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A PUBLIC HEALTH APPROACH TO SOLVING THE EARTHQUAKE PROBLEM

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Earthquakes are a significant threat to public health in tectonically active areas of the world. Earthquakes can cause catastrophically large numbers of injuries and fatalities with little or no warning. Indirect effects from release of environmental contaminants and damage to public infrastructure may lead to long term and large scale negative health effects. The health risk associated with earthquakes will continue to increase as population increases in vulnerable areas. Earth scientists have made great progress in understanding the causes and effects of earthquakes, and identifying the most hazardous areas, yet despite significant effort, short-term prediction of damaging earthquakes remains an elusive goal that has been identified as one of the grand challenge problems in science. Even if earthquakes could be reliably predicted, they could not be prevented because large scale tectonic processes are beyond human control. Therefore, the solution to the earthquake problem must be found in human response. The traditional approach to reducing earthquake risk involves identification of hazardous areas and quantification of hazard by earth scientists, followed by mitigation through engineering and regional planning. This “top down” approach has reduced risk of injury and death from earthquakes, but it has limitations. Many residents of seismically active areas are concerned about seismic risk, but they do not take protective action. To achieve greater seismic risk reduction, the earthquake problem could be conceptualized with a public health model, and addressed with proven methods of public health risk reduction. The field of public health focuses on prevention of harm and promotion of safe living conditions, based on scientific understanding of processes. In a public health model, injury is viewed as resulting from a chain of causation involving agent, host and environment. This model has been successfully applied to reducing death from threats as diverse as AIDS, drunk driving and contaminated food. It could be extended to include the negative impacts of earthquakes. The field of public health has developed systematic ways of thinking about problems that emphasize the development of interventions to prevent undesirable health outcomes. Several interventions could be “borrowed” from common public health problems and applied to earthquakes.

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