

# Disaster Preparedness and Response

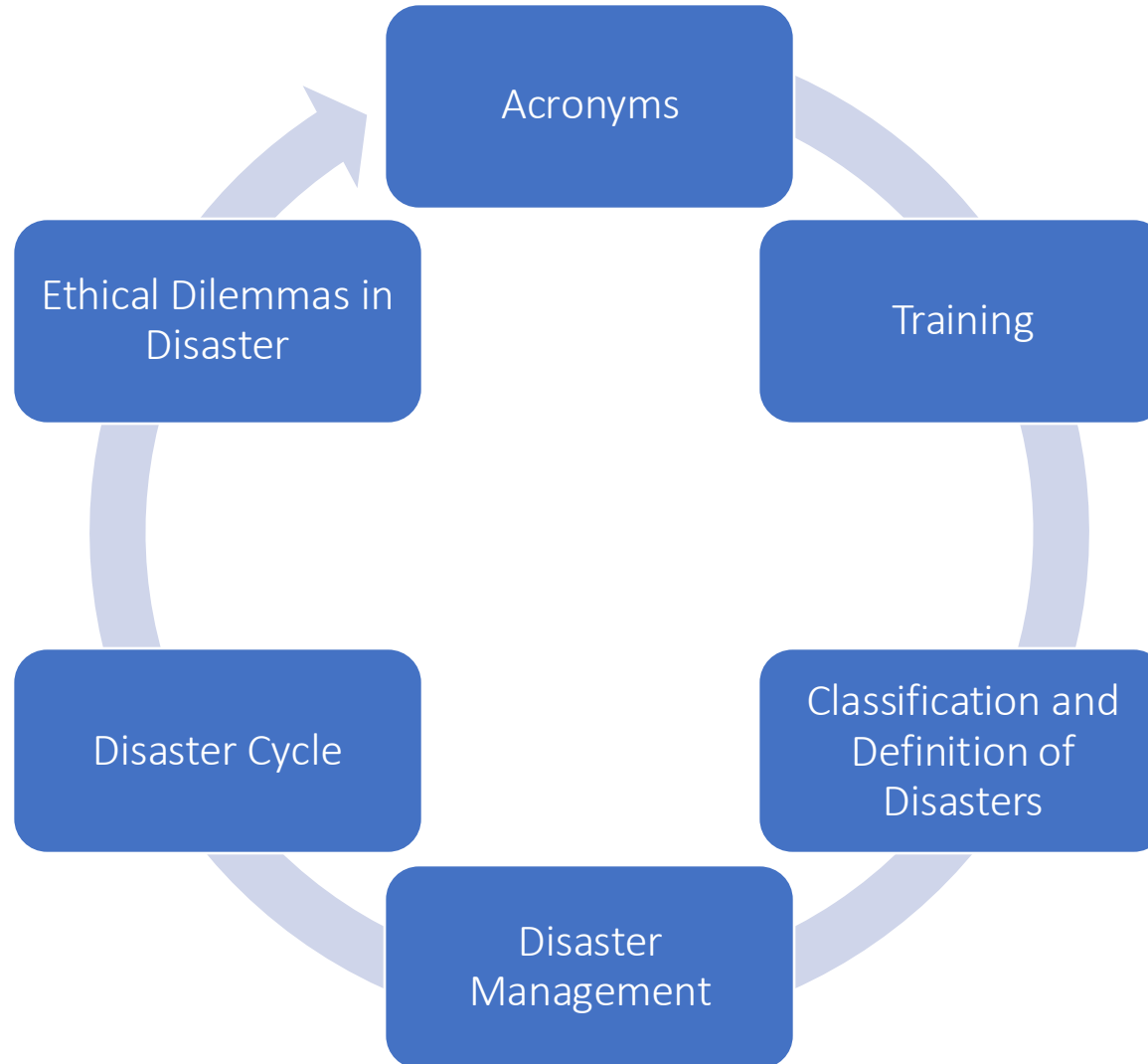
Additional Surgical Techniques



# Lesson Objectives:

1. Discuss different types of disasters
2. Discuss the common features of a disaster
3. Define the four phases of the disaster cycle
4. Define the Incident Command System and explain how it works
5. Describe basic human needs in a disaster
6. List the primary components of a health care facility disaster plan
7. Discuss ethical dilemmas that accompany disasters
8. Explain the possible roles of the surgical technologist during a disaster

