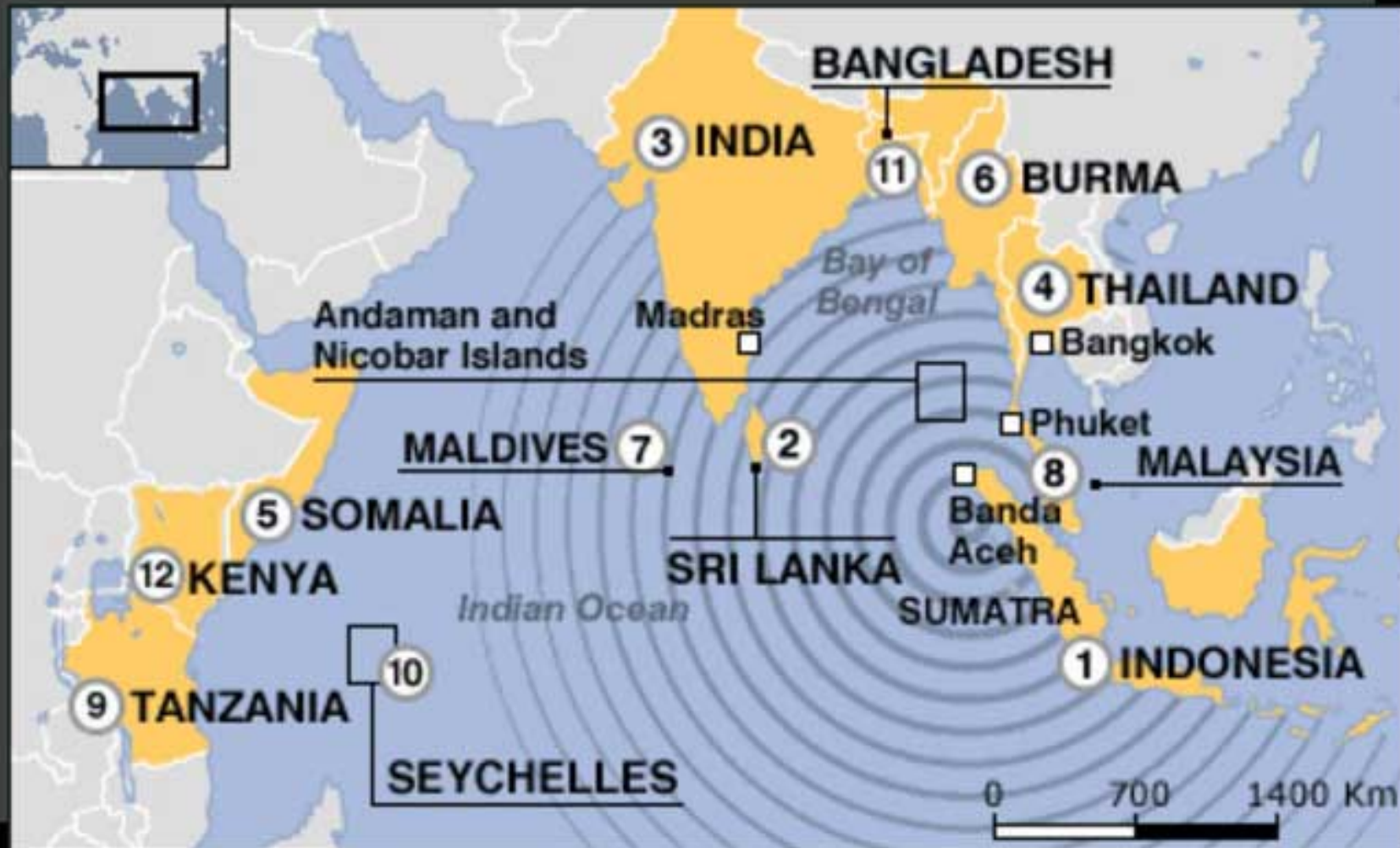


Preparing for the Psychological Consequences of Terrorism

Lewis R. Goldfrank, MD
Professor and Chair, Emergency Medicine
New York University School of Medicine
Director, Emergency Medicine
Bellevue Hospital/NYU Hospitals/VA Medical Center
Medical Director, New York City Poison Center

