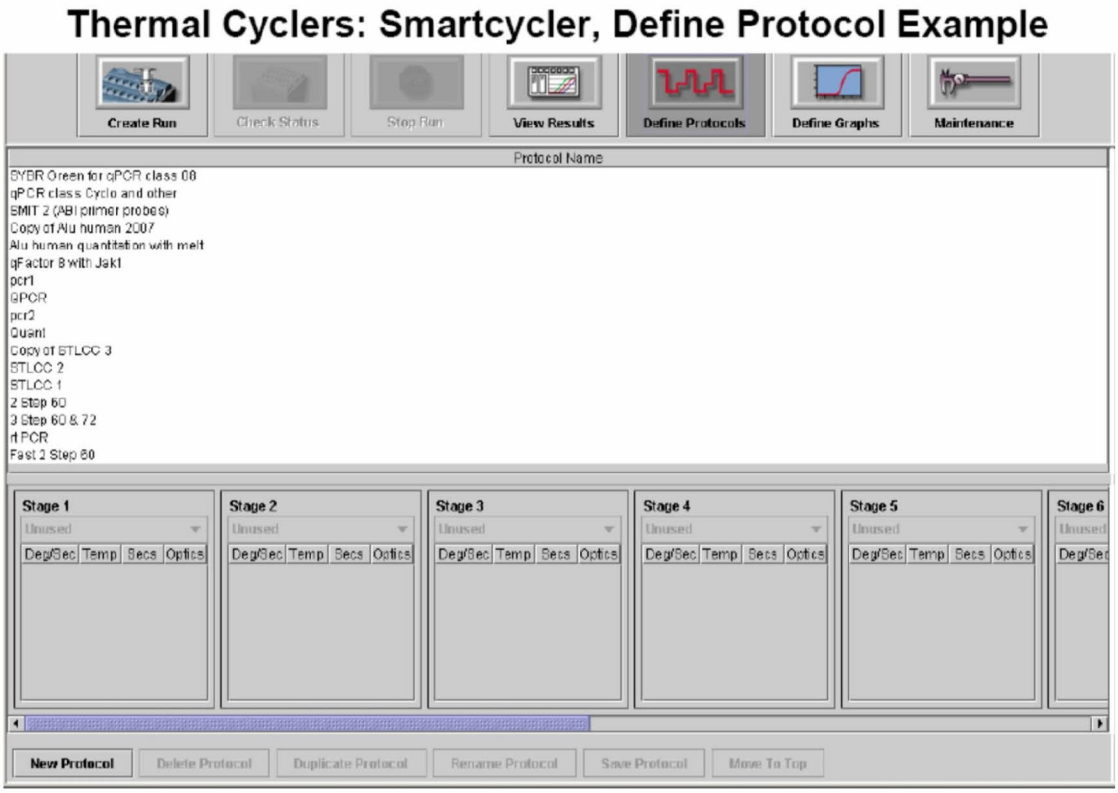
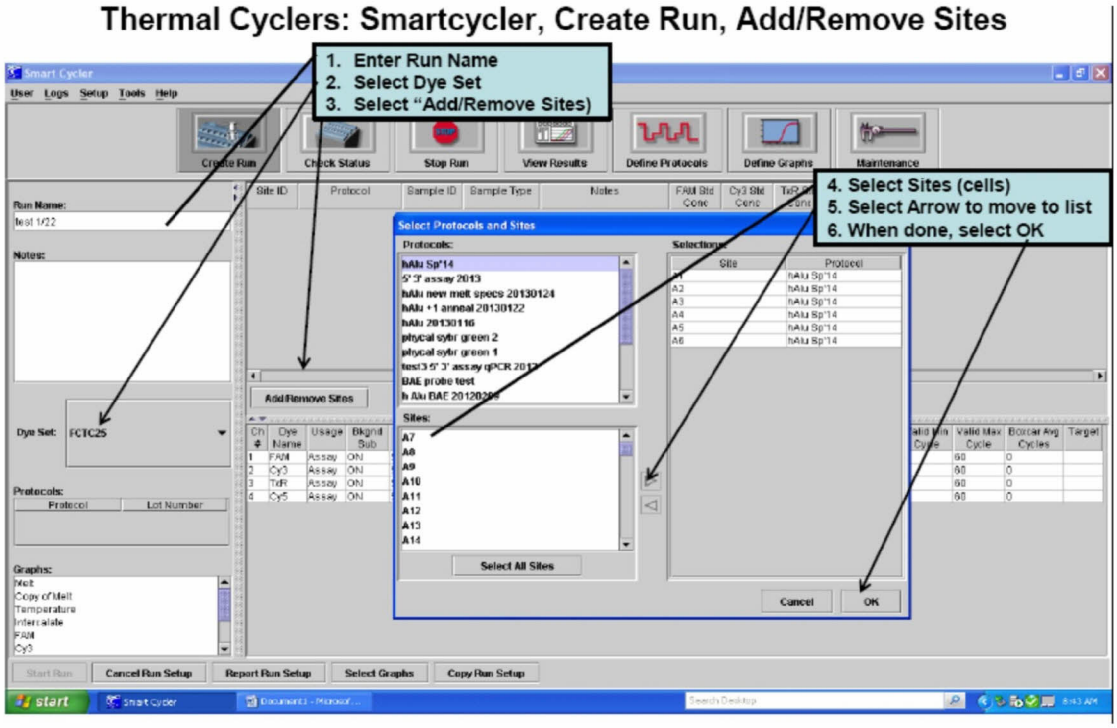


