

Ethical principles

- Principles of bioethics apply to disasters
 - But with limitations in certain circumstances
- Principle of beneficence is clearly applicable
 - Maximize benefits, minimize harms
- Respect for autonomy
 - Pertains to research conducted during and after disasters
 - Not applicable where need for triage of injured persons is necessary or when limited resources must be allocated
- Principle(s) of justice
 - Procedural fairness when triage and resource allocation are necessary
 - Emergency response and post-disaster justice

Man-made vs. Natural Disasters

- Usual distinction between natural and man-made disasters is questionable
 - “What makes an event into a disaster is its impact on human beings”
 - Henk ten Have
- Even a natural disaster has a human component making its impact more or less on humans
 - Depending on preparedness and response
 - Clear examples of man-made disasters
 - Chernobyl
 - Bhopal
- Combination: Tsunami and Fukushima nuclear accident in Japan

Man-made: Chernobyl



Protesting the Bhopal Disaster



Preparedness

- Depends on type of disaster
 - General preparation in areas prone to specific types of disaster
 - Hurricane Katrina in New Orleans, USA
 - Years of failure to strengthen levees to prevent massive flooding
 - Yet imminent arrival of Katrina was predicted
 - Poorly coordinated local response
 - Poorly coordinated state and federal response
 - Director of US FEMA was incompetent

Damage from Hurricane Katrina 2006



Lessons from Katrina

- Social science study of the experience of evacuees from New Orleans revealed the following
 - Participants were mainly African American and had low incomes
 - Their decision to evacuate was greatly influenced by family
- Conclusions of the study
 - Removing the more obvious obstacles of shelter and transportation will likely be insufficient for improving disaster plans for impoverished, minority communities
 - The important influence of extended families and social networks demand better communitybased communication and preparation strategies.

Some comments of interviewees

- “They said go to Texas but I didn’t know anybody in Texas.”
- “Really truly, we had cars, but we didn’t know anybody to go to.”
- “I mean, if you’ve got 20 people trying to get in 1 car it’s not going to happen.
- “So some people, you just stay because you have to.”
- “They would have had to send buses like close up to the door so they get [theelderly] out.”

More comments of interviewees

- “I no healthy to drive too far.”
- “I take so much medication by that time I was like groggy.”
- “Like my mom said, she’s been through Betsy, Camille, all the hurricanes, the major hurricanes and she just wasn’t evacuating. So I wasn’t going to leave my mom to stay there by herself.”
- “Some was telling us that we should evacuate . . . and some of them was telling us to stand by.”

Sociocultural reasons

- “The mayor, the governor of New Orleans, that run the city of New Orleans they let the waters go in the poor neighborhoods and kept it out of the rich neighborhoods like that French Quarter where tourists goes at.”
- “It was from them opening flood gates, telling lies about the levee breaking and stuff . . . I believe they do these things intentionally . . . so they can flood out those black neighborhoods.”

Hurricane Sandy New York 2012

- Two major hospitals right next to each other were hit hard by the storm
 - Both carried out emergency evacuations
 - NYU Langone Medical Center (a private hospital) evacuated 300 patients during the storm
 - The next day Bellevue Hospital (a public hospital run by NY city) evacuated 700 patients
- However, the nearby Veterans Affairs (VA) New York Harbor hospital evacuated patients **before** the storm

Preparedness

- New York hospitals did post-Katrina planning
 - As a result, they had capabilities to manage evacuations
 - with transport equipment to move patients within the facility
 - 350 additional ambulances brought to the city
 - Rapid response by emergency medical service transport units
 - FEMA placed urban search and rescue teams nearby as the storm came ashore

Lessons from Katrina

- Because of post-Katrina planning, NY hospitals had more detailed emergency plans and access to better positioned backup generators
- However, Bellevue Hospital failed to learn a critical lesson
 - Planning for the transport of physically disabled or obese patients
- A general failure in preparedness for Sandy
 - Leaving crucial decisions to health care facilities
 - This results in inconsistent action, potentially adverse to patient and public interests
 - Three neighboring NYC hospitals made different decisions regarding when to evacuate

Earthquake preparedness

- Typically no warnings for earthquakes
 - Poor building construction in earthquake-prone countries
 - China (2008) – with financial means to construct better buildings
 - Haiti (2010) – poorest country in Western Hemisphere
 - Unanticipated aftermath
 - Relief workers from Nepal brought cholera epidemic
 - Combination disaster: natural and man made
 - Haiti still not fully recovered and rebuilt