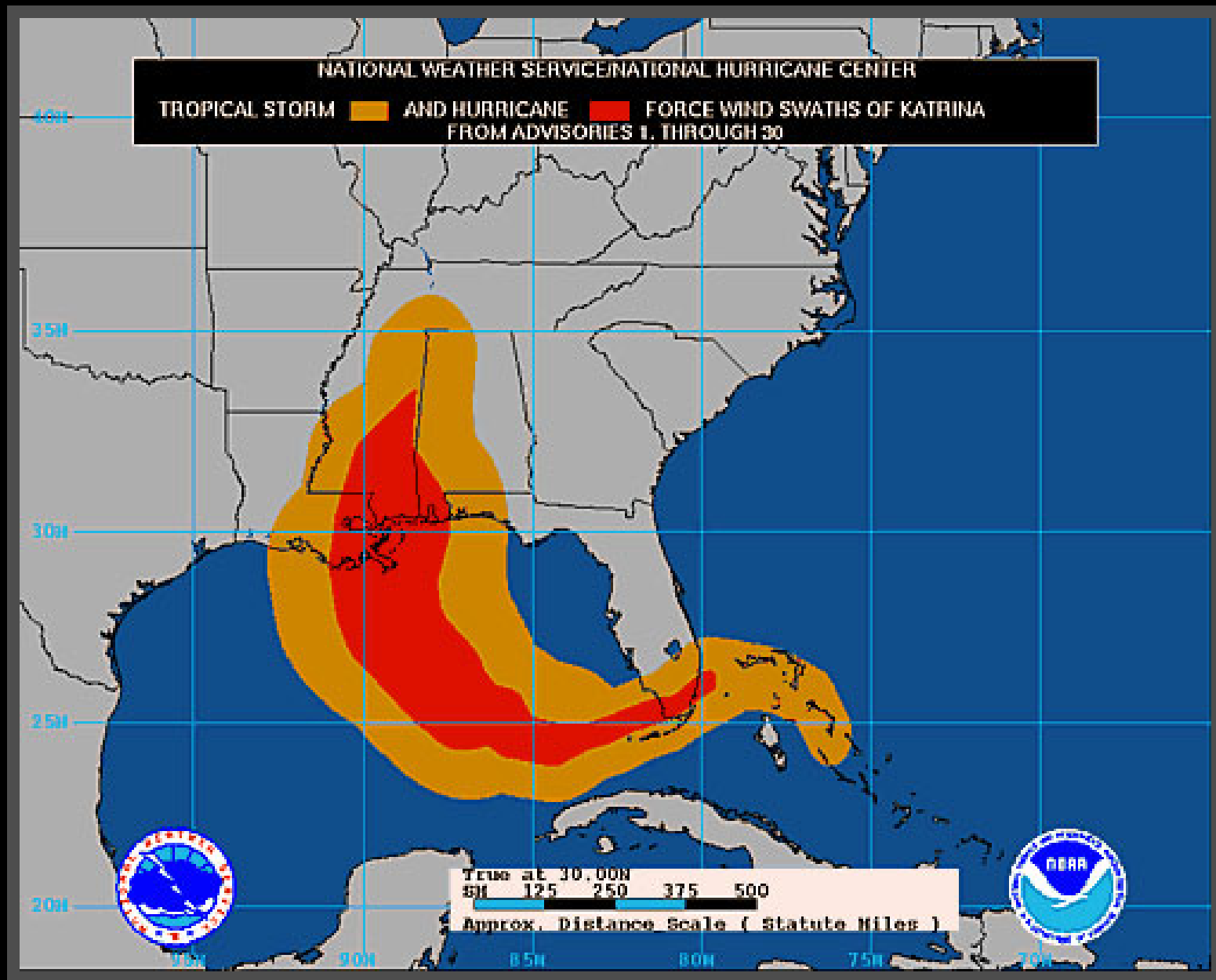
July 12, 2006

¹
Omaha, Nebraska



























Living in a Fearful World

Societal Concerns

Tuberculosis

Anthrax

HIV/AIDS

Serial Rapist

War

West Nile Virus

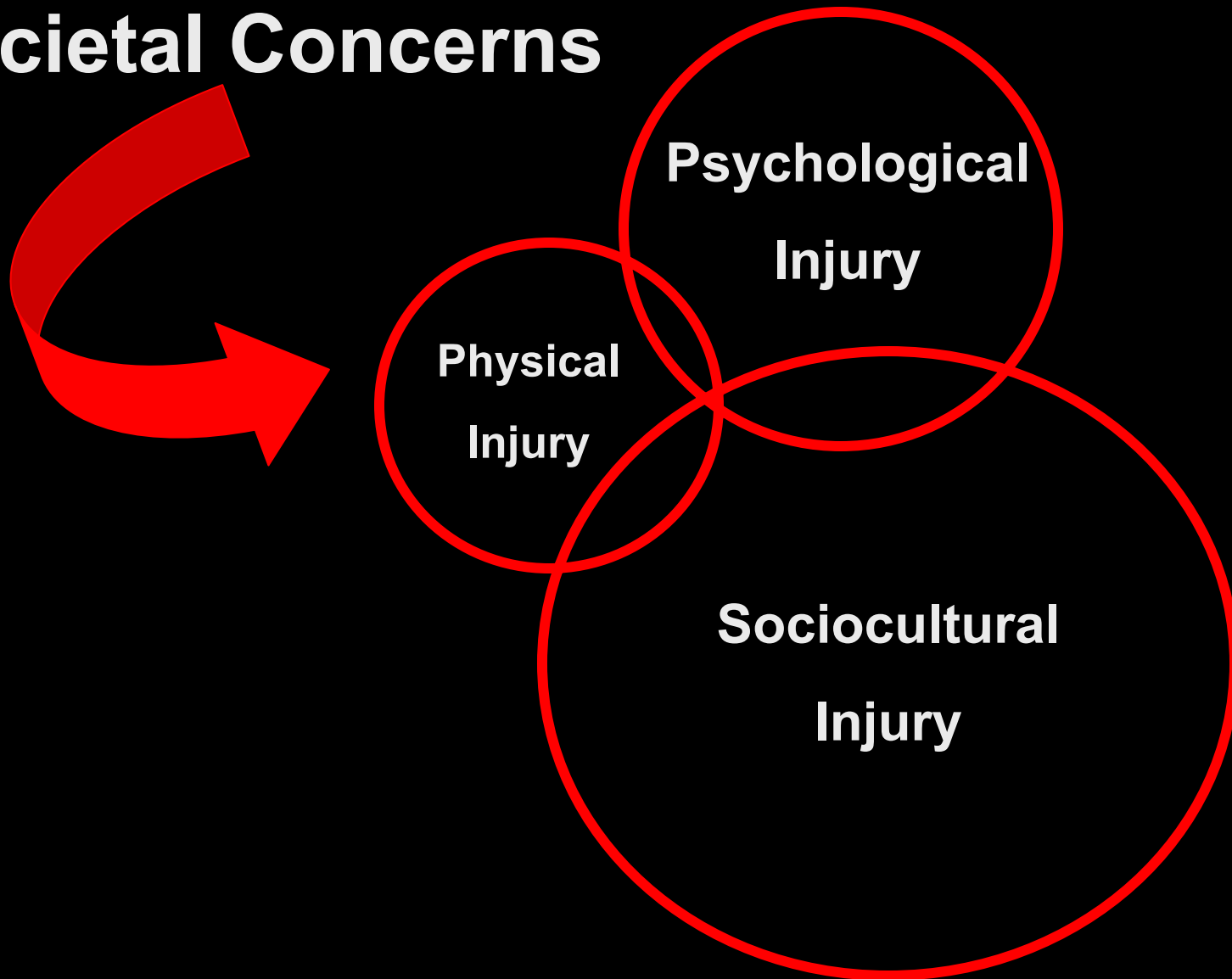
Snipers

SARS

[illegible]

Living in a Fearful World

Societal Concerns



Worst Case Scenarios?

March 17, 2003

Should President Bush have said “terrorists could kill hundreds of thousands of innocent people in the country” and “wreck destruction of a kind never before seen on this earth.”