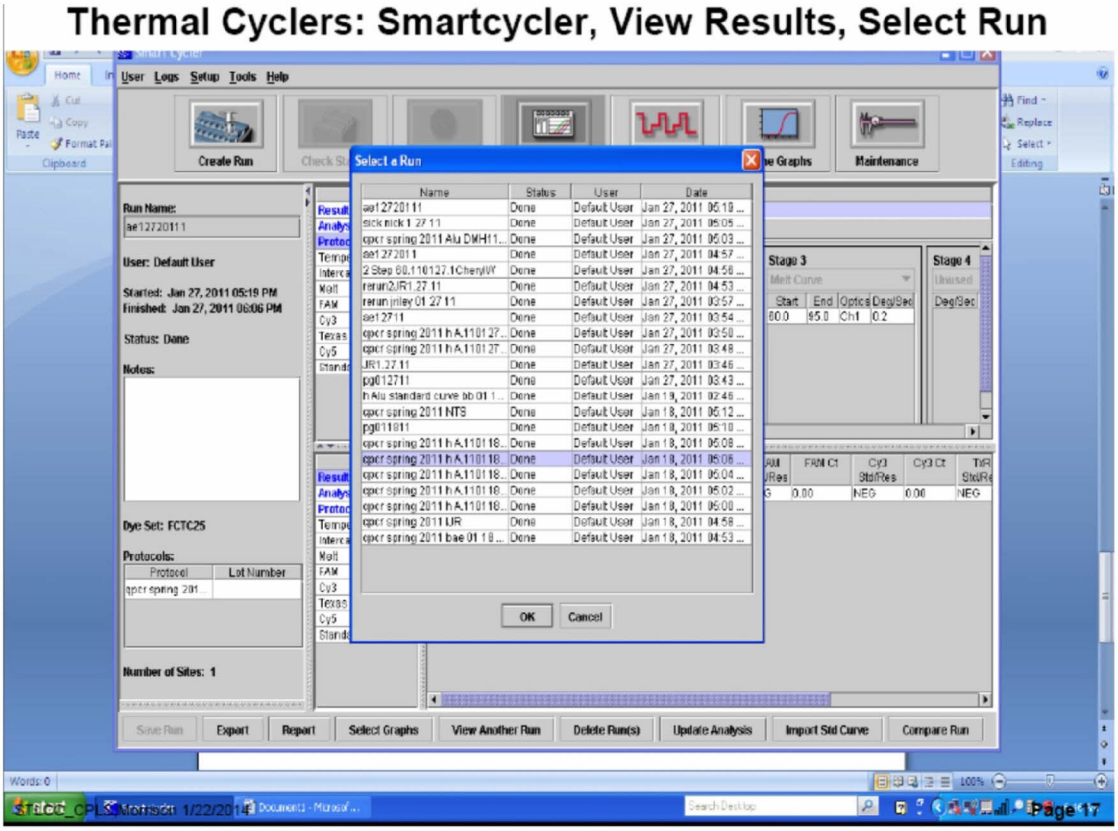
8. Insérer les informations comme mentionné sur l'image ci-dessous :



