GEORGETOWN UNIVERSITY
Georgetown University Medical Center
Center for Global Health Science and Security

Outbreak Activity Library: An online, user-friendly compilation of activities essential for effective outbreak response

Rebecca Katz, Ellie Graeden

BACKGROUND

Effective prevention, detection, response, and recovery from infectious disease outbreaks requires informed and coordinated action from a multitude of actors. We are increasingly seeing outbreaks in more complex environments, expanding the number of stakeholders and types of activities required to control the spread of disease, particularly when those outbreaks cross international borders and impact multiple species. There is no better example than the current COVID-19 pandemic. Every country around the globe is engaged in outbreak preparedness, response, or recovery. And leaders at every jurisdiction and in every organization have been forced to quickly learn the ins and outs of public health and epidemiology, make complicated decisions to protect population health, and navigate a complicated web of stakeholders, experts, and public health decisions to mount an effective response to the virus.

Oftentimes during the COVID-19 response, we have remarked that the public health community is "writing the textbook as we go." The response has required applying an evolving understanding of the virus and the evidence base to support public health decisions to mitigate the spread and aid in the response. Yet, we discovered several years ago that as outbreaks around the world have become more complex, there was no comprehensive source of all of the activities and stakeholders across this diverse range of missions during an outbreak, leading many to not fully understand what outbreak response really meant. This lack of a shared understanding of response requirements was apparent during many of the diplomatic discussions on preparedness and response to infectious disease threats we participated in over the past decade.

To fill this gap, we have created the Georgetown Outbreak Activity Library, or GOAL, an online platform that clearly identifies all of the activities and actors involved in preparedness, response, and recovery of infectious disease outbreaks. This user-friendly, interactive tool, now publicly available, provides a shared resource to communicate what needs to get done, when, and by whom, and links each activity to easily accessible policy and guidance documents.

LIBRARY DEVELOPMENT

We first conducted an extensive literature review to not only identify what resources existed for outbreak response, but also to find common agreement on the categories and phases of pandemics. This review included disease specific response guidance from the World Health Organization (WHO) (1-5), the Emergency Response Frameworks from the WHO, the United Nations Office for the Coordination of Humanitarian Affairs, the United Nations Children's Fund, and international non-governmental organizations (6-8), academic literature (9, 10), and texts for discrete parts of outbreak response, such as Field Epidemiology (11, 12). We convened workshops of global experts to help define outbreak categories, stakeholders and levels of response. Building on the expert feedback, we created a detailed inventory, organized into six distinct categories, linked to case studies, documents and policies. We developed a data architecture to organize the information for rapid search and analysis, and then custom built an online tool to ensure usability and easy access to information to facilitate communication and action during response and recovery to an outbreak. The tool is available on standard web browsers and supports exploration, filtering, and search of the underlying data (Available online at: **https://GOAL.ghstracking.org**).

The activities collated in the inventory are organized into the categories of humanitarian assistance and community engagement; governance, coordination and policy; healthcare and infection prevention and control; safety and security; epidemiology and laboratory analysis; and logistics and infrastructure support. The library allows users to filter and search by stakeholder or activity during a particular phase of an outbreak, by time, sector and stakeholder, and additional factors including geographic scale, whether the event is zoonotic, and if there is a security consideration. Additionally, a library of case studies is linked to activities.

