

OKLAHOMA DISASTER INSTITUTE

3RD ANNUAL DISASTER MEDICINE SYMPOSIUM

Austere Medicine

What to do when the lights go out



Joseph J. Contiguglia MD, MPH&TM, MBA
Clinical Professor of Public Health
Tulane University School of Public Health & Tropical
Medicine

DISASTER



OVERVIEW

- ◆ Threats & Vulnerability
- ◆ Readiness
- ◆ Response
- ◆ Recovery
- ◆ Management



VULNERABILITY

- ◆ Population
- ◆ Lifestyle
- ◆ Emerging Disease
- ◆ Environment
- ◆ Technology
- ◆ Political Strife



DISASTER

◆ Emergency

- Realignment of priorities
- Change of process & guidelines
- Redefined standards for outcomes

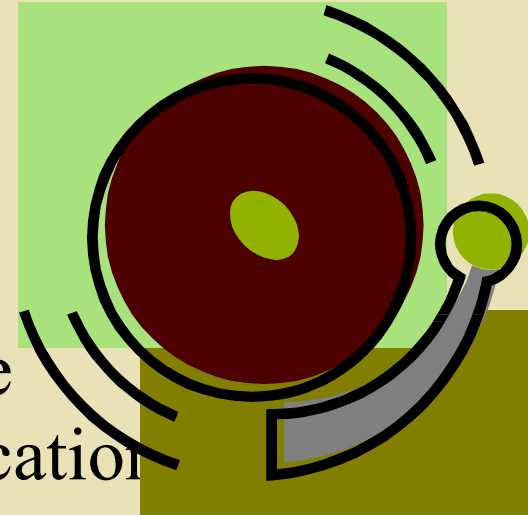


◆ Disaster

- Local Resources Inadequate
- Modified standards achievable

◆ Catastrophe

- Adequate resources unavailable
- Fight to maintain orderly application



INTERVENTION PRINCIPLES

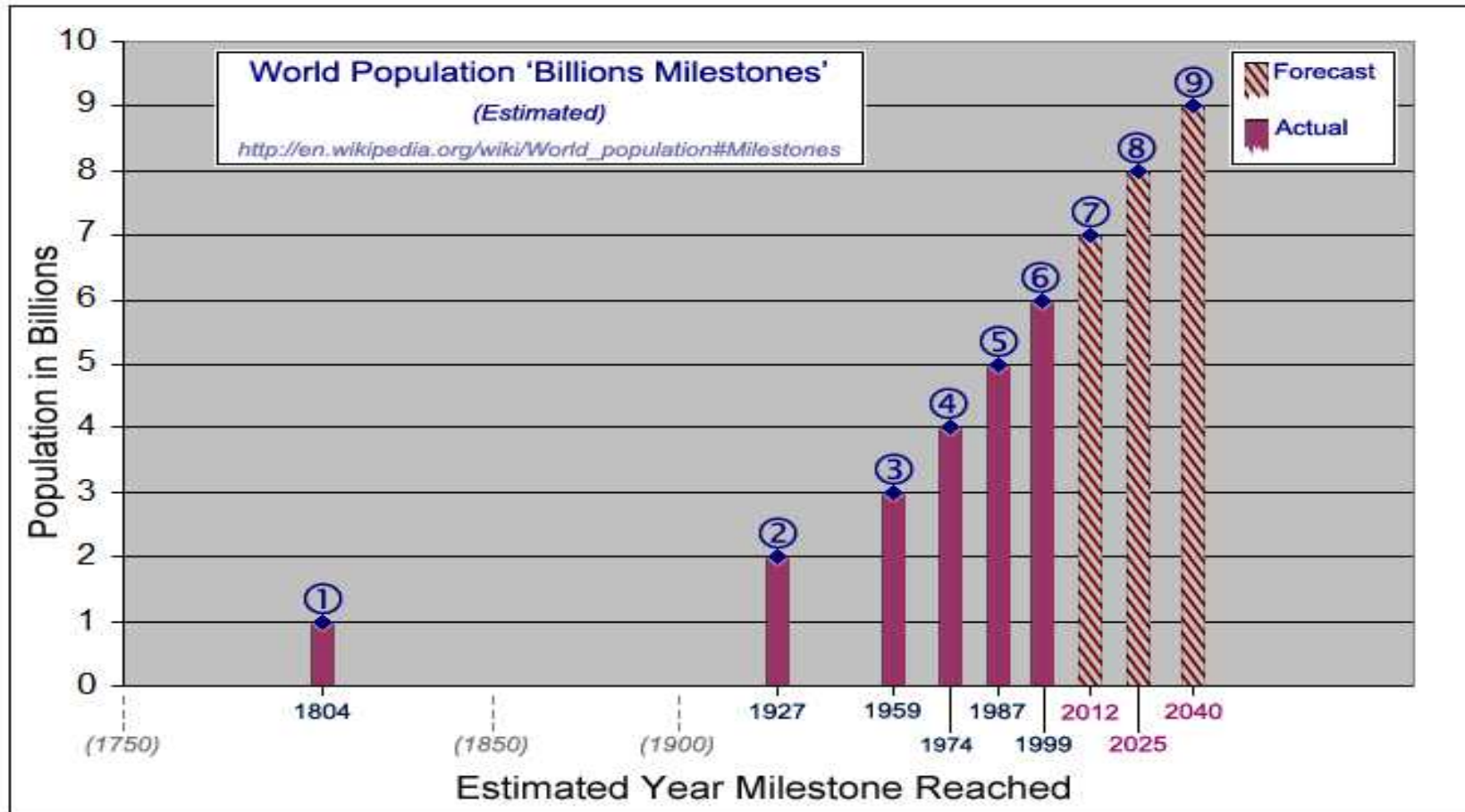
- ◆ Keep the Science Straight
- ◆ Realistically evaluate threats & assets
- ◆ Rationally develop specific plans
- ◆ Identify needs:
 - Doctrine
 - Organization
 - Communications
 - Equipment
 - Personnel & Training
- ◆ Speak with one voice

LIFESAVER EXERCISES

“THAT OTHERS MAY LIVE”



GLOBAL POPULATION GROWTH



◆ Overall

- Today – 6.8 B
- 2040 – 9B

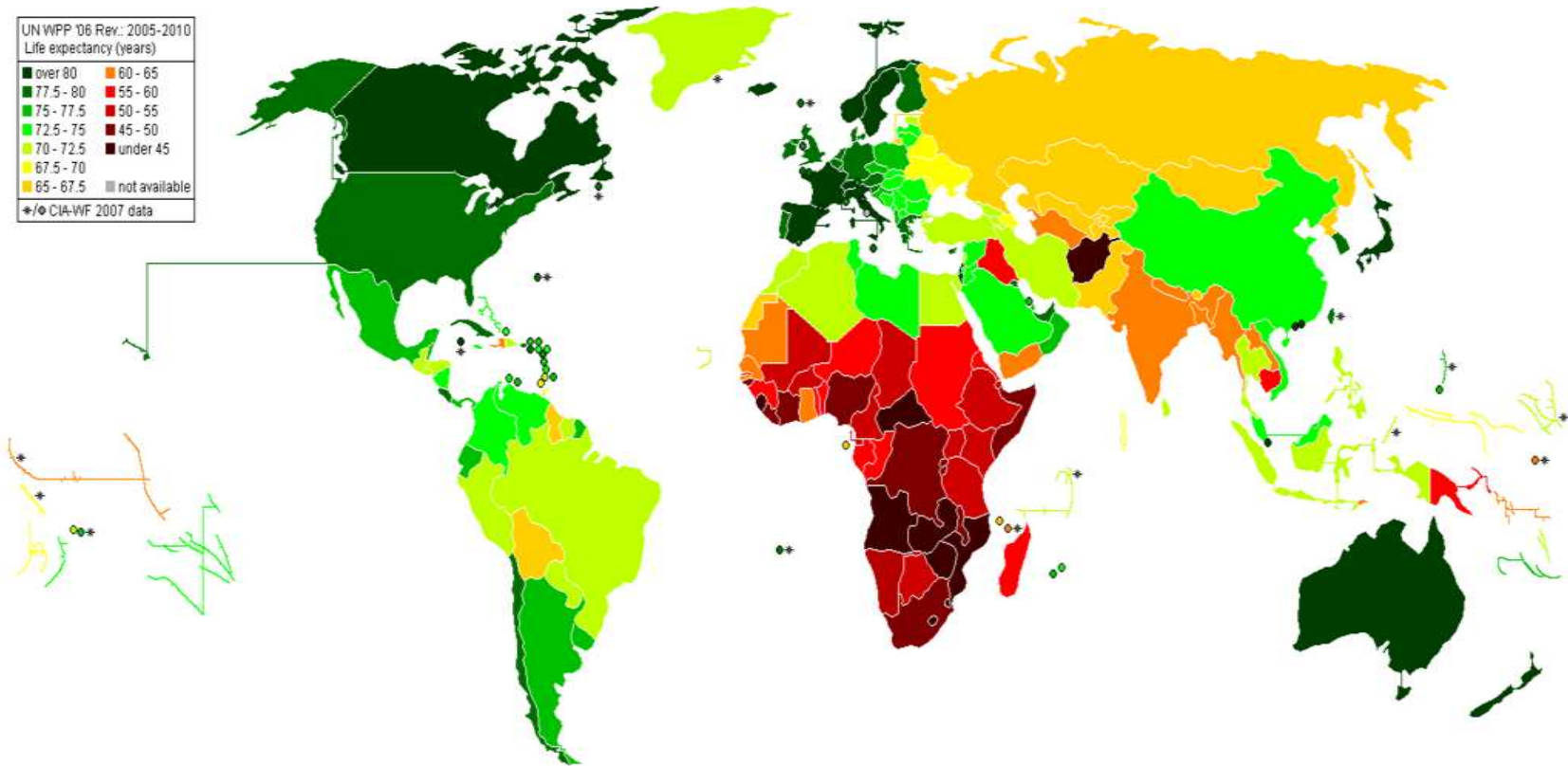
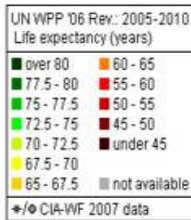
◆ Urban