1) **Run Name :** Insérer le nom et la date de l'analyse
2) **Dye Set :** choisir **FATA25**
3) Cliquer sur **"Add/Remove Sites"** : pour ouvrir la fenêtre des protocoles et des cellules
4) Sélectionner le protocole dans la fenêtre **"Protocol"** et les cellules (les puits ou cupules) à utiliser suivant le nombre d'échantillon à analyser (y compris le control positif et le control négatif) dans la fenêtre **"Sites"**
5) Cliquer sur la flèche ▷ pour déplacer la liste et voir les cellules sélectionnées ainsi que le protocole utilisé pour chaque cellule.
6) Cliquer sur **OK** si la sélection est finie

9. Ensuite cliquer sur **Start Run** pour démarrer l'analyse

10. A la fin de l'analyse pour visualiser les résultats, Cliquer sur **View results, Select Run**



11. Sortir les tubes de la machine et les jeter dans la poubelle
12. Eteindre la machine (le Smartcycler) et l'ordinateur

Référence :

1. Protocole de l'Agence de Santé Publique du Canada sur l'inactivation du virus Ebola, l'extraction de l'ARN et amplification par PCR à temps réel
2. http://www.who.int/csr/resources/publications/ebola/whoemcesr982sec1-4.pdf
3. Smartcycler® PCR systems, Ceiphed®, Operator's manual
4. Thermal Cycler PCR, qPCR - STLCC - CPLS Instrumentation Specialiste, Feb 2013

From: Jonna Mazet <jkmazet@ucdavis.edu>
To: Andrew Clements <aclements@usaid.gov>
Sent: 5/25/2017 7:44:52 AM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update

I haven't read their SOP yet -- Tracey's on that. If it's not sufficient, we will work with them to improve it.
J

On Thu, May 25, 2017 at 7:39 AM, Andrew Clements <aclements@usaid.gov> wrote:
So that means that samples will be prepared/handled the same as for regular Predict sampling?

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 25, 2017, at 4:21 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Confirmed that the aliquot to which we would have access is the one at INRB, and the team is in receipt of the sample inactivation and handling protocol that INRB has prescribed.
Have a good day,
Jonna

On Thu, May 25, 2017 at 2:30 AM, Andrew Clements <aclements@usaid.gov> wrote:
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 May 25, 2017, at 2:14 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

Hello,
Today's update attached. I observe in the meeting notes that there will be 4 aliquots of each sample tested and/or stored by the listed labs. Predict is not listed. I inquired with our team, and they responded that we have not yet received a letter officially requesting our testing. It is likely that if/when that is received, we will test the sample going to INRB, where our lab is located, but that is not yet confirmed. I also asked our team to confirm how the samples that we might be asked to test will be transported (media, cold chain, etc.) and stored.
Hopefully, we'll be able to provide clarity on that in the future,
Jonna

On Tue, May 23, 2017 at 9:56 AM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
Current update attached.
Have a nice day,

Jonna

On Sun, May 21, 2017 at 1:38 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:
Please see below and attached regarding what has been requested of Predict and what we believe we can offer. Note that we are concerned about both cold chain and the media into which samples are being collected in the field. We can test the samples, but there will likely be a reduction in sample quality that may impact analysis.
We will keep you posted, but please let us know if you have questions that we should pass to the in-country team.
Have a nice day,
Jonna

---------- Forwarded message ----------
From: **James Ayukekbong** <jayukekbong@metabiota.com>
Date: Sun, May 21, 2017 at 7:37 AM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>, Maria Makuwa <mmakuwa@metabiota.com>
Cc: Prime Mulembakani <pmulembakani@metabiota.com>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>, Damien Joly <djoly@metabiota.com>

Dear all,

Find attached the updated PREDICT Outbreak Rapid Report form regarding the current Ebola outbreak in DRC.

We are told the Minister of health would sign an official request for PREDICT to perform the following;

- To conduct a joined ecological research with FAO to look for Ebola virus among wild and domestic animals in Likati.

- To test all samples (including negatives) from these outbreak with the PREDICT panel.

