

## Historical Healthcare Burdens Associated with Extreme Weather Events at the Belau National Hospital in the Republic of Palau, 2011-2021

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Climate change is associated with increasing frequency of extreme weather events (EWE) and higher demands on global health systems. The Pacific Island nation of the Republic of Palau is vulnerable to the health and social impacts of typhoons, prolonged rainfall, and extreme heat. However, the impacts of these EWEs on healthcare utilization rates have not been studied. We seek to describe emergency and critical care demands during the 30-day period following EWE by investigating the relationship between typhoons, heavy rainfall periods, and extreme heat periods and Emergency Department (ED) visits and intensive care unit (ICU) admissions at the Belau National Hospital from 2011 to 2021. Secondly, we aim to describe differences in lengths of stay (LOS) and all-cause mortality by EWE type. EWE were identified using climatological databases to record monthly average precipitation levels, ambient temperature, and typhoon events from the World Bank Climate Change Knowledge Portal, International Civil Aviation Organization, and Coral Reef Foundation. Extreme heat periods had the highest median ED visitation rates (928, IQR: 782-990.5) as compared to typhoons (853, IQR: 846-873) or extreme rainfall periods (741, IQR: 710-806). Median ICU admissions were highest during rainfall EWE (197, IQR: 107-145) as compared to heat events (169, IQR: 159.5-169.5) or typhoons (157, IQR: 133.5-157). Of our secondary outcomes, median mortality was highest during typhoon events (16, IQR: 12.5-19.5) as compared to heat (14, IQR: 12.5-15) or rainfall periods (11, IQR: 9.5-11.5). All EWE types had a median LOS of 4 days. Further study quantifying the associations between EWE type and our outcomes will be estimated using a lag distribution Poisson model with overdispersion controlling for potential confounders. The 30-day post-EWE periods will be matched with a preceding 30-day control period to address short-term seasonal variability. Our initial results describe health resource utilization patterns following EWE types in Palau and contribute to a growing body of literature quantifying the human and system impacts of climate change in vulnerable areas.