Lesson Six

The DISASTER Paradigm™

Lesson Learning Objectives

Given a disaster or public health emergency scenario:

- Identify early warning systems, indicators, and clues that may signal onset
- Given list of terms from incident management lexicon, match each to its definition
- Describe important health, safety, and security risks to be considered
- Describe personal, institutional, and community protective measures to prevent and control spread of disease

Continued

Lesson Learning Objectives

Given a disaster or public health emergency scenario:

- Discuss the purpose and rationale for personal protective equipment
- Discuss the purpose and rationale for victim decontamination
- Define *surge capacity* in the context of health system response
- Given a mass casualty scenario, discuss the purpose of triage

Continued

Lesson Learning Objectives

Given a disaster or public health emergency scenario:

- Identify basic lifesaving and life support measures to minimize morbidity and mortality
- Describe situations and circumstances that may hinder safe evacuation of affected populations
- Identify strategies to ensure continuity of supplies and services to meet medical or mental health needs
- Describe the potential short- and long-term impact of event on recovery of local health system

The DISASTER Paradigm

Detection

Incident management

Safety and Security

Assess hazards

Support

Triage and Treatment

Evacuation

Recovery

The DISASTER Paradigm

Mnemonic device for all-hazards disaster response

- Uniform framework to address disaster recognition, response, and recovery
- Organizational tool for responders to assess individual and community needs and utilize available resources
- Mechanism for promoting consistency of communications among emergency responders and response agencies

Goals of Detection Process

- Determine existence of emergency situation that may overwhelm immediately available resources
- Protect personal safety and prevent harm to others
- Determine possible cause of the situation
- Alert authorities to plan for or initiate rapid and coordinated response

Lauren Hobart/FEMA

Priority: Personal Safety

Does anything appear out of the ordinary?

What possible hazards are present?

What resources are available to help?

What information can witnesses provide?

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Biological Emergency Clues

Illness:

- Out of range

  (Spike in influenza-like illness)
- Out of context
- Out of sequence
- Out of season
- Out of place

CDC Image

Chemical Emergency Clues

- Noxious or foul odor
- Rapid symptom onset
- Patients reporting common signs and symptoms
- Concentrations of dead, dying, or sick people
- Unexplained illness/death in young or healthy people
- Unexplained death of plants, fish, or animals
- Chemical dissemination devices present at the scene
- Low-lying clouds or vapors

Hundreds of people from the same location present to the local ED over a few minutes complaining of common signs and symptoms (eg, shortness of breath, skin and eye burning). This is most likely a result of:

1. Biological emergency
2. Mass hysteria
3. Chemical emergency
4. All of the above

National Incident Management System

- Standardizes command and control structure nationwide
- Provides standards for training, equipment, and other resources
- Clearly defines roles and responsibilities during disaster management