Kind regards,

J.A Ayukekbong, PhD
Regional Coordinator /Central Africa
USAID PREDICT | Metabiota
Email: jayukekbong@metabiota.com
Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

--

From: Andrew Clements <aclements@usaid.gov>
Sent: Fri, 26 May 2017 09:00:51 +0200
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
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 May 25, 2017, at 9:05 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> Just FYI,
> J
>
> ---------- Forwarded message ----------
> From: **Tracey Goldstein** <tgoldstein@ucdavis.edu>
> Date: Thu, May 25, 2017 at 10:57 AM
> Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
> To: James Ayukekbong <jayukekbong@metabiota.com>
> Cc: Jonna Mazet <jkmazet@ucdavis.edu>, Maria Makuwa <mmakuwa@metabiota.com>, Prime Mulembakani <pmulembakani@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>, Eddy Rubin <erubin@metabiota.com>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>, Damien Joly <djoly@metabiota.com>
>
> Hello James,
>
> Thank you for the protocol!
>
> It looks like the RNA is inactivated and then extracted with the Qiagen kit, and they end up with ~50ul RNA after extraction. They are only using 5ul RNA for the Ebola testing, so there should be plenty of sample left to do PREDICT testing.
>
> If asked to do the testing, we would need 8ul RNA to make cDNA the normal way we do with Superscript, and the the samples can be used for the PREDICT viral family testing.
>
> Hope this helps,
> Best Tracey
>
> On Thu, May 25, 2017 at 1:55 AM, James Ayukekbong <jayukekbong@metabiota.com> wrote:
>
> > Hi Tracey,
> >
> > Attached is the protocol for suspected Ebola sample inactivation and handling use by the INRB.
> >
> > PREDICT would have access to sample aliquot at INRB if we are requested and approve to do the testing.
> >
> > Kind regards,
> >
> > **J.A Ayukekbong, PhD**
> > Regional Coordinator /Central Africa
> > USAID PREDICT | Metabiota
> > Email: jayukekbong@metabiota.com

Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

From: [redacted] > on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
Sent: Wednesday, May 24, 2017 5:06:07 PM
To: James Ayukekbong
Cc: Maria Makuwa; Prime Mulembakani; Karen Saylors; Eddy Rubin; PREDICT-outbreak; Damien Joly
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update

Thanks, James -- probably worth having our team ask the question, so we can plan and also suggest which aliquot and transport medium would likely be used or possible for our testing in an upcoming meeting or through a mechanism you all suggest.
Jonna

On Wed, May 24, 2017 at 4:48 PM, James Ayukekbong <jayukekbong@metabiota.com> wrote:

Dear Jonna,

We were earlier told verbally in a meeting that a request may be made for PREDICT to test all outbreak samples (including negatives) using PREDICT panel. We have not received any official request yet.

The only samples tested by PREDICT so far are the initial set of 5 samples that 2 were positive by the INRB real-time PCR protocol and one was confirmed positive by PREDICT Filovirus assay.

With the new direction of the coordination committee, we are not currently testing any samples in the PREDICT lab. Testing is being done in the field and aliquots to INRB for storage.

However, the mobile lab bought with PREDICT USAID funds is being used in the field for testing by INRB staff who have received training from PREDICT.

Please let me know if you have others concerns, thanks.

Kind regards,

J.A Ayukekbong, PhD
Regional Coordinator /Central Africa
USAID PREDICT | Metabiota
Email: jayukekbong@metabiota.com
Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

From: [redacted] on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
Sent: Wednesday, May 24, 2017 4:25:18 PM
To: James Ayukekbong
Cc: Maria Makuwa; Prime Mulembakani; Karen Saylors; Eddy Rubin; PREDICT-outbreak; Damien Joly
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update

Dear James,
Thanks for the update & for adding the clarifying formatting note -- just one question:
We have reported that we have been requested to test the samples. Your report today indicates that 4 aliquots will be made. Which one will we test (if any). If we will no longer be testing, we need to report that.
Once I have that info -- I will send your report forward.
Hope you have a good night,
Jonna

On Tue, May 23, 2017 at 11:59 PM, James Ayukekbong <jayukekbong@metabiota.com> wrote:

> Dear all,
> Find attached the update of Ebola Virus Disease Outbreak in the Bas-Uele province, DRC as of May 23, 2017.

Please let me know if you have any questions.

