

## The Willingness of Public Health Workers to Respond: Assessment and Potential Interventions

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## JH~PHIRST: An Overview

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## Willingness to Respond Vs. Ability to Respond

The Willingness of U.S. Emergency Medical Technicians to Respond to Terrorist Incidents  
CHARLES DMAGGIO, DAVID MARRKINSON, GEORGE T. LOO, and ERWIN REEGLER

TABLE 1. DIFFERENCE BETWEEN ABILITY AND WILLINGNESS TO RESPOND TO DISASTERS

	Percent able to report	Percent willing to report	Difference
Snowstorm with 36 inches of snow in a 24-hour period occurs where you live.	62.2	84.1	(-21.9)
Smallpox outbreak, 200 patients admitted to 10 hospitals	77.5	64.8	12.7
Chemical terrorism attack with 5,000 victims requiring treatment and transport	83.3	74.3	9.1
Explosions in stadium with 2,000 seriously injured	89.7	87.7	2.0
Fire in landfill, 1,000 nearby residents with smoke inhalation	91.4	87.5	3.9
Radioactive dirty bomb explodes in school; 500 children injured.	83.4	73.8	9.6

Nationally representative sample of emergency medical service providers, United States, 2003.

- Source: *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, Volume 3, Number 4, 2005

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### Pan Flu Response Willingness

- Conducted May – July 2005
- 3 local health departments in Maryland
- Anonymous paper-based survey
- Likert scale
- N= 308
- 58% Response rate

Research article

**Local public health workers' perceptions toward responding to an influenza pandemic**

Ran D Balicer<sup>\*1</sup>, Saad B Omer<sup>2</sup>, Daniel J Barnett<sup>3</sup> and George S Everly Jr<sup>3</sup>

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### Pan Flu Response Willingness: Results

- Only 53.8% indicated they would likely report to work during influenza pandemic
- Only 33% considered themselves knowledgeable about public health impact of pandemic flu
- Perception of the importance of one's role in the agency's overall response was the single most influential factor associated with willingness to report
- Multivariate OR: 9.5; CI 4.6–19.9

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### Pan Flu Response Willingness: Limitations

- Maryland-specific sample
- Survey conducted pre-Hurricane Katrina

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## JH~PHIRST: Design and Concept

- Johns Hopkins ~ Public Health Infrastructure Response Survey Tool (JH~PHIRST)
- Adopt **Extended Parallel Processing model (EPPM)**
  - Evaluates impact of threat and efficacy on human behavior
- Online survey instrument
- All-hazards scenarios
  - Weather-related
  - Pandemic influenza
  - 'Dirty' bomb
  - Inhalational anthrax

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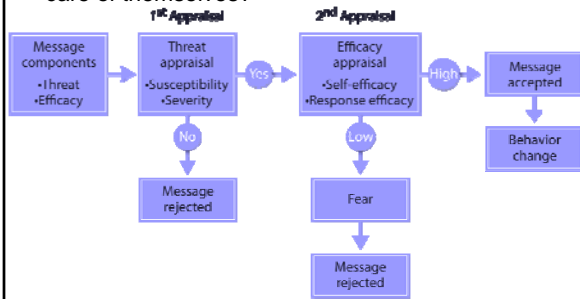
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## The Extended Parallel Process Model (Kim Witte)

- How do you frame messages to get people to take care of themselves?



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## JH~PHIRST Online Questions and EPPM

- **Threat Appraisal**
  - Susceptibility
    - "A \_\_\_\_\_ disaster is likely to occur in this region."
  - Severity
    - "If it occurs, a \_\_\_\_\_ disaster in this region is likely to have severe public health consequences."
- **Efficacy Appraisal**
  - Self-efficacy
    - "I would be able to perform my duties successfully in the event of a \_\_\_\_\_ disaster."
  - Response efficacy
    - "If I perform my role successfully it will make a big difference in the success of a response to a \_\_\_\_\_ disaster."

