Session 5: Behavioral and Risk Communication Issues and Intervention Strategies in Nuclear Detonation Incidents

Dori B. Reissman, MD, MPH
CAPT, U.S. Public Health Service
Senior Medical Advisor, Office of the Director
National Institute for Occupational Safety and Health
Disclaimer

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Stressors

“Events or conditions that may cause physiological and behavioral reactions and present coping difficulties for the individual experiencing them”

Mental Health and Mass Violence, NIMH 2002
Consider This…

- Public’s concern about exposure and safety
- Incomplete knowledge and conflicting opinion
- Perceived mismatch of governmental action and public expectations
- Insufficient services (biomonitoring, Rx)
- Reluctance to follow health directives (evacuation or sheltering)
- Mass fatality management without acceptable ceremony
Emergencies and Contingencies

- Am I at risk?
- How can I protect myself?
- What about my family?
- Do I get the resources?
- Am I a target for intervention?
- Can I afford to stay home?
- Do I have faith in the leaders?
  - Expectations, track record, sufficient action?
Behavioral Health Responses to Trauma

- Problems making decisions
- Less able to assess situations
- Bodily complaints
- Slow to respond
- Change in behavior

Distress

Disorders
- PTSD
- Depression

Health Risk Behaviors
- Recklessness
- Unsafe work practices
- Alcohol, drugs, tobacco
“Tipping Point”

Events, actions, or perceptions that strongly influence psychological reactions or social behaviors at the group level

*Modified from source: Malcolm Gladwell, 2000*
Individual/Family Context

Community Context

Societal/Structural Context

DISASTER:

Forces of Harm:

Exposure to Hazard     Loss       Change

Affected Population

Individual Characteristics

- Age
- Gender
- Race/Ethnicity

Socioeconomic Position

- Education
- Occupation/Employment
- Income

Family Structure

Protection Behaviors

- Family disaster plan
- Response to warning
- Evacuation/Shelter in place
- Protection of property
- Family communications plan
- Citizen response role

Socioeconomic Status

- Wealth & Poverty

Physical & Built Environment

Health services, Social services

Local Political Structure & Governance

Community Infrastructure

Social support

Policy Environment

Global Policies & Influences

Cultural context

Civic Society

Social capital

Community Socioeconomic Status

Risk Behaviors

Local Government

Citizen Disaster Preparedness

Social Environment

Civic Society

Social support

Social capital

Community Socioeconomic Status

Socioeconomic Status:

Wealth & Poverty

Shultz, Espinel, Galea, & Reissman, 2008
Consider This…

- Demand surge for medical attention
  - Concern about exposure, safety
- Incomplete knowledge & thwarted expectations
- Adherence to health directives
  - Mass dispensing efforts
  - Movement & activity restrictions to stop disease
Consequences

- Poor adherence to recommended public health actions
  - Could lead to morbidity and mortality
  - Signal for problems with recovery due to loss of trust/faith

- Maladaptive responses to “fear” and anticipated loss
  - Could cause critical workforce shortage during epidemics
  - Could thwart best scientific efforts at containment

- Stigma and discrimination: “exposed”
  - Avoidance of healthcare could propagate disease
  - Can lead to violence and cascading economic consequences
Factors Provoking Tipping Points

- Belief that resources are not available, fairly distributed, or effective
- Blame, stigma & discrimination
- Restricting civil liberties (unevenly)
- Rumors & conspiracy theories
- Loss of faith in social institutions & leaders
  - Medical, public health, and social systems of care; life safety & law enforcement
- Inciting event was purposeful (terrorism)
Mass Casualty Response Framework

- Uncertainty of roles and responsibilities
- Lack of understanding of response needs
  - Information needs (distance, dose, protection, help)
  - Directives about Sheltering or Evacuating?
  - Service extenders for initial burn care
  - Managing mass movements (civil order, safety)
- Decisions in first few hours have greatest public health and medical impact
  - Not likely to be technically informed
  - Models help to anticipate/prepare but do not direct response
  - Concerns about secondary devices or additional targets (mutual aid, responder safety/health)
Harvesting Expert Opinion

- Maximize public trust
- Shape group behavior to reduce risk
- Reduce social and emotional dysfunction
- Support key infrastructure personnel

Reissman, Watson, Klomp, Tanielian, & Prior, JHSEM, July 2006
Tools of Population Behavior Change

- Education
- Marketing
- Risk Communication
- Leadership
- Policy
- Law

Ursano, Fullerton et al 2003
GOAL: Risk Reducing Behavior
Why Don’t We Follow Directions?