# Lesson Snapshot



# Interdisciplinary Approach to Disaster Management

- Disaster preparedness involves multiple agencies and individuals, with diverse roles and responsibilities.
- Introduction to disaster terminology and core principles helps surgical technologists understand the disaster environment, focusing on foundational concepts rather than specialized roles.

## **Mandatory Training for Healthcare Professionals:**

- Accreditation standards now include emergency preparedness for allied health professionals by organizations like CAAHEP, emphasizing understanding one's role in emergencies.

# Acronyms

<b>AHRQ</b>	Agency for Healthcare Research and Quality
<b>CDC</b>	Centers for Disease Control and Prevention
<b>DHHS</b>	Department of Health and Human Services
<b>DHS</b>	Department of Homeland Security
<b>DHSES</b>	Division of Homeland Security and Emergency Services
<b>DMAT</b>	Disaster Medical Assistance Team
<b>EMA</b>	Emergency management agency
<b>EOC</b>	Emergency operations center
<b>FCC</b>	Federal Communications Commission
<b>FEMA</b>	Federal Emergency Management Agency
<b>HazMat</b>	Hazardous materials
<b>HICS</b>	Hospital incident command system
<b>HRSA</b>	Health Resources and Services Administration
<b>MCE</b>	Mass casualty event
<b>NDMS</b>	National Disaster Medical System
<b>NIMS</b>	National Incident Management System
<b>NRF</b>	National Response Framework
<b>NWS</b>	National Weather Service
<b>START</b>	Simple triage and rapid treatment
<b>WHO</b>	World Health Organization

# Definition of Disasters

## Definition

- Catastrophic event posing large-scale risk to life and property, overwhelming local resources, requiring external aid.

## Differentiating Disaster and Emergency

- Disasters disrupt social order, cause widespread injury and property loss, while emergencies are more localized and manageable by local services.

## Mass Casualty Event

- Localized emergencies like transportation accidents or structural collapses overwhelming local healthcare, but not necessitating federal assistance.<sup>a</sup>

# Types of Disasters (Modern Nomenclature)

- **Natural:** Events arising from natural forces, like weather-related disasters or geological occurrences.
- **Technological/Accidental:** Emergencies caused by failures or malfunctions of technological systems, such as chemical spills or nuclear accidents.
- **Pandemic:** Outbreaks of infectious diseases that spread across large geographical areas, **affecting populations globally**.
- **Terrorist:** Deliberate acts of violence intended to instill fear or cause harm to individuals or communities.