Kind regards,

J. Ayukekbong, PhD
Regional Coordinator /Central Africa
USAID PREDICT | Metabiota
Email: jayukekbong@metabiota.com
Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

From: [redacted] on behalf of Jonna Mazet <jkmazet@ucdavis.edu>
Sent: Tuesday, May 23, 2017 3:19:14 PM
To: James Ayukekbong; Maria Makuwa; Prime Mulembakani; Karen Saylors
Cc: Eddy Rubin; PREDICT-outbreak; Damien Joly
Subject: Fwd: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update

Hi Team, not sure if this request below from Andrew is reasonable or possible -- if so, maybe you could get the clarity in your meetings and report accordingly. If not, we should likely just stop reporting on testing that we aren't doing. In other words -- only include Predict testing in the daily reports.
Remember, do not include results in the reports until you have cleared those data through your lab lead, the lab team, and your country reviewers/release process. The lab team stands ready on a short timeline, just as I am doing with these daily reports.
In the short-term that would mean that you report meeting informational items (without testing) in one section with a paragraph separation space and then report on Predict activities, including # samples received and, when

ready, # samples tested, but no results until cleared through our process.
Thanks,
Jonna

---------- Forwarded message ----------
From: **Andrew Clements** <aclements@usaid.gov>
Date: Tue, May 23, 2017 at 12:04 PM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>
Cc: PREDICTMGT <predictmgt@usaid.gov>, Angela Wang <awang@usaid.gov>, Sarah Paige <spaige@usaid.gov>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>

Thanks, Jonna.

Is it possible for more precise terminology to be used in these reports regarding the samples tested? (Possibly not if the government is providing the information in a specific way.) I find it confusing for the reporting to mention number of samples collected and tested without any reference to how many cases these samples have come from. Is it as simple as "1 sample tested" = "1 case"? Or is that not necessarily the case?

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 23, 2017, at 6:59 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> Current update attached.
> Have a nice day,
> Jonna

On Sun, May 21, 2017 at 1:38 PM, Jonna Mazet <jkmazet@ucdavis.edu> wrote:

> Please see below and attached regarding what has been requested of Predict and what we believe we can offer. Note that we are concerned about both cold chain and the media into which samples are being collected in the field. We can test the samples, but there will likely be a reduction in sample quality that may impact analysis.
> We will keep you posted, but please let us know if you have questions that we should pass to the in-country team.
> Have a nice day,
> Jonna

---------- Forwarded message ----------
From: **James Ayukekbong** <jayukekbong@metabiota.com>
Date: Sun, May 21, 2017 at 7:37 AM
Subject: Re: [predict] [predict-outbreak] Ebola Virus Disease Outbreak in the Bas-Uele province -update
To: Jonna Mazet <jkmazet@ucdavis.edu>, Maria Makuwa <mmakuwa@metabiota.com>
Cc: Prime Mulembakani <pmulembakani@metabiota.com>, PREDICT-outbreak <predict-outbreak@ucdavis.edu>, Brian Bird <bhbird@ucdavis.edu>, Eddy Rubin <erubin@metabiota.com>, Karen Saylors <ksaylors@metabiota.com>, Damien Joly <djoly@metabiota.com>

Dear all,

Find attached the updated PREDICT Outbreak Rapid Report form regarding the current Ebola outbreak in DRC.

We are told the Minister of health would sign an official request for PREDICT to perform the following;

- To conduct a joined ecological research with FAO to look for Ebola virus among wild and domestic animals in Likati.

- To test all samples (including negatives) from these outbreak with the PREDICT panel.

Kind regards,

J.A Ayukekbong, PhD
Regional Coordinator /Central Africa
USAID PREDICT | Metabiota
Email: jayukekbong@metabiota.com
Mobile: +1 250-797-7755
Website: www.metabiota.com
Skype: ayukekbong.ayukepi

--

<PREDICT-DRC_EVD Outbreak Bas-Uele 22May2017.doc>

--

Tracey Goldstein, PhD
One Health Institute
School of Veterinary Medicine
University of California
Davis, CA 95616
Phone: (530) 752-0412
Fax: (530) 752-3318
E-mail: tgoldstein@ucdavis.edu

From: Anna Willoughby <willoughby@ecohealthalliance.org>
To: David J Wolking <djwolking@ucdavis.edu>
CC: Kevin Olival, PhD <olival@ecohealthalliance.org>;Peter Daszak <daszak@ecohealthalliance.org>;Prof. Jonna Mazet <jkmazet@ucdavis.edu>
Sent: 5/26/2017 9:23:05 AM
Subject: Re: URGENT: Modeling & Analytics semi-annual

Hi David,

Kevin is in Thailand, so not sure if he will be able to respond this morning. I will follow up with our Tech team next week to ensure appropriate branding is visible on the EIDR site. The second item does refer to EHA work: an ongoing analysis of viral detection seasonality in bats that has been expanded significantly to include climate/life history data since we started the project in summer of 2016. Perhaps adding in that this is specific to bats will help clarify?