- Wash hands
- Cover nose/mouth
- Stay home
- Take temperature
- Emergency plans
  - Work, family
Public Comprehension: Active Listening Within Communities

- Need for 2-way communication
  - Emotional ventilation
  - Addressing concerns
  - Correcting false beliefs
- Mapping the voices of the community
- Relevant content and expectations
  - Demands for information
  - Preparing the public to receive critical information & instructions
GOAL: Reduce Social and Emotional Deterioration

- Psychological first aid
  - Safety, calming, connectivity, efficacy, hope
- Monitor, screen, triage, and care
- Grief leadership, ceremony, support
- Continuity of household and family
Desired Action (competency and function): Shelter or Evacuate?

- How do you set expectations (competing hazards – firestorms, fallout)?
  - Ready at home (what does it take?)
    - Violence potential – keeping others out; diffusing distress within
  - Ready at work?
    - Safe places, communication (shared experience; situation awareness), ability to connect with loved ones
  - Ready at school?
    - Situation awareness for staff, distraction activities and support for kids, having a plan where all kids have a note/picture from parent at school desk for such occasions, and reunification plan for families
  - Ready on the road (how to protect? Where to go? Relief stations along the way?)
    - Violence potential – fear-based and self-interest
    - Ability to maintain law and order (staffing? – family of police?)

- How do you get the word out for what is to be done and where to get supplies, medical evaluation, treatment?
  - Telecommunications – demand vs. override, EMP issues, surge/stand-up stations

- How do you prepare the public to receive the message and take appropriate action?

- How can you tell what place is safe and what is dangerous?
  - May not be able to see through debris/dust or be cued about wind direction or consistency of wind (plume direction)
  - Size of the device matters in terms of timing (immediacy) of radiation release
GOAL: Support Key Personnel in Critical Infrastructure

- Grief and loss on large scale
- Balance demands of work and home
  - Shared roles within the home
- Maximize one’s ability to function on the job (resilience)
  - Comprehensive stress, anger, grief management
  - Anticipate ethical dilemmas (e.g., healthcare)
  - Sustainable internal resources (life and coping skills)
Causal Pathways: Work Organization and Worker Safety & Health

NIOSH Steering Committee on Work Organization and Health

http://www.cdc.gov/niosh/programs/workorg/
GOAL: Organizational Support of Workers

- Culture/climate - integrate health, safety, and resilience
  - Anticipating needs & work pace over time
  - Grief leadership
  - Continuity of information and support
- Monitoring needs and providing support
  - Monitoring for emerging needs (e.g., stress-related, depression, grief, idiopathic medical conditions)
  - Continuity of occupational health services (mental health)
  - Provider education - stress-related conditions, health and safety concerns
  - Mobile stress management outreach and family assistance programs
Tipping Points

- Ethics and support for mindful triage and decontamination to coordinate and conserve medical resources
- 1st amendment rights vs. mandatory dictums
- Trusting the spokesperson (ready cadre?)
- Do I know that my loved ones are safe?
  - Reunification, Locator services
- What is a safe level? What is the real measurement?
  - Plume modeling helps anticipate but doesn’t direct (false security?)
- What are the appropriate protective measures?
- Consistent site-specific worker health and safety plans?
  - Exposure control (perimeter, shifts, PPE, designated zones)?
  - Measuring exposure meaningfully? Coordinated data collection, sharing, interpretation?
  - HASP Enforced?
- EUA and IND will likely raise thorny issues about experimentation – caution with equity/disparities and stigma
Preparatory Interventions