## NATURAL DISASTERS



tornado



volcano



earthquake



tsunami



drought



avalanche



dust storm



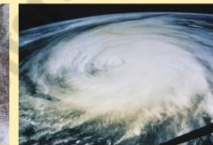
forest fire



thunderstorm



snowstorm



hurricane



windstorm



hailstorm



flood



sandstorm

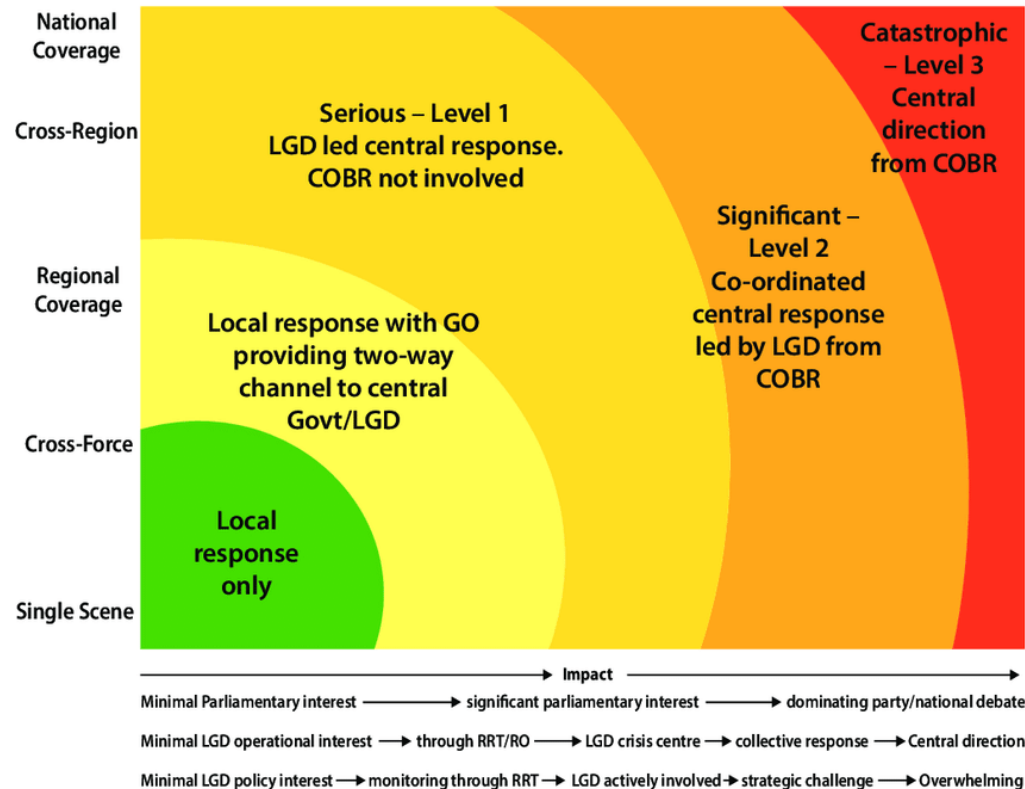


sinkhole

[www.eslforums.com](http://www.eslforums.com)



# Probable Causes and Response Levels



- **Level I:**

- Local Management: Emergency teams at the local level can effectively handle immediate consequences and aftermath.

- **Level II:**

- Regional Assistance: Surrounding communities provide support when the disaster exceeds local capabilities but can still be managed at a regional level.

- **Level III:**

- Statewide and Federal Aid: State and federal assistance is necessary when the disaster overwhelms local and regional resources, requiring a coordinated national response.



# Natural Disasters

- Definition: Events stemming from natural forces like hurricanes, tornadoes, earthquakes, floods, and extreme temperatures.
- Human Impact: Overpopulation, urbanization, and environmental changes exacerbate disaster risks.

**Watch "Health Consequences of Disasters" video in  
the next slide!**

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## Module 2

### Health Consequences of Disasters

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# Health Consequences of Disasters Video

- **Summary of the Video:**

1. Describe “six common disaster myths”.
2. Recognize the 2 key clusters of disaster consequences that commonly affect health
3. Recognize the differences in health impact for man-made as compared to natural disasters
4. Identify the major health consequences of natural and man-made disasters
5. Recognize that different disaster hazards often cause the same health effects

# Types of Natural Disasters

(Slide 1 of 2)

Blizzard

- High winds, blowing snow, and extreme cold causing low visibility

Ice-Storm

- Freezing rain forms a thick, slippery layer of ice, causing structural damage and transportation issues.

Extreme Heat

- Temperatures surpassing the body's ability to regulate itself, leading to deaths, especially among vulnerable populations.

Drought:

- Prolonged lack of rainfall resulting in failed crops and water shortages.

Earthquake:

- Tectonic plate movements causing massive loss of life and property.

# Types of Natural Disasters

(Slide 2 of 2)

Flood

- Often due to poor drainage and construction in flood-prone areas, leading to loss of life and property.

Forest Fire

- Annual occurrences exacerbated by human activity in forested regions.

Hurricane

- Intense storms with high winds and heavy rain, categorized by the Saffir-Simpson scale.

Tornado

- Rotating columns of air causing rapid destruction in localized areas.

