



SALZBURG  
GLOBAL  
SEMINAR

# Finding Outbreaks Faster: Metrics for One Health Surveillance

## Write! Tweet! Post!

If you're interested in writing either an op-ed style article for our website, or a personal reflection blog post, please let Salzburg Global Communications Associate Oscar Tollast know or email your submission directly to [otollast@salzburgglobal.org](mailto:otollast@salzburgglobal.org).

If you do intend to write for your organization, please make sure to observe the **Chatham House Rule** (information on which is in your Welcome Pack). If you're in any doubt, do not hesitate to contact Oscar.

We'll be updating our website with summaries from the panels and interviews with our Fellows, all of which you can find on the session page: [www.SalzburgGlobal.org/go/641](http://www.SalzburgGlobal.org/go/641).

You can also join in the conversation on Twitter with the hashtag [#SGSHealth](https://twitter.com/SGSHealth) and see all your fellow Fellows on Twitter via the list [www.twitter.com/salzburgglobal/lists/SGS-641](https://www.twitter.com/salzburgglobal/lists/SGS-641).

We've updated both our Facebook page [www.facebook.com/SalzburgGlobal](https://www.facebook.com/SalzburgGlobal) and our Flickr stream [www.flickr.com/SalzburgGlobal](https://www.flickr.com/SalzburgGlobal) with photos from the program. (If you require non-watermarked images for your own publication, please let Oscar know).

We will also be posting photos to Instagram [www.instagram.com/SalzburgGlobal](https://www.instagram.com/SalzburgGlobal). Use the hashtag [#SGSHealth](https://twitter.com/SGSHealth), and we might feature your pictures in the newsletter!

### Reflections from Twitter...



[@emma\\_glennon](https://twitter.com/emma_glennon) Leaving Salzburg feeling like we've set something big in motion. It's been an incredible privilege to work with this diverse and accomplished group!

[@adamwrcrawley](https://twitter.com/adamwrcrawley) So thankful on #OneHealthDay for the participants at @SalzburgGlobal & @EndingPandemics' seminar Finding Outbreaks Faster: Metrics for One Health Surveillance - excited to advance these outcomes with our partners around the world!



## Embracing the One Health Metrics

Coinciding with the fourth annual One Health Day, participants of Salzburg Global Seminar and Ending Pandemics' latest program have designed the first-ever set of One Health timeliness metrics and prototyped a framework for implementation.

Specialists in environmental, livestock, wildlife, and human health from across the globe spent the past few days at Schloss Leopoldskron in Salzburg, Austria, as active participants in the program *Finding Outbreaks Faster: Metrics for One Health Surveillance*.

In November 2018, Salzburg Global Seminar and Ending Pandemics ran a program that produced a set of metrics for measuring progress in finding and responding to human health outbreaks faster. These metrics have now been adopted by the World Health Organization and other agencies. The participants in this year's program broke new ground in expanding the application of this approach to One Health.

One Health is a collaborative, multi-sectoral, and transdisciplinary approach that recognizes that the health of people, animals, and the environment are connected. The timeliness metrics will enable One Health stakeholders to

measure their performance in finding outbreaks faster to save lives and protect livelihoods.

On November 3, each year, One Health Day is marked across the world. It is a campaign that brings attention to the need for a One Health approach to address shared health threats at the human-animal-environment interface.

During this year's program, participants engaged with panel discussions, presentations, and group work to design One Health metrics. Initial discussions centered on operationalizing One Health surveillance and identifying metrics for human, animal, and environmental health. A few examples of timeliness metrics developed through a highly interactive, iterative process include time to detect an unusual or adverse health event, time to initiation of a multisectoral investigation, and time to implementation of control measures.

Moving forward, Ending Pandemics will process the many ideas generated at the program and produce a One Health framework to be openly shared and promoted globally. At the end of the program, participants mapped out an action plan through 2021 and offered commitments to push this plan further ahead.



#SGSHealth @SalzburgGlobal



facebook.com/SalzburgGlobal



instagram.com/SalzburgGlobal

# Finding, Verifying, and Containing Outbreaks Faster

Kick-starting the first full day of *Finding Outbreaks Faster: Metrics for One Health Surveillance*, participants were reminded of their responsibility to ensure work undertaken during the program would be “impactful.”

An overview of Ending Pandemics’ journey so far was provided plus details of what the final destination may look like. Routine capture of outbreak milestones through use of after-action reports, event-based surveillance tools, and event management systems were some of the ideas put forth.