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## “Concerned and Confident”

- Three broad categories identified in the JH ~ PHIRST assessment tool:
  - Low Concern (*low threat*)
    - Educate about threat
  - High Concern / Low Confidence (*high threat/low efficacy*)
    - Improve skill, modify attitudes
  - High Concern / High Confidence (*high threat/high efficacy*)
    - Reinforce comprehension of risk and maintain efficacy

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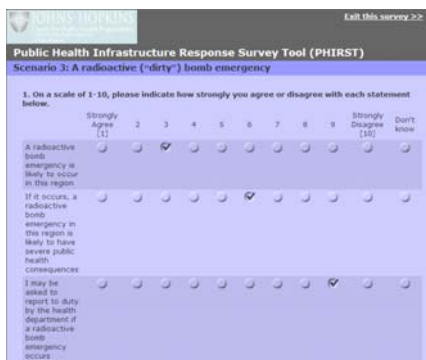
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## JH~PHIRST: Online tool



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## PHIRST: Nationwide Surveys

- Overview of completed surveys:
  - Minnesota (7 counties)
  - Ohio (3 regions - 25 counties)
  - West Virginia (31 counties)
  - Montgomery County, MD
  - Howard County, MD
    - N= 2913
    - 81% Response rate
    - November 2006 – June 2008

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**JH~PHIRST: Willingness to Report *by Scenario***

- Demographic characteristics *not* significantly associated with attitudes regarding public health emergencies

Reporting to Duty	Weather	Pandemic Influenza	Dirty Bomb	Anthrax
<b>Required by agency</b>	93%	92%	84%	89%
<b>Asked, but not required by agency</b>	88%	86%	75%	82%

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**Willingness to Report *by Scenario/EPPM* (if required)**

	Extended Parallel Processing Model Category							
	Low threat, Low Efficacy		Low threat, High Efficacy		High threat, Low Efficacy		High threat, High Efficacy	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
<b>Weather</b>	1.00	Ref.	13.14	6.40 27.00	4.12	2.69 6.30	20.00	9.75 41.02
<b>Pan Flu</b>	1.00	Ref.	12.44	5.46 28.36	2.46	1.68 3.59	27.63	11.28 67.66
<b>Dirty Bomb</b>	1.00	Ref.	5.37	3.63 7.95	1.62	1.25 2.09	10.62	6.64 16.98
<b>Anthrax</b>	1.00	Ref.	12.79	6.23 26.23	1.58	1.17 2.14	16.33	8.56 31.13

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**Willingness to Report *by Scenario/EPPM* (if not required)**

	Extended Parallel Processing Model Category							
	Low threat, Low Efficacy		Low threat, High Efficacy		High threat, Low Efficacy		High threat, High Efficacy	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
<b>Weather</b>	1.00	Ref.	6.51	4.20 10.08	3.44	2.46 4.80	8.93	5.90 13.51
<b>Pan Flu</b>	1.00	Ref.	4.66	3.01 7.22	1.60	1.20 2.12	8.11	5.34 12.32
<b>Dirty Bomb</b>	1.00	Ref.	5.24	3.84 7.16	1.58	1.26 1.97	6.13	4.54 8.29
<b>Anthrax</b>	1.00	Ref.	5.74	3.74 8.70	1.09	0.85 1.39	7.60	5.20 11.09

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Frequencies of Attitudes and Beliefs by Scenario				
	Weather	Pan flu	Dirty bomb	Anthrax
Knowledgeable about PH impact	80%	86%	50%	71%
Awareness of role-specific responsibilities	67%	76%	40%	67%
Psychologically prepared	85%	85%	59%	76%
Ability to safely get to work	77%	86%	56%	78%
Confidence in safety at work	81%	78%	43%	72%
Family prepared	77%	78%	59%	69%
Health Department's perceived ability to provide timely information	84%	89%	77%	84%
Ability to address public questions	78%	78%	39%	67%
Importance of one's role in the agency's overall response	81%	85%	74%	81%

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- JH~PHIRST: Next Steps**
- Expanded reach to multiple FEMA regions
    - Urban and Rural LHD settings
  - Design of tailored curricular program per baseline JH~PHIRST survey results
  - Post-program re-administrations of JH~PHIRST to identify short, medium, and longer-term impacts of curricular interventions

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- Benefits to Participating Health Departments**
- Cutting-edge research focusing on behaviors and attitudes, not just skills and knowledge
  - Free assessment, data analysis, reporting, and training intervention
  - Post-intervention analysis will demonstrate impact of training interventions on willingness to respond
  - Opportunities for academic collaboration including scholarly publication, and national presentation

