GW Report Delivers Recommendations Aimed at Preparing Puerto Rico for Hurricane Season

Milken Institute School of Public Health Estimates Excess Deaths Due to Hurricane Maria and Offers Next Steps to Protect the Most Vulnerable Communities

WASHINGTON, DC (Aug. 28, 2018) — In an independent report published today, researchers at the George Washington University Milken Institute School of Public Health (GW Milken Institute SPH) estimated there were 2,975 excess deaths in Puerto Rico due to Hurricane Maria from September 2017 through the end of February 2018. The researchers also identified gaps in the death certification and public communication processes and went on to make recommendations that will help prepare Puerto Rico for future hurricanes and other natural disasters.

Hurricane Maria hit Puerto Rico in September 2017 and, soon after, the government of Puerto Rico determined that 64 people had died. Later, unofficial investigations and independent scientific studies suggested that the death toll was likely much higher. To get a more accurate and rigorous assessment, the Governor of Puerto Rico commissioned an independent study from GW Milken Institute SPH.

Today, GW Milken Institute SPH, in collaboration with researchers from the University of Puerto Rico Graduate School of Public Health, delivered on that request.

“The results of our epidemiological study suggest that, tragically, Hurricane Maria led to a large number of excess deaths throughout the island. Certain groups – those in lower income areas and the elderly – faced the highest risk,” said Carlos Santos-Burgoa, MD, MPH, PhD, the principal investigator of the project and a professor of global health at GW Milken Institute SPH. “We hope this report and its recommendations will help build the island’s resilience and pave the way toward a plan that will protect all sectors of society in times of natural disasters.”

The epidemiological study found:
• An estimated 2,975 excess deaths related to Hurricane Maria from September 2017 to February 2018, a number that is 22 percent higher than the number of deaths that would have been expected during that period in a year without the storm.

• All municipalities in Puerto Rico were hit hard by the hurricane and the aftermath, however, certain groups faced the biggest risk. In fact, this study showed that the risk of dying over this period was the highest (60 percent higher than expected) for people living in the poorest municipalities – and that the elevated risk persisted beyond February 2018.

• Over this same period, older male Puerto Ricans had a risk of death that was 35 percent higher than expected and that elevated risk continued past the study observation period.

The research represents the most rigorous study of excess mortality due to the hurricane done to date. The GW-led team analyzed death certificates and other mortality data for six months from September 2017 through February 2018. Using a sophisticated mathematical model, the team compared the total number of deaths during that time to the expected number based on historical patterns. The researchers also adjusted for age, sex and migration from the island.

In addition to estimating the excess deaths, the team also sought to identify flaws in mortality surveillance and communications systems and to offer recommendations aimed at helping Puerto Rico – and the mainland U.S. – establish better methods for disaster preparedness and response.

The team found that lack of communication, well established guidelines and lack of training for physicians on how to certify deaths in disasters, resulted in a limited number of deaths being identified as hurricane related. Thus, like other jurisdictions that are part of the U.S., the death certification process can lead to an undercount of deaths related to disasters like Hurricane Maria. The team found error rates in death certificates that were within the norms. In fact, similar error rates in death certificates are found throughout the United States. To reduce such errors, the team recommends that physicians and other relevant health care providers in Puerto Rico – and on the mainland – receive explicit training so that they can more accurately certify deaths under disaster conditions.

The team also found that poor communication about deaths after the disaster, and especially the distinction between deaths directly related to the storm and those indirectly tied to it, contributed to confusion and consternation among members of the public.

The report provides a number of key recommendations:

• All jurisdictions, not only Puerto Rico and other parts of the U.S. but also globally, should develop methods to rapidly assess total excess mortality after natural disasters and to provide that information to the public. Monitoring should look not only at overall rates of death but also for spikes in death rates in certain areas and within subpopulations, such as the elderly. Armed with that
information, public health officials can more quickly identify populations at risk and develop interventions aimed at protecting the most vulnerable citizens.

- Puerto Rico specifically needs to fully staff these public health functions within the Department of Health, including the Vital Statistics Registry and the Bureau of Forensic Sciences. In addition, the island must strengthen the coordination between the Vital Statistics Registry and the Bureau of Forensic Sciences with the goal of creating a timely and accurate surveillance system. Given the nearly universal impact of the storm including on the professional staff in these departments and their families, outside disaster assistance agencies, including the U.S. Centers for Disease Control and Prevention, need to provide aid and assistance to professional staff involved in natural disasters.

- Puerto Rico needs to conduct after-action reviews and use those, along with the results of the study, to create a new crisis and emergency risk communication plan, one that is integrated with government agency and municipal plans, has community and stakeholder involvement, and is aligned with the possibility of catastrophic disasters.

- Additional research must be done to understand how the hurricane was involved in the excess deaths identified in this study. This would involve interviews of family members and others, as well as in-depth statistical analyses, to learn about the circumstances leading up to individual deaths. Such a study can provide clues that will aid in protecting vulnerable groups in the future.

“The lessons learned from this report and subsequent studies will help not just Puerto Rico, but other regions in the U.S. and around the world that face the ongoing threat of hurricanes and other natural disasters,” said Lynn R. Goldman, MD, MS, MPH, Michael and Lori Milken Dean of the GW Milken Institute SPH and a co-author of the report. “If enacted, the recommendations of this report could help save lives in Puerto Rico and beyond.”


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