In a discussion titled “Outbreak Metrics – Applications for One Health,” participants heard details of several existing practices taking place around the world. In Southeast Asia, a study of outbreak timeliness for animal diseases drew several learnings.

At a global level, in many instances, the participants behind the study found timeliness data missing for outbreak intervention, outbreak investigation, sample submission, public communication, outbreak report, and outbreak notification. The completeness of other data varied depending on the disease.

Participants also heard the availability of outbreak milestones varied country-by-country. The study authors concluded the study identified them to identify gaps and

develop suggestions to improve timeliness for outbreak detection and response. Further consideration is needed for definitions, factors influencing outbreaks, report types, and the relevance of the sample.

A participant also provided further insight into environmental drivers of infectious disease outbreaks. In particular, participants learned about the work of the European Environment and Epidemiology (E3) Network designed by the European Centre for Disease Prevention and Control (ECDC).

Staff at the ECDC have looked at the drivers, which lead to infectious disease threat events in Europe, and have tried to learn how the drivers interact. The take-home message was that epidemic events rarely happened as a cause of one single driver. Events don’t happen in isolation. In the example shared, one driver, which stood out from all other drivers, was travel and tourism.

Participants heard efforts were being made to capture the impact of travel and tourism, and platforms such as the E3 Network enabled more opportunities for high-risk cities to be identified and allowed earlier prevention measures. The speaker concluded stating that improvements in International Health Regulations’ core capacities could help reduce the amount of cross-border infectious disease outbreaks in Europe.

---

## The First Steps Toward Operationalizing One Health

Following a productive exchange on various applications for One Health, participants moved forward by learning more about further projects capturing emerging animal and environmental health threats.

One such project is Participatory One Health Digital Disease Detection (PODD), which focuses on early detection of health threats in Chiang Mai, Chiang Rai, Kohn Kaen, and other provinces throughout Thailand. The project has involvement from multiple stakeholders, including veterinarians, public health officers, livestock officers, community volunteers, technologists, economists, economists, social scientists, and geographic information systems experts.

Community members use smartphone and online applications to report unusual disease events affecting wild animals and humans. Their reports result in a local response from health experts who collect lab samples from the disease source and conduct preventive steps.

Another presentation focused on the challenges experienced in Africa. To combat a high infectious disease burden, a participant said there had been a collaborative effort between natural and social sciences to advance understanding of interactions between humans, animals, and the environment, to improve public and animal health.

The Southern African Centre for Infectious Disease Surveillance has developed AfyaData – an open-source digital disease surveillance tool that works on a mobile phone. The app is open source, interoperable, geo-tagged, and multi-lingual. It is powered by One Health Knowledge Repository, a system that

helps predict the likely disease conditions based on reported signs and symptoms.

A panellist then shared FAO’s Global Animal Disease Information System, EMPRES-i. Participants heard this web-based system contains more than 100,000 records and details on 100 diseases in 189 countries. FAO also has an Event Mobile Application known as EMA-i, which is used in nine African countries. To date, more than 700 people have used the application and helped record more than 10,000 EMA-i events in EMPRES-i.

EMPRES-i has shown several limitations in the outbreak timeliness milestones it can measure, but the same cannot be said for EMA-i. Participants heard EMA-i has helped improve the situation on the ground, enabling people to identify the outbreak start, outbreak detection, outbreak notification, outbreak verification, laboratory confirmation, outbreak intervention, and outbreak end.

As the panel discussion came to a close, participants heard about work taking place at the World Animal Health Department at OIE and the World Animal Health Information System (WAHIS). One of the primary missions of the OIE is to guarantee transparency of the world animal health situation.

Details were conveyed as to how data is gathered, processed, and reported. OIE’s long history in disease data collection and sharing was also reaffirmed, which occurs through technology and collaborating with other organizations. Participants learned that in 2018, more than 20,000 items were verified.





These images, provided by Diana Arsenian, captured discussions at a high level and do not represent the specific recommendations from the meeting.

# Exploring Expectations and Transformative Moments

The majority of participants for *Finding Outbreaks Faster: Metrics for One Health Surveillance* arrived in Salzburg on Wednesday afternoon. Meeting in the Meierhof's Parker Hall, they were welcomed by Clare Shine, vice president and chief program officer at Salzburg Global Seminar, and Mark S. Smolinski, President of Ending Pandemics.

An interactive session followed, where participants introduced themselves. Two questions were asked: What has been a transformative moment in your career related to One Health? What do you expect to gain from this program?