Terrorists evoke horror.

How likely is an unprecedented catastrophe?

Why dwell on worst case scenarios?

Worst Case Scenarios

The probability of a terrorist attack in the USA is high but the risk to any one person is quite low.

These scenarios distort the proportional likelihood

Responsible risk assessment avoids this strategy



What is Risk?

Wide Spread Anxiety



- ❑ Toxic threats: industrial chemicals and pesticides.
- ❑ Vehicles and smoke stacks fouling the air.
- ❑ Dental fillings, aluminum pots, electromagnetic fields.
- ❑ Terrorism: Biological Warfare.

Definitions

Hazard is a potential harm

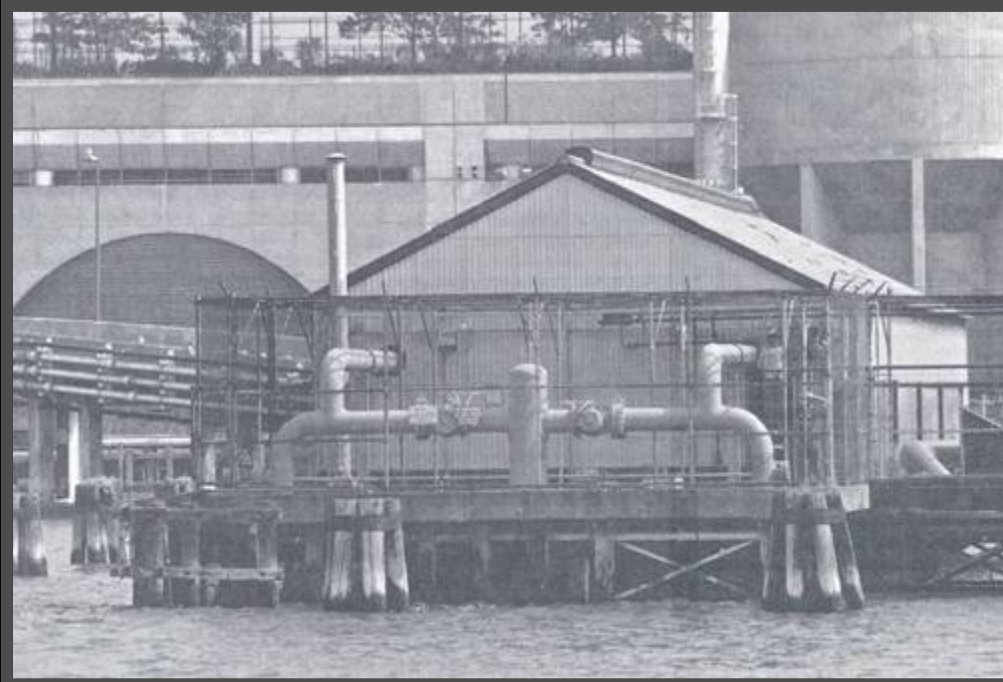
Hazards are sometimes confused with risk

A risk is the probability that the potential danger of a hazard will be realized

If a person is not exposed to a hazard, however dangerous, there is no risk

Types of Hazards

- ⌘ Chemical
- ⌘ Physical
- ⌘ Biological
- ⌘ Radiological
- ⌘ Cultural



Risk/Hazard Assessment

Example:

A fire is a hazard but the risks vary tremendously –

- ❑ Next door?
- ❑ Down the block?
- ❑ Or ½ mile away next to a pesticide plant?



- **Laboratory scientist studying properties**
- **Manufacturer defending against liability**
- **A worker who believes she became ill from exposure**
- **A consultant charged with cleanup**
- **A family concerned that the water is too polluted to drink**
- **A public health official attempting to counsel the community.**



Experts believe that societal risks have never been less.

Individuals believe that they face more risks than ever before and the risks will be greater in the future.

Self Assessment Test

1. Industrial explosion releases toxic chemicals
2. Radioactive radon gas released from the soil seeps into homes
3. Deposits of buried hazardous wastes
4. Pollution of air in home and office

1.Medium-Low, 2.High, 3.Medium-Low, 4.High₂₉

What is the difference between Risk and Uncertainty?

Risk can be calculated: the probability of winning the lottery,

Uncertainty arises when the odds of success or failure are incalculable: weighing the economic and political consequences of war

If you remember the Werner Heisenberg Uncertainty Principle (1926)

“uncertainty is unavoidably introduced into the measured qualities by the measurement itself.”

Preparedness: The more we study possibilities the more uncertain we become. The better prepared we become.

Differences Between Individuals and Experts

Experts: use probability and populations.

Odds of harm occurring to a % of a population and the severity of damage

Goal of the expert: to protect the greatest number of people the greatest amount of time

Individuals: analyze the consequences of an event occurring independent of its likelihood

Goal of an individual: is to be protected at all times

Characteristics of Hazard Assessment

Low Risk

Voluntary

(not wearing seat belts)

Familiar

(second hand smoke)

Natural

(radon)

Controllable

(personal habit)

Not Dreaded

(one causing emphysema)

Diffuse in Time

(kills 500 over year)

High Risk

Involuntary

(a nearby garbage dump)

Unfamiliar

(food irradiation)

Artificial

(X-ray)

Uncontrollable

(natural disaster)

Dreaded

(causes cancer)

Focused in Time

(kills 500 per decade but all at once)

Preventive Health

Risk Factors

Modifiable

Age, Sex, Family History

No

Workplace, Education
Home/Community

Partially

Tobacco, Diet, Alcohol/Substance use
Stress, Social Support
Sexual Practice

Yes

ACCIDENTS aRe Not

raNdom eVents

THey are PreDictABle

thEy CAN BE

PreVENTed

Citizen Preparedness for Terrorism

- ❑ Deal with our anxiety.
 - ❑ We won't die in a terrorist attack but we will watch on CNN and must explain to children
 - ❑ Routinization and understanding of terror prevents paralysis by fear.
 - ❑ This strips terrorists of their power.
-

There are no dumb questions!

Confidence

Perseverance

Caring

Teamwork

Common sense

Problem solving

“That which ought to be the most noble and the most becoming to those who are really educated, release from perturbation, release from fear—freedom. We must not believe the many, who say that only free people ought to be educated, but we should rather believe the philosophers, who say that only the educated are free.”