Tsunami

- Powerful ocean waves triggered by seismic events, devastating coastal communities.

Snow  
Avalanche

- Massive snow, ice, and rock movements common in mountainous regions.

# Types of Technological Disasters

## Explosion

- Occur in facilities with flammable materials.
- Victims suffer severe injuries; communities face environmental releases.

## Hazardous Material Accident

- Common in refineries and facilities with hazardous material storage.
- Requires material identification and specialist response.

## Radiation Accident

- Uncommon but devastating events like Fukushima.
- Focus on containment, evacuation, and specialist management.

## Transportation Accident

- Includes aviation, vehicle, and train accidents.
- Environmental conditions can complicate rescue efforts.
- May require on-site triage and treatment



# Acts of Terrorism

- **Bioterrorism:**

- Intentional release of harmful biological agents into the environment.
- Agents include anthrax, botulism, plague, smallpox, tularemia, viral hemorrhagic fevers, and emerging infectious diseases.

- **Chemical Terrorism:**

- Use of chemical agents for intentional harm.
- Includes blistering, caustic agents, nerve gases, and flammable chemicals like napalm.

- **Bombing/Direct Attack:**

- Creates mass casualty events necessitating immediate response.
- Triggers activation of disaster preparedness systems, including rescue, triage, evacuation, and national security measures.

# Pandemic

- **Pandemic vs. Epidemic:**
  - Pandemic: Global, rapidly contagious infectious disease.
  - Epidemic: Localized to a specific population.
- **Major Pandemics:**
  - HIV/AIDS, influenza, coronavirus.
- **Community Response:**
  - Prevention through public health practices: immunization, health education, testing.
- **Clinical Containment:**
  - Isolation, strict hand washing, disinfection, sterilization of patient care items.
- **Clinic Preparedness:**
  - Winter flu season often busy, occasional overwhelming of services, usually temporary.

# Pandemic

Preparedness is:



Preparedness is *not*:

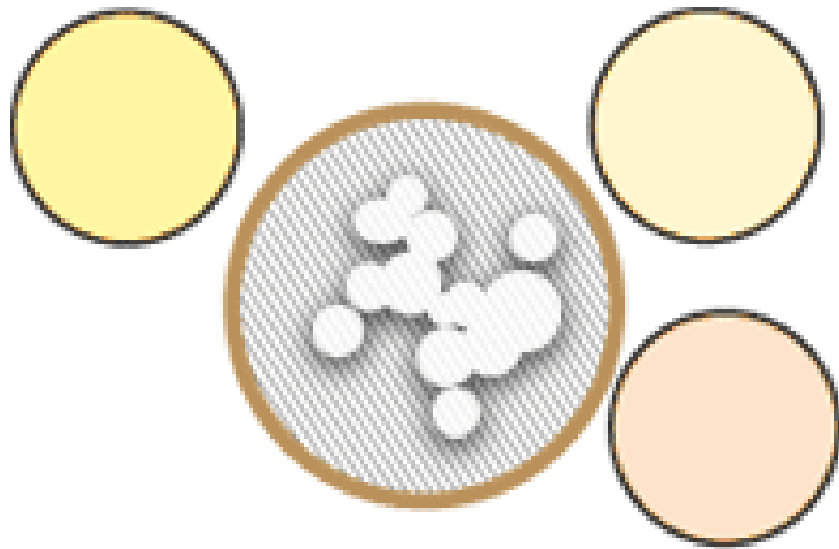


Rather than scrambling when disaster strikes and supplies are short for everyone, buy a little bit extra on every trip.