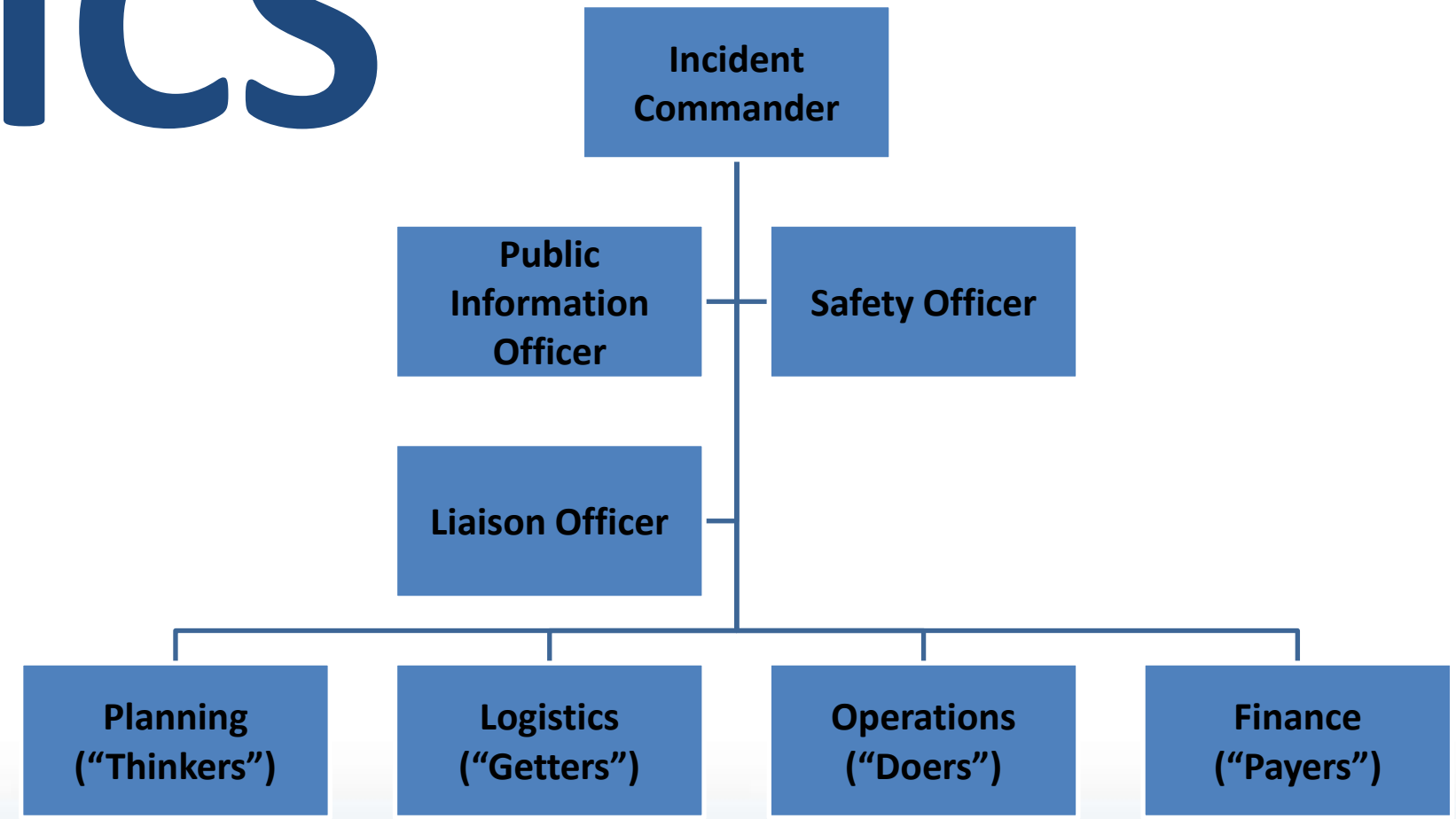
NIMS

Incident Command Systems (ICS)

- Unity of command
- Orderly line of authority
- Span of control
- Standardized and scalable response
- Clarity of message

Jocelyn Augustino/FEMA

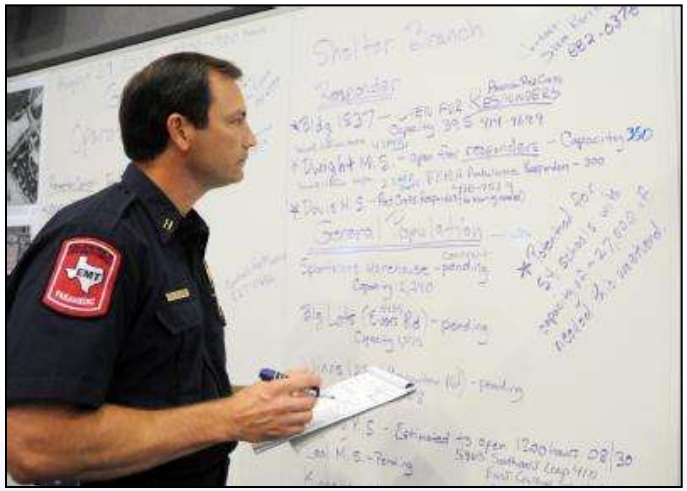
ICS



Tour of State EOC during 2011 Missouri River Flood, SDPB

Emergency Operations Center (EOC):

Central command and control location responsible for carrying out principles of emergency management at strategic level in emergency situation



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Safety and Security: DO

- Do protect yourself and others from harm
- Do communicate potential hazards to others
- Do enforce restricted access as directed
- Do proceed as though scene is contaminated
- Do remain vigilant for secondary hazards

Safety and Security: DON'T

- Don't show up as a spontaneous volunteer
- Don't enter scene without protection
- Don't become another casualty
- Don't contribute to traffic problems
- Don't disturb the scene

Possible Hazards at Scene		
Animals and insects	Environmental exposure	Hazardous material release
Blood/body fluid exposure	Equipment-related injuries	Motor vehicle crashes
Communication disruption	Explosions	Ruptured gas lines
Contamination (air, water)	Fire	Secondary explosive devices
Debris	Flooding	Smoke and toxic gases
Downed power lines	Gunman/snipers	Structural collapse

