

P0187 Emergence of infectious respiratory diseases following earthquake-induced tsunamisMaria Mavrouli¹, Spyridon Mavroulis², Efthymios Lekkas², Athanassios Tsakris¹

¹ Department of Microbiology, Medical School, National and Kapodistrian University of Athens, Athens, Greece, ² Department of Dynamic Tectonic Applied Geology, Faculty of Geology and Geoenvironment, National and Kapodistrian University of Athens, Zografou, Greece

Background: Tsunamis are gravity waves generated when a large water volume is vertically or horizontally displaced by a sudden sea floor disturbance. Earthquake-induced tsunamis have the potential to cause extensive damage to natural and built environment and are often associated with fatalities, injuries and infectious disease outbreaks.

Materials/methods: This study involved an extensive and systematic literature review of 37 research publications related to the occurrence of respiratory infections (RI) following the three most devastating tsunamis of the last 15 years induced by great earthquakes, namely the 2004 Sumatra-Andaman earthquake (Mw9.2), the 2009 Samoa earthquake (Mw8.1) and the 2011 Tōhoku (Japan) earthquake (Mw9.0) in the Indian, Western Pacific and south Pacific Ocean respectively. The inclusion criteria were literature type comprising journal articles, natural disaster type including earthquake-induced tsunamis, population type including humans and outcome measure characterized by increase of RI incidence.

Results: Polymicrobial RI caused by environmental pathogens, multidrug-resistant and atypical bacteria were commonly detected among survivors of the 2004 Indian Ocean tsunami who experienced near-drowning events. *Scedosporium* and *Aspergillus* spp infections were mainly detected after the 2011 Great East Japan tsunami. *Legionella* and Influenza infections were detected following the 2011 tsunami that occurred during Influenza virus transmission season. Increased acute RI incidence rate was recorded among survivors in evacuation centers. Measles transmission and outbreaks depended on the baseline immunization coverage among the affected population in crowded shelters, where tuberculosis was also a growing concern. The detected risk factors include destruction of health care infrastructures, low socioeconomic conditions, exposure to high pathogen densities, aggravating post-tsunami weather conditions, regional disease endemicity, overcrowded evacuation shelters, low vaccination coverage and poor personal hygiene.

Conclusions: Earthquake-induced tsunamis can take place anywhere and infectious disease emergence can occur not only in developing countries but also in developed, industrialized ones. The establishment of strong disaster preparedness plans characterized by sufficient environmental planning, resistant infrastructures and resilient health care facilities is significant for the early detection, surveillance and control of emerging respiratory infections. Moreover, the establishment and the continuous function of reliable early warning systems may help mitigate tsunami-related impact on public health, especially in tsunami prone areas.

