

Disaster Response: Leveraging Technology And Mass Casualties To Advance Global Healthcare

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An estimated 20,000 people died daily from lack of surgery after the 2010 Haiti earthquake; natural disasters have cost over 1.3M lives and US \$2 trillion since 1995. To improve morbidity/mortality in disasters both natural and man-made (terrorism, building collapse, transportation accidents), disaster response (DR) must be on-site within 24 hours - not the days to weeks of current DR (e.g. UN, WHO, Red Cross).

Trauma and stroke centers (TC/SC) evolved with evidence that "24/7" immediate treatment improved morbidity/mortality. TC/SC equipment/personnel are seamlessly integrated into healthcare (HC) systems. We propose incorporating DR as Disaster Response Centers (DRCs). A DRC includes a mobile operating room (including CT powered by car battery) - portable by helicopter - that can be operational anywhere worldwide within hours. Telemedicine allows subspecialty surgical guidance; robots and drones maximize DR (e.g. identify the living buried in rubble, optimize triage).

Disasters evoke a humanitarian response - suspending political and socioeconomic barriers that hinder response to other crises. The DRC concept has input/support from American College of Surgeons, UN and WHO DR, Consortium of Universities for Global Health, US National Center for Disaster Medicine and Public Health, Chilean and Pakistani Health Ministries, etc. Recently a US National Trauma Care System has been proposed that similarly integrates the civilian TCs with military DR resources. Initial DRC sites include Iquique (Chile) and Peshawar (Pakistan). A meeting with local health officials, Chilean Air Force, and Chilean Office of Emergency Management was recently held in Iquique to advance a DRC there; a US neurosurgery resident who is also a Global Health Scholar will be spending part of the next 2 years in Chile and neighboring countries with the DRC proposal.

This global TSC system will improve DR, establish global standards for medical education/training, and provide a universal research platform. DRCs provide resources (radiology, blood bank, pathology) necessary for the 2015 *Lancet Commission: Global Surgery 2030* goals. DRCs, with multinational staff, advance HC in developing countries and collaboration with developed countries. There are political and socioeconomic benefits - beyond the HC benefits - of integrating DR into the ongoing global HC system.