SALZBURG
GLOBAL
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FINDING OUTBREAKS FASTER: HOW DO WE MEASURE PROGRESS?

Session 613

November 4-8, 2018

Ending Pandemics

Visual Notes by Diana Arsenian

SALZBURG GLOBAL SEMINAR

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ADVANCING TIMELINESS METRICS FOR RAPID OUTBREAK DETECTION AND RESPONSE.

1. ACCOUNT FOR LESSONS LEARNED FROM 28 PILOT COUNTRIES.
2. DEVELOP GUIDANCE TO ADDRESS BARRIERS TO IMPLEMENTATION.
3. OPERATIONALIZE THE OUTBREAK METRICS FRAMEWORK FOR PROSPECTIVE MEASUREMENT.
4. ALIGN TIMELINESS METRICS FRAMEWORK WITH KEY GLOBAL GOVERNANCE INITIATIVES.

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Finding Outbreaks Faster: How Do We Measure Progress?

Background

Partners across the globe are working to improve the capabilities needed in every country to stop emerging infectious diseases from expanding beyond their points of origin. Additionally, countries are reaching across national borders to improve regional cooperation to raise early alerts and thereby increase the chances of curbing spread. The risk of any local epidemic becoming a regional or global threat is a clear and present danger as long as we have weak links in our global health security chain.

The ongoing implementation of the International Health Regulations and the supporting actions of the Global Health Security Agenda are assisting countries in assessing their readiness to detect, verify and respond to disease outbreaks. To help with these and other efforts within countries to monitor quality improvement, Ending Pandemics began an effort in 2014 to define and test a handful of simple, quantitative metrics in 28 countries.[1] Retrospective analyses of 5-10 years highlighted gaps in surveillance and identified opportunities to improve timeliness of outbreak detection and response activities. Modifications to data collection practices and response protocols resulted from this work in several participating countries. Continuous monitoring of these metrics will provide the ability to track progress in near real-time and help guide investments in epidemic and pandemic preparedness.

Outbreak Timeliness Milestones

In 2018, in partnership with the Salzburg Global Seminar, Ending Pandemics convened representatives from 26 organizations (including national and international public health agencies, NGOs, universities, and foundations) working across the globe to revise the outbreak milestones based on lessons learned from the 28 implementing countries. Several days of in-depth discussion and spirited debate resulted in a set of eight outbreak milestones for use by both public health agencies and other interested organizations. The set of eight outbreak milestones can be used to calculate any number of key timeliness intervals that occur between select milestones.

Outbreak Milestones	***Definition***
Outbreak Start	Date of symptom onset in the primary case or earliest epidemiologically-linked case
Outbreak Detection	Date that the outbreak or disease-related event is first recorded by any source or in any system
Outbreak Notification	Date the outbreak is first reported to a public health authority
Outbreak Verification	Earliest date of outbreak verification through a reliable verification mechanism[2]
Laboratory Confirmation	Earliest date of laboratory confirmation in an epidemiologically-linked case
Outbreak Intervention	Earliest date of any public health intervention to control the outbreak
Public Communication	Date of first official release of information to the public from the responsible authority
Outbreak End	Date that outbreak is declared over by responsible authorities

[1] Smolinski et al. *Finding Outbreaks Faster*. Journal of Health Security. 2017

[2] Please refer to *Early detection, assessment, and response to acute public health events: Implementation of Early Warning and Response with a focus on Event-Based Surveillance (Interim Version),* World Health Organization, 2014.

Outbreak Timeliness Metrics

A set of standardized outbreak milestones allow countries or organizations to define and calculate relevant timeliness metrics to address their own needs. A timeliness metric is measured as the time interval between two relevant outbreak milestones. Some countries or partners may not have the capacity or intent to measure all the outbreak milestones, and therefore may not measure every possible time interval. While timeliness metrics may be defined differently by countries and organizations, maintaining consistent definitions over time will allow for valid comparisons to capture trends.

As a case in point, Ending Pandemics is using four outbreak milestones to define timeliness metrics relevant to monitoring the impact of our work. We define *time to detection* as the time interval between outbreak start and outbreak detection. *Time to verification* is defined as the time interval between outbreak detection and outbreak verification. And finally, *time to intervention* is defined as the time interval between outbreak detection and outbreak intervention.