Several answers were put forward, but there seemed to be a general theme emerging through everyone's responses. A large proportion of participants were looking to learn from colleagues, to enjoy different perspectives, and build bridges culturally and geographically. While some had experienced transformative moments in their careers already, others were hoping to have their first transformative moment in relation to One Health here in Salzburg.

One participant suggested the program was the right place to bring expertise and ideas together, while another indicated there was an opportunity to harness the power of diversity. There was a belief participants could contribute to a holistic One Health real-time surveillance system.





# Brainstorming for Animal and Environmental Health

Participants explore potential One Health outbreak milestones across livestock, wildlife, and environmental sectors using specific diseases to facilitate discussion

On Wednesday afternoon, participants took part in their first group work activity, which focused on brainstorming milestones for animal and environmental health.

Participants broke off into five working groups in Schloss Leopoldskron to deliberate relevant One Health outbreak milestones across livestock, wildlife, vector-borne, and environmental sectors.

In a subsequent session, there was an opportunity for each group to present their brainstorming output, rationale, and to take brief questions from other participants in the room.

A large number of potential milestones were formulated. On Wednesday evening, these ideas were synthesized further and presented to the group the following morning for consultation.

On Thursday morning, participants were presented with around 30 potential milestones across the livestock, wildlife, and environment sectors. They were reminded that their main goal was to find outbreaks faster and to create a “disease agnostic” framework that could be used by every country.

At the same time, participants were cautioned to consider the existing status quo and how it was only recently the animal health and human health professionals had come together. One speaker suggested participants had to be “realistic.” After a large group discussion reviewing the potential milestones, participants voted for the milestones they felt should be removed, i.e., those that were impractical or which could not be measured.

The priority milestones which remained were then debated further in a Knowledge Café format. During this

exercise, participants began defining the milestones for each sector. Participants were asked to list the milestone, provide a definition, identify what the data sources were, and who had access to them. Each table had an organizer and note-taker to capture the discussions.



These images, provided by Diana Arsenian, captured discussions at a high level and do not represent the specific recommendations from the meeting.



ENDING PANDEMICS  
NOV. 1, 2019

# DAY 3

## TIMELINESS METRICS

### DISCUSSION HIGHLIGHTS

- "NOTIFICATION" IS NOT THE SAME AS ONE HEALTH SURVEILLANCE OF OUTBREAKS. - IT NEEDS TO HAPPEN "INSTITUTIONALLY"
- AFTER AN OUTBREAK- DEPLOYMENT OF THE MULTI-SECTORAL RESPONSE ONE HEALTH COORDINATED MECHANISM. - A COLLABORATIVE EFFORT
- ENVIRONMENT: Should start with alert, RAINFALL, FLOODING, MOSQUITO POPULATION, WILDLIFE, HUMAN, LIVESTOCK
- ALL THE SCENARIOS THAT LEAD TO AN ENVIRONMENTAL EVENT THAT MAY LEAD TO AN OUTBREAK.
- WE COULD MEASURE DURING AN OUTBREAK INVESTIGATION. WITH EVIDENCE YOU IMPROVE PREDICTION.
- MEASURING THE MOMENTUM OF TIME. HIGHLIGHT DATES THAT SURPASS THE THRESHOLD.

IN THE ONE HEALTH WORLD ALERTING NEIGHBORING COUNTRIES IS VERY IMPORTANT.

- Date of PREDICTION
- Date of OUTBREAK (EVENT) SHARING
- \* Different Conditions.
- MULTIPLE FACTORS CAN INFLUENCE A MILESTONE
- INTERSECTORIAL PLANNING
- WE need Pre-Planning You need to know who to call.

SHARING INFORMATION, REGIONAL NETWORKING, GLOBALLY NETWORKING

CONTEXT: Public Engagement, Social Economics, TRADITIONAL HEALER, WESTERN MEDICINE, VETERINARIAN

DEFINITIONS: EVENT, INTER-AGENCY COMMUNICATION, 2-WAY COMMUNICATION, CO-ORDINATED COMMUNICATION, CROSS-SECTOR COMMUNICATION

ENVIRONMENTAL TRIGGERS RECOGNIZED BY ANY AGENCY

- JOINT OUTBREAK INVESTIGATIONS
- CONVERGENCE OF KEY CRITERIA AFTER A SERIES OF EVENTS
- Trace Back, Root Cause

AFTER ACTION INVESTIGATIONS

Are TIMELINESS METRICS about FINDING "NEW" EMERGING OUTBREAKS ONLY? OR EXISTING, ON-GOING OUTBREAKS AS WELL?