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## Creating Buy-In At The Local Level

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### St. Paul-Ramsey County Public Health

- Local Public Health department serving City of St. Paul (Minnesota Capitol); Ramsey County and suburban municipalities; population of 493,219
- 340 employees
- Programs include: Disease prevention and control; TB clinic; Refugee Health; Immunizations, including travel; Family Planning and STD clinic; Birth and Death records; Chronic disease prevention; violence prevention; injury prevention; WIC; family health home visiting; policy and planning; correctional health; public health emergency preparedness; environmental health.
- Part of 7 county metropolitan area of 2.7 million population; with 9 local health departments. The metro area is about 53% of the state population.

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### Metropolitan 7 County region



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### Preparedness Efforts at the Local Level in 2006

- Local Public Health departments were working on many aspects of public health emergency preparedness:
  - Mass dispensing
  - Crisis/Risk communication training
  - Incident Command training
  - Isolation and quarantine
  - Staff call out and deployment plans
  - Increased surveillance
  - Medical Reserve Corps
  - Health Alert Network

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### Overview of Need For/Interest in JH~PHIRST

#### The Big Question?

How will we know if we are making progress in our preparedness work? Is there a metric we can use to measure progress?

Began to answer the question with work on a survey of employees to measure their willingness and ability to respond. Results from PHIRST were published right around this time.

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### Baseline Survey Implementation - 2006

- Single county or regional approach to the survey
- Coordinating with 9 local health departments
- Barriers and Benefits:
  - Concern about sharing data between health departments
  - Need to develop common job categories; common dates for completion of survey
  - Needed contract with John Hopkins for project
  - Creating buy-in with staff; getting a large enough sample
  - Benefit in having a regional metric

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### Baseline Survey Implementation – 2006 (cont.)

- Worked through Directors group; developed common memo and letters; created alternative access to employees who did not have computer access; problem solved technical issues with Survey tool
- Needed to hold completion dates open longer to get large enough sample: had an overall response rate of 89%

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### Conclusions - 2006

#### St. Paul-Ramsey Results

Reporting to Duty	Weather Emergencies	Pandemic Influenza	Dirty Bomb	Inhalational Anthrax
Required by Agency	86%	83%	65%	75%
Asked, but not required by agency	80%	77%	59%	66%

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### Conclusions II

- We learned that staff who were willing to report were:
  - Psychologically prepared
  - Able to get to work safely
  - Confident in their personal safety at work
  - Have a higher self-efficacy
  - Feel their family is prepared to function in their absence
  - Think their role is important
  - Think pre-and post-event training & preparation is important

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### Intervention Strategy: Roadmap to Preparedness

- Educated staff as to the Public Health role in specific scenarios, including a dirty bomb, weather emergency, pandemic flu, and inhalational anthrax.
- Defined individual staff roles in an emergency
- Defined communication methods that would be used in an emergency (trained and exercised them)
- Trained on the use of risk communication in an emergency
- Promoted personal and family preparedness
- Reviewed the Incident Command Structure (ICS), with specific department examples.
- Completed during 2007-2008

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### Post-Intervention Survey-2008

- Single county only-St. Paul-Ramsey Public Health
- Primary Intervention was the Roadmap to Preparedness
- Secondary Intervention was all Department workgroup: PHEW (Public Health Emergency Workgroup)

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### What We Learned from the Post-Survey

Survey Dates	Nov 2006	June 2008
Number of Responses	252	203
Overall response Rate	83%	67%

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## Conclusions

### St. Paul-Ramsey Results 2008 compared to 2006

Reporting to Duty	Weather Emergencies	Pandemic Influenza	Dirty Bomb	Inhalational Anthrax
Required by Agency	93% (86%)	86% (83%)	80% (65%)	87% (75%)
Asked, but not required by agency	86% (80%)	85% (77%)	72% (59%)	78% (66%)

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### Unique Application of the JH~PHIRST in Montgomery County, Maryland

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## Background of Project Public Health Ready