- 1800 – 3%
- 2000 – 47%

LIFE EXPECTANCY

◆ US	Today	1950	1900
– Male	75.6	65.5	47.9
– Female	80.8	71.0	51.7

U.S. BUREAU OF THE CENSUS



SPECIAL NEEDS

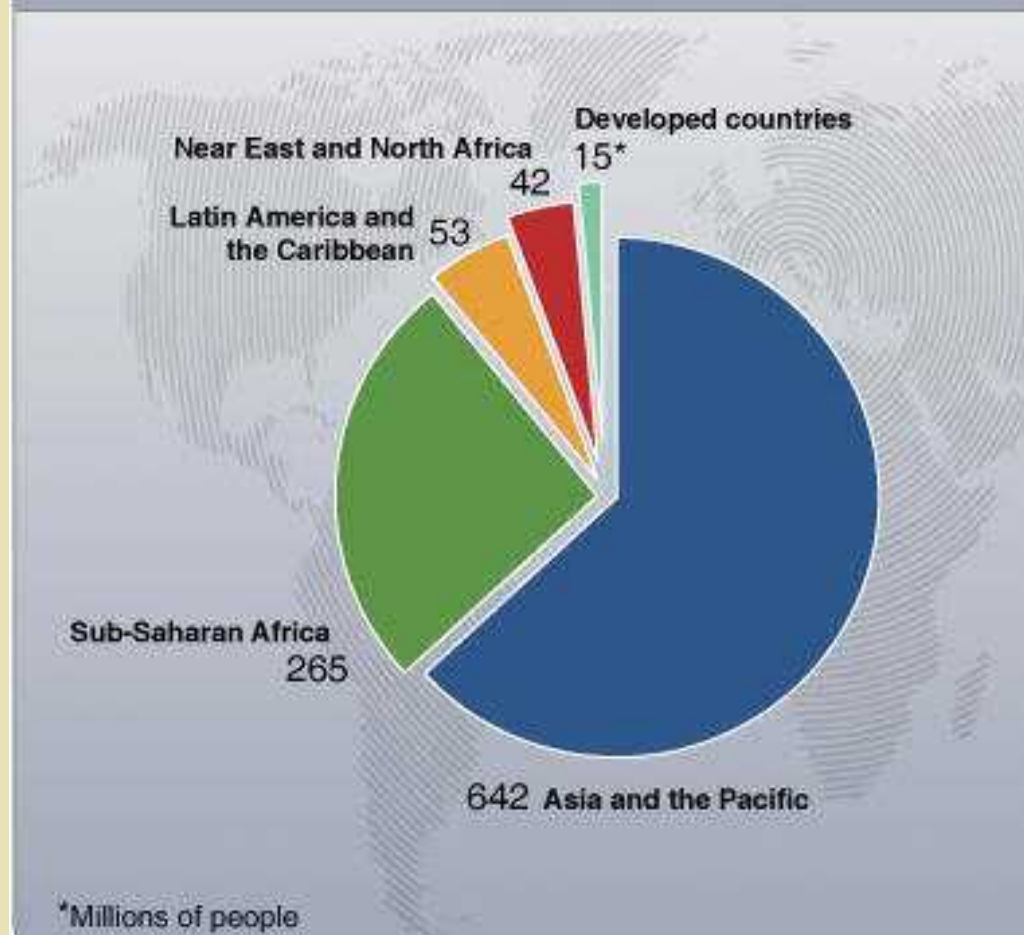
- ◆ Age
- ◆ Disability
- ◆ Medical
- ◆ Acute Injury
- ◆ Psychological
- ◆ Culture & Lifestyle



WORLD HUNGER

- ◆ Poverty
- ◆ Economic Systems
- ◆ Conflict
- ◆ Climate
- ◆ But the world produces enough food
 - 2720 kcal/person/day

More than 1.02 billion hungry people



WATER

◆ Hierarchy of needs

◆ WHO

CHOLERA, 1883

THE UNWELCOME VISITOR

- 78 percent of the population in less developed countries is without clean water
- 85 percent without adequate fecal waste disposal



PREMATURE VICTORY



◆ 1967

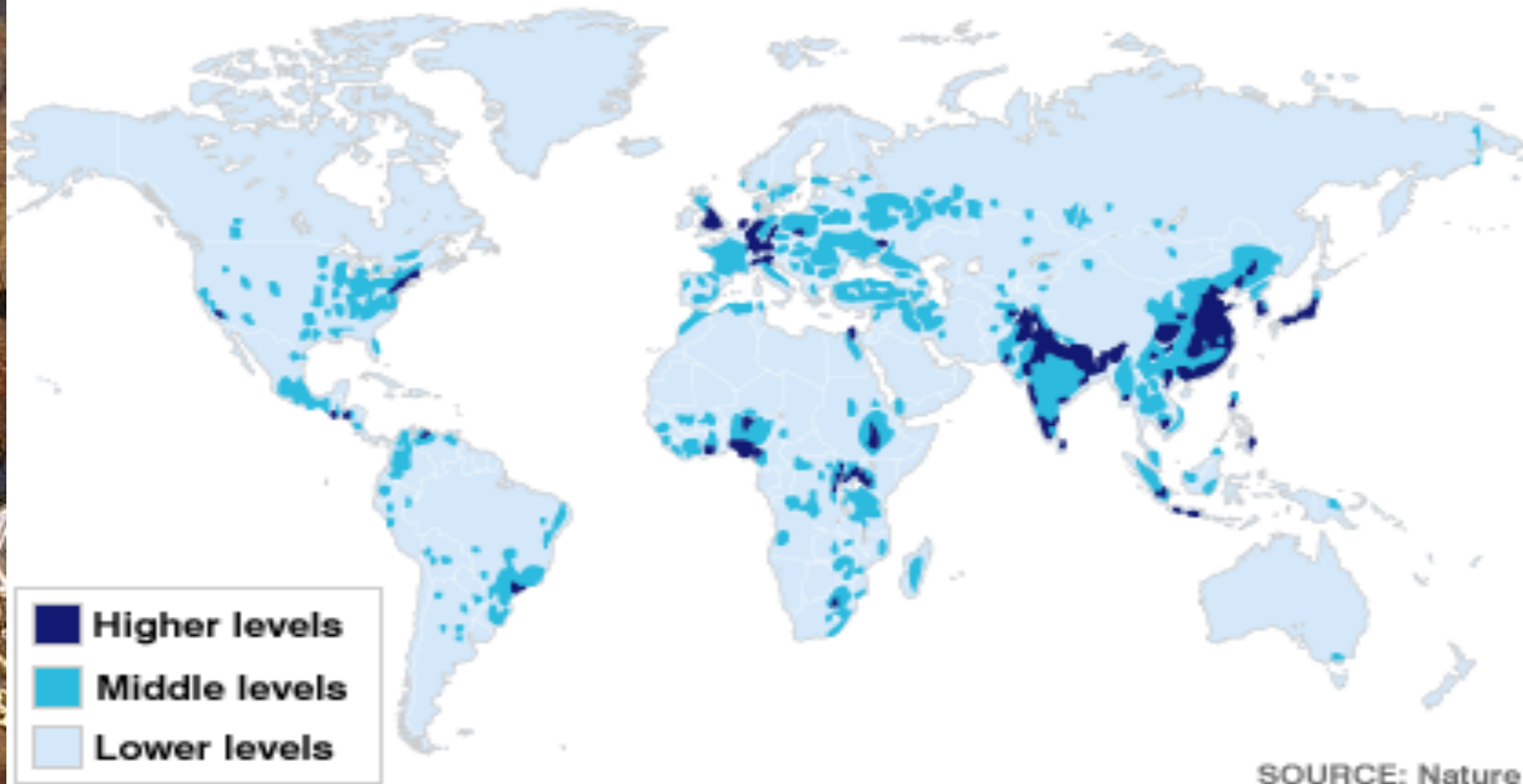
Don't worry, it's only a virus

“The war against infectious diseases had been won” and we should focus our efforts on other areas of research and public health...

