Emergency Preparedness

An Overview
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Personal examples anyone?
Please share, if you are comfortable doing so.
Recent examples:
- Severe storms, flooding, torrential rains
- Active shooter – public places, hospitals, schools, and universities
- MERS CoV travels to US – 2014
- Ebola outbreak in western Africa – 2014
- Zika Virus - 2016

What threats? Who’s in charge?
- Active Shooter
- Severe Weather
- Fire
- Pandemic/Epidemic Flu or Illness
- Mass Casualty Event

Each facility/community needs to do a Hazard Vulnerability Analysis

Phases of Emergency Management
- Mitigation
- Preparedness
- Response
- Recovery
- Mobilization of resources to meet the needs of the community in response to an emergency event.
- Activities, actions, procurements, planning, training, and interjurisdictional cooperation designed to increase response readiness to identified hazards in the community.
- Actions taken before an event to reduce the impact to life and property.
- Returning the community to its pre-event condition

**FEMA (& later JCAHO) Model**

NOTE: Connect the phase with the definition. They are all mixed up.

Emergency Preparedness Emerges...
Shifts...

- “Bioterrorism” to “Pandemic” to “All-Hazards”
- National Response “Plan” to “Framework”
- NIMS (National Incident Management System)
- HICS (Hospital Incident Command System)
  - http://www.emsa.ca.gov/disaster_medical_services_division/hospital_incident_command_system

Incident Command

- Incident Commander
- Command Staff
- Operations
- Logistics
- Planning
- Administration/Finance

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Hospital Preparedness

- The Joint Commission moved emergency management out of “Environment of Care” into a set of regulations with 6 critical areas:
  - Communication
  - Resources and assets
  - Safety and security
  - Staff responsibilities
  - Utilities management
  - Patient and clinical support activities


Numbers and types of Exercises

- “The organization must test its Emergency Operations Plan twice per year, either in response to an actual emergency or in a planned exercise.”
- “Tabletop sessions, though useful, are not acceptable substitutes for exercises.”
  Source: Joint Commission, 2007

Exercise Planning and Evaluation

Homeland Security Exercise and Evaluation Program (HSEEP)
- A capabilities and performance-based exercise program which provides a standardized policy, methodology, and terminology for exercise design, development, conduct, evaluation, and improvement planning.
- Website: https://hseep.dhs.gov/

What happens when victims greatly outnumber responders?

Sorting through tragic circumstances...

Answer: Triage

- Triage is a French word which means “to sort.”
- Triage is used when there are many more victims than rescuers.
- Usually resources are limited.
- Do the greatest good for the greatest number.
- NO CPR!!!

Issues at the scene...

- Victims
- Responders
- Environment (Vehicles, Buildings, Trees, Flooding, Fire, Chemicals, etc.)
- Spontaneous Untrained Volunteers
General Procedures

• Stop, look, listen, and think.
• Conduct voice triage after identifying yourself: “If you can walk, come to the sound of my voice.” Assign someone to tag those who respond to voice triage.
• Evaluate each remaining victim and tag them. Systematically evaluate the scene.

Triage “tags”

Minor: any injuries can be treated with basic first aid
Delayed: injuries requiring medical treatment, but not life threatening, okay to delay care
Immediate: life threatening injuries requiring rapid treatment
Deceased/Morgue/Dead (Black)

Triage Procedure: Step One

• Open airway
• Check Breathing (breaths per minute)
  • >30 indicates shock. Treat shock and tag immediate.
  • <30 should move to Step Two.
• No breathing after two attempts to open airway indicates death. Tag black.

Triage Procedure: Step Two

• Check circulation/bleeding
• Control severe bleeding
  • Bandages, pressure points
• Blanch test (nail beds, capillary refill)
  • If normal color takes >2 seconds to return, tag immediate.

Triage Procedure: Step Three

• Check Mental Status
  • Give simple command. “Squeeze my hand.”
  • If no response, treat for shock and tag immediate.

If victim passes all tests

• Tag patients that pass all triage tests as delayed.
• If a victim fails one test, tag them immediate. Immediate victims require 3 interventions (on next slide).
• Every victim gets a tag.
Interventions for immediate

- Airway control
  - Head tilt/Chin lift
- Bleeding control
  - Direct pressure/pressure bandage
  - Elevation above heart
  - Pressure points (Brachial-arm, Femoral-leg)
- Treatment for shock (limited resources)
  - Lay on back, elevate feet, open airway
  - Control bleeding, maintain body temp

Sounds easy, doesn’t it?