- Are we watching Endemic Diseases??
- THERE ARE MULTIPLE ENVIRONMENTAL TRIGGERS TO WHEN THE ALERT HAPPENS. BY COUNTRY, BY REGION

D. Arsenian 15

ENDING PANDEMICS  
NOV. 1, 2019

## TIMELESSNESS METRICS

### DISCUSSION cont'd...

WORDS: OUTBREAK, INCIDENT, EVENT, WILDLIFE, EXOTIC ANIMALS, DOMESTICATED ANIMALS, LIVESTOCK

DEFINITIONS: EVENT

Inter-Agency Communication, 2-way Communication, CO-ORDINATED COMMUNICATION, CROSS-SECTOR COMMUNICATION

ENVIRONMENTAL TRIGGERS RECOGNIZED BY ANY AGENCY

- JOINT OUTBREAK INVESTIGATIONS
- CONVERGENCE OF KEY CRITERIA AFTER A SERIES OF EVENTS
- Trace Back, Root Cause

AFTER ACTION INVESTIGATIONS

Are TIMELINESS METRICS about FINDING "NEW" EMERGING OUTBREAKS ONLY? OR EXISTING, ON-GOING OUTBREAKS AS WELL?

- Are we watching Endemic Diseases??
- THERE ARE MULTIPLE ENVIRONMENTAL TRIGGERS TO WHEN THE ALERT HAPPENS. BY COUNTRY, BY REGION

D. Arsenian 16

ENDING PANDEMICS  
NOV. 2, 2019

# DAY 4

## COMING TO AN AGREEMENT ON THE MILESTONES

### TERMINOLOGY

Group discussion on "Definitions of Milestones" from yesterday's Knowledge Café.

Regarding Definitions → Let's be consistent and not be confusing.

I found a dead Bird! Alert? An Event? Enhanced Surveillance? A Human Pathogen is circulating the Environment... Unusual Pathogen??

Mortality, Morbidity, Unusual Pathogen??

"RESPONSIBLE" AUTHORITIES, "LEGAL" AUTHORITIES, "RELIABLE" AUTHORITIES

Who does the ANNOUNCEMENT FIRST? IMPORTANT Responsible AUTHORITIES

RELEVANT STAKEHOLDERS (May include the General Public)

\* The Public may not be the appropriate stakeholder to hear about "STRANGE" announcements req. "Outbreaks". What outbreaks do you COMMUNICATE to the Public?

EVENTS vs. INCIDENTS

In WILDLIFE - A "CASE" → Something "UNUSUAL" has happened.

Sending ALERTS to all RELEVANT AUTHORITIES

FAO, OIE, WHO

GLEWS+ INFO Systems

Do we say "JOINT" Investigation or to "COORDINATED" Investigation or "MULTI SECTORIAL" Investigation?

COORDINATED INVESTIGATION & RESPONSE

Start w/ your Sector 1st, Then connect w/ other Sectors, To a COORDINATED INVESTIGATION

ONE HEALTH → We need to DRIVE CHANGE! One Health should Be a PRACTICE

"ALL" → CAN YOU REALLY include "ALL"

Do we use the word "control" or "management" → Public Health outreach. CAN IT BE INTERCHANGEABLE? From wildlife perspective- it may be different.

D. Arsenian 17

These images, provided by Diana Arsenian, captured discussions at a high level and do not represent the specific recommendations from the meeting.



# Reaching Common Ground and Improving Our Impact

ECDC division head Jan C. Semenza discusses One Health and being part of a bigger system

By Claire Kidwell

Jan C. Semenza is the head of the scientific assessment section at the European Center for Disease Prevention and Control (ECDC). He attended the second joint program between Salzburg Global Seminar and Ending Pandemics, *Finding Outbreaks Faster: Metrics for One Health Surveillance*. In an extended Q&A with Salzburg Global, he discusses One Health, the importance of the environment in global health, and his hopes for the future in regards to ending pandemics.

**SG: What does One Health mean to you?**

**JCS:** One Health is trying to have a holistic view of the world as we know it because humans have carved it out into different disciplines. But in reality, we are all part of this big system, and these divisions are artificial.

We have organized ourselves along different disciplines and along different domains of expertise, which is completely, totally artificial. And One Health aims to bridge those visible divides and bring people to the table to discuss the complexity of the world that we live in and consider humans that live in an environment and animals all interconnected in an interdependent way.