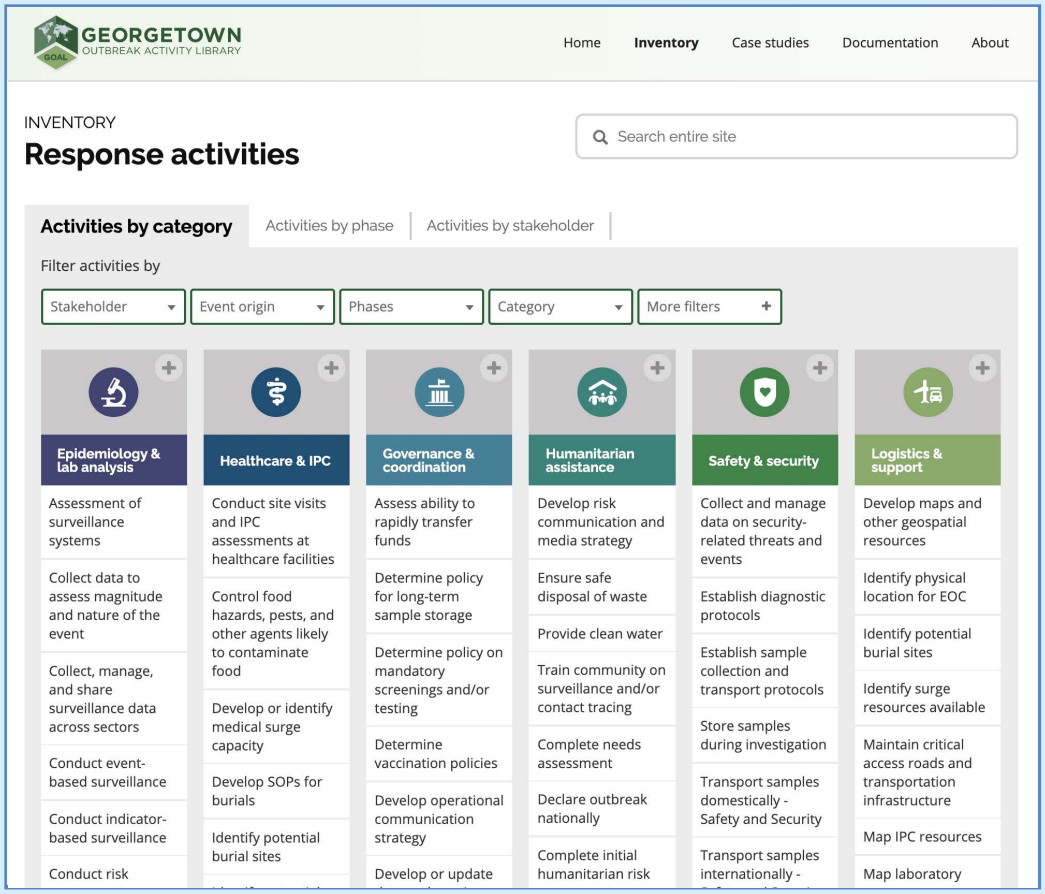
We identified over 260 unique activities, organized into the following categories: humanitarian assistance and community engagement; governance, coordination and policy; healthcare and infection prevention and control; safety and security; epidemiology and laboratory analysis; and logistics and infrastructure support (Figure 1). The library allows users to filter and search the activities by stakeholder, event origin, phase during an event, and other key metadata.

Users can search the inventory by these parameters to identify, for example, only the activities that would be required in a deliberate event that would be expected to be performed by a subnational health authority, or all activities a national government might expect the World Health Organization or an International NGO might offer to support during the post-intervention phase of a zoonotic event. A library of case studies is linked to activities, providing examples of how the activity has unfolded during previous outbreaks, a critical resource for teachers, researchers, and implementers considering the impact of their work in the context of different types of events. These case studies also support real-time response, as needed during the current COVID-19 pandemic. For example, a decision maker implementing contact tracing efforts in the US can draw from case studies of how such efforts were used to manage the Ebola outbreak in Western Africa in 2013 and 2014 (Figure 2).

Each individual activity has its own page which includes a referenced description of the activity, links to the inventory category (or categories), function(s), stakeholders, and coded by event type (Figure 3). Each activity then links to relevant policies and plans, and when available, also links directly to a case study.

Figure 1.

Activity categories included in the Georgetown Outbreak Activity Library.



