Module 5: Terrorism and Bioterrorism
What is Terrorism?

The unlawful use of or threat of use of force or violence against individuals or property, governments or societies, often to achieve political, religious or ideological objectives.

*Department of Defense, 1990*
Terrorism

- Extremely rare
- Targets innocent victims
- Chosen for maximum effect
- Terror tactics
  - Multiple simultaneous attacks
  - Secondary devices
  - Multiple techniques
When Terrorism Occurs

- Terrorism often occurs in a state of denial
- Sudden and unexpected
- Leads to profound crisis and confusion
- Witnesses and primary responders confront the horror of injury, mutilated and the dead
- Shock, disbelief, emotional numbness
- Feelings of vulnerability
September 11, 2001
Terrorism is a Crime

- Terrorists acts are criminal behavior
- Subject to Tort Claims
- Treating a terrorist or the victims of a terrorist are recording evidence in a criminal case
Mind of the Terrorist

- Lives in the future
- Has an idealized vision of what should be
- Narcissistic sense of righteousness
- Little empathy for those who stand in the way
- Destruction of society is seen as a necessary means to achieve their goals

Hoffman, Dir. Rand Inc., 1999
The Terrorist

- As a child experienced abuse/emotional humiliation
- Deep mistrust of others
- Loaths passivity/victimization
- Turns passivity/masochism/victimization into activity/sadism/victimizer
- Hatred/violent tendencies toward others
- Malignant narcissism
- Amoral in the service of their goals
Phase Response to Terrorism (The First Week)

- Shock
- Disbelief
- Numbness
- Denial
- Somatic ills

- Hyperarousal
- Fear
- Anxiety
- Insomnia
- Dysphoria

Cohen et al. 1987, Human Problems in Major Disasters
Phase Response to Terrorism (1-12 Weeks)

- Increasing group solidarity
- Patriotism
- Awareness of loss and threat
- Anger/Revenge
- Mobilization
- Suspiciousness
- Stress related emotional/behavioral problems
Phase Response to Terrorism (12-52 Weeks)

- Increasing disillusionment/fear
- Embitterment by threats/losses
- Loss/fragmentation of community
- Individualism (I have to take care of myself)
- Loss of idealism (I don’t want to sacrifice)
- Doubts regarding leaders
- Give them what they want
Phase Response to Terrorism (1-5 years)

- Gradual acceptance of new reality
- Reappraisal of event and personal role
- Rebuilding of the community
- Struggles to adapt to:
  - PTSS
  - LOSS
  - ANXIETY/DYSPHORIA
  - SOMATIC ILLS
- Changed attitudes: self/others/future
What do we know about the psychological responses to terrorist events?
Murrah Building/Oklahoma Six Month Postdisaster

- April 19, 1995, 167 Killed
- 182 adult survivors
- 45% Post disaster Psychiatric Disorder
- 34.3% PTSD
- 76% Same day onset
- Predictors
  - Female 55% : 34% Male
  - Prior psychiatric disorder
  - 94% Avoidance and numbing criteria

North, JAMA 1999
Murrah Building
Oklahoma/Bombing

- Survey of 2381 Middle School Children seven weeks after bombing
- 66% heard or saw blast
- 51% knew someone killed or hurt
- Three most common peritraumatic fears
  - (68%) Someone in the family would be hurt
  - (58%) A friend would be hurt
  - (54%) Nervous and afraid

Pfefferbaum et. al., 2002
Psychiatric Disorders in Rescue Workers after the Oklahoma Bombing

<table>
<thead>
<tr>
<th></th>
<th>Rescue Workers %</th>
<th>Primary Victims %</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>MDD</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Panic</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Alcohol</td>
<td>25</td>
<td>1</td>
</tr>
<tr>
<td>Any Disorder</td>
<td>38</td>
<td>34</td>
</tr>
</tbody>
</table>
Survey of Manhattan 5-8 Weeks After 9/11

- 19.3% PTSD (Lifetime prevalence)
- 8.8% Current PTSD (Last 30 days)