- Surgeon General William H. Stewart testifying before Congress

EMERGING INFECTIOUS DISEASE

INFECTIOUS DISEASES TRANSMISSIBLE BETWEEN ANIMALS & HUMANS



- ◆ 75% of emerging infectious diseases reach humans through animals
- ◆ 49% of human pathogens are zoonotic

THE BLACK DEATH: 1346 AD



- ◆ Lasted more than 130 years
- ◆ Killed 20-30 million Europeans
 - (1/3 of the European population)
- ◆ Probably began on the Mongolian steppes as an epidemic among marmots
 - Weather favored a rodent population explosion
- ◆ Trappers collected furs of dead animals & sold them to Western buyers



AMERICA & THE COLUMBIAN EXCHANGE

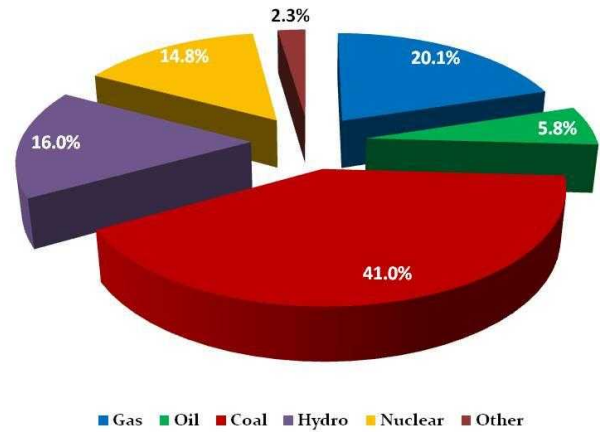


- ◆ Smallpox & Measles
- ◆ New diseases in non-immune populations
- ◆ 95% mortality
- ◆ “The gods are against us”

GLOBAL ENERGY



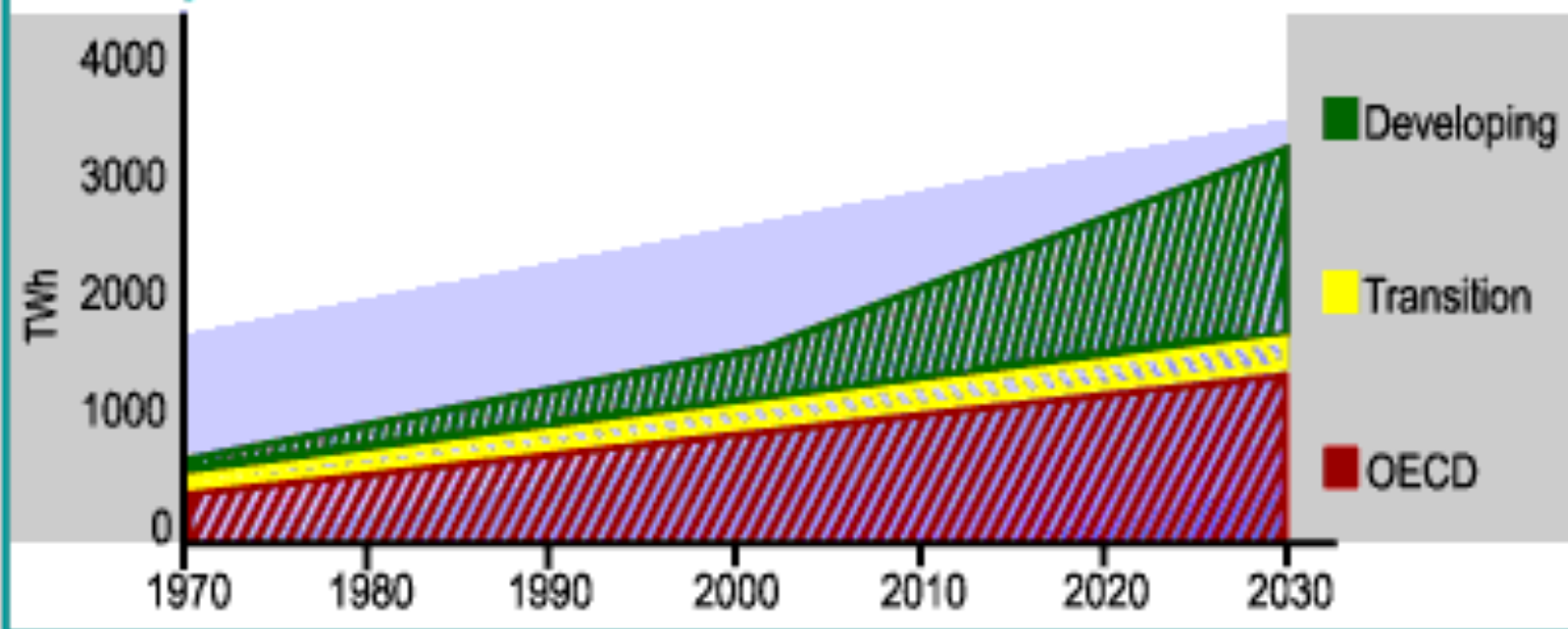
Global Electricity Generation



Source: The World Nuclear Association (WNA)

Figure: 1-1

Electricity demand



Source: OECD/IEA World Energy Outlook 2004.

THE RADIOLOGICAL THREAT



THREE
MILE
ISLAND

- ◆ Nuclear Warfare
- ◆ Nuclear Terrorism
- ◆ Nuclear Accidents



ACTION PHASES

READINESS

- ◆ 1. Prevention
- ◆ 2. Preparation
- ◆ 3. Surveillance
- ◆ 4. Identification



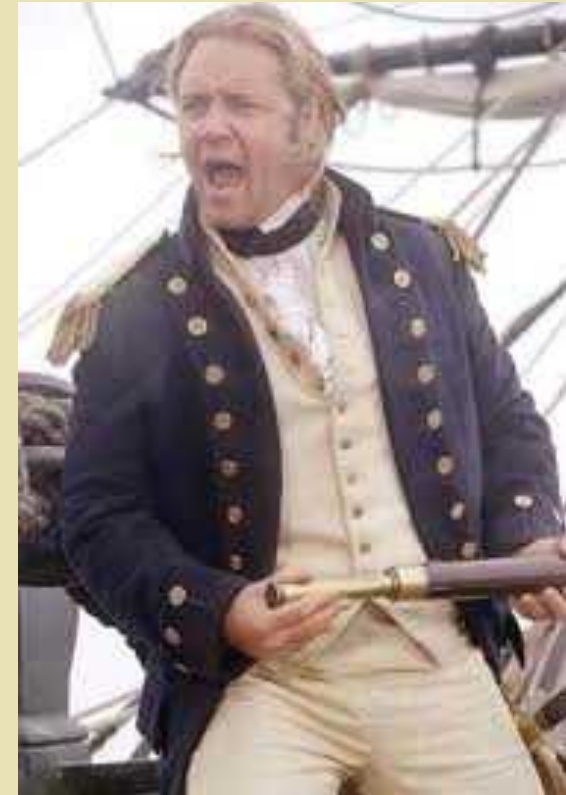
PREVENTION

- ◆ Shape the Battlefield
- ◆ Psychological Injury Management
- ◆ Communications Infrastructure
- ◆ Risk Communication
- ◆ Education
 - Government Officials
 - Community Leaders
 - Responders
 - Population at Large



CONCEPT OF OPERATIONS (CONOPS)

- ◆ Effective
- ◆ Practical
- ◆ Robust
- ◆ Authorized
 - Incorporated in law, plans & regulations



OPERATIONAL MODEL

WIND

AEROSOL CONTAGEOUS
VIRAL EXPOSURE

MASS
COMMUNICATIONS

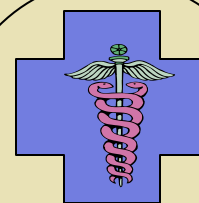
ESTIMATED
EXPOSURE ZONE

PLACE & TIME



POPULATION
AT LARGE

X FACILITY
TREATMENT &
SCREENING



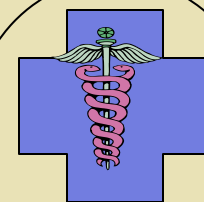
HOSPITAL

POTENTIAL
CONTACTS



SYMPTOMATIC
PATIENTS

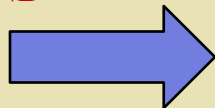
C FACILITY
SPECIALIZED
TREATMENT



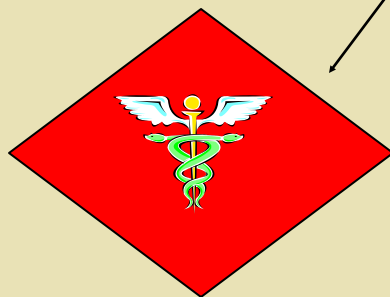
HOSPITAL

POPULATION AT RISK

- PRESENT
- TRANSIENT
- DOWNWIND

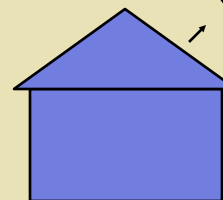


NON HOSPITALIZED
EXPOSED INDIVIDUALS



EVALUATION &
PROPHYLAXIS
SITES

TREATED
ASYMPTOMATIC
CONTACTS



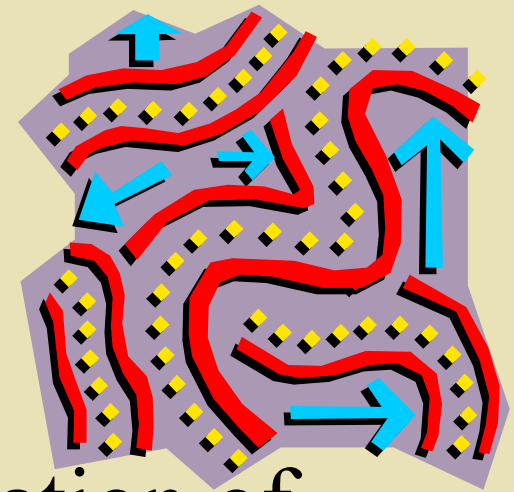
R FACILITY
SUPPORT

GUIDELINES & STANDARDS



- ◆ Guidelines & Standards are needed to define **measurable, acceptable and approved** pathways & outcomes for individuals and agencies to pursue during a time of **scarce resources**.