- Remember time and resources are limited.
- Recruit help from survivors who are able.
- Avoid pitfalls:
  - Poor planning
  - Indecisive leadership
  - Too much focus on a single victim
  - Triage vs. Treatment
- Source: CERT Participant Manual, edited for Omaha Metro, OFD approved.

What if?

The idea of triage is comfortable when the event is “over” or the threat is gone.
What about...
- Aftershocks?
- The vehicle is explosive?
- The spill is flammable?
- A gunman not captured or found?
Scene safety vs. action

What prepares responders for the emotional challenges in a disaster?

Disaster Mental Health Concepts...

Concepts of Disaster Mental Health

- Disaster mental health assistance is often more practical than psychological in nature.
- Disaster mental health services must be uniquely tailored to the communities they serve (ethnicity, age, disability, etc).
- Survivors respond to genuine concern.

Phases of a disaster...

From: http://www.bt.cdc.gov/mentalhealth/primer.asp
Concepts of Disaster Mental Health

- Mental health workers need to set aside traditional methods, avoid the use of mental health labels, and use an active outreach approach to intervene successfully in disaster.
- Disaster stress and grief reactions are normal responses to an abnormal situation.
- Social support is necessary for recovery.

Psychological First Aid

- Immediately following a disaster or terrorism event, psychological first aid (PFA) is an approach to assisting children, adolescents, adults, and families.
- It can be delivered by all responders.
- Decreases distress.
- Encourages short-term and long-term adaptive functioning.
- Mental health specialists should be embedded in a variety of response units.

Self-care for responding to disasters

- Manage workload, delegate tasks.
- Balance lifestyle: exercise, healthy eating, adequate rest, maintain social supports.
- Stress reduction strategies: deep breathing, meditation, leisure activities, interaction with co-workers.
- Self awareness: know your own warning signs for excessive stress.

What you see...

Omaha, NE December 5, 2007

Watch for burnout!

- People in a disaster response role are stressed in many ways:
  - Long hours
  - Overwhelming survivor needs/demands
  - Ambiguous roles
  - Exposure to human suffering
  - Disaster victim identification

What is involved in evacuating a healthcare facility?

Evacuation vs. Shelter-in-place
Evacuation Decisions

Depends on the situation:
- Storm warning
- Fire
- External event
- Internal event
- Other local facilities impacted?

Source: Hospital Evacuation Decision Guide, AHRQ 2010

Priorities...

<table>
<thead>
<tr>
<th>Top Line</th>
<th>Mid-Level</th>
<th>Bottom Line</th>
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</thead>
<tbody>
<tr>
<td>Escape routes</td>
<td>Alternate routes</td>
<td>Shelter in place</td>
</tr>
<tr>
<td>Evacuation area</td>
<td>Shelter in place</td>
<td>Escaping from building</td>
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</tbody>
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Source: The Nebraska Medical Center Evacuation Policy

Active Shooter Situations...

- Malls, movie theaters, schools, and hospitals.
- VIDEO LINK: Surviving an Active Shooter Event [Link]
- Nebraska Law, LB 677 enacted 18 July 2012.

Emergency Lockdown Resources

- HEROES Website:
  - Two versions
    - Healthcare facility
    - School

What do I need to know about chemical exposure?

Labels, placards, protective gear, and more...

Chemical agents:

- Signs of a chemical incident:
  - People running or collapsed
  - Evidence of leak, fire, or vapors
  - Unusual colors, odors, or sounds
- SIN: Awareness Level Response
  - Safety
  - Isolate
  - Notify
Resources...
- Ask victim, family, or caregivers
- Container labels and placards
- Material Safety Data Sheets
- Poison Control
- Local Haz Mat Team
- Emergency Response Guides

Emergency Response Guidebook
PURPOSE: Basic Safety, Identification, and Initial Actions

Organization:
- White: Basic Information and Instructions
- Yellow: UN #, Guide #, & Material Name
- Blue: Material Name, Guide #, & UN #
- Orange: Chemical Information
- Green: Isolation & Protective Actions