Epictetus: The Discourses

**Roman Philosopher and Former Slave Discourses
(101AD)**

Tyrants and autocrats have always understood that literacy, learning, books and newspapers are potentially dangerous.

1671: British Royal Governor of Colony of Virginia

I thank God there are no free schools nor printing; and I hope we shall not have (them) these (next) hundred years; for learning has brought disobedience, and heresy, and sects into the world, and printing has divulged them and libels against the best government.

If Washington Irving's character Rip Van Winkle were to return to New York City from his 100 year slumber in the Catskills – investigating our TV, radio, movies, newspapers, magazines, comics and many books – he might conclude that we focus solely on sex, murder, rape, superstition and consumerism.

Tabloids, TV Talk Shows, Movies

Pseudoscience/Superstitions

Astrology

Ghosts

Big Foot

ESP

Loch Nessie

Unlucky number 13

UFOs

Witches

Aliens

Extraterrestrials

Dumbing Down of America

Decay in the content of the
influential media

Lowest common denominator
programs

The Six O'Clock News

- ❑ The thirty second sound bites
- ❑ Rarely Science
- ❑ Progress in medicine and technology
- ❑ When did the president last say something intelligent about science?

We Must Transform the Role of the Newspapers, Television, Internet

No matter how sincere, no matter how deeply felt, facts are truly more comforting than fantasy.

A fundamental understanding of the findings and methods of science must be available on the grandest scale.... It is insufficient to produce a small highly competent group of professionals.

It is not the function of our government to keep the citizen from falling into error; it is the function of the citizen to keep the government from falling into error.

**US Supreme Court Justice
Robert H. Johnson 1950**

**The science of the future
must be comprehensible to
the leaders and the people**

Biology: The genome, evolution

Chemistry: Nerve agents, carcinogens

Physics: The planets, nuclear energy

Science alerts us to the perils introduced by our world altering technologies.

Science teaches us about the deepest issues of origins, natures and fates of our species, of life, of our planet and universe.

The gift of science may be to know where, when and who we are.

The rate of change in science is responsible for confusion and lack of faith

- No longer true
- Partially true
- Difficult to understand
- Social revolution; disquieting to those who can't keep up

Carl Sagan, *The Demon Haunted World: Science as a Candle in the Dark*. Ballantine Books 1996.

Science

Experimental results

Data

Observations

Measurements

Possible explanations

Humans may desire absolute certainty;
They may pretend to have achieved it.

Throughout history the goal of science
is to achieve improved understanding.

Science

Independent analysis: controlled experiments

- ❑ Could this logic be distorted?**
- ❑ Is there a deficit in approach/reasoning?**
- ❑ Substantial debate from all perspectives**
- ❑ Don't depend on "Authority"; no anecdotes**
- ❑ Quantify**
- ❑ Simplify – strength of evidence**

Avoidable human dilemmas are caused not so much by stupidity as much as by ignorance, particularly ignorance about ourselves. The attraction of pseudoscience and superstition are great dangers.

Science like democracy is an imperfect instrument, but they are the best weapons against ignorance and injustice. The whole idea of the democratic application of skepticism is that everyone should have the essential tools to effectively and constructively evaluate claims to knowledge.

As children tremble and fear everything in the blind darkness, so we in the light sometimes fear what is no more to be feared than the things children in the dark hold in terror.