**Predictors**
- Residence below canal street
- Perievent panic attack
- Low social support
- Losing possessions in the attack
- > 2 Life stressors in the prior 12 months
- Participation in rescue efforts

Galea et al, 2002 J. Urban Health
Survey of Manhattan 5-8 Weeks After 9/11

57.8% One PTSS in the last month

- Intrusive memories 27.4%
- Insomnia 24.5%
- Startle reaction 23.6%
- Foreshortened future 21.2%

Galea et al, 2002 J. Urban Health
Psychological Sequelae of the September 11 Terrorist Attacks

N=1008 adults, 5-8 weeks post-disaster

Depression 9.7%

- Depression predictors:
  - Hispanic ethnicity
  - Low level of social support
  - Death of a friend or relative during the attacks
  - Loss of a job due to the attacks

Galea et al. 2002
# WTC Disaster

<table>
<thead>
<tr>
<th>Predictors/Depression</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>3.2</td>
</tr>
<tr>
<td>2 or more stressors</td>
<td>3.4</td>
</tr>
<tr>
<td>Panic attack</td>
<td>2.6</td>
</tr>
<tr>
<td>Death of a friend</td>
<td>2.3</td>
</tr>
<tr>
<td>Loss of a job</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Galea 2002, NEJM
## Survey of New Yorkers

<table>
<thead>
<tr>
<th>N=1009, 516 men; 493 Women</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewed in person 3-6 months post 9/11</td>
<td></td>
</tr>
<tr>
<td>At least one severe or two or more mild to moderate symptoms</td>
<td>56.3</td>
</tr>
<tr>
<td>• Sought treatment</td>
<td>27</td>
</tr>
<tr>
<td>Employment changed</td>
<td>29</td>
</tr>
<tr>
<td>Lost close family member or friend</td>
<td>10.5</td>
</tr>
<tr>
<td>Painful memories associated with traumatic reminders</td>
<td>33</td>
</tr>
</tbody>
</table>

- Unemployment, loss of residence, family/friends correlated with severity of PTSS

DeLisi et al, 2003
# National Survey 3-5 Days Post WTC (9/11) Disaster

N=560 adults

<table>
<thead>
<tr>
<th>Condition</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upset when thinking about it</td>
<td>30</td>
</tr>
<tr>
<td>Disturbing thoughts, memories or dreams</td>
<td>16</td>
</tr>
<tr>
<td>Trouble concentrating</td>
<td>14</td>
</tr>
<tr>
<td>Sleep Problems</td>
<td>11</td>
</tr>
<tr>
<td>Irritable/angry outbursts</td>
<td>9</td>
</tr>
<tr>
<td>At least one of the above</td>
<td>44</td>
</tr>
</tbody>
</table>

Schuster, NEJM, 2001
National Survey 3-5 Days Post WTC (9/11) Disaster

<table>
<thead>
<tr>
<th>Children, 5-18 years</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoided talking, hearing about what happened</td>
<td>18</td>
</tr>
<tr>
<td>Trouble concentrating</td>
<td>12</td>
</tr>
<tr>
<td>Sleep Problems</td>
<td>10</td>
</tr>
<tr>
<td>Losing temper and irritability</td>
<td>10</td>
</tr>
<tr>
<td>Having nightmares</td>
<td>6</td>
</tr>
<tr>
<td>At least one of the above</td>
<td>35</td>
</tr>
</tbody>
</table>

Schuster, NEJM, 2001
Psychological Effects of Terrorism

Post WTC (9/11) Disaster

- 22% of children in Manhattan were referred for counseling
- 58% of the counseling took place in the schools
- Predictors for referral:
  - Male with a sibling
  - Parent with PTSD

Stuber et al, 2002
Psychological Effects of Terrorism

In Israel, 30-50% of children exposed to terrorism experience:

- PTSD
- Anxiety disorders
- Mood disorders
- Disturbance in behavior and development

La Greca et. al., 2002
What is Bioterrorism?