Hazard Classes
- Explosives (Class I)
- Compressed Gasses (Class 2)
- Flammable/Combustible Liquids (Class 3)
- Flammable Solids (Class 4)
- Oxidizers & Organic Peroxides (Class 5)
- Poisonous & Infectious Materials (Class 6)
- Radioactive Materials (Class 7)
- Corrosive Materials (Class 8)
- Miscellaneous Hazardous Materials (Class 9)
- Unknown Chemicals

NFPA 704 System
Blue = Health
Red = Flammability
Yellow = Reactivity
Color: Higher numbers = more dangerous (0-4)
White = Specific Hazards
- Examples - acid, alkali, corrosive, oxidizer, radioactive, reacts with water

HAZMAT lingo
- HOT: Scene area and areas of wind drift
- WARM: Outside of hot zone, gross decon area, emergency care in PPE
- COLD: Area considered clean, safe to give routine patient care

Levels of Personal Protective Equipment (PPE)
Levels A, B, C and D (in order):
Level C PPE

- Many steps need to be followed carefully.
- HEROES Posters are available:

![Posters](image)

**Posters for:**
- Type C, 3M
- Type C, ILC Dover
- Type B
- Suit Support

Chemical Agent Exposure: Response to rapidly acting agents

- Protect yourself (PPE)
- Remove victim from hot zone
- Maintain Airway
- Decontaminate
- Who to call?
  - Regional Poison Control Center
  - 1-800-222-1222 (National Hotline)

Two agents of interest

- Cyanide
  - Naturally occurring in some plants/foods
  - Tobacco smoke, vehicle exhaust, burning plastics
- Organophosphate
  - Nerve Agents
  - Pesticides (sometimes worse symptoms)
  - Why? Important pre-hospital antidotes

Learn More...

Cyanide
- [http://www.cyanokit.com/](http://www.cyanokit.com/)
- Also look up Cyanide Antidote Kit.

Organophosphates (pesticides)
- [http://emergency.cdc.gov/agent/nerve/casedef.asp](http://emergency.cdc.gov/agent/nerve/casedef.asp)

Chempak: Call Regional Poison Center

- Access to Chempak (specifically for organophosphate toxicity).
  - This is a Federal asset for response to organophosphate (needed rapidly so forward deployed to the states).
- Surveys hospitals statewide for antidote availability annually.
- Special Note:
  - Some hospitals pay annual fee to poison center and can call anytime for free...others do not and there is a charge to the facility. If chempak is needed, fee is **always waived**.

Chempak Availability

- Dimensions: 5 foot x 5 foot x 18 inches
- Two kinds (12 total): EMS (treat 454 auto-injectors) & Hospital (treat 1000 vials)
- Local resource: Contact poison control to determine need for accessing ChemPak (no facility charge).
- Nebraska Regional Poison Center
  - 1-800-222-1222
What does the Chempak look like?

More information...

Chem Paks have contained Duodote kits since 2010.
Contact at Nebraska DHHS:
Russell J. Wren, MPA, EMT-B
Office: 402-471-3438
russ.wren@dhhs.ne.gov

HEROES Website:
• Mark 1 kit/Duodote kit videos online

How do you decontaminate a patient?
Keywords: Wet and Naked

Decontamination

• Any victim of a chemical incident should be decontaminated prior to entering a hospital.
• This should occur even if the patient was decontaminated at the incident scene UNLESS the victim is in severe distress. In that case, modified decontamination procedures may be warranted.

At-Hospital Decontamination
• Maintain warm and cold zones.
• Victims must remove ALL clothing (removes 95% of the problem).
• Wash, wash, wash... dilution= solution.
• Where does the dirty water go?

Decontamination Methods

• Key Concepts:
  • Soap and Water: Soap molecules are composed of a head (that likes water) and a tail (that likes oils).
  • The soap breaks the surface tension of the water and makes the water wetter. Also attracts the water soluble and oil soluble contaminants and sends them away.
Directed Self-Decontamination

What can we do in the meantime if patients begin arriving?

- Personal privacy kits:
  - Large opaque poncho, plastic bags for contaminated clothing, small clear plastic bag for valuables (kept with victim).
  - Should have simple directions (in multiple languages if possible).