Lucretius, On the Nature of Things. 60BC

Education

Start early

Universal high quality

Public health and public policy

Science will increase understanding

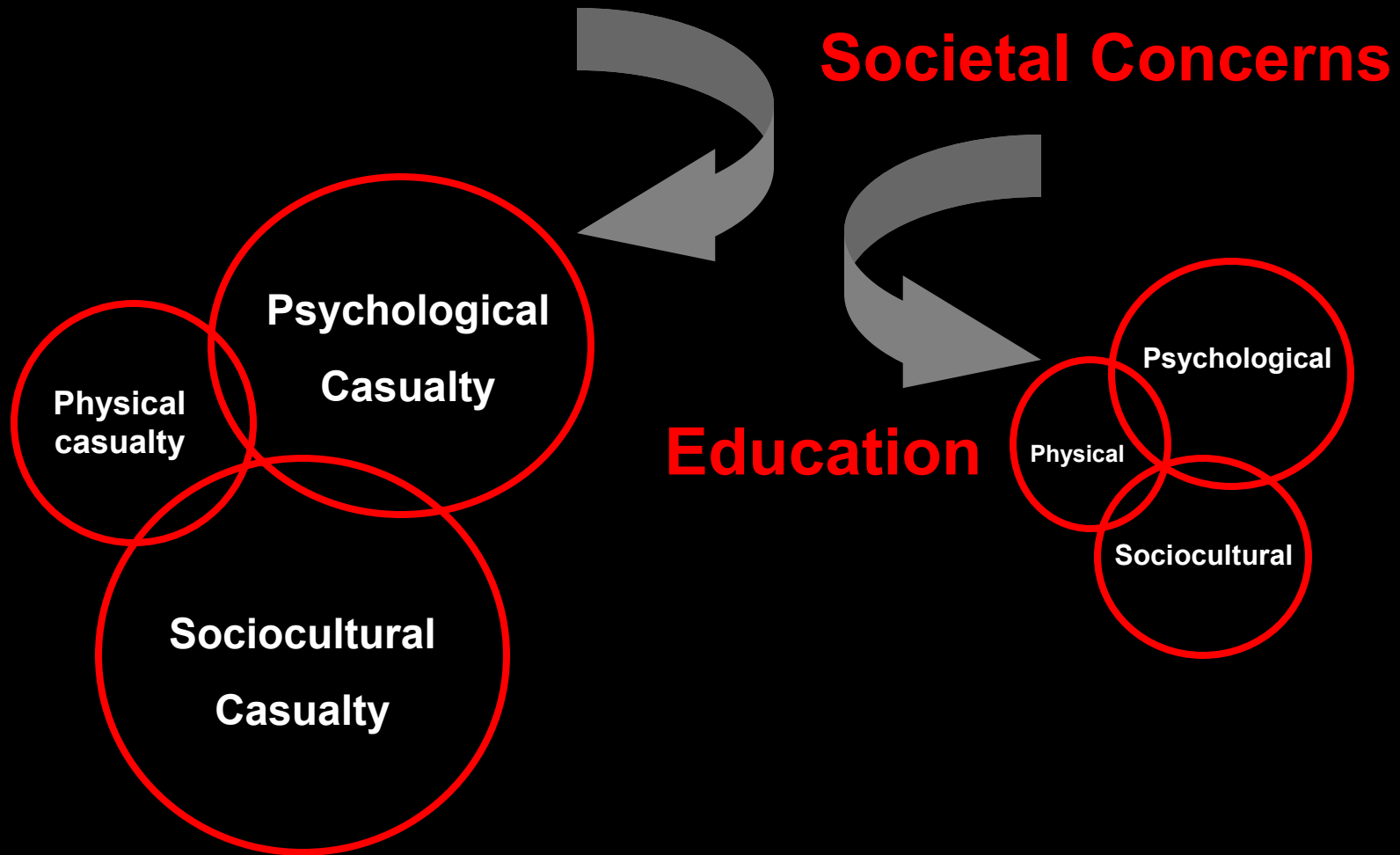
True risk assessment

Understand complex world

Personal responsibility

Continue for a lifetime

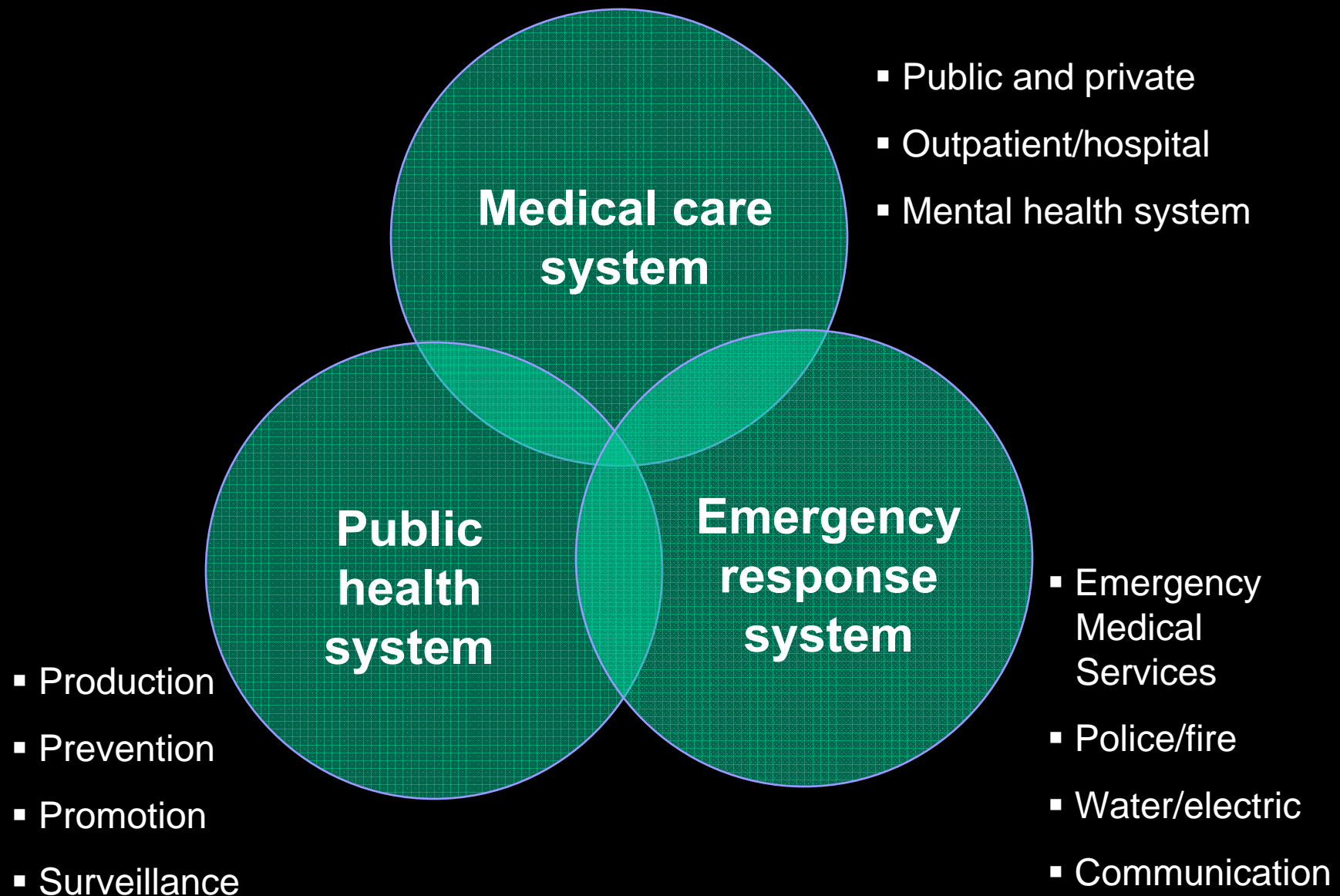
Living In a Fearful World



INSTITUTE OF MEDICINE

PREPARING FOR TERRORISM

TOOLS FOR EVALUATING THE
METROPOLITAN MEDICAL
RESPONSE SYSTEM PROGRAM



MMRS Goals

- ☐ Unique response plans.
 - ☐ Integrated immediate response structures.
 - ☐ Local and regional support network.
 - ☐ Integrate regional response systems into the planning process.
 - ☐ Integrate local mass casualty plans.
 - ☐ Collaboration of city planning agencies
 - ☐ Initiate hospital NBC planning.
 - ☐ Primary care and public health collaboration.
 - ☐ Develop appropriate medical treatment protocols.
-

Preparedness: Emphasis and Concerns

- ❑ Most Federal, State and Local agencies have little experience collaborating.
- ❑ Develop real time seamless channels of inter and intra agency coordination and cooperation
- ❑ Establish preparedness planning with honest intra agency and inter agency criticism
- ❑ Achieve unity of purpose – evaluate areas of potential, bureaucratic dysfunction.
- ❑ Share expertise and capabilities “no unit is an island”