“The premeditated unlawful use or threat of use of a biological organism with the intent to terrorize or kill the defined enemy”

Culpepper 2001
Bioterrorism

“There is a common misperception that war is about killing the enemy. In fact conflict is about the imposition of will, which may or may not involve lethal consequences.”

History of Pandemics

- 400 BC: Athens
- 250-600AD: Roman Empire
- 1350 AD: Black Death
- 1500 AD: Smallpox
- 1918 AD: Influenza
- 1980s-Present: HIV
Bioterrorism

- Not a new concept
- Bioterrorism events occurred in ancient times

**What is new:**

- Public health science focused on:
  - Prevention
  - Detection (early recognition is critical)
  - Treatment

The New York Academy of Medicine, 2002
Overt vs. Covert Terrorist Attacks

- **Overt** attacks: *immediate* response at the time of impact
  - Examples: Bombings, chemical attacks

- **Covert** attacks: *delayed* response due to unknown release of agent
  - Example: Biological attacks

MMWR, 2000:49(RR-4)
CATEGORY A Biological Agents

- “Weaponizable”
- Easily disseminated & transmitted
- High mortality and/or high morbidity
- Creates major public health emergency

- Anthrax
- Plague
- Smallpox
- Botulinum toxin
- Tularemia
- Viral hemorrhagic fevers
Without treatment, the **respiratory form of Anthrax** will kill approximately 90% of those infected.

**Small Pox** is highly contagious; will kill 30% of the population; and will leave the remainder greatly incapacitated.
The Ebola Virus is highly lethal. Mortality rates during epidemics have ranged between 50% and 90%.

Botulinum toxin is the most potent toxin known. Botulism can result in death due to respiratory failure. However, in the past 50 years the mortality rate has fallen from about 50% to 8%.
Methods to deploy biological weapons

1. Food contamination
2. Water contamination
3. Aerosol delivery
4. Direct spread of the infected agents
5. Poisoning of livestock
Fall 2001 Anthrax Outbreak via the U.S. Mail

Release of several grams of anthrax spores in 7 mailed envelopes
Fall 2001 Anthrax Outbreak

- 5 deaths
- 18 nonfatal infections
- 30,000 employees treated with antibiotics
- Hoarding of Ciprofloxacin
Fall 2001 Anthrax Outbreak

Shutdown of:

- Brentwood mail processing center
- US House of Representatives
- Hart Senate Office Building
- Supreme Court
- HHS Building
Fall 2001 Anthrax Outbreak

- HAZMAT calls: 60,000 excess calls nationwide in first 2 weeks
- In this outbreak, fear was “contagious”
- “Anthrax anxiety” was common
- “Contagious somatization”: anxious search for physical symptoms suggesting contagion
Impact on the Community

Surat Plague Outbreak

Site: Surat, India 1994

Perpetrator: none (non-terrorist)

Agent: Yersinia pestis
Surat Plague Outbreak

- September 1993 earthquake in the state of Maharashtra
- Decline in public health measures
- Increase in rat population
- 150 cases/28 fatalities
Surat Plague Outbreak

- Physicians and pharmacists fled the city with antibiotics
- Hoarding of antibiotics
- Within 4 days, 25% of population left the city
- Rumors of bioterrorism
Surat Plague Outbreak

- Huge economic impact
- Foreign airlines suspended flights to India
- Some countries banned the import of Indian food grains
- Passengers traveling from India were quarantined
- India's international image suffered
Children and Bioterrorism

- Children may be more vulnerable
  - Higher number of respirations/minute
  - Greater permeability of the skin of newborns/children
  - Higher surface/mass ratio
  - Readiness for dehydration
  - “Chemical agents” gravitate at lower heights

American Academy of Pediatrics, 2000
Psychological Symptoms Associated with Bioterrorism

- Fear of:
  - Invisible agents
  - Contagion
- Horror
- Panic
- Magical Thinking
- Scapegoating
- Demoralization

Holloway, 1997
**Psychological Symptoms Associated with Bioterrorism**

- Paranoia
- Social isolation
- Anger
- Loss of faith in social institutions
- Attribution of arousal symptoms to infection

*Holloway, 1997*