Module: Public Health Disaster Planning for Districts

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Resource Title: Session 3.1 Fire

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Fire

Compiled By The Eastern Africa Disaster Management Training Core Team

Narrated by Dr. Roy William Mayega
Understanding Fire: Definition

- The uncontrolled burning of settlements, forests, vehicles and vessels
- A very frequent form of hazard in Eastern Africa
- May be accidental or deliberate (arson)
- May be natural or technological
Elements of Fire

Represented by a triangle:

Fuel                   Heat

Oxygen

If any of the three is removed then fire will not exist
Impact of fire

- Burns and Shock
- Disabilities and Deaths
- Damage and loss of property
- Environmental degradation and pollution
Factors that influence fire

- Vegetation and weather
- Combustibles and toxicity of flammables
- Absence of warning and Lack of knowledge
- Magnitude of exposure and age of victim
- Availability of fire fighting equipment
- Housing characteristics and absence of exits
- Access to nearest health facility
Causes of Fires

i) Electrical causes
- Broken and dirty insulators
- Loose flexible wiring
- Perishable or damaged insulation of wiring
- Bad connections e.g. overloading
- Incorrect fusing and poor earthing
- Current traveling via a gas pipe
Causes of Fires

i) Human causes
- Smoking
- Cooking and Unattended fire
- Appliances left on cookers or irons
- Aerosols and flammable liquids
- Careless handling and Playing with fire
- Arson
- Misuse of appliances
Class A Fires

• Resulting from ordinary combustible materials such as wood, paper, grass, cotton (clothes) etc.

• **Extinguishing media:** Water, dry chemical powder, sand and fire beating
Class B Fires

- **Result** from flammable liquids such as kerosene, petrol, spirit, cooking fats etc.

- **Extinguishing media**: Foam and Dry chemical power
Class C Fires

- Involve gases such as methane, propane, butane etc.
- Gases can produce explosions

- **Extinguishing methods:** First close the valve of the container if possible
  - You can also use dry chemical powder
Class D Fires

• Result from in metal heating such as Aluminum, Magnesium etc.

• **Extinguishing media:** Dry chemical powder
Electrical Fires

• Do not constitute a class on their own
• It becomes either a class A, B, C or D fire

• **Extinguishing methods:** Cut off the electricity then use extinguishing media
  – Recommended media is Dry chemical powder or carbon dioxide
Methods of Fire Extinguishment:

i) Smothering: Process of removing oxygen (by blanketing)

ii) Starvation: Process of removing fuel (by removing unburnt materials)

iii) Cooling: is the process of removing heat (spraying water)
Public Health Disaster Planning for Districts
Demonstration: Portable Fire Extinguishers

• We shall have a brief demonstration on colour codes for fire extinguishers and their use

• **Question:** Examine the different types of fire extinguishers you see and read their labels
  – What is their content?
  – What classes of fires are they indicated for?
  – Kindly check the expiry dates and service situation

• If possible, we shall also have a demonstration on the actual use of an extinguisher
Portable Fire Extinguishers

- Are the ‘FIRST AID FIRE FIGHTING APPLIANCES’ (FAFFA)
- Normally operated by one man
- Types:
  - Water – Red label
  - Foam – cream label
  - Dry chemical powder – blue label
  - Carbon dioxide – black label
- Nowadays most extinguishers are red and are only differentiated by a colour code
Safety Implications of Hand Held Extinguishers

• Always note the following hazards:-
  – Electrocution. Water/foam extinguishers are good conductor of electricity
  – Inhalation of dry chemical powder, smoke and toxic gases may cause respiratory problems
  – Frostbite from Carbon dioxide
  – Failure rate higher; Weight
  – Noise, especially carbon dioxide type
  – Impaired vision e.g. dry chemical powder
Pre Hospital Fire Management

- Organize and establish control authority
- Extinguish the fire
- Conduct Rapid Needs Assessment
- Search and Rescue and evacuation of victims
- Initial triage and First Aid to the victims
- Transport victims to health facility
- Use available resources and mobilize for others if needed
Hospital Based Operations

- Activate Hospital contingency plans
- Assess magnitude, severity, number of victims
- Establish advance teams to the fire site
- Establish receiving mechanism and prepare admission ward
- Identification of burn emergency team
- Treat and manage victims according to degree of burns
Hospital Based Operations

- Refer the patient to higher health institutions
- Establish special burn treatment centres
- Alleviate shock by fluids, transfusion, surgery etc
- Certify death if any and provide mortuary facilities
- Keep records and inform appropriate authorities
- Monitoring, evaluation and rehabilitation
Fire Prevention

• What factors increase fire risk and how do you think fires can be prevented in institutions in your district?
Fire Prevention

- Building standards that incorporate hazard reduction
- No smoking signs
- Orderly arrangements of goods to avoid spontaneous ignition
- Provide space between goods and avoid congestion in dormitories
- Fire segregated walls where applicable
- Preventive measures against easy spread of fire
Fire Prevention

- Good Housekeeping: Regular checks on practices especially in vulnerable groups like schools
- Create awareness about the impact of fires to the community
- Collaborate with Fire and Rescue departments
- Reinforce legislations which control the buildings requirements
- Set bylaws on preventing bush fires
Fire Protection

• Installation of fire equipment inside and outside
• Fire escapes, exits and escape signs
• Protect building from extensive damage resulting from fires
• Aim is to protect people and properties but assure the continuity of operations
Fire Protection

- Hand appliances: Fire Extinguishers; Buckets of sand
- Fixed installations (using water): Risers; Hose reels; External private hydrants
- Fixed installations (not using water): Foam; Gases; Dry chemical powder
- Automatic Sprinkler systems: Detect and extinguish fires, give information, prevents fire spread. Discharge water/foam/CO_2 in form of spray
Fire Drills

• Should cover:-
  – Fire alarm effectives
  – Timelines of notification
  – The fire teams conformance with established fire procedures
  – Safe evacuation and assembly

• Emphasis on orderly evacuation rather than on speed
  – Participants assemble to a predetermined location
  – Remain there till a roll-call and dismissal signal is given
Evacuation

• Removal of people from an area of danger to a safe area in an orderly manner to prevent confusion and panic
  – Risk of injuries should be minimized by following the required instructions
  – Routine Emergency drills (evacuation and assembly) every 3 months
  – Can be announced or unannounced drills
Evacuation

• Evacuation Assembly Point:
  – Selected area for workers (staff) to run and assemble
  – Should be pre-determined by the staff
  – If a staff member is not seen during the roll call then fire team conducts search and rescue

• Rendezvous point for evacuation:
  – A meeting point for first responders such as fire engines, ambulance, fighters, mobiles etc.
  – Should also be predetermined
  – Can be changed due to wind direction and fire situation
Thank you for the attention!