

H36 A Framework for Assessing Mortality and Morbidity After Large-Scale Disasters: The National Academies of Science 2020 Report

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Learning Overview: The goals of this presentation are: (1) to compare the utility of mortality “counts” and “population estimates” to assess the impact of disasters, (2) to strengthen existing systems to improve individual-level mortality data, and (3) to implement standardized definitions for death data collection and reporting

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating that the variability of death certificate data reporting systems in the United States precludes the collection and reporting of accurate death data to measure the impact of a large-scale disaster and impairs the ability to utilize the data for remediation of active disasters and prevention and planning for future events.

The National Academies of Science convened an expert committee in 2019–2020 to assess the difficulties in collecting accurate mortality and morbidity data after large-scale mass disasters and to prepare a report to assist data collectors.¹ The report was initiated in response to the inability to collect and analyze mortality and morbidity resulting from the hurricane that devastated Puerto Rico. Death counts were minimal in the face of multiple catastrophic events, and retrospective epidemiological and population statistical studies produced much larger numbers that were disparate. All panelists agreed that a better framework was needed to assist medicolegal death investigators and health care providers in data collection so that the true impact of a disaster could be measured. Among the report recommendations are several that directly impact medical examiner/coroner systems. They provide information, tools, and standards that can improve death data collection by existing death investigation systems.

Recommendation 2-1 states multiple federal agencies should adopt and support the use of a uniform framework for assessing disaster-related mortality and morbidity before, during, and after a disaster.

Recommendation 2-2 states both individual counts and population estimates should be used as accepted standards for reporting mortality and morbidity by state, local, tribal, and territorial entities and supported by the federal agencies as indicators of mortality and morbidity to determine the impact of disasters over time.

Recommendation 3-1 recommends the Centers for Disease Control and Prevention (CDC) through the National Center for Health Statistics (NCHS) incentivize and strengthen existing death registration systems (medical examiner and coroner systems) to improve the quality of disaster-related mortality data at all levels.

Recommendation 3-2 recommends the NCHS, working with the states, should update the Model State Vital Statistics Act to drive uniformity of data collection with respect to disaster-related mortality. Among specific issues identified were the following. Death certificates for disaster deaths do not mention the disaster so they are not coded as disaster-related and may not be counted. Recognizing that there is no specific box on the death certificate asking if the death was disaster-related, the committee recommended a drop-down box that would collect the disaster information in question. Deaths may not be attributed to a disaster by some systems unless due to the actual immediate forces of the disaster when in fact a death may be disaster-related due to unsafe or unhealthy conditions while preparing, responding to, or during recovery. Partially attributable deaths and morbidity (i.e., where the disaster more likely than not contributed to the death) are not identified and not counted. Discussions of the above led to the adoption of the CDC Terminology for attribution of deaths as Direct, Indirect, and Partially attributable death as a uniform framework for reporting mortality and morbidity.

The committee recognized the importance of professional training and support with Recommendation 3-4 tasking the CDC with state agencies and professional associations, (National Association of Medical Examiners [NAME], International Association of Coroners and Medical Examiners [IACME], American Academy of Forensic Sciences [AAFS]) to strengthen the value, capacity, and capability of the medicolegal death investigation system to improve investigation, training, data development and collection, and case management.

Recommendation 3-5 recommended that state, local, tribal, and territorial public health and emergency management departments should integrate the professionals and agencies from the medicolegal death investigation and death registration systems in all aspects of preparedness and planning. This should involve the consideration of moving mortality management out of Emergency Support Function #8 (ESF8) and creating a separate ESF dedicated to mortality management to focus attention on assessing mortality during and after disasters.

The committee also recognized and discussed recommendations supporting the utility of population-level estimates of mortality and morbidity, especially excess mortality, as a true measure of the wider impact of a disaster and as an important element in preparation, mitigation, and pre-planning for future disasters.

Reference(s):

1. National Academies of Sciences, Engineering and Medicine 2020. *A Framework for Assessing Mortality and Morbidity After Large-Scale Disasters*. Washington, DC. The National Academies Press. <https://doi.org/10.17226/25863>

Mass Disasters, Disaster Mortality, Disaster Statistics