So One Health is a new approach where one breaks the silos and reaches out to other disciplines and content. Just the fact that it's not just humans that matter, it's also animals that matter, it is the environment that matters, you name it, insects, we're all part of a system, and we're all interdependent [and] interconnected. And that's what we need to think about.

**SG: Why do you think it's taken so long for the environment to be included in One Health conversations?**

**JCS:** We in the West have had the reductionist approach to looking at the world where we have isolated ourselves from our surroundings. It goes way back into our religious background. Division

of mind and body where one separates as if we were two different entities.

But other cultures do not consider themselves different from the or distinct from the environment. If you think about Native American cultures that they are much more integrated, and they consider themselves part of the bigger whole of earth.

**SG: You and your team at the ECDC developed models to predict possible pandemics using environmental data. If you were to explain these models to anyone on the street, what would you say?**

**JCS:** We at the European CDC are concerned about human health, obviously, but we do take into consideration other factors also. One of those issues is the environment, and we are trying to monitor changes in the environment that have an impact on human health.

Specifically, we are monitoring climatic and/or meteorological conditions to see if those have an impact on human health. Because we have shown that changes in sea surface temperature in the Baltic Sea, for example, can predict the environmental suitability of these infections from bacteria that live in marine environments. They're called *Vibrio* bacteria, but those are very dangerous bacteria that can cause wound infections, diarrhea, or blood poisoning, and some of these diseases are very dangerous and potentially fatal.

So we are monitoring these environmental conditions in order to prevent people from getting exposed to these bacteria and prevent people from getting sick by going to the beach when they're not supposed to because there are too many toxic bacteria in the marine environment.

**SG: What sort of challenges do you see the One Health mindset facing in the future?**

**JCS:** Philosophically, that we humans believe that we are in the center of the

world and that we are the only ones that matter. And so that's a conceptual problem because that will not help us solve all these issues. So One Health struggles with the fact that experts are trained in a certain discipline and nobody has been trained to think outside of that domain.

So connecting with people from different disciplines is very difficult because you speak a different language. We produce our reports in different journals. And we are divided by methods and the way of looking at [the] world and on and on. There are so many things that divide us, and we don't seem to be able to look at the things that we have in common.

There are lots of issues in society like that. People tend to look at things that divide people instead of the things that people have in common and that they share. And it's just a conscious decision that we need to shift our focus from what divides us to what brings us together and what's the common ground for what we stand on.

**SG: Have you seen this common ground during this program?**

**JCS:** Here at... Salzburg [Global] Seminar it was different in that we had a lot of ecologists that were at the table that know the environment very well. I do environmental epidemiology, but I'm more on the human health side also. But we are trying to bring the veterinarians, human health epidemiologists, and then the ecologists and environmental people to the same table to come up with an approach and a way of thinking about this that's more inclusive and more comprehensive. And we'll have a much bigger impact than approaching these problems from a singular perspective... We were able to communicate in ways that I hadn't imagined and come to a common ground; it was encouraging.

# Bridging Divisions and Developing New Partnerships

Veterinarian Kachen Wongsathapornchai reflects on populations understanding One Health

By Claire Kidwell

Kachen Wongsathapornchai believes the One Health approach is best described by the words, “inclusiveness, openness, and sharing.” Without these traits, he suggests, it will be challenging for people to understand the nuances between different health sectors.

Wongsathapornchai, a veterinarian specializing in epidemiology, sat down to share his thoughts during the Salzburg Global Seminar and Ending Pandemics program, *Finding Outbreaks Faster: Metrics for One Health Surveillance*.

In this program, one of Ending Pandemics’ aims was to extend the concept of outbreak milestones used to generate timeliness metrics into the realms of livestock, wildlife, vector-borne diseases, and environmental drivers of disease outbreaks.

Wongsathapornchai is among a group of specialists gathered to help determine outbreak milestones relevant to livestock, wildlife, and environmental sectors. Generally speaking, Wongsathapornchai suggests most people are primarily concerned about human health and not the outside factors which impact it.

He says, “When people are thinking about One Health, they’re focused on One Health and the benefits to humans, which I mean, in a sense [that] already goes against the ideas of One Health. It does not necessarily always have to be about humans. But of course, humans could benefit...”

In his role, Wongsathapornchai oversees activities related to veterinary epidemiology capacity development in Asia and the Pacific, provides advice to governments on strategic planning for animal health and disease control, and is currently serving as the regional manager, ad interim, of Food and Agriculture Organization Emergency Centre for Transboundary Animal Diseases.