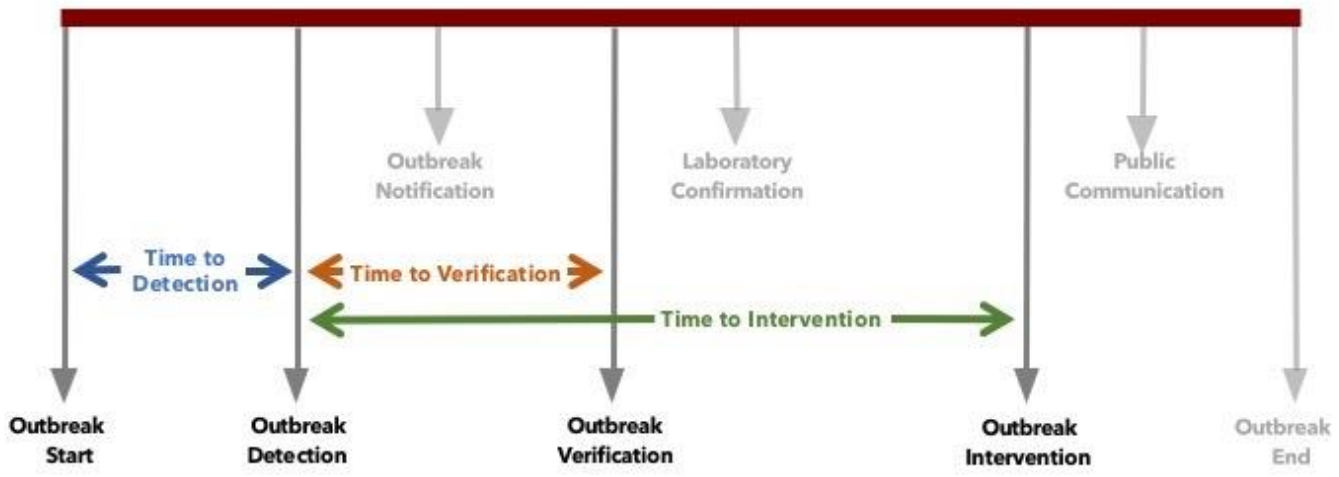

Figure 1. The eight outbreak milestones shown in the above figure are for illustrative purposes only as the actual sequencing may vary. For example, laboratory confirmation may occur simultaneous to outbreak verification. In another case, public communication may be the first outbreak intervention. As an example, Ending Pandemics' timeliness metrics are shown as the intervals between the relevant outbreak milestones.

Looking Ahead

The outbreak timeliness metrics allow for the impact of investments in global health security to improve disease detection and response to be measured through quantitative self-assessments. Their use may also capture performance improvements and help showcase progress in developing country-level surveillance capacity. These critical data points can be integrated into existing, routine disease surveillance systems, including outbreak reporting forms, event management systems, and after-action reports. Ending Pandemics has committed to working in concert with key stakeholders to advance the use of these metrics in countries around the world. As we advance these metrics for use in human health contexts, we will also expand this approach to include the animal health sector and environmental drivers, a critical step for ensuring the earliest possible detection and prevention of emerging health threats.

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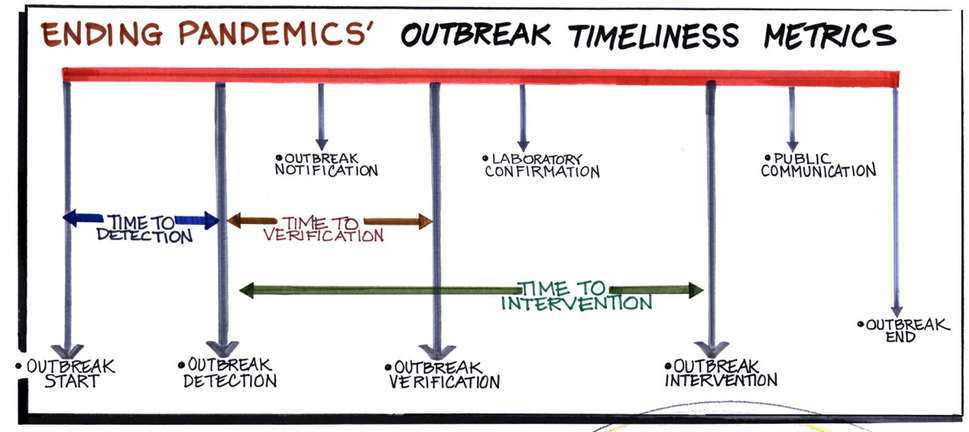
OUTBREAK TIMELINESS METRICS

OUTBREAK TIMELINESS METRICS ARE MEASURED AS THE TIME INTERVAL BETWEEN TWO RELEVANT OUTBREAK MILESTONES.

OUTBREAK MILESTONES	DEFINITION
OUTBREAK START	DATE OF SYMPTOM ONSET IN THE PRIMARY CASE OR EARLIEST EPIDEMIOLOGICALLY-LINKED CASE.
OUTBREAK DETECTION	DATE THAT THE OUTBREAK OR DISEASE-RELATED EVENT IS FIRST RECORDED BY ANY SOURCE OR IN ANY SYSTEM.
OUTBREAK NOTIFICATION	DATE THE OUTBREAK IS FIRST REPORTED TO A PUBLIC HEALTH AUTHORITY.
OUTBREAK VERIFICATION	EARLIEST DATE OF OUTBREAK VERIFICATION THROUGH A RELIABLE VERIFICATION MECHANISM.
LABORATORY CONFIRMATION	EARLIEST DATE OF LABORATORY CONFIRMATION IN AN EPIDEMIOLOGICALLY-LINKED CASE.
OUTBREAK INTERVENTION	EARLIEST DATE OF ANY PUBLIC HEALTH INTERVENTION TO CONTROL THE OUTBREAK.
PUBLIC COMMUNICATION	DATE OF FIRST OFFICIAL RELEASE OF INFORMATION TO THE PUBLIC FROM THE RESPONSIBLE AUTHORITY.
OUTBREAK END	DATE THAT OUTBREAK IS DECLARED OVER BY RESPONSIBLE AUTHORITIES.



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