Risk Communication Challenges in Nuclear Detonation Incidents

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Communication in Disasters and Emergencies

- Effective risk communication is central to the success or failure of efforts to manage any disaster.
Importance of Effective Disaster Communication

• Timely, consistent, accurate, comprehensible messaging is vital
  – Provide people with protective action information
  • Reduce deaths, injuries, illness
  – Prevent responses that interfere with efforts to manage the incident
  – Reduce psychological and social impacts
  – Help maintain public trust and confidence
Terrorist Attack with a 10 kt Improvised Nuclear Device (IND)

- Likely to be among the most challenging in terms of risk communication
  - Event may occur suddenly and without warning
  - Massive devastation
  - Possibility/expectation of additional attacks to follow
  - To save lives, emergency messaging will be needed almost immediately
  - Event involves radiation and radioactive contamination
Radiation

- Risk perception research has consistently shown that radiation is one of the most feared of all hazards.
- “Situations involving radioactive materials have a remarkable capacity to produce widespread fear, a profound sense of vulnerability, and a continuing sense of alarm and dread.”

Goiania Accident
Cesium 137
244 contaminated
54 treated
4 deaths
800 acres contaminated
112,000 sought monitoring

Psychogenic symptoms

Source: Ricks, REACT/S
Source: IAEA
Population Flight

- **TMI**
  - For every person advised to leave, about 45 actually did (Erikson, 1994)
  - Some 150,000 people took to the highways

Social Stigma

• The Example of Goiania
  – “Hotels in other parts of Brazil refused to allow Goiania residents to register. Some airline pilots refused to fly airplanes that had Goiania residents aboard. Cars with Goiania license plates were stoned in other parts of Brazil.” (Kasperson & Kasperson, 1996)

• The Example of Chernobyl
  – “It was very unpleasant…they shunned us.”
    10th form pupil at the Karpovichi secondary school (TOTBW, 1996)
Various Critical Audiences in an IND Event

- People living downwind
- Broader population / nation as a whole
- Emergency responders
Risk Communication for Radiological/Nuclear Events

- Real world experience
- Research
  - General
  - Specific to rad/nuc
Pre-Event Message Development Project

• General Public
  – Focus Groups:
    • 30 rad/nuc focus groups with 285 participants
  – Cognitive Response Testing Interviews:
    • 39 rad/nuc individual cognitive response testing interviews
  – Geographic Distribution:
    • Mid-Atlantic, Southeast, Southwest, Midwest, West
  – Nine population subgroups:
    • Urban African-American
    • Rural African-American
    • Urban Caucasian
    • Rural Caucasian
    • Urban Hispanic
    • Rural Hispanic
    • Urban Asian
    • English Second Language
    • Native American
Focus Group Demographics: General Public

Ethnicity/Race

N = 285
(30 focus groups)

Nine population subgroups
What Do People Think About The Threat?
What Are Their Main Concerns?
What Information Do They Want?
What Do They Think of Current Government Informational Materials?
What Terms Do They Understand or Not Understand?
How Would They Change or Improve Emergency Messages?
General Public: Finding #1

People’s primary information needs center on health issues

- “How do I protect my family?”
- “What are the symptoms that I need to look for?”
- “When do [we] need to get medical help?”
- “What happens if the… water is contaminated, what do we do?”

Need for spokesperson(s) with high credibility on health issues
Trusted Sources: National

CDC 84%
Doctor who is expert 83%
U.S. Surgeon General 76%
NIH 75%
DHHS Secretary 69%
DHS Secretary 68%
President Bush 65%
Attorney General 65%
General Public: Finding #2

- **Television meteorologists** were seen as another good source of information by people in areas used to dealing with natural disasters
  - Seen to be apolitical and without an axe to grind
    - “Why would he tell us something he didn’t believe in? It’s not like he will be voted out of office.”
  - Considered well known, familiar figures that people regularly watched for daily weather information or, more importantly, for updates on weather emergencies
    - “Usually, if something bad happens, it is weather. So when you go to the TV, there he is giving us the information.”
General Public: Finding #3