Previously working at Thailand’s Department of Livestock Development (DLD), he had the opportunity to co-pioneer the establishment of the first Field Epidemiology Training Program for Veterinarians. He believes it might be easier for people to understand One



Kachen Wongsathapornchai, pictured above, in conversation at Salzburg Global Seminar.

Health if they recognized the bigger picture.

“I think that it’s easier for [people] to understand...like ASF situations or other diseases that affect primarily animals or wildlife that could also have an impact on their well-being. Not just health, but overall well-being... Whether or not they would have food on their plates every day or whether or not those foods would still be affordable to them.”

One Health is a collaborative, multisectoral, and transdisciplinary approach that identifies the health of people is connected to the health of animals and the environment. This approach has the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.

“Although we say that this One Health is not new - it’s been around for a decade or two - but we’re still learning on how to work together. And as we expand our [reach] into other areas... we’re doing a lot better now compared

to 20 years ago when we started talking about health because we learned from experience on how to work together,” Wongsathapornchai says.

Having worked at regional and international levels with various organizations, Wongsathapornchai possesses several years of experience. He has worked on projects on diseases including pandemic influenza, avian influenza, and African swine fever. While working for FAO, he was fielded to Cambodia, Lao PDR, Mongolia, and Myanmar.

Working toward a One Health approach, Wongsathapornchai indicates there are challenges bridging gaps between different sectors, but these can be overcome if the right mindset is adopted. He says, “It’s completely new, and there are so many uncharted territories that we still need to explore if we want to be more inclusive and if you want to be more open-minded. But I think there is no recipe to this. If people are willing to work together, they always find a way.”

# Elevating the One Health Approach and Saving Lives

Veterinary pathologist Tracey S. McNamara on advocating for a species neutral approach

By Claire Kidwell

**“All bets are off. It’s time for every diagnostician, whether in human or wildlife or agricultural species, to strip away those preconceptions and then go that extra step and think, what if this is something new?”**

That’s the approach veterinary pathologist Tracey S. McNamara took when she discovered the West Nile Virus in flamingos in 1999. An advocate for One Health, McNamara spoke at Salzburg Global Seminar while joining other experts to help craft new forecasting tools and metrics to prevent pandemics.

McNamara said the decision to hold another program with Ending Pandemics and focus on something other than humans was in itself “a big mark of success” and lends weight to the One Health approach.

“One Health is all about breaking down the silos between human health, agricultural species of economic value and free-ranging wildlife and then everything else that doesn’t fall under any federal agencies’ jurisdiction,” says McNamara.

McNamara, who is also a professor of pathology at Western University of Health Sciences College of Veterinary Medicine, indicates there’s no reason people in the public health sector should be ignoring wildlife diseases. She says, “They look at the power of these agricultural agencies and just assume, ‘Oh, they must have it all taken care of.’ And that’s not the case.”

Governments tend to barely look at wildlife, according to McNamara, and instead focus on epidemiology in animals with economic value, such as cows, pigs, and chickens. She says, “That means that although wildlife has been implicated in all recent emerging infectious diseases, the problem is no one owns wildlife... the responsibility is rather diffuse, and [wildlife doesn’t] have any monetary economic value compared to a cow.”

Security and defense have emerged during the discussions in Salzburg, and it is evident why McNamara has an interest. She served as a consultant to the National Biosurveillance Advisory Subcommittee.

McNamara says, “I think the Department of Defense is way ahead of everybody else... a lot of these innovations and surveillance and diagnostic testing are coming from the defense arena, and we just have to apply them to these different sectors.”

If a similar level of funding was available for the wildlife sector, McNamara suggests more progress could be made. “If you don’t start funding the wildlife sector and making it possible to do wildlife disease surveillance, then we may as well all just close up shop and go home because nothing will change.”

***“If we can really shift the epi curve to the far left by using environmental data, it’ll be the best way to save lives, the best way to save money...”***

McNamara still holds hope other government agencies across the world will broaden their scope when assessing how diseases and pandemics spread. She recommends pushing the epidemiologic curve further to the left and that governments should find emerging diseases in animals “before they spill over into humans.” She adds, “Or even further

to the left and finally start incorporating climate and meteorological data to help us predict and truly get ahead of disease outbreaks, that I’ve been waiting for that for 20 years. So if that happens, that’ll be a huge outcome of this meeting.”