GUIDELINES & STANDARDS



- ◆ They permit;
 - The **systemized** optimization of alternatives and compromises
 - Within an **ethical** context
 - Upon which public morale and the preservation of **civil order** depends, as well as
 - Preparing a resilient and **sustainable infrastructure**.

OUTCOME

- ◆ To optimize outcome, all available resources need to be preserved, coordinated and focused so as to optimize community response in dealing with;
 - 1. The normal **ongoing needs** of the stricken and spared populations
 - 2. The special **disaster-related needs** of the population at risk
 - 3. The **special needs** encountered by populations with special vulnerability



PREVENTION

- ◆ What is the difference between PREVENTION and PREPARATION?



PREVENTION

- ◆ What is the difference between PREVENTION and PREPARATION?
 - A. PREVENTION focuses on building a resistant and resilient environment
 - B. PREPARATION focuses on developing the capability for a coordinated, timely & effective response



PREPARATION

◆ Assets

- Personnel
 - Numbers & Training
- Equipment
- Logistics & Supplies
- Risk Communications

◆ Infrastructure

- Authority
- Command, Control, Communications & Intelligence



COMMAND



Incident Commander

Liaison Officer

**Safety and Security
Officer**

**Public Information
Officer**

**Logistics
Section
Chief**

**Planning
Section
Chief**

**Finance
Section
Chief**

**Operations
Section
Chief**

OPERATIONAL COMPONENTS



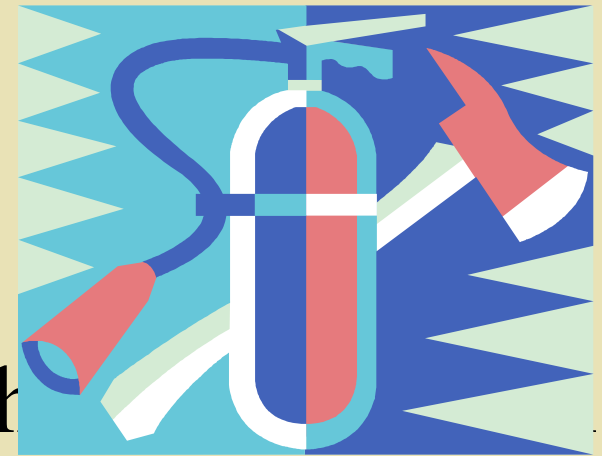
◆ Personnel

- Adequate numbers for initial & sustained operations
- Trained in appropriate skills
- Authorized for time/duty required



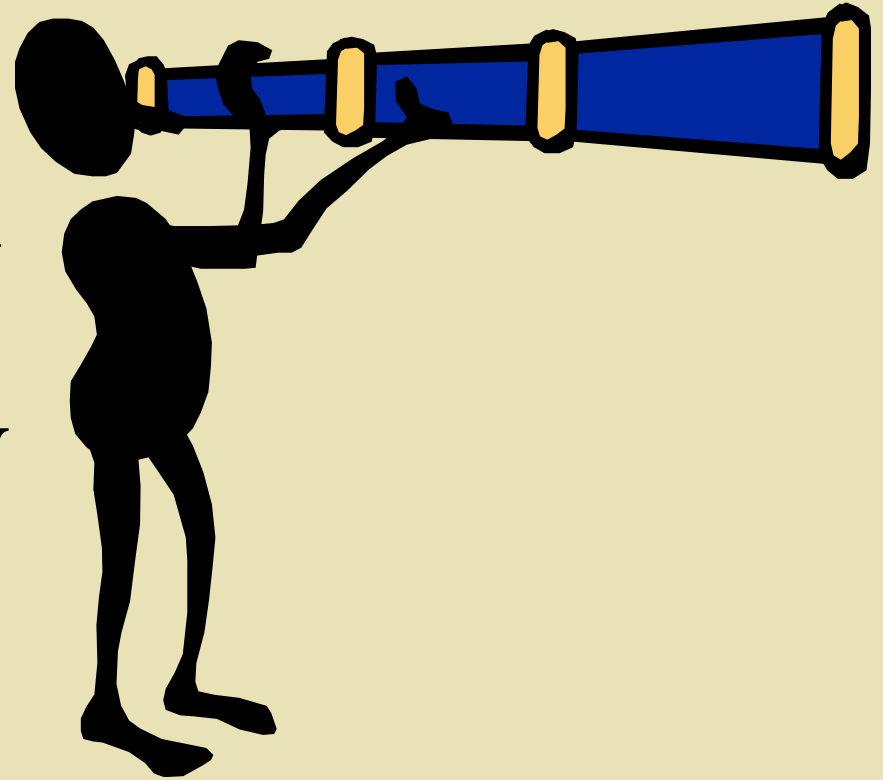
OPERATIONAL COMPONENTS

- ◆ Equipment
 - Available, familiar & ready
 - Supplies
 - Time phased logistics
- ◆ Risk Communications
- ◆ Prepared Population with place
- ◆ Practice & revision for evolving needs



SURVEILLANCE

- ◆ Scope
- ◆ Sensitivity
- ◆ Specificity
- ◆ Reliability
- ◆ Security
- ◆ Cycle Time



IDENTIFICATION

- ◆ Specificity
- ◆ Confidence
- ◆ Immediacy



ACTION PHASES

EXECUTION

- ◆ 5. Notification
- ◆ 6. Marshalling
- ◆ 7. Early Response
- ◆ 8. Full Response
- ◆ 9. Mop - Up



NOTIFICATION

- ◆ Timely
 - Here is where it begins
- ◆ Robust
- ◆ Orderly
- ◆ Functional



MARSHALLING

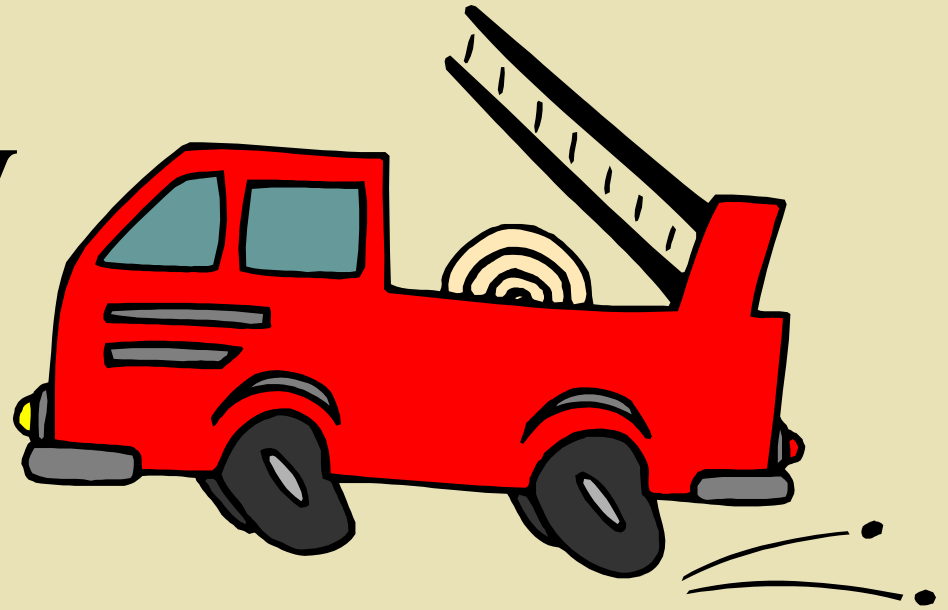
- ◆ “Get There Firstest with the Mostest”
- ◆ Right People
- ◆ Right Stuff
- ◆ Right Time
- ◆ Right Place