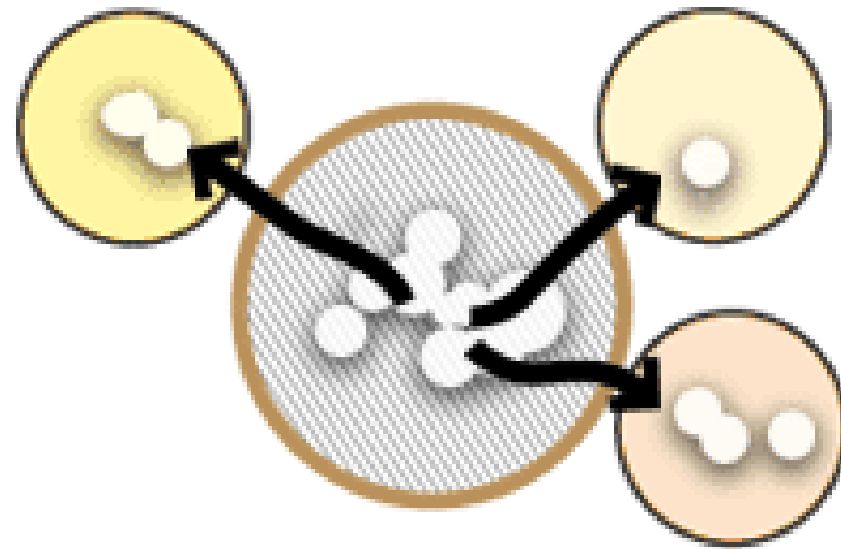
# Epidemic vs Pandemic

Epidemic



Epidemics Diseases are those that affect large number of people in one area simultaneously

Pandemic



Pandemic is a term that refers to an epidemic that has spread to more than one area.

# Disaster Management and Government Structures

- **Disaster Management Levels:**

- Strategy used across federal, state, and local government and community levels.
- Hierarchical structure ensures rapid and effective action.

- **Government Structures:**

- Plans flow from federal to regional/state to community levels.
- Facility plans align with state and federal regulations (e.g., OSHA, DHHS).

- **Chain of Command:**

- Disaster plans consolidate through each level's emergency system.
- Community and facility protocols compatible with state and federal regulations.

# Federal Emergency Management Agency (FEMA)

- Responsible for coordinating, managing, and responding to nationally declared disasters.
- Conducts training programs in disaster preparedness, management, and response.
- Assistance available only in disasters declared as a state of emergency by the governor.
- Formal request made to the federal government triggers federal declaration, releasing funding and resources.
- Collaborates with various partners, including community-based organizations.



# FEMA's Federal Partners

Federal  
Communications  
Commission  
(FCC)

National  
Weather Service  
(NWS)

National  
Disaster Medical  
System (NDMS)

Department of  
Health and  
Human Services  
(DHHS)





# National Incident Management System (NIMS)

- **National Incident Management System (NIMS) Overview:**
  - Implemented by FEMA for disaster coordination and response.
  - Defines management structure, objectives, chain of command, and procedures.
  - Intended for all levels of government, NGOs, and the private sector.
- **Components of NIMS:**
  - Preparedness
  - Communications and Information Management
  - Resource Management
  - Command and Management
  - Ongoing Management and Maintenance



# Health Resources and Services Administration (HRSA)

- **Health Resources and Services Administration (HRSA) Overview:**
  - HRSA, an agency of the Department of Health and Human Services, manages medical response in disaster situations.
- **Primary Agencies Under HRSA:**
  - Agency for Healthcare Research and Quality (AHRQ): Provides disaster-related research, resources, training, and recommendations.
  - National Disaster Medical System (NDMS): Maintains a database of trained personnel and trains first responders.



# Centre for Disease Control and Prevention (CDC)

- Information, training, and research organization for disasters and emergencies.
- Provides public health education through local partners.
- **Mandates:**
  - Offers strategic guidelines for various health problems.
  - Addresses bioterrorism, environmental disasters, infectious disease outbreaks, etc.
- **COTPER:**
  - Coordinates Office for Terrorism Preparedness and Emergency Response.
  - Funds technical assistance and stockpiles necessary medical resources.



# Disaster Cycle



**Watch the "Disaster Management – How to Create a Disaster Preparedness Plan" to gain insights into how to be prepared for a disaster**

## Disaster Management – How to Create a Disaster Preparedness Plan



# Disaster Management – How to Create a Disaster Preparedness Plan

## Summary of the video:

- **Preparation for Disaster:**

- Understand potential disasters and create an evacuation plan.
- Prepare emergency supplies and practice evacuation with family.