- Large universe of potential interventions
  - Individuals, groups of workers, or systems
- Interventions can target
  - Degree of worker exposure
  - Expectations/familiarity with potentially traumatic work stimuli
  - Predictability and controllability of acute stress reactions
  - Coping behaviors
  - Appraisal processes
  - Social support
  - Team cohesion
  - Help-seeking behaviors

*(NIMH workshop results presented by Josef Ruzek at ISTSS 2007)*
## Organizing Framework

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<th>Anticipate Tipping Points</th>
<th>Guidance Strategy</th>
<th>Operational Resource</th>
<th>Benchmark of Success</th>
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<td>Triage/Decontam.</td>
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<td>Shelter or Evacuate?</td>
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<td>Locate loved ones, reunify?</td>
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<td>Early intervention? Rx, safe food/water, support</td>
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<td>Manage contamination zones</td>
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<td>Biomonitoring</td>
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- IOM Com. on Psychological Consequences of Terrorism 2003
- Carter Center Mental Health Program
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- Defense Threat Reduction Agency (DOD)
- American Psychiatric Association
- American Psychological Association
- American Red Cross
- CDC funded Academic Centers for Public Health Preparedness, and the National Child Traumatic Stress Network
Catastrophic Event: Healthcare Facilities

- Proof of safe facility?
  - Situation awareness if become engulfed in the plume
  - Decon procedures and shelter procedures for staff/patients

- Contingency plans (specialized expertise and critical staffing on 24/7 call) for measuring radiation
  - Health physicist, nuclear medicine and radiation oncology experts
    - CDC working with Society for Nuclear Medicine - expanding local expertise - helping to provide radiation-specific training (decon, treatment), converting hosp gamma camera for whole body monitoring (just-in-time training?)
    - American College of Radiology, NRRPT, Health Nuclear Society, Amer Society for Radiation Oncology
  - Workforce capacity – likelihood of adequate staffing for critical functions?
  - Redundancy planning (innovation) to counter supply disruptions (just-in-time inventories)

- Triage in context of the magnitude of casualties and realistic mutual aid
  - Develop cadre of Triage Officers from the US Government (systems integrity)
  - Tensions of decontamination vs. delay in life-saving intervention
    - What good is a nice clean dead person?
  - Dynamics of triage – re-triage expectant once resources are available
  - Scope/scale: dealing with ethics/coping about decisions to constrain treatment
  - Supportive care strategies to buy time to enable more supplies to be obtained (anticipating other needs – antibiotics, blood products, etc.)

- Standard of care for catastrophic event vs. evolving discipline
Healthcare System Impact

- Injuries (30-40% single; 65-70% combo)
  - Fire/Blast, Radiation, Thermal, Combined
- Smaller devices have more radiation – simultaneous burst of radiation w/blast
- Population density impacts casualty load for both prompt and fallout effects
- Ability to transfer patients limited (transportation gridlocked or disrupted)
- Bed availability improves with distance but do you have staff? (if you can shuffle current occupancy)
- Surge of worried well blocking access to healthcare facilities
- Transportation gridlock, power loss, rubble, chaos
- Severe lack of adequate hospital security
- Inadequate number of hospital beds
- Lack of screening tools for radiation-related illness
- Evacuation probably based on C130 if adequate runway size (choppers not avail due to VIP)
- Turn audio off the Geiger counter – signal to upset folks
Medical Monitoring Considerations

- Who will be monitored?
- Will it be voluntary?
- Who will conduct the monitoring?
- How will the information be handled?
- Who will pay for the monitoring?
- What should be the content?
Pandemic Influenza: General Consequences

- Absenteeism and dysfunction
- Massive loss and grief
- Overwhelmed healthcare system
- Communities without supplies or support
- Fear leading to poor coping choices, violence
- Cascading economic problems

Reissman, Watson, Klomp, et al. JHSEM, July 2006
Pandemic Influenza: Impact on Health Care Personnel

- Conflicting demands of work and home
- Fear of transmission to family
- Ethical dilemmas for treatment decisions
- Grief and loss on large scale
- Helplessness of care-providers
- Loss of self-efficacy
- Exhaustion and resilience

Reissman, Watson, Klomp, et al JHSEM, July 2006
What is Resilience?