Risk Reduction Measures:
Personal Protective Equipment (PPE)

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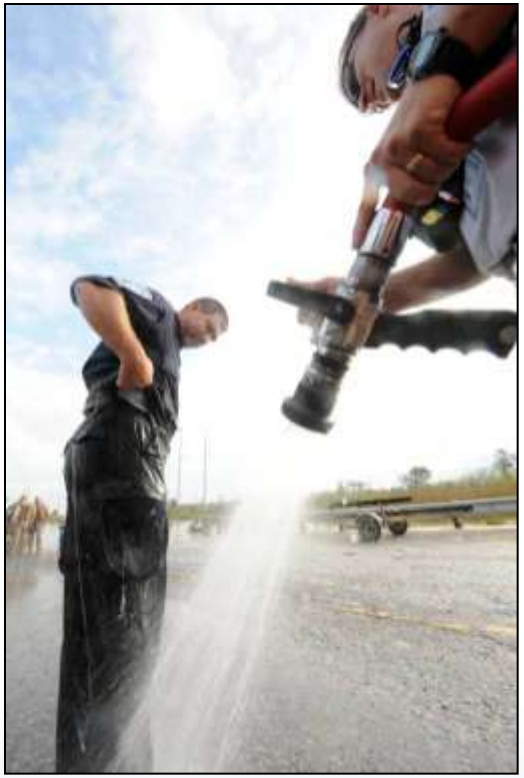
Purpose: Reduce potential exposure to chemical, biological, radiological, and infectious disease threats

Risk Reduction Measures:
Decontamination

Dry decontamination removal of all clothing, shoes, socks, jewelry, undergarments, and contact lenses

Wet decontamination dry decon-tamination, plus high-volume wash with soap and water, scrubbing of external body surfaces, and use of neutralizing/deactivating substances



Jocelyn Augustino /FEMA

Support: Human Resources

- Health professionals
- Firefighters
- Law enforcement
- Bomb squad
- Heavy rescue
- HAZMAT teams
- Construction workers
- Equipment operators
- Warehouse personnel

Larry Lerner/FEMA

- Administrators
- Photographers
- Housekeeping staff
- Truck drivers

Andrea Booher/FEMA

Triage

Definition: Sorting of patients by seriousness of condition and likelihood of survival

Goal: Help as many injured persons as possible with resources available

Mass Casualty Triage

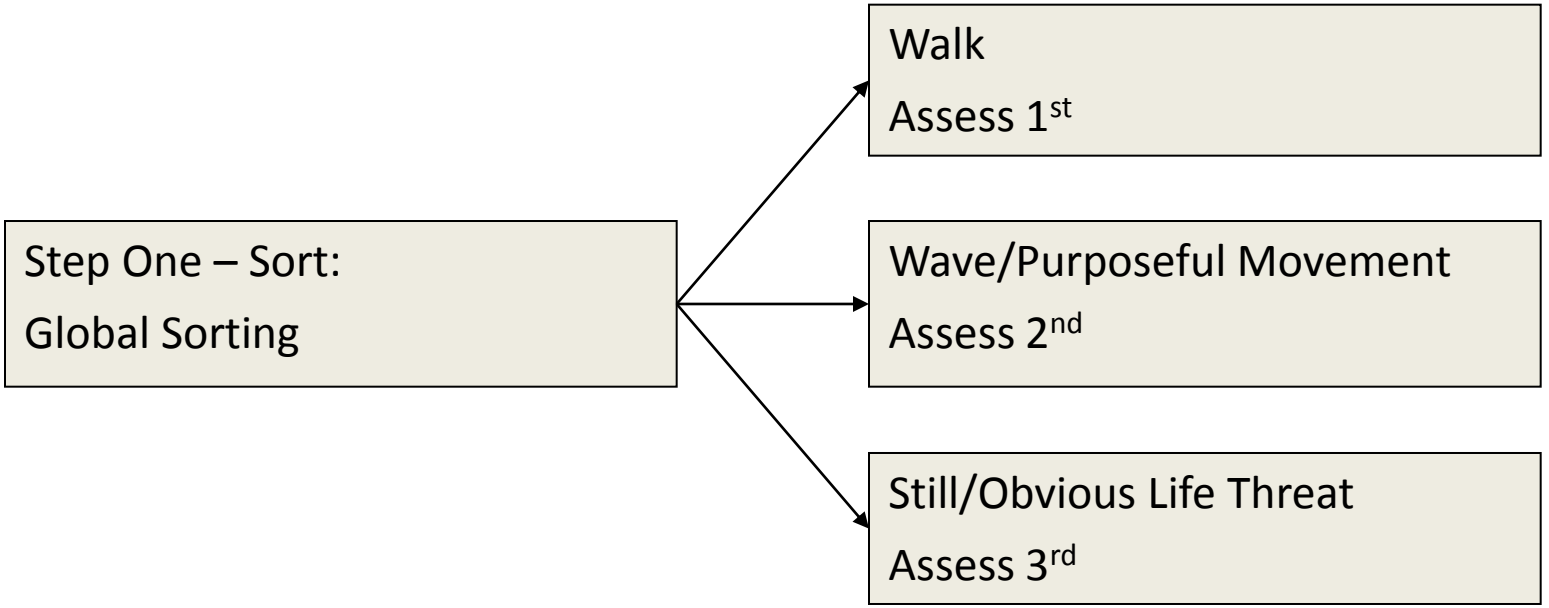
- Disaster triage involves categorization of casualties with severe injuries in need of medical attention
- Needs exceed available resources thus all casualties may not receive full medical care
- Field triage often performed by local first responders
- Knowledge of medical consequences of injuries is critical and particularly important for children
- All affected persons, injured or otherwise, cannot be attended to at once