Preparedness

- ☐ Empowers local communities
 - ☐ Permits Community flexibility
 - ☐ Depends on rigorous continuing education and improvement
 - ☐ Depends on shared responsibilities of governmental and nongovernmental agencies
-

Successful Preparedness Plan

Know your area

- Potential targets
- Mass transit
- Large public spaces
- Landmarks

Know your enemy

Potential toxins

Know your resources

Emergency response

- Containment
- Diagnostics
- Decontamination
- Treatment
- Transport

Hospitals

Antidotes

PREPUBLICATION COPY
UNCORRECTED PROOFS

PREPARING FOR THE PSYCHOLOGICAL CONSEQUENCES OF **TERRORISM**

A PUBLIC HEALTH STRATEGY

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

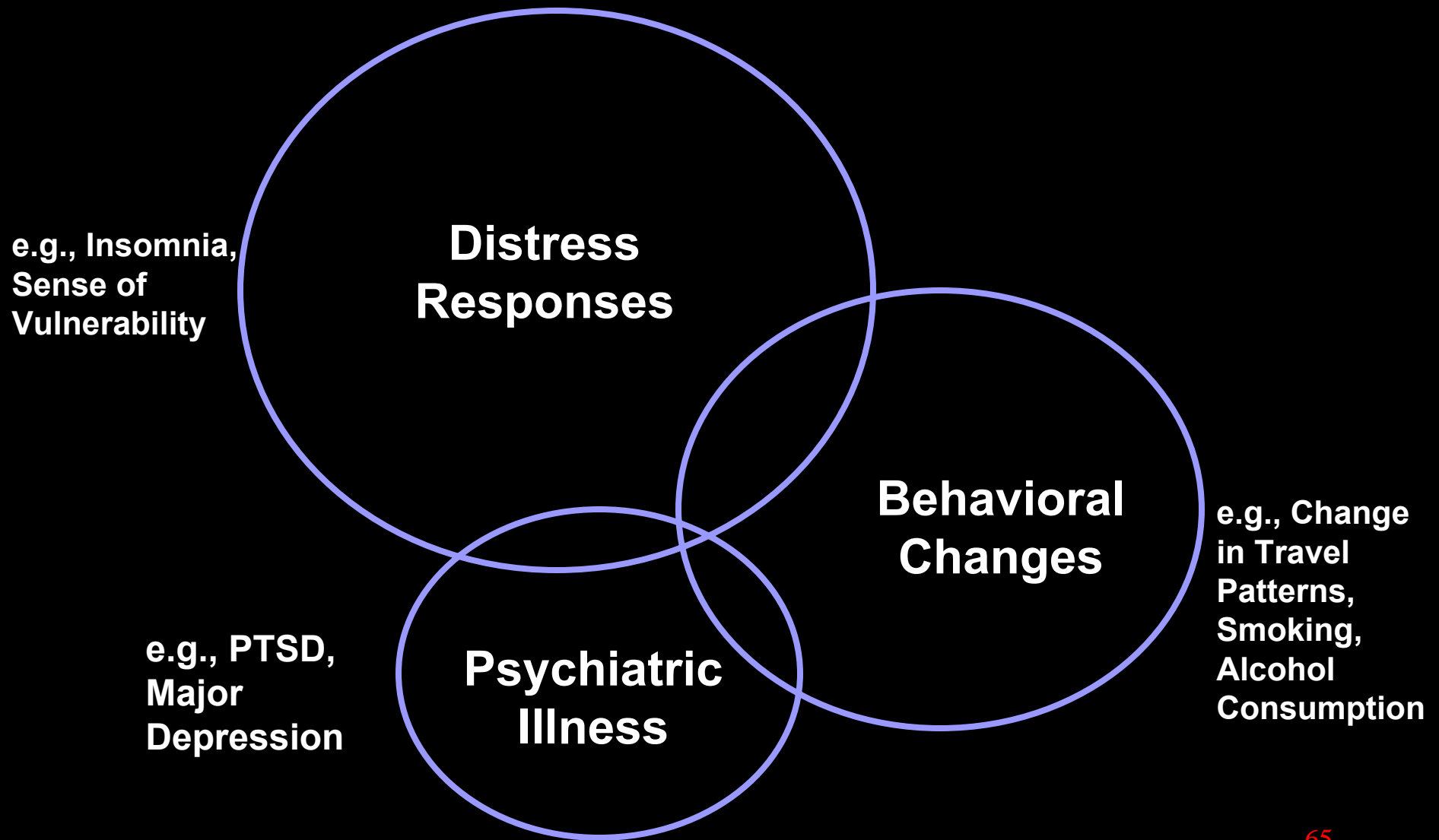


Charge to the Committee

With input from a workshop that addresses mental health issues that result as a consequence of terrorism:

- Identify gaps in knowledge and in planning, preparedness, and public health infrastructure for successful implementation of interventions.
- Identify a variety of approaches to intervention to limit adverse mental health consequences.
- Provide recommendations for options on how to optimize the public health response to long-term and short-term mental health consequences of terrorism.

Defining Psychological Consequences



Unintentional vs Intentional Events

In 2001 – World death toll terrorism 4000
vs accidents (car crashes) 40,000 in USA