General Nathan Bedford Forrest

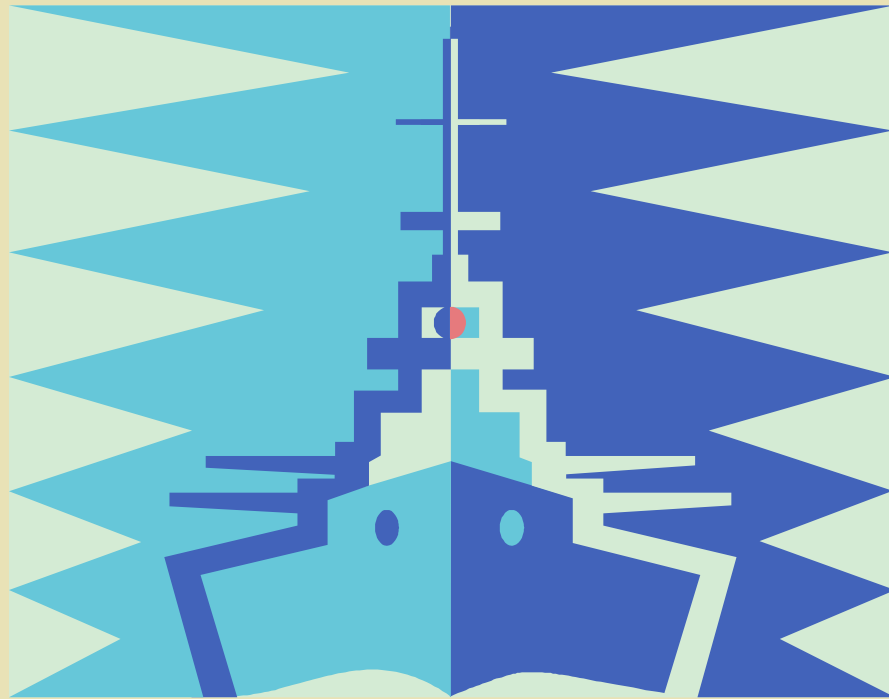


EARLY RESPONSE

- ◆ Effective
- ◆ Professional
- ◆ Orderly



FULL RESPONSE



- ◆ Big as it needs to be to minimize casualties
- ◆ Delicate as a battleship

MOP - UP

- ◆ Finish it off
- ◆ Thorough
- ◆ Quick
- ◆ Disciplined
- ◆ Responsive to the Public
 - Plans & Actions
 - Tactical Risk Communication



MEDIA PUBLIC INFORMATION TACTICAL CONSIDERATIONS

1. TARGETED
2. SPECIFIC
3. AUTHORITATIVE
4. CONCISE



ACTION PHASES

RECOVERY



- ◆ 10. Clean Up
- ◆ 11. Reconstitution
- ◆ 12. Convalescence/Healing
- ◆ 13. Rebuilding
- ◆ 14. Prevention
 - Shape the Battlefield

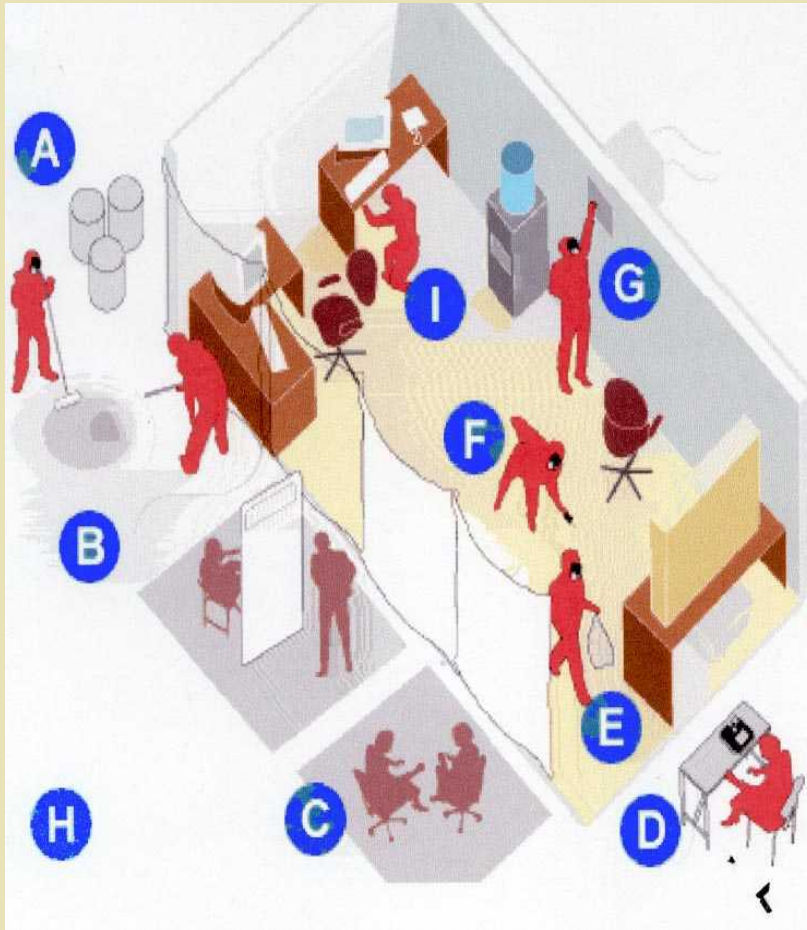
CLEAN - UP

- ◆ Follow Through
- ◆ Hierarchy of needs



FOLLOW THROUGH IT RIGHT

DO



A- Isolation

B- Decontamination

C- Interview

D- Clinical specimens

E- Containment

F- Floor sampling

G- HVAC sampling

H- Outside samples

I- Surface sampling

FOLLOW THROUGH

- ◆ Return of Personnel & Equipment
- ◆ Damages & Reimbursement
- ◆ Recognition
 - Authorities, Agencies & Participants
- ◆ Constructive Feedback



HEIRARCHY OF NEEDS

KIBEHO REFUGEE
CAMP, RUWANDA, 1994



- ◆ Safety
- ◆ Water
- ◆ Food
- ◆ Shelter/heat
- ◆ Clothing
- ◆ Medical Care
- ◆ Employment

JTF SAFE
HAVEN
PANAMA 1995



HEIRARCHY OF NEEDS

- ◆ Companionship
- ◆ Family envmt.
- ◆ Stability
- ◆ Social status & advancement
- ◆ Child development
- ◆ Care of elders
- ◆ Mid & long term plans

SCHOOL
ART
KOSOVO



MEETING HUT,
EMPIRE RANGE, JTF
SAFE HAVEN



RECONSTITUTION

◆ Ready to go again



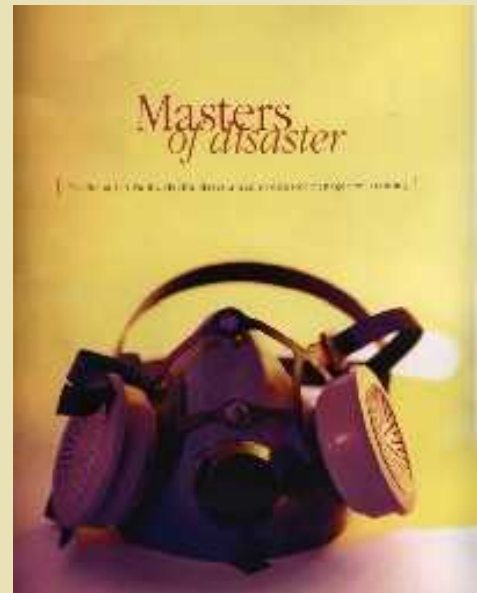
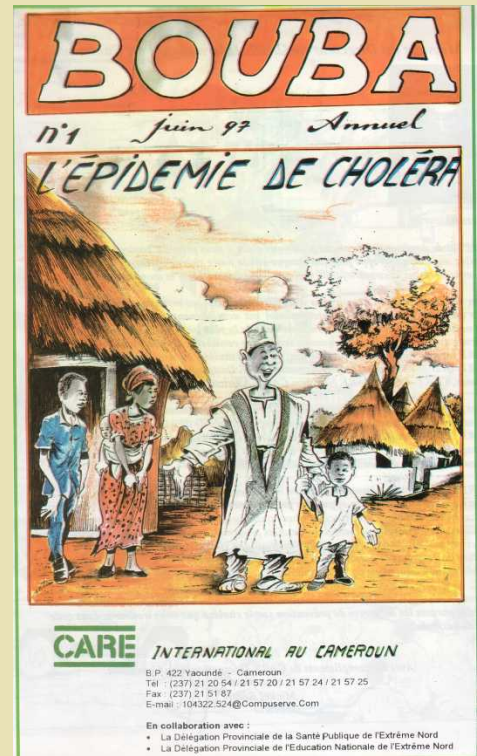
CONVALESCENCE / HEALING RETURN OF FUNCTIONS

- ◆ Governance
- ◆ Housing
- ◆ Municipal Services
- ◆ Public Health Infrastructure
- ◆ Medical Services
- ◆ Education Services



EDUCATION

- ◆ Community Awareness
- ◆ Citizen Skills
- ◆ Cooperative Action
- ◆ Responder Training
- ◆ Formal Education
- ◆ University
 - Pure Science
 - Applied Science
 - Social Science