- Consistent with other research, many participants expressed **substantial resistance to the idea of sheltering**
  - “If you have **kids**, the first thing you do is to get to your kids.”
  - “You’re not thinking of covering up, you’re trying to get to that **child** at that time.”
  - “I’m not gonna stay in the house. I’m gonna try and find my **kids**.”
  - “My first response would be to go find my **children**.”
  - “I would still go get my **children** no matter what. Because to me that is everything.”
Fatalistic attitudes towards terrorism in general and radiation/radioactive contamination in particular were much more pronounced in minority populations.

- “I don’t think we’d have a chance…”
- “It’s radioactive material. Once it gets in you, [you’re] dead anyway.”
- “There is nothing you can do.”
Key terms are not always clear

• “Who provides shelter, the Red Cross?”

• “Shelter in place. What does it mean? Does it mean stay where you are?”

• “I assume shelter in place means to go to the place that affords you the greatest protection.”

• “The word shelter sounds a little confusing….”

General Public: Other Findings

Concern was expressed about the feasibility of some protective actions

• “Realistically, [are] people really going to cut their air conditioning[ing]… because people have asthma and it is extremely hot outside, I mean, I don’t know.”

• “If… it is like 89 degrees, you are going to suffocate.”
General Public: Other Findings

Incomplete instructions were seen as a serious problem

• “What happens if you are driving when it is happening?”

• Should outer clothes be taken off in a certain way?
Emergency Responders
First Responders
Hospital E.D.
Public Health

22 focus groups
Responders: Finding #1

• High level of **dedication to duty**
  – “We are professionals.”
Responders: Finding #2

- Concerned about “newness” of the radiological terrorism threat
  - “This one is going to involve radiation or nuclear materials, this is a new one.” (first responder)
Responders: Finding #3

• For all professional groups, the radiation scenario appeared to generate more concern and uncertainty than did scenarios involving chemical or biological agents
  – “We know so little about radiation.” (nurse)
Responders: Finding #4

• Serious concerns about individual and organizational **preparedness** for a terrorist event involving radioactive materials
  – “This is where we are most vulnerable.” (nurse)
  – “I just wonder if the training and equipment is up to it.” (first responder)
  – “Although we have drilled on this, I would be concerned about how prepared we are to take this on.” (healthcare professional)
Nine focus groups conducted with public health professionals (n = 52)
Characteristics of Public Health “Radiation” Focus Group Participants

- **Occupational Specialty**
  - P.H. Nurse
  - Epidemiologist
  - Lab
  - Environmentalist
  - Other

- **Gender**
  - Male
  - Female

- **Race**
  - African-American
  - White
  - Other
Public Health

- A clear desire to help was often in evidence
  - “I would want to know if there is anything that I can do to help others.”
  - “I would be ready as a health professional to do what I could to help.”
Public Health

• But many public health professionals were unclear about their role in a rad event
  – “What role would one play in this?”
  – “I’d be wanting to find out what my responsibility and role would be.”
  – “We’re on a bioterrorism focus, and it, radiation, is one of my weakest points… I’ve had minimal training in radiation.”
  – “I haven’t heard that I am involved and I don’t want to be involved.”
Hospital Emergency Department

- Series of 10 focus groups with ED clinicians (n=77)
  - Overall, 743.2 years of ED experience

Concern #1: Hospital will be Overwhelmed

• “No one is going to shelter in place. Everyone is coming right now to the ER to figure out if they’ve been exposed.”
  – Physician
Concern #2: Safety of Loved Ones

“My first honest reaction would be... calling home to let my family know what I knew before I get on with everything else that I needed to do.”
– Physician

“Get your family out. That’s the first thing you are going to think of is your family.”
– Nurse
Concern #3: Adequate Staffing

“Who would come in? Probably we all would but not until we know that everybody’s ok.”

– Nurse

“There would be a lot of hospital staff who would not come to work or who would leave work for concern of their own safety and that of their family.”