- **Actions During Disaster:**

- Stay calm, follow the plan, and evacuate if needed.
- Seek shelter, stay informed through local news.

- **Recovery:**

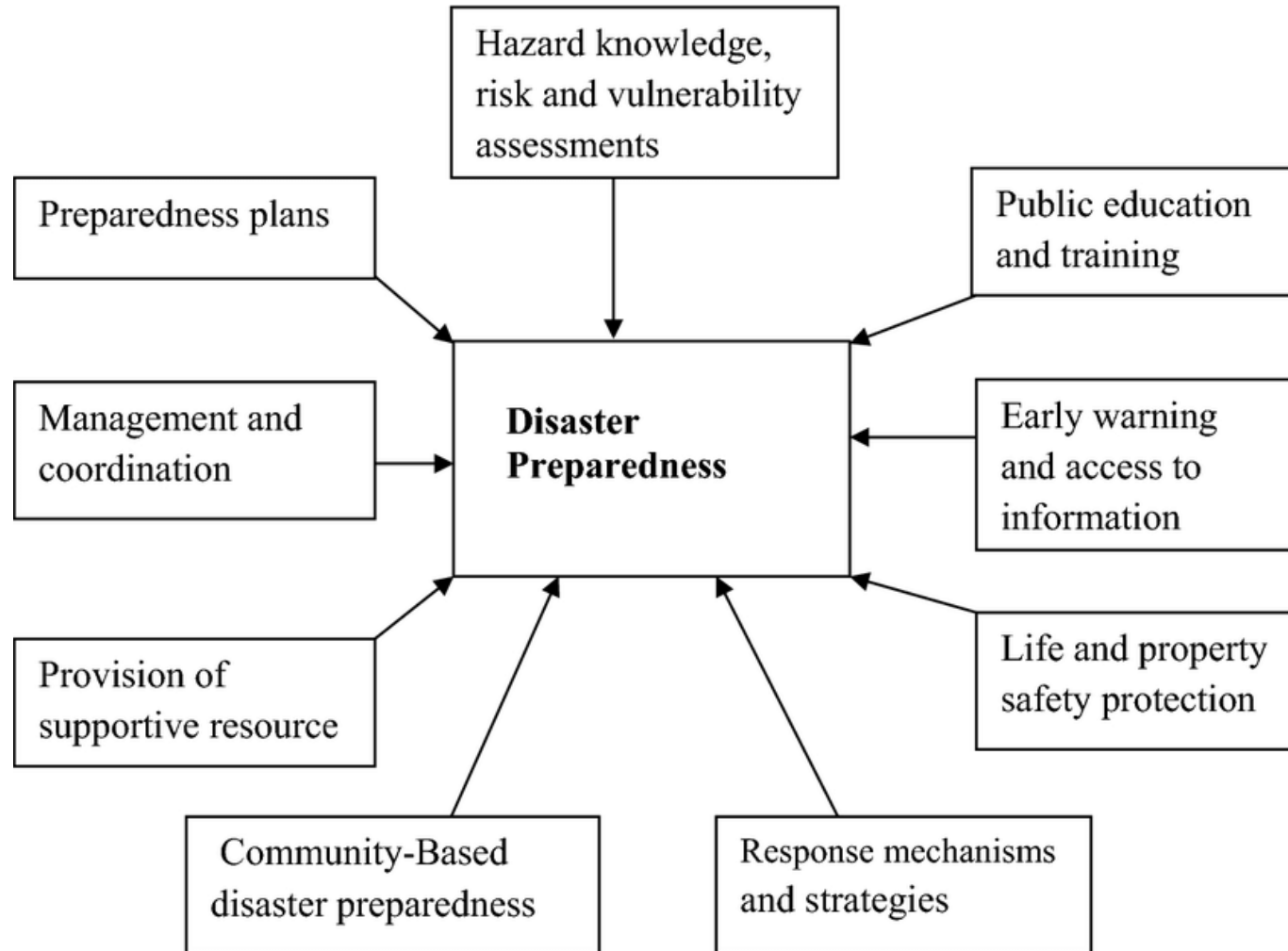
- Clean up, repair, and take care of well-being.
- Stay informed, contact insurance for claims.