REBUILDING

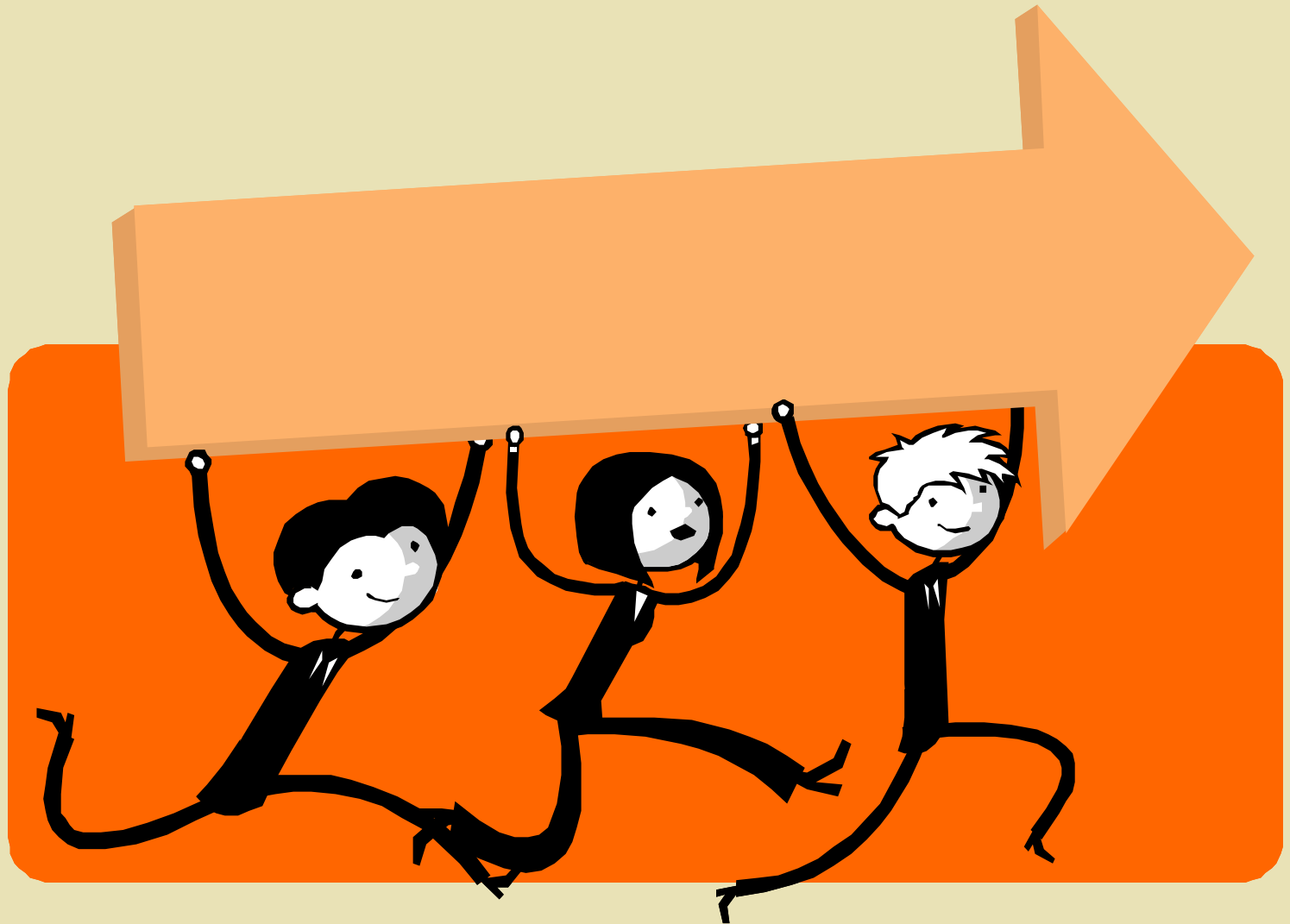
◆ For the future not the past



RESOURCES

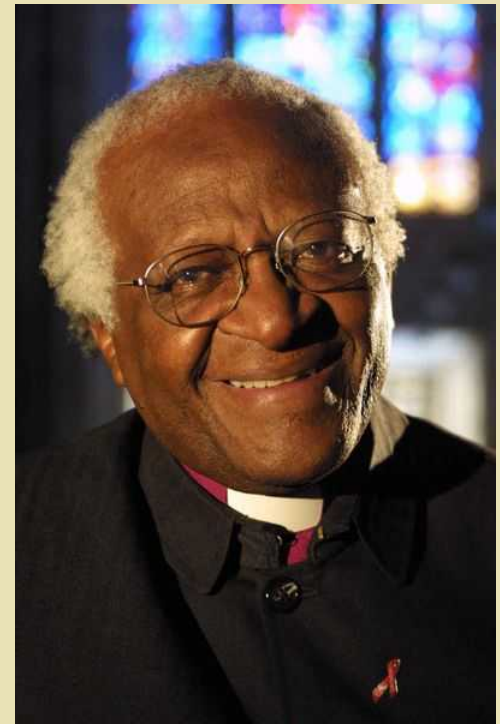


COORDINATION



PREVENTION

DESMOND
TUTU



- ◆ Shape the Battlefield
- ◆ Back to the Future
- ◆ “The good news to a hungry person is bread .” – Desmond Tutu



PSYCHOLOGICAL INJURY

- ◆ Expect large numbers of casualties
- ◆ Treatment principles
 - Proximity
 - Immediacy
 - Expectancy



SOLDIERS RESTING ON
OMAHA BEACH
WAR PSYCHIATRY, ZAJTCHUK

PSYCHOLOGICAL INJURY

◆ Stress of dealing with casualties

–Fatigue

- Overworked
- Understaffed
- Sleep deprivation



CRISIS & CONSEQUENCE MANAGEMENT INTEGRATION

**CRISIS
MANAGEMENT**

LOCAL

**CONSEQUENCE
MANAGEMENT**



**INCIDENT COMMAND
SYSTEM OR UNIFIED
COMMAND SYSTEM**

CONSEQUENCE MANAGEMENT LOCAL SUPPORT



FEMA



- ◆ DoD Teams
- ◆ Weapons of Mass Destruction Civil Support Teams (WMD-CST)
- ◆ Joint Task Force - Civil Support (JTF-CS)
- ◆ Metropolitan Medical Strike Teams (MMST)
- ◆ Federal Emergency Management Agency (FEMA)
 - State Emergency Management Agencies





THE LEOPARD



- ◆ “If we want everything to stay the same, it is necessary for everything to change.”
–Fabrizio Tomasi, Prince of Salina

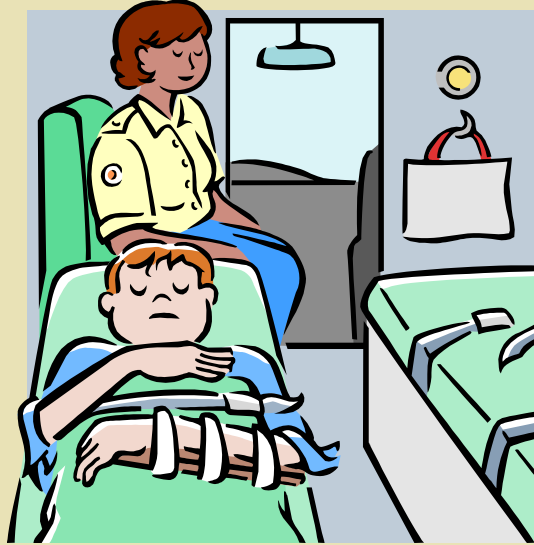
FALL BACK

RETREAT FROM
RICHMOND



- ◆ Change process to maintain standards of outcome
- ◆ Deliberate decisions by authorized leadership
- ◆ Coordinated pullback to maintain new standards
 - Carefully planned
 - Capable of support
 - Personnel trained & equipped
- ◆ Optimize outcome under evolving conditions

ALTERNATIVE STANDARDS OF CARE



- ◆ Alternative Standards of Care imply the deliberate and planned alteration of a series of elements in the medical care process;

ALTERNATIVE STANDARDS OF CARE



- ◆ 1. **Who** – implying variation in roles, competencies and training,

ALTERNATIVE STANDARDS OF CARE



- ◆ **2. How Provided** – implying variation in process

ALTERNATIVE STANDARDS OF CARE



- ◆ **3. Where Provided** – implying variation in sequence and venue

ALTERNATIVE STANDARDS OF CARE



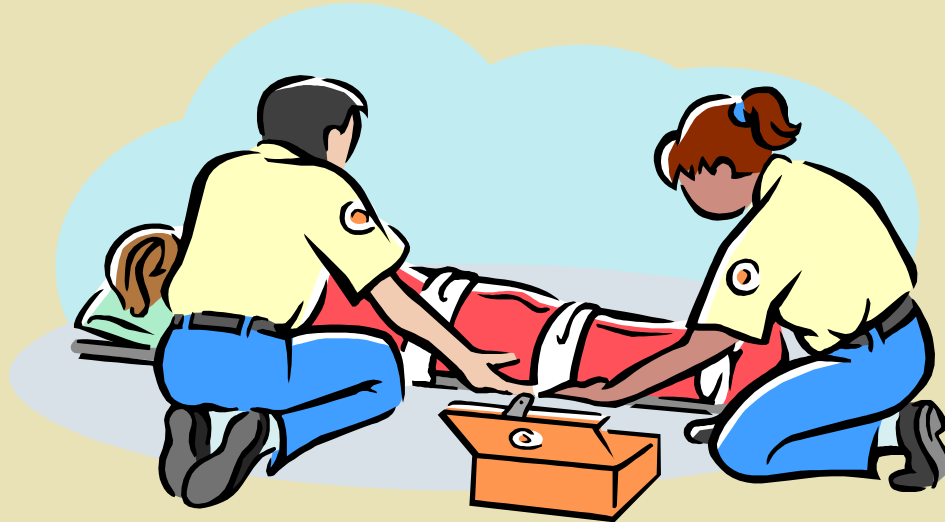
- ◆ **4. How Overseen** – implying variation in level of expertise and clinical sophistication

ALTERNATIVE STANDARDS OF CARE



- ◆ **5. How Evaluated** – implying alteration in criteria of outcome

EVALUATION



- ◆ Using responsible **agencies** & appropriate **focus groups**, metrics should be proposed and employed in defining the **shortfall** of functional capabilities for outcome, efficiency and coordination.

