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Earthquake Preparedness for Healthcare Professionals

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Earthquakes, Healthcare, and Seismic Properties in the Korean Peninsula Earthquakes are among the most destructive natural hazards, characterized by their unpredictability and their potential to cause widespread societal damage within a short period of time. Earthquakes cause the collapse of critical infrastructure and the disruption of healthcare systems, as well as significant loss of life. In the immediate aftermath of large earthquakes, various public health issues rapidly emerge, including trauma, infectious diseases, respiratory conditions, and mental health problems. In particular, a marked increase in renal disease is observed following major earthquakes. This increase is associated with crush injuries caused by building collapse and dehydration due to delayed rescue efforts, often leading to rhabdomyolysis and subsequent acute kidney injury. Accordingly, renal disease is recognized as one of the critical targets in disaster emergency response and medical management, particularly in urban earthquake scenarios involving the collapse of infrastructure such as roads, bridges, and water supply systems. Such impacts can be severe in densely populated regions like South Korea. The Korean Peninsula has recently experienced increased awareness of seismic risk following the 2016 Gyeongju earthquake and the 2017 Pohang earthquake. However, the Korean Peninsula has the potential to experience larger seismic events. For instance, a magnitude 6.2 earthquake occurred near Pyongyang in 1952, and historical records from the Joseon Dynasty document multiple earthquakes exceeding magnitude 6.0. Furthermore, seismic events on the Korean Peninsula are typically shallow, occurring at depths of less than 15 km. Such shallow earthquakes can cause significant damage in densely populated urban areas due to the relatively low attenuation of ground motion. In addition, limited experience with seismic disasters and insufficient preparedness in both infrastructure and medical

response systems increase concerns about health impacts. We examine the risks associated with earthquake disasters, with a particular focus on renal disease in the immediate aftermath, and discuss the seismic characteristics of the Korean Peninsula. This presentation further aims to provide insights into improving future disaster response strategies and healthcare system preparedness in the region.

Keywords: Earthquakes, Renal Disease, Seismic Properties in the Korean Peninsula