New Horizons in Disaster Management

Medical Reserve Corps
November 20, 2016
Which camp is at higher risk for cholera?
WOODSTOCK
94
SAUGERTIES
New York
August 13th & 14th

MORE DAYS
OF PEACE & MUSIC
A story of disaster risk reduction...
15 years later...
Marion, where the afternoon twister cut its deadly path, going east parallel to Illinois 13 along Stockton and Boulevard avenues
All deaths occurred during the impact phase.


Keim, 1981
When do most disaster-related deaths occur?

Pre-impact

Mitigation

Preparedness

Prevention

Recovery

Response

Post-impact

IMPACT!!!
Natural history of disaster-related injuries

- Seconds to minutes: “The Golden Hour”
- EXTREMELY BRIEF INCUBATION PERIOD
Evolution of “Golden Hour” after Combat Injury

PRE-2015
- Location-based
- Fixed Level or Echelon of Care

2015 & BEYOND
- Physiology-based
- Advanced Resuscitative Capability

60 minutes
10 reasons why disaster rescue is often TOO LITTLE, TOO LATE

REASON #7 (out of 10)

Most disaster deaths occur during the disaster impact when even local rescue is impossible to deploy

Available via free download at: www.disasterdoc.org
Why Zika Needed An Ounce of Prevention

Emergency Response, Doctrinal Confusion, and Federalism in the Deepwater Horizon Oil Spill

International Business Times

Hurricane Sandy Anniversary 2014: Billions Of Dollars In Federal Aid Still Unpaid

Needless delays frustrate thousands of Hurricane Sandy victims still waiting for city aid: investigation

Who's to Blame for Delayed Response Katrina?

Indonesia Aid Efforts Delayed

Slow Ebola response cost thousands of lives:
An Evolution in Approaches

- Floodplain Management
  A New Approach for a New Era

- Flood Preparation Handbook
  (ISO 31000)

Risk Management

Preparedness (ISO 31000)

Response

@disasterdr
DisasterDoc
DisasterDoc
DisasterDoc
DisasterDoc
What is risk?

Risk is the probability that an event will occur.

In epidemiology (the study of health risk determinants) it’s used to express the probability that a particular outcome will occur following a particular exposure.

Causes → Effects

Causes:
- Hazard
- Exposure
- Vulnerability

Effects:
- Mortality
- Morbidity
- Displacement
- Loss of livelihood

Risk Reduction → Risk Acceptance

@disasterdr  DisasterDoc  DisasterDoc  DisasterDoc
Disaster risk reduction (DRR) for health

What is DRR?
• Preventing disaster-related adverse health impact before it happens
• Deals with the root cause

Why DRR?
• Majority of disaster deaths occur during impact phase
• More effective in reducing mortality
• 4-7 times more cost effective
Simple is good
What is a hazard?

“A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage”

Translation: “Dangerous stuff”
Examples of hazards:

- Floods
- Earthquakes
- Typhoons
- Biologicals
- Radiation
- Tornadoes
What is exposure?

Exposure
Any condition which provides an opportunity for a hazard to contact the body

Translation:
“Ewwww…”

Links JM, Principles of Exposure, Dose, and Response Johns Hopkins University, 2006
“The characteristics and circumstances of a (person) that make them susceptible to the damaging effect of a hazard”

Translation...

“What is vulnerability?

“Could get hurt”
Reducing exposures

Floodplain management
  • *Dams, levees, weirs*

Population protection measures
  • *Evacuation*
  • *Mass care*

Land use planning and regulation

Building codes

PPE, sanitation/hygiene
Tornado death rates are decreasing in the US

WHY?

LESS EXPOSURE
- Improved forecasting and early warning
- Improved communication
- Changes in construction

NOT because of the health sector

(Blasphemy!?)

Reducing vulnerability

Health promotion
Health care
Poverty reduction
Community planning
Immunization
Education
National Prevention Strategy

Increase the number of Americans who are healthy at every stage of life.

Healthy & Safe Community Environments
Clinical & Community Preventive Services
Tobacco Free Living
Preventing Drug Abuse and Excessive Alcohol Use
Reproductive and Sexual Health
Mental and Emotional Well-being
Empowered People
Elimination of Health Disparities
Active Living
Healthy Eating
Injury and Violence Free Living
Mapping human vulnerability

Miami-Dade County, FL - Vulnerable Populations (Poverty and Elderly Combined)

Emergency Response Preparedness Map Series

Geospatial Research, Analysis, and Services Program, Division of Emergency Preparedness and Response, CDC

Map Purpose:
This map portrays US Census Tract populations to determine areas that are most vulnerable during a disaster.

Data Sources:
Transportation information provided by FOMA
GRASP GOLD, ODS Data
Georeferenced Data provided by NOAA

Percent in Poverty - US Census 2000

US Census Tracts
Percent in Poverty
- 0% - 5% in poverty
- 6% - 20%
- 21% - 40%
- > 40% in poverty

Percent Elderly Population

US Census Tracts
Percent Aged 65 yrs or older
- 0% - 19% Aged 65 yrs or older
- 11% - 20%
- 21% - 50%
- > 50% Aged 65 yrs or older

Percent Poverty and Elderly Combined
- Low
- Medium
- High

Major Highways
Secondary Highways

Total Population - US Census 2000

US Census Tracts
Total Population
- 0 - 1000 persons
- 1001 - 2000 persons
- 2001 - 5000 persons
- > 5000 persons
WHO website links to DisasterDoc Blog
Why should MRC lead DRR?

Adaptation to disasters occurs at the community level

MRC can play an active role in reducing disaster risk by:

- **Reducing susceptibility**
  - “Health people”

- **Reducing exposure**
  - “Healthy homes”

- **Increasing resilience**
  - “Healthy communities”

---

Thank you

For more info see

http://disasterdoc.org