Consistent Patterns in Secondary Health Effects of Disasters

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Objectives

- Define primary and secondary death/injury causes related to disasters
- Discuss factors related to recurring death/injury patterns in disasters
- Provide resources for further study (post-presentation upload)
Interdependent infrastructure (Y. Wang)
Power
Health and healthcare
Evacuation and sheltering
Coming or going?
How would you do?

- No primary power for 7-30-xx(x) days
- Scarce fuel: how will pumps, generators work?
- No reliable water/wastewater
- Minimal cellular/internet
- Multi-modal transportation impact
- Most non-emergency government services unavailable
- ATMs spotty at best
What kills people in disasters?

- **Primary**
  - Direct trauma determined by event
  - Disease (e.g., acute epidemic)
  - Direct environmental impact (e.g., heat/cold/chemical exposure)

- **Secondary**
  - Pre-existing medical conditions
  - Environmental impact
  - Secondary trauma
  - Psychological impact
Pre-existing medical conditions

- Diagnosed, ~ stable, chronic
  - Cardiorespiratory (hypertension, heart failure, COPD)
  - Endocrine (diabetes)
  - Other (ESRD, psychiatric)

- Controlled by diet, medication, home care, out-patient procedures
  - Dialysis, home O₂, powered life-support equipment

- Common to most disasters/disruptions
  - Low threshold

- Difficult to attribute
Environmental impact

- Unmediated exposure
  - Heat, cold
  - Environmental degradation (air, water, food)
    - Enteric disease, mold
  - Otherwise-controlled pathogens
    - Localized; major disease outbreaks uncommon
  - Introduced toxicants
    - CO
Secondary trauma

- Post-event; unintentional
  - Repair/recovery activities
  - Falls, electrocution
  - Fires
  - Motor-vehicle collisions
Psychological trauma

- Beyond/exclusive of pre-existing conditions
  - Effects of prolonged disruption, dislocation
  - Ongoing/continuing incidents (e.g., aftershocks)
  - Personal loss
Selected references and resources

- National Library of Medicine Disaster Management Research Center (NLM-DIMRC)
- *Disaster Medicine and Public Health Preparedness* (DMPHP) (journal)
- *Prehospital and Disaster Medicine* (PDM) (journal)
- *Morbidity and Mortality Weekly Report (MMWR)*: CO poisoning after
  - Hurricane Irma (2017)
  - Hurricane Ike (2008)
- MMWR: epidemiologic impact assessment of 4 Hurricanes, FL, 2004
- MMWR: nonfatal injuries after Hurricane Sandy, NY City, 2012
- MMWR: snowstorm-related mortality, NY State, 2014
- GSA: landslide-caused valley fever outbreak, Northridge EQ, 1994
- PDM: acute respiratory illness due to post-EQ mold exposure, Japan, 2011
DMPHP: chronic conditions and disaster relief
DMPHP: baseline medical needs in disaster-displaced populations
DMPHP: planning for post-disaster chronic-disease medications
DMPHP: chronic diseases in 5 years after EQ, Japan
CDC: vulnerable older adults disaster chronic-disease needs
Am. J. Kid. Dis.: dialysis care and death after Hurricane Sandy, 2012
DMPHP: risk of social isolation among EQ/tsunami survivors, Japan
DMPHP: post-EQ resilience and recovery, New Zealand
Kaiser Fndn.: Gulf-Coast recovery experiences Hurricane Harvey, 2017
Kaiser Fndn.: public health in Puerto Rico after Hurricane Maria, 2017
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