Module: Public Health Disaster Planning for Districts

Organization: East Africa HEALTH Alliance, 2009-2012

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Floods and Landslides
Background & Nature of Floods

- **FLASH FLOODS**
  - **Rapid** onset
    - Rain
    - Structural failure
  - **Brief** duration
  - **Steep** terrains, canyons
  - Little or **no** warning
Background & Nature of Floods

- **RIVER FLOODS**
  - **SLOW** onset
  - **LONG** duration
  - **Concave** terrains
  - **Some** warning
Scope & Relative Importance of Floods

- Floods account for 40% of all world disasters
- Floods cause the most damage worldwide
- During 160 floods worldwide between 1980-1985:
  - 120 thousand were killed
  - 20 million left homeless
Most Lethal Floods

- Most lethal floods in modern history
  - 1887: 2 million dead
  - 1931: 4 million dead
  - 1938: 1 million dead
In Uganda

• Flooding is an emerging public health problem in the region
• Every year, floods affect more and more people in different localities
• Closely associated with heavy rains (natural) and human settlement patterns (technological)
Uganda

- Bududa (2010)
- Butalejja (2010)
- Kisoro (2010)
- Soroti (2007)
- Kumi (2007)
- Kampala (Every Year)

- Landslides can be predicted and risk reduction and mitigation activities can be initiated
Factors that Contribute to Floods

• **Topographical makeup**
  – (e.g. Kyoga, Aswa floodplains)

• **May accompany other disasters**
  – Heavy rains and river surges
  – Breakdown of river embankments
  – Hurricane sea surges
  – Earthquake-related tsunamis
  – Landslides or volcanic eruptions
Factors that Affect Flood Occurrence & Severity

• Natural factors
  – Geological
    • Soil character
    • Eruptions
  – Seasonal variation
    • I.E.... Monsoon, Prevailing winds
  – Climatic factors
    • I.E... El nino
  – Topographical factors
    • Incline
    • Basins & canyons

• Human factors
  – Urbanization
  – Deforestation
  – Over-grazing
  – Improper construction
  – Inadequate safeguards
Flood-Related Mortality

- Most deaths occur in flash floods
- Most deaths are due to drowning
- Death rates vary according to country, rate of onset and community resilience
Public Health Impact of Floods

- Medical & public health needs can persist for many months after river floods.
- Normal health care delivery is disrupted
- Chronic illness is worsened long term
- Serious infectious diseases rarely increase
- Food & water shortages often develop
Key Health & Safety Response Issues After Floods

- Water quality
- Food safety
- Cleanup activity safety
- Sanitation & hygiene
- Disease vectors: insects, rodents, wild animals
- Chemical hazards
- Mental health for responders & victims
- Temporary settlement
- Early warning for subsequent floods
Outreach support
After Floods

• Not all victims can seek help
  – Geographical limits
  – Monetary limits
  – Disability
• Prevent convergence on limited resources
• Set up search and rescue efforts
• Set up immediate relief efforts
• Enhance surveillance & situational awareness
Prevention & Control Measures for Floods

- Mitigation
- Surveillance and early warning (Measurements that predict)
- Rapid Needs Assessment
- Mechanisms for Search and Rescue
- Mechanisms for immediate control of water surges
- Public information
- Floodplain management
- Responsible management of human settlements
Landslides
Introduction

• In Uganda, landslides are a focal problem in areas that are have topographic risk
• Due to population pressures and land-use implications, people are moving higher and higher into high risk areas
• Landslides can be predicted and risk reduction and mitigation activities can be initiated
Secondary Disasters Caused by Landslides

- Fires & explosions
- Building collapse
- Dam failures & floods
- Release of toxic materials
Contributing Natural Factors

- Geophysical factors
- Topographic factors
- Meteorological factors
Contributing Human-Made Factors

• **Structural Factors**
  – Types of houses
  – Land-use patterns, demography, and population pressures
Health Impact

- **Immediate**
  - Minor injuries, lacerations
  - Crush injuries to head & chest
  - Hemorrhage & hypovolemia
  - Asphyxia, drowning
  - Burns

- **Delayed**
  - Dehydration
  - Environmental exposure
  - Crush syndrome
  - Wound infection & sepsis
  - Smoke & dust inhalation
Health Impact

• Landslides do not often create significant outbreaks of new infectious diseases
Prevention & Control Measures

- Avoid construction in areas of high geological risk
- Safer construction
- Drills, Scenarios & Planning
- Planning for displaced populations (SPHERE)
- Planning for emergency services
- Search & Rescue

Source: AP Photo
Saving Lives

- Landslides have potential to cause MCIs
- Rapid assessment of impact
- Timely & appropriate disaster response
- Surveillance for injuries & diseases
- Dissemination of public health information
- Environmental health & control measures
- Follow up epidemiology

Source: AP Photo
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Slide 12, Image 1: [mooi], "Landslide cuts off No.3 freeway, Taiwan", flickr, http://www.flickr.com/photos/mooitw/4551530772/, CC: BY-NC-ND 2.0, http://creativecommons.org/licenses/by-nc-nd/2.0/