EVALUATION



- ◆ 1. **Timeliness** of response and time sensitivity of outcome



EVALUATION



- ◆ 2. **Access** for individuals within vulnerable populations at risk

EVALUATION



- ◆ **3. Quality of medical intervention and the employment of available technology**

EVALUATION



- ◆ **4. Effectiveness** of diagnostic and therapeutic actions in the preservation of life and health

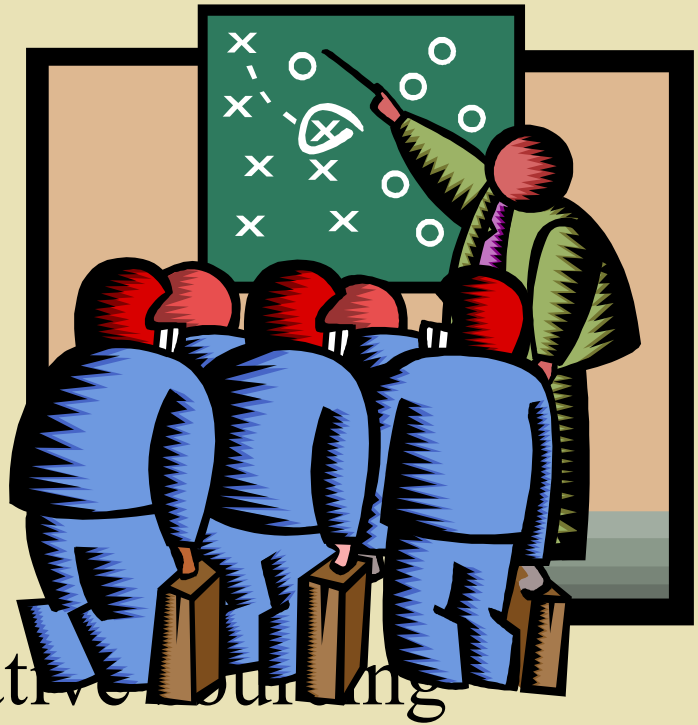
EVALUATION



- ◆ **5. Acceptability** within the expectations and cultural sensitivities of the community

MANAGEMENT

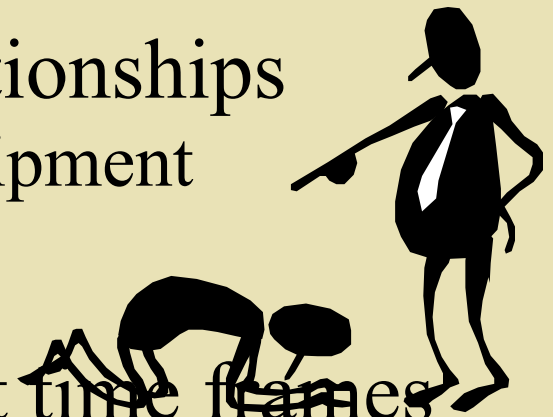
- ◆ Time Phasing Critical
- ◆ Decision Points
- ◆ Defined Options
 - Pre-approved actions
- ◆ Prepared
 - Sites
 - Operational Elements
 - Equipment
 - Supply flow & alternative sourcing
 - Manning



STOVEPIPE

RECOVERY-BASED MANAGEMENT

- ◆ Primary focus on disaster events
- ◆ Basic responsibility to respond
- ◆ Fixed, location-specific conditions
- ◆ Responsibility in single agency
- ◆ Command and control, directed operations
- ◆ Established hierarchical relationships
 - Focused on hardware and equipment
- ◆ Specialized expertise
- ◆ Urgent, immediate, and short time frames

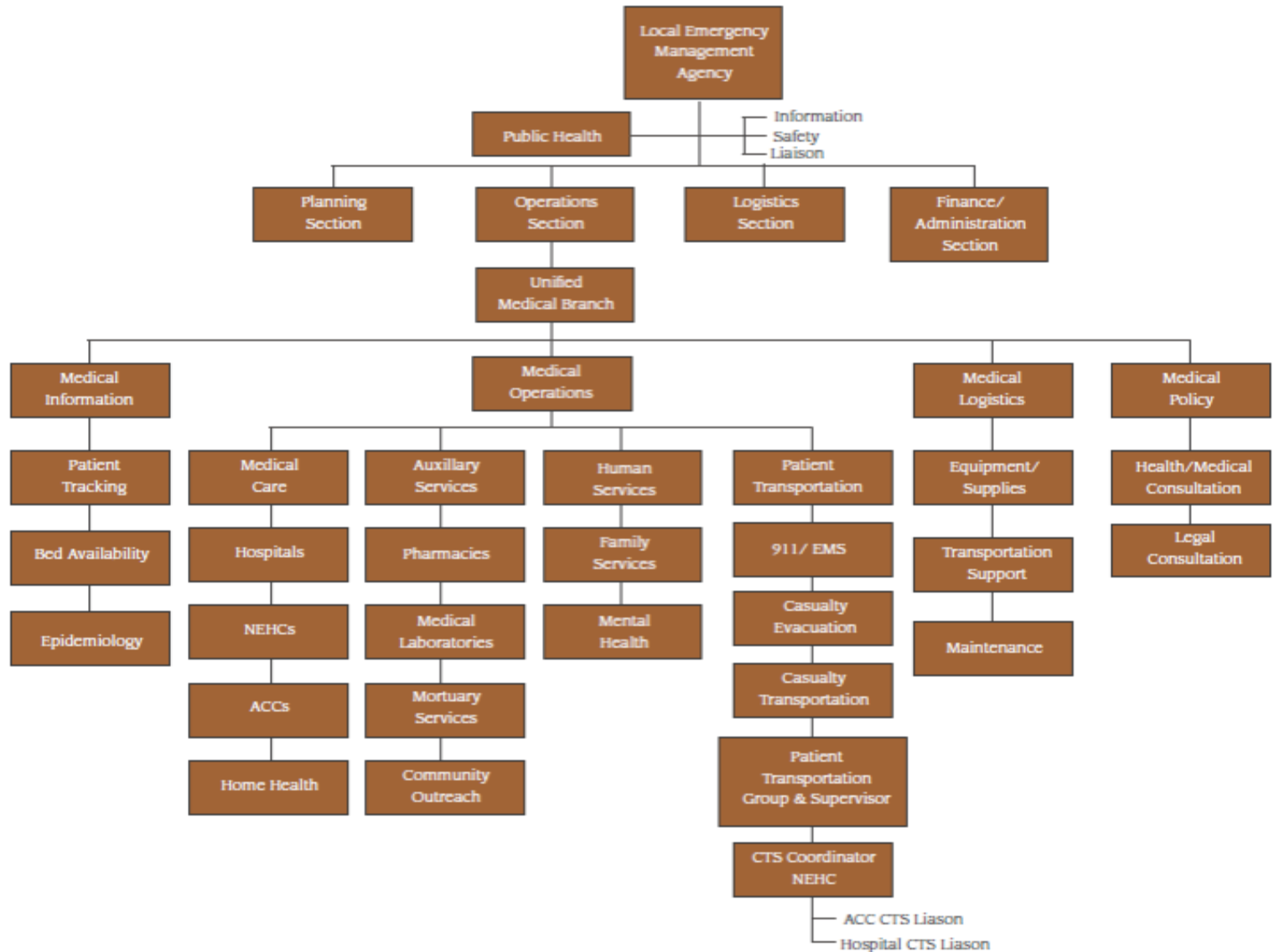


BROAD COMMUNITY PLANNING PREVENTION-BASED MANAGEMENT

- ◆ Focus on vulnerability and risk
- ◆ Exposure to changing conditions
- ◆ Changing, shared or regional, variations
- ◆ Multiple authorities, interests, actors
- ◆ Situation-specific functions
- ◆ Shifting, fluid, and tangential relationships
- ◆ Moderate and long time frames



MEDICAL COMMAND



TOOLS

- ◆ Horizontal Community Planning
 - Prevention Model integrated with Recovery Model
 - Across Responding Agencies
- ◆ Guidelines
 - Coordinated & Integrated
- ◆ Standards
 - Modified
 - Timing
 - Training
 - Outcome
 - Care