SALT Triage

- Simple, effective tool that is easy to remember
- Allows response personnel to sort large groups of casualties
- Aids in determination of lifesaving interventions to administer

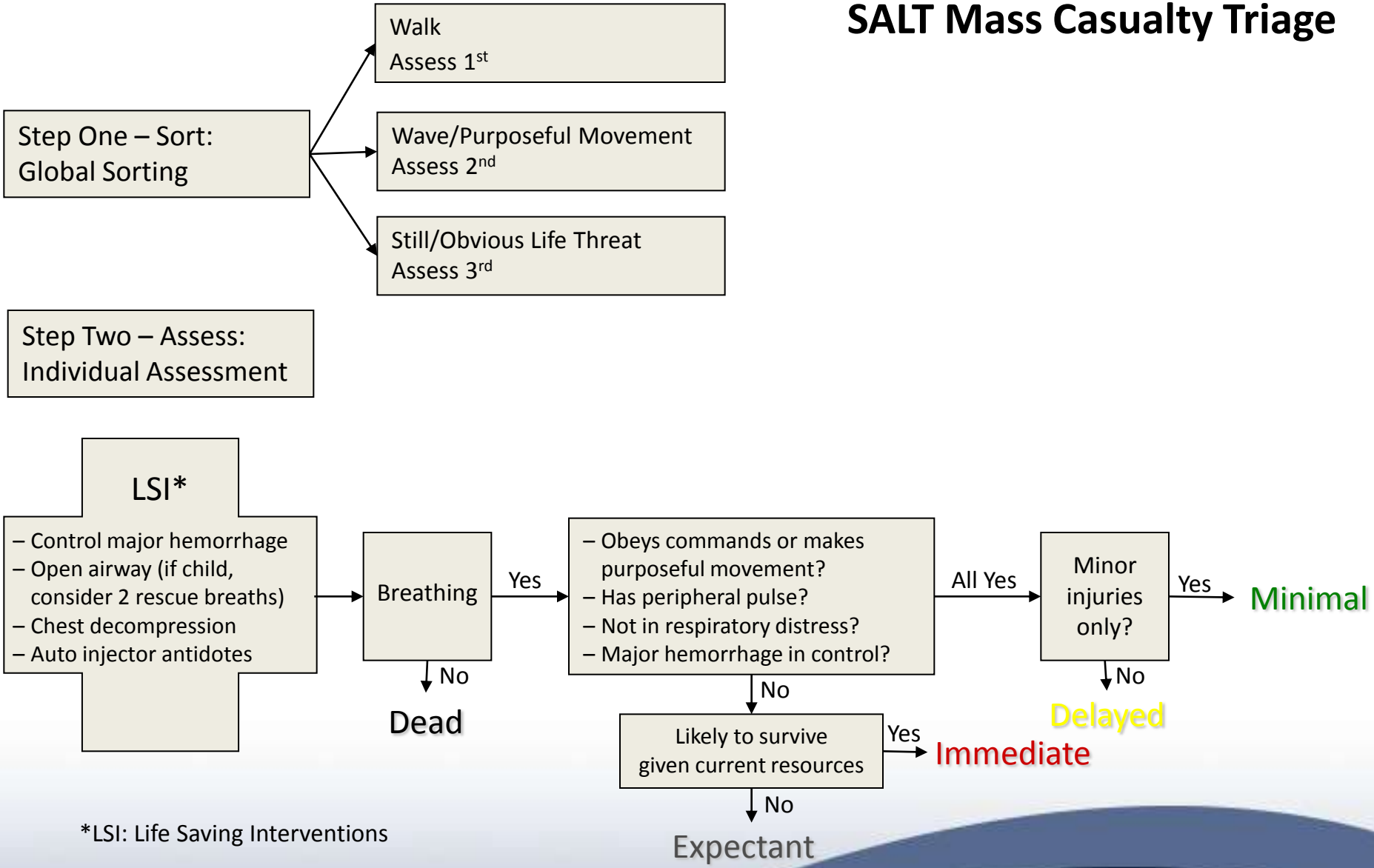
S	Sort
A	Assess
L	Lifesaving interventions
T	Treatment/transport