# Preparedness

- **First Step:** Initiation of disaster planning process
- **Goal:** Ensure effective response to various disasters
- **Activities:** Complex tasks involving individuals, communities, and government sectors
- **Guidelines:** Provided by governmental agencies (e.g., FEMA), health agencies (e.g., CDC), and research institutions
- **Execution:** Implementation of executable plans in hospitals, medical offices, or surgery centers
- **Prevention:** Aims to prevent wastage of human and material resources
- **Consequences of Inadequacy:** Rapid deterioration of disaster environment, leading to increased loss of life and property

# Factors Included in Preparedness



# Personal Disaster Planning

- Is my family OK?
- Family and self steps
  - Regional emergencies?
  - Plan
  - 911
  - Documents
  - BLS and first aid
  - Phone numbers
  - PRACTICE
  - Supplies



# Response

- Disaster response is challenging, unpredictable, and demanding.
- Plans must be implemented swiftly with an understanding of potential limitations.
- Ethical mandates guide actions to minimize harm.
- **Common Community Disaster Scenarios:**
  - Loss of shelter, sudden need for relocation, disruption of transport, and health care services.
  - Disproportionate impacts on vulnerable populations.
  - Challenges include logistical support diversion and infrastructure loss.

# Human Needs in a Disaster

## Evacuation and Shelter:

- Immediate need for shelter
- Evacuation procedures and communication
- Shelter-in-Place options
- Identification of vulnerable individuals
- Challenges in evacuation assistance

## Medical Aid:

- Allocation of existing healthcare facilities
- Types of medical aid based on disaster nature
- Transportation challenges for victims
- Response to specific types of injuries

## Infection Control:

- Preventing disease transmission
- Operational needs for disease prevention
- Implementation of infection control procedures
- Distribution of protective equipment

# Human Needs in a Disaster

## Food Security:

- Threats to food security during disasters
- Problems with food pipeline disruptions
- Panic and instability due to food shortages

## Mental Health Needs:

- Importance of social and psychological assistance
- Measures to maintain social structure
- Controversy around critical incident counseling
- Immediate psychological aid in disaster response

## Protection:

- Addressing criminal threats during disasters
- Diversion of law enforcement resources
- Enforcement of curfews for prevention of violence

# Operational Considerations During the Response

(Slide 1 of 2)

- **Communication:**

- Utilize satellite or high-frequency radio for internal communication and local radio stations for community health messages.
- Activate at least three backup communication systems and assign a media representative for external communications.

- **Medical Facility Evacuation:**

- Evaluate risks versus benefits and maintain patient care continuity during partial or complete evacuations.
- Refer to facility disaster guidelines and conduct evacuations with trained first responders.



# Operational Considerations During the Response

(Slide 2 of 2)

- **Surge Capacity:**

- Increase capability through strategies like discharging elective cases and calling in additional staff.
- Ensure availability of space, supplies, drugs, and medical equipment for surge response.

- **Staff Assignments:**

- Activate emergency plan, call in staff, and assign roles using a job action sheet (JAS).
- Designate reporting areas, specify tasks, and ensure surgical technologists' roles align with their usual duties.

# Triage

- The process of prioritizing emergency medical treatment based on the probability of survival.
- **Purpose:** Necessary when demand for medical attention exceeds available resources.
- **Characteristics:** Requires rapid, clear, and decisive thinking and action by medical personnel.
- **Parameters:** Patients categorized based on:
  - Need for emergency care
  - Probability of survival with medical care
  - Benefit of medical intervention for survival
  - Unlikely increase in survival chance with medical intervention