Concentrate on

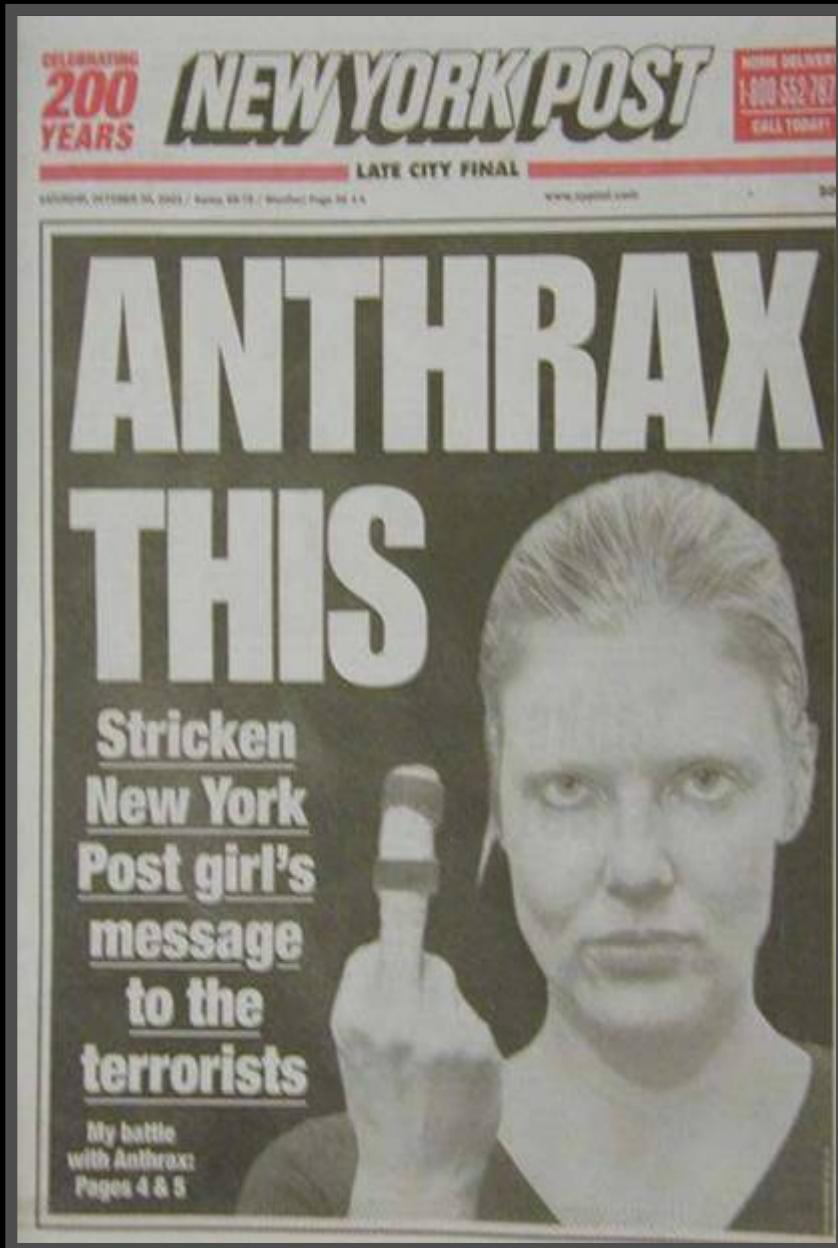
- ▶ Seat belts
- ▶ Air bags
- ▶ Brakes
- ▶ Helmets
- ▶ Car seats
- ▶ Drinking
- ▶ Driver Age etc.



Haddon Matrix

Factors

	Human (Host)	Car (Vehicle/Vector)	Speeding without Seatbelt (Environment)
Pre-event	Driver's education	Building of cars with crumple zones and airbags	Guard rails and divided highways
Event	Use of seat belts	Activation of anti-lock breaks and deployment of airbags	Witness contact emergency medical services
Post-event	First aid	Use of emergency equipment to rescue victims	Emergency care and rehabilitation
End Result	Injured passengers	Damaged car	Damage to property and/or other cars



Cases

- Inhalational (11)
 - deaths (5)
- Cutaneous (11)
- Treatment
 - 10,000s
- Psychological!





A Public Health Approach to the Psychological Consequences of Terrorism

Application of a Public Health Model to the Psychological Consequences of Terrorism

Epidemiologic Terms	Psychological Terms
Agent	Violent act or threat
Host	Affected individuals and populations
Vehicle or Vector	Terrorist and injurious agent, way terror is propagated
Environment	Physical and social env.



An Example Public Health Strategy

PHASES

FACTORS			
	Affected Individuals and Population	Terrorist and Injurious Agent	Physical and Social Environment
Pre-event			
Event			
Post-event			
Desired End Results			



TABLE 1-5 Matrix of Phases and Factors Involved in the Psychological Impact of Terrorist Attacks—World Trade Center (WTC) Attack, 2001

Phases	Factors		
	Affected Individuals and Populations	Terrorist and Injurious Agent	Physical and Social Environment
Pre-event	Psychological unpreparedness for the attack	Vulnerability of aircraft to hijackers	Vulnerability of WTC to attack (structural, symbolic nature, height)
Event	Exposure to the violence of the attack	Aircraft turned into weapon of mass destruction	Towers collapse
Post-event	Inadequate assessment and treatment of psychological consequences	Numerous bomb threats	Relocation of Lower Manhattan residents
End results	Distress responses, behavioral change, psychiatric illness	Terrorists gain greater visibility	Disruption of support networks

Public Health Strategy

Factors

Phases	Affected Individuals and Populations	Terrorism and Injurious Agent*	Physical and Social Environment
Pre—event	Physical	Physical	Physical
	Psychological	Psychological	Psychological
	Sociocultural	Sociocultural	Sociocultural
Event	Physical	Physical	Physical
	Psychological	Psychological	Psychological
	Sociocultural	Sociocultural	Sociocultural
Post—event	Physical	Physical	Physical
	Psychological	Psychological	Psychological
	Sociocultural	Sociocultural	Sociocultural
Desired End Results			



Finding: Ensuring Preparedness

The management of the psychological consequences of terrorism is a pressing public health issue.

- Interventions are needed for all phases.
- Interventions are needed for all factors.
- The present mental health system is not able to meet all the expected needs.



Finding: Workplace Preparedness

The workplace is a newly recognized and important environment for implementing preparedness planning.

New occupationally exposed groups include:

- construction workers
- postal workers
- utility workers
- public health workers
- children and teachers in schools



Finding: Training for Mental Health Providers

Many mental health professionals do not have specific knowledge in disaster mental health.


- Training and education for mental health professionals (including school-based)
- Training should include:
 - knowledge of psychological consequences
 - methods for response



Finding: Training for Other Professionals

Those outside the mental health professions, who may regularly interface with the public, can contribute substantially to community healing.

- Professionals including primary care, teachers, faith-based leaders (among others)
- Training should include:
 - knowledge of psychological reactions
 - supportive techniques
 - recognizing serious symptoms for referral



Finding: Psychological Consequences

Terrorism and the threat of terrorism will have psychological consequences for a major portion of the population.