2008 Sichuan province in China



Many schoolchildren died

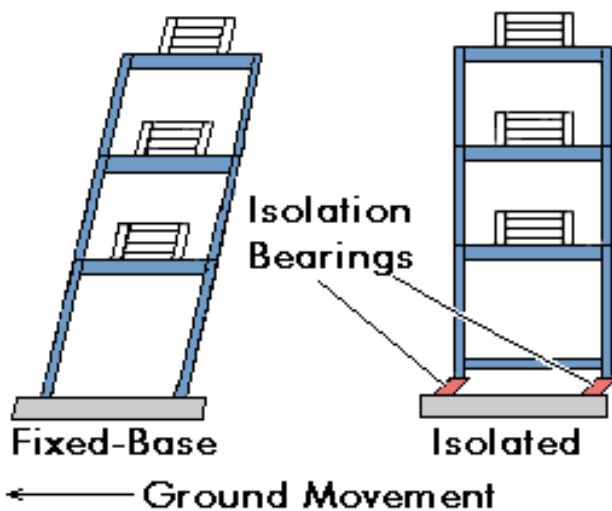


Haiti



Earthquake Preparedness

- Earthquake preparation must be permanent, in advance
- Earthquake-proof construction
 - Los Angeles
 - Japan



Advance preparation

- Situation differs in disasters that can be predicted in advance, such as severe disease outbreaks
 - Zanzibar has predictable outbreaks of cholera
 - Plans have been made for allocation of ventilators, preventive vaccines, and allocation of medical treatments for influenza pandemic
- Allocation schemes differ
 - Some differences depend on the intervention
 - Vaccines for prevention, ventilators for care
 - Other differences are based on differing ethical judgments regarding whom to save

Ventilators in Pandemic Influenza

- NY State commission devised a plan for H1N1
- Clinical guidelines proposed both withholding and withdrawing ventilators from patients with the highest probability of mortality to benefit patients with the highest likelihood of survival
 - Classic triage situation
 - No preference for any group based on age, occupation, or other characteristics
 - Ethical principle: “Save the most lives”

Influenza vaccine: Save the most lives

- US National Vaccine Advisory Committee (NVAC) and the Advisory Committee on Immunization Policy (ACIP)
 - Jointly recommended a prioritization scheme placing vaccine workers, health-care providers, and the ill elderly at the top, and healthy people aged 2 to 64 at the very bottom
 - Primary goal was to “decrease health impacts including severe morbidity and death”
 - Principle of death prevention, health maximization
 - Secondary goal was minimizing societal and economic impacts

Influenza vaccine: Life-cycle principle

- Life-cycle allocation principle is based on the idea that each person should have an opportunity to live through all the stages of life
- “Investment refinement” version of life-cycle
 - Gives priority to people between early adolescence and middle age on the basis of the amount the person invested in his or her life balanced by the amount left to live. 20-year-olds are valued more than 1-year-olds because the older individuals have more developed interests, hopes, and plans but have not had an opportunity to realize them
 - Emanuel & Wertheimer

Influenza vaccine: principle of public order

- Principle of public order focuses on the value of ensuring safety and the provision of necessities, such as food and fuel
- Gives high priority to vaccine production and distribution workers, as well as health-care and public health workers with direct patient contact
 - Priority not because of “social worth” but because they help to ensure public order during an influenza pandemic

Research in Disasters

- Some criticisms of conducting research in disasters
 - Disaster victims are rendered too vulnerable by the disaster to ask them to participate in research
 - Disasters in developing countries or other poor communities render the inhabitants more vulnerable
 - They need aid, not research
- People recruited for research by health workers may confuse research with treatment
 - The therapeutic (philanthropic) misconception
- People caught in a disaster are too emotionally unstable to provide informed consent

Criticisms of conducting research in disasters

- Even following a disaster, victims may be traumatized by interview or physical exams
 - Causing them to recall terrible circumstances
- Conducting research may impede efforts to mitigate harm
 - Can intrude into rescue operations
- Insufficient time to prepare a research protocol and have it reviewed by a research ethics committee
 - Research subjects may lack adequate protection of their rights and welfare

Need for research in disasters

- Enhanced likelihood of accidental radiation exposure
- Increasing use of nuclear technology in power production and possibility of nuclear terrorism or war



Need for research on radiation

- Research during radiation accidents can contribute to existing scientific understanding
 - Need to fill the gaps in knowledge of radiation action in different dose ranges and post-irradiation windows
 - Would help in improving therapeutic approaches
 - Expected health consequences to the victims of the Chernobyl accident would be different from atomic bomb survivors
 - External whole body radiation versus exposure from fallout of radioisotopes
- Situation in Japan earthquake and tsunami

Need for research on sex and gender differences

- “There is a general lack of research on sex and gender differences in vulnerability to and impact of disasters”
 - World Health Organization
- Evidence of greater vulnerability of women than men when disasters strike
 - Women and girls more vulnerable to sexual abuse in disaster situations
 - Sex industry often becomes part of the interaction between refugee or displaced population and local community

Conclusions

- Disaster preparedness and response involve complex ethical decisions arising from
 - Uncertainty about severity, where impact will be worst, whether and how preparations will work
 - Conflicting ethical principles regarding whom to save
 - Difficulty planning and coordinating different governmental and humanitarian agencies
 - Difficulty predicting responses of individuals and community
- Lessons learned from past episodes should be recorded and applied in future

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