One benefit of this program, according to McNamara, is having participants present knowledge about climate and environmental factors. She says, “That’s a very important outcome of this meeting, to have had representatives from the environmental sector. And to see what they can contribute because I think that really it’s the answer. If we can really shift the epi curve to the far left by using environmental data, it’ll be the best way to save lives, the best way to save money. I mean, it’s the way to go.”

For those yet to get fully behind the One Health approach, McNamara has a warning. “I would tell them that if they personally would not mind being the index case of the next pandemic, well then fine. I’ll shut up and stop talking about this. But that’s the bottom line. People have to admit that we are using taxpayers as sentinels.”



Tracey S. McNamara, pictured above, at Salzburg Global Seminar. McNamara recently chaired a panel on “Disease X” at the World Health Summit, Berlin, 2018.





## Remembering Melinda Moore

In January 2019, the staff at Salzburg Global Seminar and Ending Pandemics were sad to learn public health expert Melinda Moore passed away at her home at the age of 68.

Moore had bravely battled ovarian cancer since 2017 and had just recently attended a Salzburg Global and Ending Pandemics program in November 2018 titled, *Finding Outbreaks Faster: How Do We Measure Progress?*

Moore was a senior physician policy researcher at the RAND Corporation. During the program, Moore's expertise proved invaluable. She and other participants helped create a set of eight outbreak milestones for use by both public health agencies and other interested organizations.

An obituary, published by the *Washington Post*, says, "During her extraordinary career in global health - 20 years at CDC, 5 at HHS, and 14 at RAND - she attained the rank of Captain in the USPHS, worked in over 45 countries, and touched countless lives.

She will be remembered for her adventurous spirit, moral and intellectual leadership, and eternal optimism." Staff at Salzburg Global and Ending Pandemics share these sentiments.

At this year's program, Ending Pandemics presented Salzburg Global a set of publications in Moore's honor. These publications include *Spillover: Animal Infections and the Next Human Pandemic* by David Quammen; *The Great Influenza* by John M. Barry; *Microbial Threats to Health*, edited by Mark S. Smolinski, Margaret A. Hamburg, and Joshua Lederberg; and *Crisis in the Red Zone* by Richard Preston.

These publications will be kept in Schloss Leopoldskron's Max Reinhardt Library. Staff at Salzburg Global are grateful for Ending Pandemic's donation. These books are a wonderful way of honoring the memory of a fantastic and much-missed public health expert.

Melinda is survived by her husband, Andrico Nungovitch, and three children, Petro, Stefano, and Athina.

## Donation Presentation

Photos of staff from Ending Pandemics presenting donated publications to Salzburg Global Seminar in Melinda Moore's honor





## #FacesOfLeadership

“What inspires me is really the very close connection with country people. I have to travel a lot, [and]... I get to speak to people on the ground...and I can see how what we’re trying to come up with a global level. This is useful and can be utilized at country level... There’s also the questions that I get from the countries that then, you know, generate solutions. We’re trying to come up with a global level. So this exchange is very rich and is really inspiring me.

[Through this program,] we can come up with solutions [regarding] how to decrease the timeliness of things... We work a lot with donor money and sometimes... me and my colleagues... implement surveillance on the ground in countries for priority pathogens or diseases. And by using the metrics on the work that we are doing, that donors are funding, we can hopefully then clearly show progress in decreasing these time intervals. So, if you show that to donors that we use our money to actually drive progress... and improvement in countries, I think this will be very valuable.”

### **Sophie von Dobschuetz**

*Veterinary epidemiologist for the Food and Agriculture Organization of the United Nations*

## Hot Topic:

# “Who Are the Key Stakeholders We Need to Involve to Implement One Health Timeliness Metrics?”

By Mira Merchant

“I think one thing that I’ve recognized here that is missing in some of the conversations is more [discussion with] community-level stakeholders. A lot of the work that we do with our workforce project in engaging with community-level participation with respect to many things related to detection, preparation, and response and control for various epidemic diseases. There may be informal or formal mechanisms in place at the community level. I work with a lot of the universities as well. And so in terms of stakeholders, you know, I do think that it’s important to engage academics and researchers in the process to guide what those indicators might be that are associated with timeliness.”

### **Jonathon Gass**

*Infectious disease researcher and monitoring and evaluation specialist at the Cummings School of Veterinary Medicine at Tufts University*

“The key starting points are the governments with interministerial stakeholders, including the representatives from the key agencies which [are] relevant. But beyond that, the government interministerial representatives need to engage with the community and local society, in particular, to understand wider One Health concerns and impact on other societal issues such as food security, availability, and so on. And after those stakeholders have worked out the strategies for public dissemination of information should then the stakeholders in the media space, including the members of the press online and other types of media platforms, be engaged.”

