

Learnings from Biological Incident Preparedness Exercises: A Review with Real World Historic Events

Summary

The aim of this research was to develop an understanding of government preparedness in the context of health response following a biological event, regardless of accidental or deliberate intent, and provide a science-based approach in understanding preparedness themes, priorities, and gaps. Data was collated from tabletop exercises (TTXs) for anthrax and smallpox, and international events covering hybrid threats, pandemic influenza, and an unknown (fictitious) human engineered pathogen. An initial review analyzed whether there was any consistent themes or lessons from these exercises and events.

Methods-Results

Priorities and gaps were consolidated and compared between TTXs and a literature search of real-world biological incidents to improve understanding of preparedness strategies. Data was collected from 8 TTXs discussing anthrax, smallpox hybrid threats, pandemic influenza, and a disease X scenario. A subsequent review of 2,413 publications following real-world incidents, pre COVID-19 were identified from EMBASE, PubMed, and Google Scholar and reviewed for inclusion in the report. Priorities and gaps were grouped by themes outlined by the World Health Organization in the International Health Regulations (2005), i.e.: Threat; Preparedness; Surveillance; Communication; Response. A summary of the frequency by theme is included in Table 1.

Conclusions

By identifying reoccurring themes or lessons across TTXs firstly and then subsequently with real-world incidents, this research helps to inform improved outcomes, agency collaborations (government, industry, academia), and frequency of needs to better align TTXs and real-world incidents, and structure consolidated lessons learned from each in a recognized framework of health regulations.