– Physician
## Commitment to Help in Non-Hospital Field Medical Facilities (Hawaii)

<table>
<thead>
<tr>
<th></th>
<th>Physician</th>
<th>Nurse</th>
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</thead>
<tbody>
<tr>
<td>Natural Disaster</td>
<td>83 %</td>
<td>90 %</td>
</tr>
<tr>
<td>Explosion Incident</td>
<td>67 %</td>
<td>70 %</td>
</tr>
<tr>
<td>Chemical Incident</td>
<td>59 %</td>
<td>59 %</td>
</tr>
<tr>
<td>Biological Incident</td>
<td>56 %</td>
<td>53 %</td>
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<tr>
<td>Contagious Epidemic</td>
<td>56 %</td>
<td>49 %</td>
</tr>
<tr>
<td><strong>Radiological Incident</strong></td>
<td><strong>52 %</strong></td>
<td><strong>45 %</strong></td>
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</tbody>
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### Willingness of Health Care Workers to Report During Various Disasters (New York)

<table>
<thead>
<tr>
<th>Type of Disaster</th>
<th>Percent Indicating Willing to Report</th>
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<tbody>
<tr>
<td>MCI</td>
<td>86 %</td>
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<tr>
<td>Environmental Disaster</td>
<td>84 %</td>
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<tr>
<td>Weather Emergency</td>
<td>80 %</td>
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<tr>
<td>Chemical Event</td>
<td>68 %</td>
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<tr>
<td>Smallpox Epidemic</td>
<td>61 %</td>
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<tr>
<td><strong>Radiological Event</strong></td>
<td><strong>57 %</strong></td>
</tr>
<tr>
<td>SARS Outbreak</td>
<td>48 %</td>
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Concern #4: Lack of Preparedness for Radiological Events

• “I would be most concerned about the preparedness of the hospital to handle these circumstances.”
  – Physician
Concern #5: Contamination of Hospital

• “First and foremost, we would perform a lock-down of the hospital, because of the possible contamination of the hospital.”
  – Nurse
Concern #6: Self-Protection

• “Security issues are also huge… We just have minimal security.”
  – Physician

• “Those little white outfits aren’t going to help.”
  – Nurse

• “I can see people being reluctant to go near patients, when they don’t have any way of feeling safe.”
  – Physician
“Treat Life-Threatening Injuries Prior to Decontamination”

- “It contradicts a standard of practice.”
- “It is wrong.”
- “I’m not going to touch him.”
Conclusions
Conclusions

General Public

• Messages need to strongly focus on health issues/concerns

• Crucial to include spokespersons seen as credible on health issues
Conclusions

• Need to recognize that willingness to shelter depends significantly on issue of children, school
  – Unless parents are more confident about school plans and school ability to protect children, shelter in place will be ignored by many
Conclusions

• **Fatalism** in minority populations re: protective measures needs to be tackled
  – Targeted messaging?

• **Terms** such as “shelter in place” are not always understood
  – Need to avoid, replace or explain more clearly
Conclusions

Emergency Responders/Receivers

• Have a high level of dedication to duty and professional responsibilities

• Radiation scenario appears to produce the greatest level of uncertainty among all professional groups

• Responders have serious concerns about individual and organizational preparedness for a terrorist event involving radioactive materials
Conclusions

• Messages and training for professionals (esp. public health) need to better clarify **roles and responsibilities** in radiological terrorism situations.

• Family-related concerns are high. Vital to address responder concerns about family so professionals can focus on doing their jobs.
Conclusions

• Messaging and just in time training need to directly address high levels of concern that professionals have about radiation and radioactive contamination

  – Otherwise, risk that significant numbers of staff may be reluctant to treat patients thought to be contaminated
Acknowledgments

- Centers for Disease Control and Prevention
  - Radiation Studies Branch, NCEH
  - Emergency Communication System
  - Office of Communication

- Disaster and Emergency Communication Research Unit, Department of Environmental Health Sciences, UAB School of Public Health

- Members of the public and the responder community who participated in the studies