### **May O. Lwin**

*Professor of communication at the Wee Kim Wee School of Communication & Information, and associate dean at the Nanyang Technology University’s College of Humanities, Arts, and Social Sciences, and director of NTU’s University Scholars Program*

“I feel that since One Health is a multi-sectoral collaborative approach, we need to essentially involve different stakeholders. And it’s all based on the major threat or events we are going to address. The two important stakeholders are, of course, the human physicians working in health sectors and the veterinarians in animal science sectors - also the academics. But there [are] always environmental or other factors which do play a role. So, what I feel is that whenever there is a threat which is being introduced to a locality, [such as] a zoonotic disease, antimicrobial resistance or it could be anything for that matter, we need to identify key stakeholders by looking at the problem, and how the disease [is] going to impact society.”

### **Prejit**

*Officer-in-charge of the Centre for One Health Education, Advocacy, Research and Training*

“It’s definitely the bigger organizations like the WHO, FAO, [and others] at the UN level, that require... a standing... group or a format that doesn’t exist at the moment. At the moment, it’s just a little bit bilateral. So this is something that probably needs to be created... And an organization like the European Union at the political level would be also very important, [as well as] the African Union, [and stakeholders] in the Pacific region and in the Americas. So... supranational political entities need to be involved as well.”

### **Christian Haggemiller**

*Research coordinator in Health & Security at the German Institute for Defence and Strategic Studies*



## Hot Topic:

# “What’s One Concrete Step We Could Take to Overcome Barriers for the Adoption of One Health Timeliness Metrics?”

By Mira Merchant

“I would suggest...data-sharing among the partners. One Health is interdependent on human health, animal health, and environmental health. So, we need to share data in a common place to make this timeliness event analysis.”

### **Nitish Debnath**

*Professor and director of the Teaching and Training Pet Hospital and Research Centre at Chottagram Veterinary and Animal Sciences University*

“One concrete step I think we should take to overcome barriers for adoption of One Health timeliness metrics is increasing data sharing and communication between the sectors that hold data currently in silos that are very difficult to integrate with one another.”

### **Emma Glennon**

*Ph.D. candidate and Gates-Cambridge scholar at the University of Cambridge*

“I [would] say relationship building... Sometimes you can build a framework from which your trust could be based... But relationships and trust-building always require work. So, it’s a constant. It’s required throughout all of the One Health work. Constantly making sure people are touching base with each other and talking and listening... [Talking] to them and building that trust is where things can actually start

moving forwards.”

### **Tiggy Grillo**

*National coordinator at Wildlife Health Australia*

“Coordination among health, animal, and security agencies. So, information that’s reported to health systems typically on human health stays in that silo. Animal health, it stays in that silo. Security is a function, a response function. And, so, if they were at higher levels to talk, there would be a forcing function down on coordination of the working level and sharing data.”

### **Jessica A. Bell**

*Senior program officer, Global Biological Policy and Programs, Nuclear Threat Initiative*

“So, my perspective on this is that we need more collaboration. You know, many people are silent in whatever they are doing, and we are not talking to each other. So, I think one of the ways we can overcome barriers is to actually be able to collaborate and talk to each other. And I think this forum here is one of the right ways to enhance our communication.”

### **Assaf Anyamba**

*Principal earth scientist, Universities Space Research Association, Goddard Space Flight Center, NASA*



## #FacesOfLeadership

“I work on developing and strengthening capacity for detection, reporting for disease events... using participatory approaches and also technologies. Actually, my team developed an app... which has been... designed, developed, and now deployed to different areas in Tanzania and also other neighboring countries. I was trained as a vet, but later on, I realized that working alone in silos is not a good thing. So, I decided I could take up the challenge of promoting and championing One Health so that... public and animal health and environment sectors... work as one team.

[This program] is a fantastic opportunity to join a team of... people from different parts of the globe, and therefore actually... [discuss] strategies to promote global health security... starting from the national to the global level.”

### **Esron Karimuribo**

*One Health epidemiology professor and director of postgraduate studies and research, Sokoine University of Agriculture*

Salzburg Global Seminar is grateful to the following organization for their generous support of Session 641

*Finding Outbreaks Faster: Metrics for One Health Surveillance*