- A competency-based training and recognition program that assesses preparedness and assists local health departments or groups of local health departments working collaboratively as a region to respond to emergencies.
- Specific criteria or benchmarks for LHDs
- Only known national standards for public health preparedness
- Three Goals:
  - Hazards preparedness planning
  - Workforce capacity development
  - Demonstration of readiness through exercises or real events

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### Background Montgomery County, MD and PPHR

- One of 11 LHDs to receive Public Health Ready certification in 2004
- Re-applied for Recertification in early February 2009
- PPHR requires LHDs to go through a training needs assessment-workforce capacity development
- First submission worked with Johns Hopkins University and developed the *Roadmap to Preparedness* after first training needs assessment

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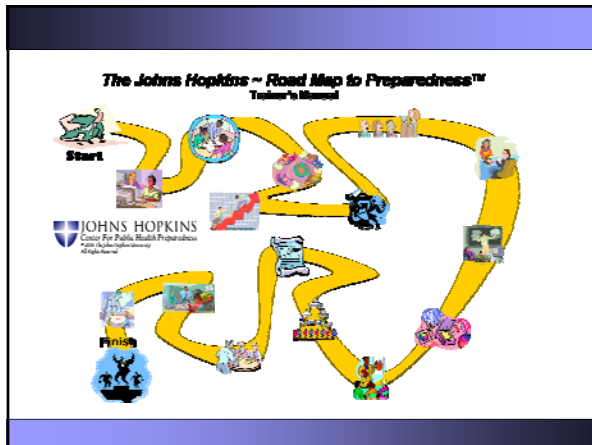
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### Training Needs Assessment for PPHR 2009

- Montgomery County wanted to go beyond the "core competencies" of public health emergency preparedness-how do we demonstrate this?
- Wanted to increase response to emergency events
- Needed to identify issues related to response that may be barriers
- Discussion with Johns Hopkins Center for Public Health Preparedness and their work on willingness to respond

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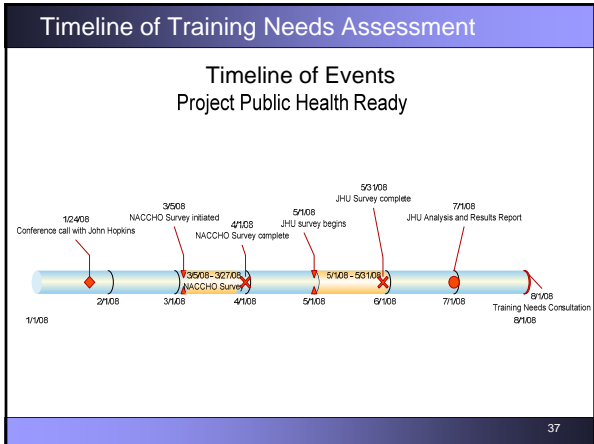
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- ### Benefits and Challenges in Implementation
- Benefits
    - Incentives
    - Assess staff and emergency preparedness
    - Involvement of staff
    - Buy-in from staff
  - Challenges
    - Second assessment of all public health staff
    - Time
    - Buy-in from staff
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- ### What We Learned From The Survey
- Information was needed
  - Provided research for management to support emergency preparedness trainings and exercises
  - Shape our training and exercise plan
  - Results were specific to our health department
    - LHD staff reported consistently higher willingness to respond if required to report
    - Less likely to respond in a dirty bomb scenario
    - Personal preparedness (not as high as we would like it)
  - Follow-up to see if we address the results from the survey
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### Training Intervention to Address Gaps

- Risk Communication for Radiological Terrorism Preparedness:
  - Based upon training assessment
  - Utilized focus groups for input
  - Developed jointly with Montgomery County and Johns Hopkins Center for Public Health Preparedness
  - Delivered on-line
  - Implementation for use pre-inauguration
  - Intranet Training Website

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### Changes At The Local Level After JH~PHIRST

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### Practice and Policy Changes

- Efficient department-wide use of incident command in a response: Operation Seek and Find
- Improved competency with workforce deployment procedures

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### Workplace Culture Shifts

- Increased confidence in staff ability to fulfill job functions in an emergency
- Improved understanding of preparedness as a core public health function

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### Thank You

- Questions?

Contact:  
Johns Hopkins Bloomberg School of Public Health  
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