No. 239352 TRIAGE TAG No. 239352

PART I

No. 239352

CALIFORNIA FIRE CHIEFS ASSOCIATION®

Leave the correct Triage Category ON the end of the Triage Tag

Move the Walking Wounded **MINOR**

No respirations after head tilt **DECEASED**

☐ Respirations - Over 30 **IMMEDIATE**

☐ Perfusion - Capillary refill Over 2 seconds **IMMEDIATE**

☐ Mental Status - Unable to follow simple commands **IMMEDIATE**

Otherwise- **DELAYED**

MAJOR INJURIES: \_\_\_\_\_

HOSPITAL DESTINATION: \_\_\_\_\_

ORIENTED ☒ DISORIENTED ☐ UNCONSCIOUS ☐

TIME	PULSE	B/P	RESPIRATION

**DECEASED**

**IMMEDIATE** No. 239352

**DELAYED** No. 239352

**MINOR** No. 239352

# Mitigation

- Mitigation minimizes the impact of an event by reducing its effects on people, infrastructure, property, and the environment.
- **Types of Mitigation:**
  - Structural Mitigation: Involves changing building codes and reconstructing to withstand disasters (e.g., earthquakes).
  - Engineering Projects: Building dams, seawalls, and defensible spaces to mitigate disaster impact.
  - Technological Infrastructure: Developing early warning systems and detection technologies.
  - Healthcare Measures: Isolating contagious patients to prevent the spread of diseases.

# Response

- **Healthcare Facility Response:**

- Activation of incident command, communication establishment, and staff mobilization.
- Triage, surge capacity, and evacuation protocols are critical.
- Supply management, morgue setup, and patient records protection are essential tasks.

# Recovery

- Complex process reducing morbidity and mortality
- Targets all societal components: physical, economic, social, psychological
- Not immediate; may take years to achieve acceptable normality
- **Humanitarian Aid and Professionals:**
  - International responders from UN or NGOs
  - Specially trained professionals with bachelor-level education
  - Various roles: doctors, nurses, anesthesiologists, midwives, surgical technologists
  - Cross-cutting responsibilities; often one person doing the job of three
  - Top coordinators usually master's level trained with additional certifications
  - Minimum entry degree: Bachelor of Nursing with tropical medicine/public health certs

# Health Care Facility Emergency Response

- Hospitals Use Emergency Action Plan (EAP)
- Responsibilities of EAP:
  - Evacuate or stay?
  - Expensive, dangerous, last resort
  - EAP
  - Transportation, power, medications, blood
  - Where?
  - TRACK patients
  - Health?
  - ST trained to move patient



**Watch "10 things you should know about disaster risk reduction Video" to gain insights into Disaster Risk Reduction (DRR)**

# 10 things you should know about disaster risk reduction Video





# 10 things you should know about disaster risk reduction Video

- **Summary of the Video:**

- Disasters are common and devastating Hundreds occur yearly, causing massive damage and loss of life.
- Disaster Risk Reduction (DRR) aims to minimize devastation: It can't prevent all disasters, but it limits their impact.
- Nature of disasters: They stem from natural and man-made hazards, with vulnerability playing a crucial role.
- DRR involves diverse interventions: From infrastructure protection to community engagement, it enhances resilience and reduces risk.

# Ethical Dilemmas in Disaster

- **Marginalized populations:** Often forgotten, lack advocacy, and preplanned support.
- **Assistance priority:** Immediate access advantages; mobility aids in reaching assistance.
- **Varied needs perception:** Discrepancy in survival essentials challenges aid efforts.
- **Rescue prioritization:** Ethical dilemmas for agencies; criteria for rescue; animal aid prioritization.
- **Government compensation:** Debate on compensating for disaster losses.
- **Resource allocation:** Equitable distribution amidst multiple disasters.
- **Importance of debate:** Understanding diverse perspectives and personal convictions.

# Read Chapter 36 from the E-book

Read **Chapter 36** from your E-Book to pass the upcoming quiz from **Surgical Technology - Elsevier eBook on VitalSource, 8th Edition**.

[Click Here](#) to access Chapter 36!

# Thank you!

Get ready for your quiz and rest of the activities now. Best of luck!



# Congratulations!

Lesson 36 is complete.