7-1-7 Bottleneck Analysis

For more information on how to conduct a 7-1-7 Bottleneck Analysis, contact the Global Health Security Agenda Team at GHSA@cdc.gov.

BACKGROUND

A 7-1-7 Bottleneck Analysis uses timeliness metrics to improve an intra- or after-action review (IAR/AAR). 7-1-7 assesses how well a country responded to an outbreak based on three targets: 7 Days to identify a suspected public health threat; 1 Day to inform the appropriate public health authority; and 7 Days to initiate an effective response.

Where these targets are not met, a country discusses what bottlenecks caused this delay. **The 7-1-7 targets guides discussion and the specifications of actions to improve response** by identifying the bottlenecks or enablers that led to achieving or not achieving the targets.

PURPOSE

A **7-1-7 Bottleneck Analysis uses** a simple set of ambitious but achievable **timeliness metrics to identify reasons behind delays in time to detection, notification, and response** to an event.

These targets are based on a review of 296 outbreaks that occurred between 2017-2019 by Resolve to Save Lives. More detail can be found in the article ***"7-1-7: an organising principle, target, and accountability metric to make the world safer from pandemics"*** (Frieden et al., 2021).

7-1-7 MILESTONES

Date of Emergence

For endemic disease: The date when a predetermined increase in case incidence over baseline rates occurred.

For non-endemic disease: The date when the index case in a new population first experiences symptoms meeting the suspected case definition of the disease, or the date of onset of the first known epidemiologically linked case.

Date of Detection

The date when any part of the health (clinical or public health) system first identified a suspected outbreak.

Date of Notification

The date when any part of the health authority (e.g. district, province, national) became aware of the outbreak and the initial epidemiologic investigation was initiated.

Date of Initial Effective Response

The date when *all relevant* early effective response measures were completed. Definitions of an effective response can be found in 7-1-7 guidance.

Outbreak emergence

DETECT: 7 DAYS

To detect a suspected infectious disease outbreak

NOTIFY: 1 DAY

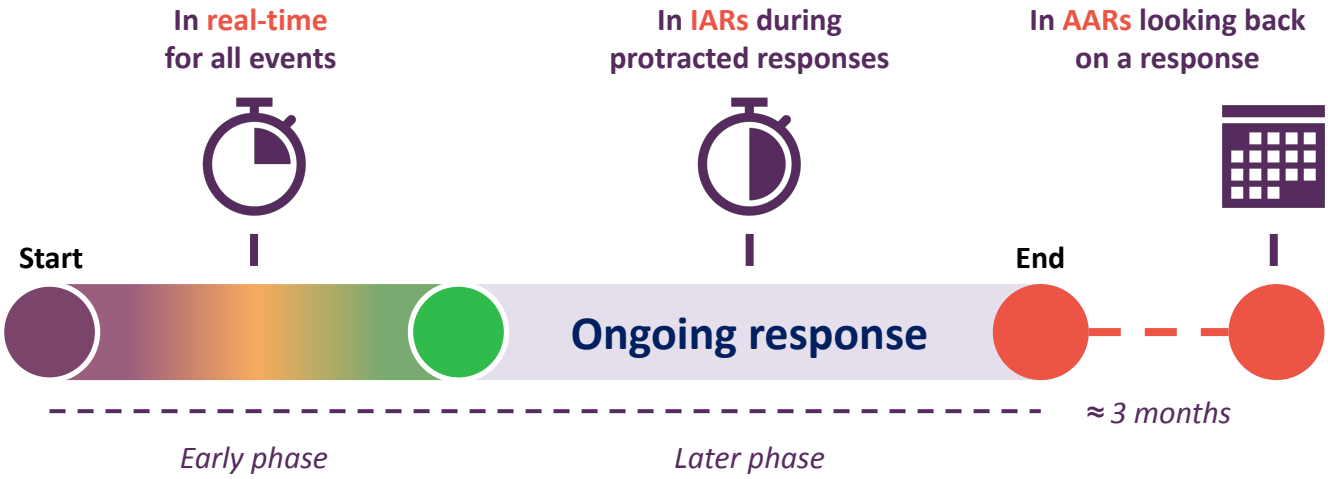
To notify public health authorities to start an investigation

RESPOND: 7 DAYS

To complete an initial response

Rapid Improvement for Early Disease Detection and Response

APPLICATION OF 7-1-7



7-1-7 Bottleneck Analyses provides a focused approach to learning from multiple stages in a response and can be applied to a variety of reviews. Multiple 7-1-7s can start to highlight common challenges that may require National Action Planning to fix.

	Single-Event Analysis	Multi-Event Analysis
Overview	Identifies event-specific reasons behind delays in timeliness metrics.	Identifies common bottlenecks across multiple outbreaks, broadly highlights systems-level gaps in capability.
Data Sources	• Situation/incident reports • Case files/health facility records • Case-based and aggregated data • Laboratory reports • Investigation or rapid response teams • Participating agencies or partners	• Mean time to detection, notification, and response • Percentage of events that hit 7-1-7 targets • A subset of events (i.e. all viral hemorrhagic fevers) • Other analyses as desired

Both single- and multi-event analysis can be used to propose solutions that may resolve bottlenecks in an ongoing response and prepare for future events. Reviews that use 7-1-7 bottleneck analyses provide important information on the use of capacities, and should be used to inform Operational National Action Plans for Health Security. Many countries struggle to prioritize gaps identified through a Joint External Evaluation. 7-1-7 data can help identify and improve this prioritization.

ADDITIONAL INFORMATION

- Frieden, T.R. et al. (2021) "7-1-7: An organising principle, Target, and accountability metric to make the world safer from pandemics," The Lancet, 398(10300), pp. 638–640. Available at: https://doi.org/10.1016/s0140-6736(21)01250-2.
- 7-1-7: Rapid Improvement for Early Disease Detection and Response: https://preventepidemics.org/preparedness/7-1-7/
- 7-1-7 Alliance: https://717alliance.org/