Decon Methods

Key Features of Decon

- ALL clothing removed and safely contained.
- Dish soap and water (wipes if resources are limited).
- Pay special attention to exposed areas when washing.
- Wash feet last and well as they will likely come in contact with hospital surfaces.
- Have blankets and towels available to reduce exposure after the washing.
- Weigh privacy against health status (hose and baby pool?).

PPE Lessons Learned: Chem vs. Bio

How do you decontaminate a patient exposed to radiation?

Scary stuff...

Radiation Incidents

- How were the victims exposed?
  - Dirty Bomb
  - Accidental exposure
- Initial Action
  - Stabilize any life threatening problem
- Next steps...
  - Check for external contamination
  - Decontaminate & retest: Intact skin, body orifices, wounds
Radiation Injury

- Signs and Symptoms:
  - Gastrointestinal:
    - Nausea & vomiting
    - Abdominal cramping
  - Neurovascular:
    - Fever, headaches, low BP
  - Neurological/Cognitive Deficits
  - Cutaneous:
    - Altered sensation, ulceration, hair/nail loss


Symptom Severity & Triage


Treatment Resources

- www.remm.nlm.gov

Portal Monitoring System

- For radiation contamination detection
- Reduces public concern/panic
- Several in Omaha area
  - Two nuclear plants in close proximity
- Walk-thru testing
  - Shower available if contaminated
  - Retest after decontamination

What should I know about emerging infectious diseases and bioterrorism?

Infection control and biocontainment care

Key Concepts

- Infection control measures for all disciplines
- Understand precaution terminology
- Proper use of personal protective equipment
- Negative airflow rooms
- Swift isolation and local public health contact
Biocontainment Care

- When would we use a biocontainment facility?
  - Bioterrorism or Lab exposure
  - Naturally occurring disease/Early pandemic
  - Highly dangerous drug resistant organisms
- Historically, why did we need such capabilities?
  - Andromeda Strain (1969 Book; 1971 Film)

Biocontainment Transport

- Independent air handling with HEPA filtered exhaust.
- Double door access and egress.
- Areas to change into scrubs and “shower out”
- Staff recruitment plan and educational program
- Special processes: Linen/Garbage handling, Staffing
- KEY: Community & stakeholder support, strong leadership

What about Nebraska?

- Volunteer staff activated by medical director and state officials
- Employed in other areas of the hospital with specialized training
- Special protocols for specific procedures
  - Entering and exiting the unit
  - Transporting a patient
  - Collecting laboratory specimens
  - Sealing and handling patient remains

The Nebraska Biocontainment Unit:
Biocontainment Research

- Cleaning Processes: Chlorine Dioxide Gas
- Bed bugs?
- Mathematical Modeling of Air Flow
- Testing the Autoclave
- Personal Protective Equipment Behaviors

When preparedness meets response

Ebola algorithm

- Febrile > 38.6 degrees Celsius
- Symptoms: severe headache, muscle pain, vomiting, diarrhea, abdominal pain, or unexplained hemorrhage
- Collect travel history, exposure/risky behaviors.
- Incubation period is 21 days.
- If suspected after history collected:
  - Do not draw laboratory specimens.
  - Contact local public health.
  - Call for infectious disease consult if available.

Ebola Disease Progression

What to wear…three levels.

Moving through hospital corridors
Care in the NBU

Central line placement

Passing the time...

What is the best way to get involved in emergency preparedness?
Best option: Through an organization

Why Emergency Preparedness?
- Problem solving (engagement)
- Teamwork (boost morale)
- Communication & Organization
- Everyday applications (small disasters)
- Legal implications after a disaster occurs
- Psychological (guilt)
  - “If only we had prepared....”

Many options...
- Community Emergency Response Team (CERT)
- Medical Reserve Corps (MRC)
- American Red Cross
- Salvation Army
  ...and many more.
Staying connected…

HEROES is a living project.
- Website has ‘contact us’ feature.
- ‘Like’ the HEROES facebook page.
- Share with us your educational needs related to emergency preparedness.
- Beth Beam
  - 402-559-6547
  - ebeam@unmc.edu

References


Thanks…

- Nebraska Biocontainment Unit
- The Nebraska Medical Center, Omaha
- Creighton University Medical Center, Omaha
- Chase County Community Hospital, Imperial
- Robin Zagurski, LMHP, CSW
- Center for Preparedness Education: www.preped.org
- Centers for Disease Control: www.cdc.gov