Let me know if you have any further questions.

Best,
Anna

On May 26, 2017, at 11:00 AM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi Kevin, Peter, and Anna,

We are getting ready to share the semi-annual report later today. Before it goes to USAID I just wanted to follow-up on a few things from your section.

1. You mention that the EIDR is a "PREDICT-derived publicly available database" and linked to it in the report. If this is accurate then we need to get some PREDICT branding on the site so that is clear to those who follow that link.
2. Also, Jonna wanted to double check that the item featured under Analyzing P-1 data refers to work in progress by UCD students and not separate efforts at EHA. For quick reference: "Finally, to assess most productive timing for sample collection, we began analysis of seasonal patterns in viral detection from PREDICT-1 data, including integration of life history data and global climate datasets"

Thanks and we appreciate a quick message back this AM if possible,

David

On Thu, May 11, 2017 at 3:26 PM, Kevin Olival, PhD <olival@ecohealthalliance.org> wrote:
David,

I'm also going to cc you when I send the full M&A M&E tomorrow, just in case you want any more detail when you're editing the SAR bullets we sent. There are figures (47 of them!) and more detailed captions in that document that may help provide some context.

Cheers,
Kevin

Kevin J. Olival, PhD

Associate Vice President for Research

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New York, NY 10001

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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.

On May 11, 2017, at 12:58 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Thanks Peter received

David

On Wed, May 10, 2017 at 6:10 PM, Peter Daszak <daszak@ecohealthalliance.org> wrote:

Hi David,

De-scientificated our M&A semi-annual following Jonna's suggestions, and added a couple of pictures….hope it's ok..

M&E stuff will come to you on Friday…

Cheers,

Peter

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From:	Peter Daszak <daszak@ecohealthalliance.org>
To:	Anna Willoughby <willoughby@ecohealthalliance.org>;David J Wolking <djwolking@ucdavis.edu>
CC:	Kevin Olival, PhD <olival@ecohealthalliance.org>;Prof. Jonna Mazet" <jkmazet@ucdavis.edu>
Sent:	5/26/2017 9:54:50 AM
Subject:	Correction Re. URGENT: Modeling & Analytics semi-annual

Hi David, Jonna,

Looking at this now, and glad you caught both these things.

Re. the EIDR database, the correct wording in the report should be "Partially-funded by PREDICT", not "PREDICT-derived". That's our fault, but it needs to be corrected. The truth is that DTRA funded the specific building and launching of EIDR as a public database, and we later on supported this with some PREDICT funds, so that we can make sure we get full benefit for PREDICT. If we brand this as USAID PREDICT, it will cause huge problems with DTRA, so I need to make sure we do this correctly and co-brand it. I'll talk with the tech team and look at the branding.

The webpage is: https://eidr.ecohealthalliance.org/ At the very least I'll have our folks insert language about 'funded by', and include DTRA, PREDICT and check if any other funders need to be in there. If you agree, we can insert logos for the funders as well, so there's better visibility when USAID click on it. I'll also get our folks to change the page under our EHA 'programs' list, because this doesn't have information about funders either (and it has our usual 'donate now' button, which wouldn't look great if USAID clicked on it!!!).

Re. the seasonality thing – this refers to some prelim analyses on EHA data that Evan Eskew has been doing and has seen some trends, and we do want to dig in deeper. I know you have a student working on this and we will make sure that 1) we don't scupper her work, and 2) if possible we aim for a bigger collaboration.

Cheers,

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From: Anna Willoughby [mailto:willoughby@ecohealthalliance.org]
Sent: Friday, May 26, 2017 12:23 PM
To: David J Wolking
Cc: Kevin Olival, PhD; Peter Daszak; Prof. Jonna Mazet
Subject: Re: URGENT: Modeling & Analytics semi-annual

Hi David,

Kevin is in Thailand, so not sure if he will be able to respond this morning. I will follow up with our Tech team next week to ensure appropriate branding is visible on the EIDR site. The second item does refer to EHA work: an ongoing analysis of viral detection seasonality in bats that has been expanded significantly to include climate/life history data since we started the project in summer of 2016. Perhaps adding in that this is specific to bats will help clarify?