SALT Triage: Initial Step



Step Two – Assess:
Individual Assessment

SALT Mass Casualty Triage



*LSI: Life Saving Interventions

Triage Categories		
I	Immediate	Persons with critical injuries who can be cared for with minimal time or resources and who, after treatment, have reasonable chance of survival
D	Delayed	Persons with significant injuries who are able to tolerate a delay in care without the risk of substantial morbidity
M	Minimal	Persons whose injuries are minor enough that they can wait for treatment (eg, "walking wounded")
E	Expectant	Persons whose injuries are so severe they have minimal chance of survival even if resources are expended; if resources become available, treated as Immediate
D	Dead	Deceased persons

Evacuation

Goal: timely and orderly removal of persons from disaster scene or affected region, and may include

- Injured
- Uninjured without transportation
- Rescue personnel
- Families of casualties
- Patients in hospitals
- Community at large

Pre-Event Evacuation

- Is evacuation the best course, or should shelter-in-place be considered?
- Where will populations be evacuated to?
- How will they get there?
- Who will manage and communicate updates while temporarily housed?
- What about family pets and other animals?

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Post-Event Evacuation:
Uninjured Individuals

Jacinta Quesada/FEMA

- Top priority is evacuation to safer environment
- Involves organizational and logistical challenges
- Many uninjured individuals will need assistance
- Evacuation is coordinated effort

Post-Event Evacuation:
Patients and Victims

- Options: treat at scene or transport
- Distribute casualties among local facilities to reduce burden
- Send patients with pediatric injuries or burns to specialty hospitals
- Distribute patients with minor injuries among local centers
- Determine how to track patients for family unification

Jocelyn Augustino/FEMA

Evacuation: Challenges

Facilities	Individual
• Long-term care facilities • Hospitals • ICU patients • Assisted living facilities	• Ventilator-dependent • Oxygen-dependent • Mobility impaired • Visual & hearing impaired

Recovery

- Goal: Restore community to “normal” level of functioning and minimize impact of event
- Effective preparation can reduce stressors and facilitate recovery process
- Beginning when event actually occurs, recovery is longest phase of disaster
- Requires long-term commitment to community
- Physical, economic, and community recovery may take months or even years

Recovery: Immediate Period

Recovery phase requires coordinated effort from multiple agencies (government officials, EMS, area hospitals)

Considerations:

- Lack of basic needs (food, water, shelter, or clothing)
- Newly homeless or resource-impaired
- Disruption in utility, computer, telecommunications systems

Patsy Lynch/FEMA

Lesson Summary

- Detection requires awareness of environment and recognition of unusual circumstances
- Incident management is facilitated through the incorporation of NIMS and ICS principles
- To ensure scene safety and security, everyone should be vigilant of immediate surroundings
- Assessment of real and potential hazards related to evolving scene must be done continually

Continued

Lesson Summary

- Receiving support from multiple agencies and organizations is critical for affected communities
- Disaster triage and treatment is about rendering lifesaving care
- With pre-planning, resources to facilitate evacuation can be put in reserve and called into action
- Recovery is a long-term process and complete when community returns to normal, pre-event functioning

Course Post-Assessment and Evaluation

NASA's Goddard Space Flight Center's Scientific Visualization Studio