✓ The ability to **rapidly adjust** to misfortune or change in a healthy manner
✓ Tied to mission success and productivity
✓ An element of organizational culture
✓ An integral component of health and safety

Reissman, Schreiber, Shultz, & Ursano, 2008
Who is a Responder?

Workers engaged in saving and protecting lives, transportation, communications, medical services, public health, disaster assistance, public works, and construction.
Psychologically Prepare!

- Attend to both work and family demands
- Comprehensive stress management
- Anger defusing techniques
- Develop social support networks
- Just-in-time resources for special situations
- Enhance health and safety culture
- Address ethical dilemmas
- Self-care skills and sustainable resiliency

Reissman, Watson, Klomp, Tanielian, & Prior, JHSEM 2006
Anticipate Responder Risks

• What are the anticipated **job hazards**?
  – Role and task, organization of work
  – Work/rest (fatigue and recovery) cycles
  – Health and safety threats

• What are the **personal risk** variables?
  – Chronic disease and degree of control
  – Current injury or disability
  – Personality, stress tolerance, mental flexibility

_Reissman, SEAK 2007_
Sources of Deployment Stress

- Role ambiguity
- Mismatch of skills with assigned tasks
- Lack of team cohesion or poor leadership
- Poor health and safety culture for responders
  - Rest and recovery not built into schedule
  - Not prepared for psychological hazards
- Competing priorities and reporting chains
- Sensory overload (loss, death, destruction)
- Social disarray (equity and order)
Safety and Resilience Function

INCIDENT COMMANDER

Safety Resilience

OPERATIONS  PLANNING  LOGISTICS  FINANCE
Event Response: Safety, Health, and Resilience

- Connect with infrastructure for coordinated health and safety activities
- Situational awareness and anticipate hazards
- Compliance with site-specific health and safety plan (HASP)
- Injury and illness reporting
- Staff and data monitoring to achieve real-time exposure assessment and control
Tools of Workforce Management

- Comprehensive health care for employees & families
- Supervision
- Personnel policies (leave)
- Job assignment policies
- Co-worker cohesion
- Work culture
- Employee training
Workforce Management in Emergencies

- Rotate people
- Reserve force
- Limit work hours
- Regional response networks
- Cross training and surge capacity
  - Across tasks, managers, locations
  - Shared leadership
- Selection/Deselection of individuals
Sustaining Resilience

- Health and safety culture, policies
- Work flow adjustment and support
- Work and family/life balance
- Stress, anger, grief management
- Team building and skills training
- Situational leadership
- Address ethical dilemmas
- Teach self-care skills
Tools to assess current status of work organization:

NIOSH Generic Job Stress Questionnaire (GJSQ):
http://www2a.cdc.gov/niosh-workorg/detail.asp?id=88

Other measures to consider:
http://www.cdc.gov/niosh/topics/workorg/tools/default.html

Ability and Willingness to report to work.
(Qureshi, Gershon, et al., 2005)

Safety climate instruments (tailored for your agency)

The Changing Organization of Work and the Safety and Health of Working People
http://www.cdc.gov/niosh/02-116pd.html
Referral?

- Pattern of absenteeism or presenteeism
- Chronic non-compliance, problems getting along with others
- Depression, anxiety, problematic use of alcohol or drugs
- Disruptive or destructive behavior
- Domestic violence, child or elder abuse
- Signs of cognitive dysfunction
- Acute psychosis
- Inability to care for self
- Suicidal or homicidal thoughts or plans
Longer-Term Effects of Stress

- Altered appearance or behavior
- Change in job performance
- Emerging dysfunction in work teams or units
- Increased health problems and injury rates
- Workforce repercussions
- Compromised mission