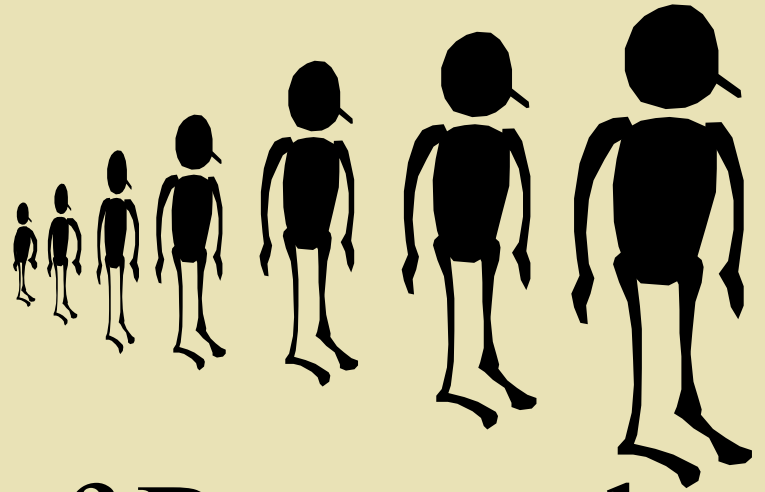


TOOLS

- ◆ Ethics
 - Substantive elements
 - Procedural elements
 - Values
- ◆ Principles
- ◆ Professional Codes
- ◆ Defined Duty Requirements
 - Compensation & Benefits
- ◆ Mandate & Sanction



RISK COMMUNICATIONS



◆ Authorities

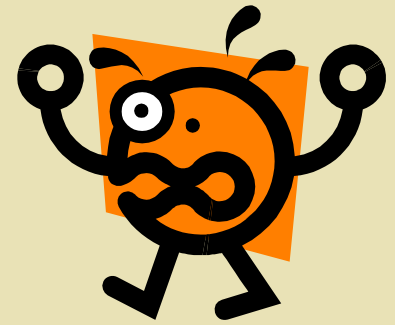
◆ Population of Responders

◆ Population at Risk

◆ Population at Large

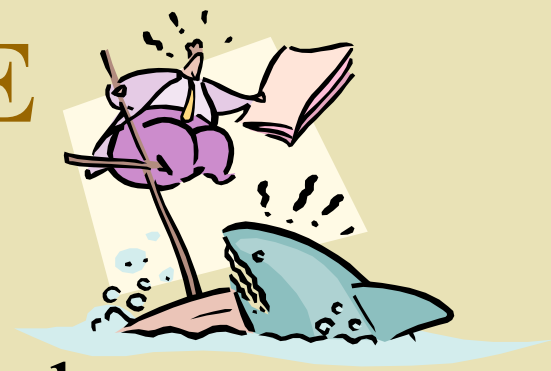


PANIC AVOIDANCE AS A GOAL



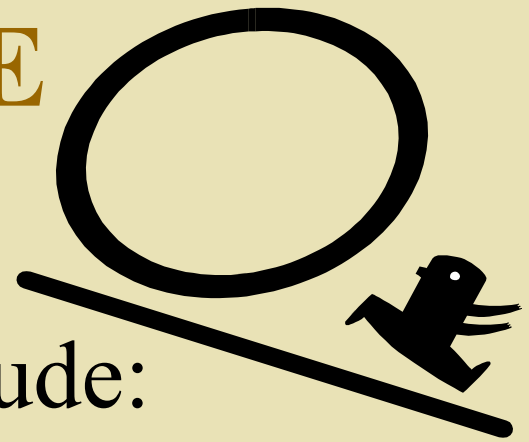
- ◆ Many communication plans list the avoidance of panic as a major goal
- ◆ Panic describes an intense contagious fear causing individuals to think only of themselves

PANIC AVOIDANCE AS A GOAL



- ◆ Risk factors for panic include:
 - The belief that there is only a small chance of escape
 - The perception that there are no accessible escape routes
 - Perceiving oneself at high risk of being seriously injured or killed
 - Available but limited resources for assistance

PANIC AVOIDANCE AS A GOAL



- ◆ Risk factors for panic include:
 - Perceptions of a "first come, first served" system
 - A perceived lack of effective management of the event
 - A perceived lack of control
 - Crowd ("mob") psychology and dynamics
 - Authorities that have lost their credibility



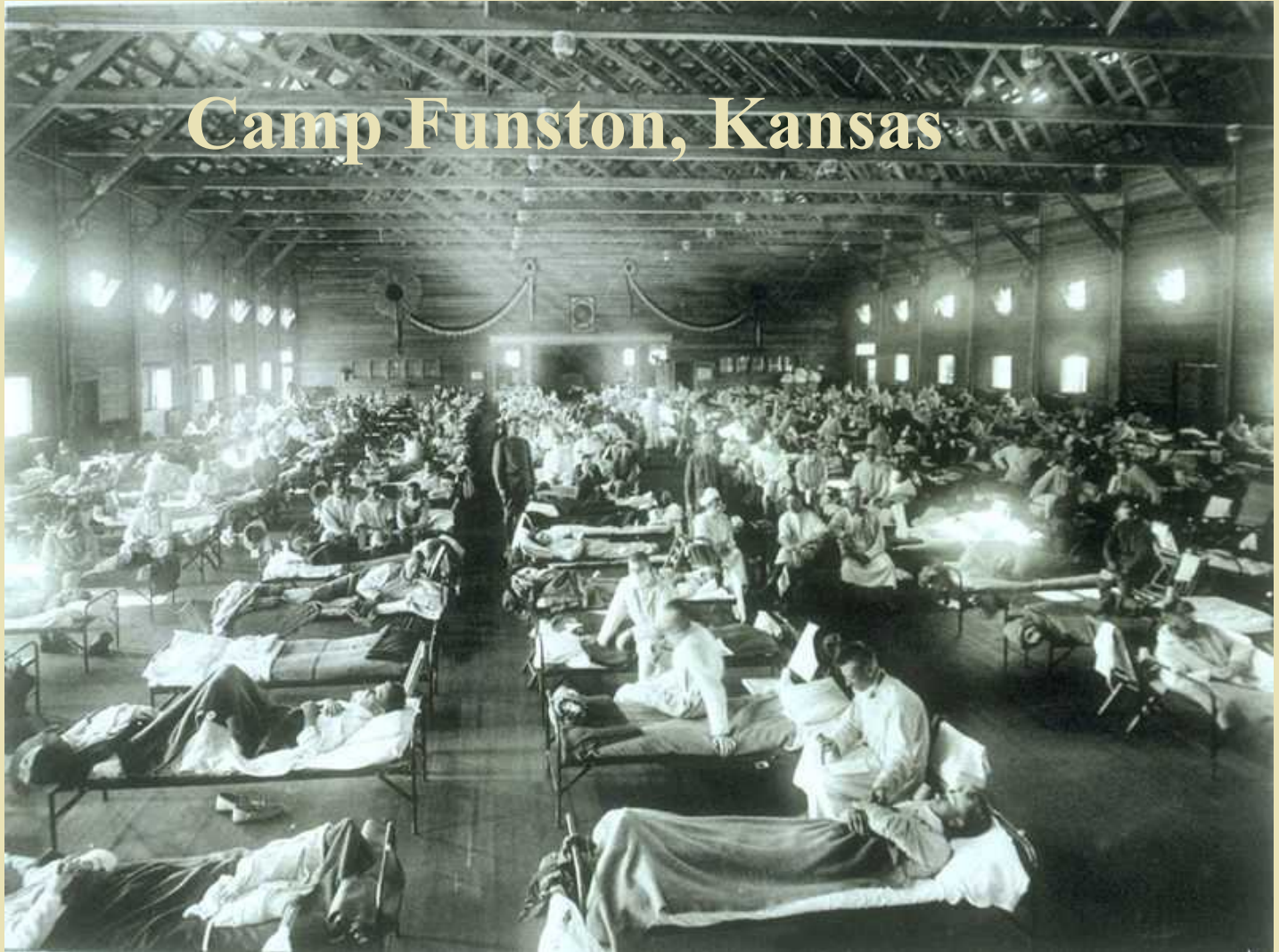
PANIC AVOIDANCE AS A GOAL



- ◆ Studies indicate that panic is rare
- ◆ Most people respond cooperatively and adaptively to natural and man-made disasters.
- ◆ Panic avoidance should never be used as a rationale for false reassurance or for lack of transparency
- ◆ We create or own heroes

BACK TO THE FUTURE

Camp Funston, Kansas



“If we don’t deal with these issues now, our children will face them in the future.”

MAINTAIN SITUATIONAL AWARENESS



Bear! Bear!

SUMMARY

- ◆ Threats & Vulnerability
- ◆ Readiness
- ◆ Response
- ◆ Recovery
- ◆ Management
- ◆ “Plans are Nothing, Planning is Everything.”
– Gen. George A. Patton



GEN GEORGE PATTON



QUESTIONS?