Let me know if you have any further questions.

Best,
Anna

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Thanks and we appreciate a quick message back this AM if possible,

David

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I'm also going to cc you when I send the full M&A M&E tomorrow, just in case you want any more detail when you're editing the SAR bullets we sent. There are figures (47 of them!) and more detailed captions in that document that may help provide some context.

Cheers,
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Thanks Peter received

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From: David J Wolking <djwolking@ucdavis.edu>
Sent: Fri, 26 May 2017 10:10:33 -0700
Subject: Re: Correction Re. URGENT: Modeling & Analytics semi-annual
To: Peter Daszak <daszak@ecohealthalliance.org>
Cc: David J Wolking <djwolking@ucdavis.edu>, "Kevin Olival, PhD" <olival@ecohealthalliance.org>, "Prof. Jonna Mazet" <jkmazet@ucdavis.edu>

Thanks Peter sorry I missed your call a few moments ago. All clear now, I'll discuss with Jonna this morning when we go over the report as a whole and will reach out with any additional questions.
Cheers,

David

On Fri, May 26, 2017 at 10:03 AM, Peter Daszak <daszak@ecohealthalliance.org> wrote:

Sorry for the confusion on these – Anna didn't know the background and was just trying to help, given Kevin's out of the office and I'm working from home today.

Give me a call if you need any more info – REDACTED (cell) or REDACTED (home).

And by the way – glad you caught both of these…

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Importance: High

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From:	Jonna Mazet <jkmazet@ucdavis.edu>
To:	David J Wolking <djwolking@ucdavis.edu>
CC:	Peter Daszak <daszak@ecohealthalliance.org>;Kevin Olival, PhD <olival@ecohealthalliance.org>
Sent:	5/26/2017 10:20:09 AM
Subject:	Re: Correction Re. URGENT: Modeling & Analytics semi-annual

Great -- thanks,
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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: Anna Willoughby [mailto:willoughby@ecohealthalliance.org]
Sent: Friday, May 26, 2017 12:23 PM
To: David J Wolking
Cc: Kevin Olival, PhD; Peter Daszak; Prof. Jonna Mazet
Subject: Re: URGENT: Modeling & Analytics semi-annual

Hi David,

Kevin is in Thailand, so not sure if he will be able to respond this morning. I will follow up with our Tech team next week to ensure appropriate branding is visible on the EIDR site. The second item does refer to EHA work: an ongoing analysis of viral detection seasonality in bats that has been expanded significantly to include climate/life history data since we started the project in summer of 2016. Perhaps adding in that this is specific to bats will help clarify?

Let me know if you have any further questions.

Best,

Anna

On May 26, 2017, at 11:00 AM, David J Wolking <djwolking@ucdavis.edu> wrote:

Hi Kevin, Peter, and Anna,

We are getting ready to share the semi-annual report later today. Before it goes to USAID I just wanted to follow-up on a few things from your section.

1. You mention that the EIDR is a "PREDICT-derived publicly available database" and linked to it in the report. If this is accurate then we need to get some PREDICT branding on the site so that is clear to those who follow that link.
2. Also, Jonna wanted to double check that the item featured under Analyzing P-1 data refers to work in progress by UCD students and not separate efforts at EHA. For quick reference: "Finally, to assess most productive timing for sample collection, we began analysis of seasonal patterns in viral detection from PREDICT-1 data, including integration of life history data and global climate datasets"

Thanks and we appreciate a quick message back this AM if possible,

David

On Thu, May 11, 2017 at 3:26 PM, Kevin Olival, PhD <olival@ecohealthalliance.org> wrote:

David,

I'm also going to cc you when I send the full M&A M&E tomorrow, just in case you want any more detail when you're editing the SAR bullets we sent. There are figures (47 of them!) and more detailed captions in that document that may help provide some context.

Cheers,

Kevin

Kevin J. Olival, PhD
Associate Vice President for Research

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On May 11, 2017, at 12:58 PM, David J Wolking <djwolking@ucdavis.edu> wrote:

Thanks Peter received

David

On Wed, May 10, 2017 at 6:10 PM, Peter Daszak <daszak@ecohealthalliance.org> wrote:

Hi David,

De-scientificated our M&A semi-annual following Jonna's suggestions, and added a couple of pictures….hope it's ok..

M&E stuff will come to you on Friday…

Cheers,

Peter

Peter Daszak

President

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