This online library meets the need for a shared resource to collate relevant international and national policies and regulations, highlight the current state of regulations, identify gaps and ensure a shared understanding of essential activities to control an outbreak. GOAL is designed to be continuously updated to expand and refine the activity descriptions, update policies and plans relevant to each activity, and adding to the library of case studies, drawing upon global professionals and students alike.

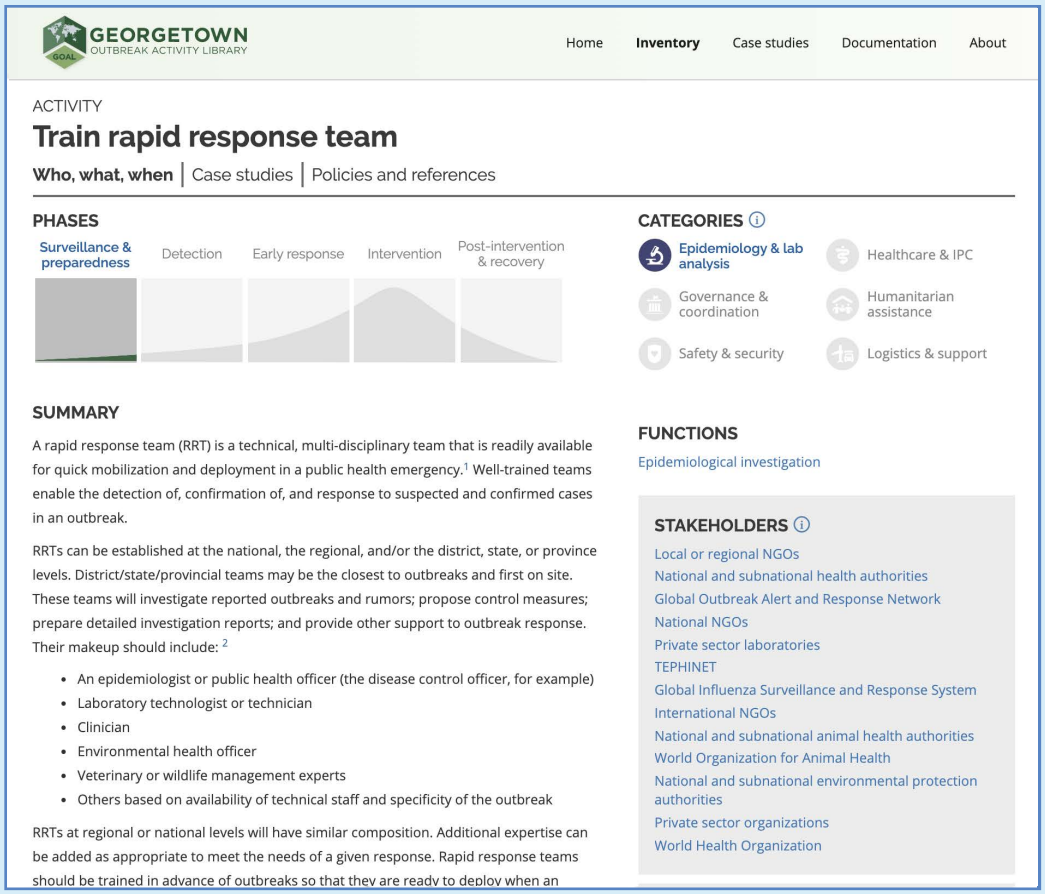
The tool is designed for policy-makers to address legislative gaps, for responders to understand existing guidance and define response requirements for new and emerging events, and for developing plans and involved in preparedness efforts to ensure the work they are doing are comprehensive and based in the practical realities of outbreak response. Indeed, as COVID-19 has unfolded, there has been a significant lack of clarity about what needed to be done when, and by whom. GOAL is a critical new tool to help guide these types of response efforts and help ensure that we are better and more comprehensively prepared for the subsequent phases of this outbreak and the next.

Figure 2.

Example of a case study included in the Georgetown Outbreak Activity Library.

Figure 3.

Example of an activity description included in the Georgetown Outbreak Activity Library.



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