- Research indicates psychological reactions develop in many
- Consequences should be addressed preventively and throughout the phases of an event



Gaps in the Current Infrastructure

- Coordination of agencies and services
- Training and supervision
- Public communication and dissemination of information
- Financing
- Knowledge- and evidence-based services



Finding: Research Needs

Research following terrorism events presents a multitude of practical and ethical challenges.

- Utilizing findings from other traumatized populations is not a substitute
- Support of disaster-specific and terrorism-specific research is necessary
- Improved cooperation and coordination can facilitate research

Integrate all emergency preparedness functions into public health structure and policy so that each day's activities generate practical training experiences for emergency responses.

Use the Web!

www.gnyha.org

www.bt.cdc.gov/

www.hopkins-biodefense.org/

Latest update on outbreaks

Information on bio/chem/radiation agents

For physicians

For patients (also in Spanish)

Commonly asked questions/answers

Emergency contact numbers (212-POISONS)

1.800.222.1222

The success in preparing for naturally occurring or human initiated disasters will be severely impaired by excessive emphasis on financial considerations and a limited emphasis on public health.

The current assault of accountants and the lack of collaboration and competence among emergency preparedness personnel are more powerful forces than the bioterrorists.

Focus on:

Belief in Incident Command

Ending Insularity and Reluctance or Inability to Share

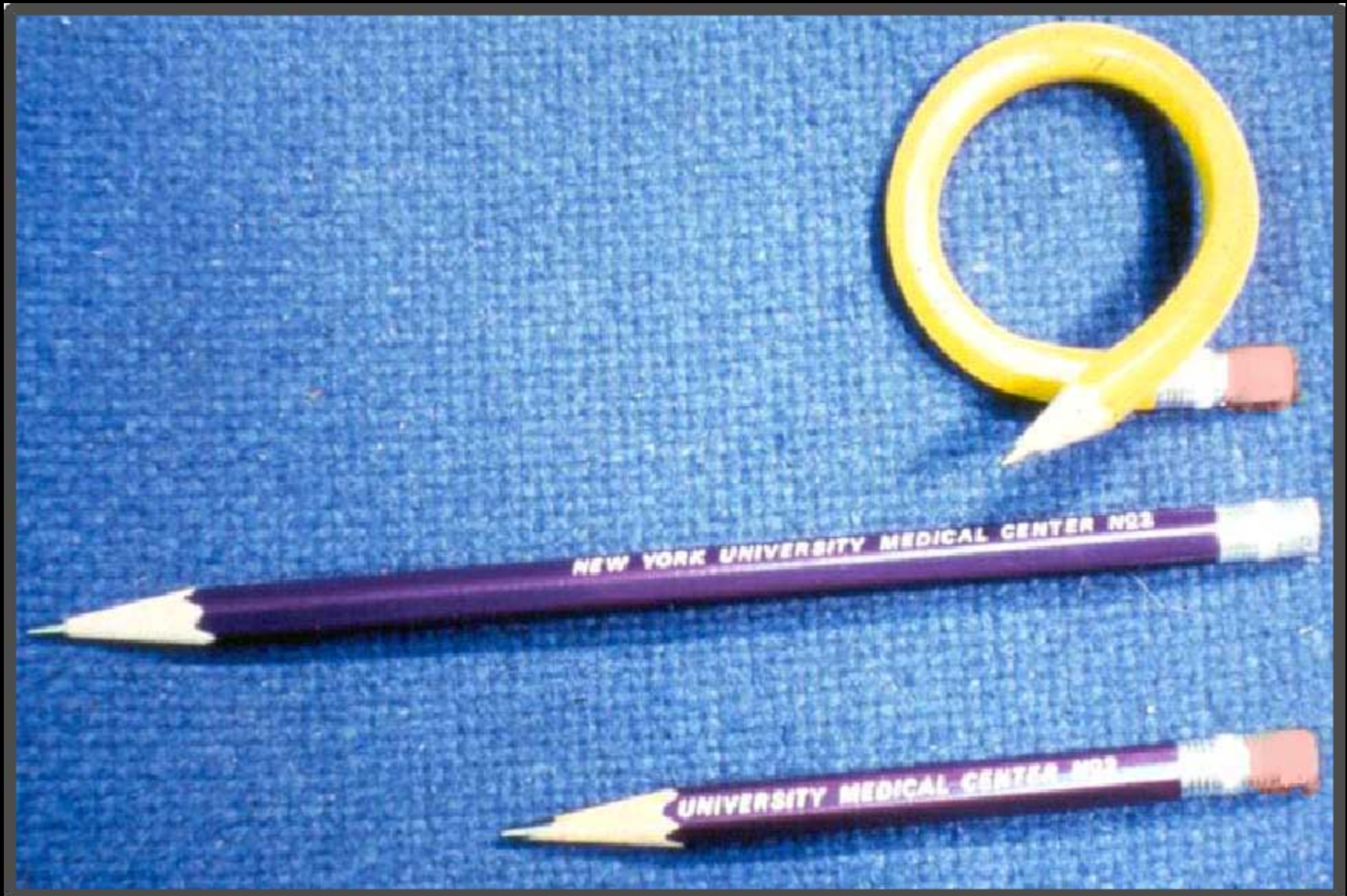
- ⌘ **Disaster personnel**
- ⌘ **Policy makers**
- ⌘ **Emergency managers**
- ⌘ **First responders**
- ⌘ **Public health works**
- ⌘ **Physicians**
- ⌘ **Researchers**

Ending Distrust and Territoriality

Creating a New Leadership

Ignorance more frequently begets confidence than does knowledge: it is those who know little, and not those who know much, who so positively assert that this or that problem will never be solved by science.

Charles Darwin, Introduction, The Descent of Man, 1871.



Nonetheless, he knew that the tale he had to tell could not be one of a final victory. It could be only the record of what had had to be done, and what assuredly would have to be done again in the never ending fight against terror and its relentless onslaughts, despite their personal afflictions, by all who, while unable to be saints but refusing to bow down to pestilences, strive their utmost to be healers.

Albert Camus

The Plague

