Emergency Preparedness Readiness of the Public Health Workforce in a Rural, Appalachian Regional Health Office

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Introduction

- Background
- Research Objectives
- Methods
- Results
- Limitations
- Conclusion

Background

- Public Health Pre- & Post 9/11
- New Threats:
  - Terrorism
  - Anthrax
  - SARS
  - Avian Flu
- Public Health Mission
  - To promote physical & mental health & prevent disease, injury, & disability
- Holds True in Emergency
  - Lead, collaborative, supportive roles


The New York Times

U.S. ATTACKED

HIJACKED JETS DESTROY TWIN TOWERS AND HIT PENTAGON IN DAY OF TERROR

A CREEPING HORROR

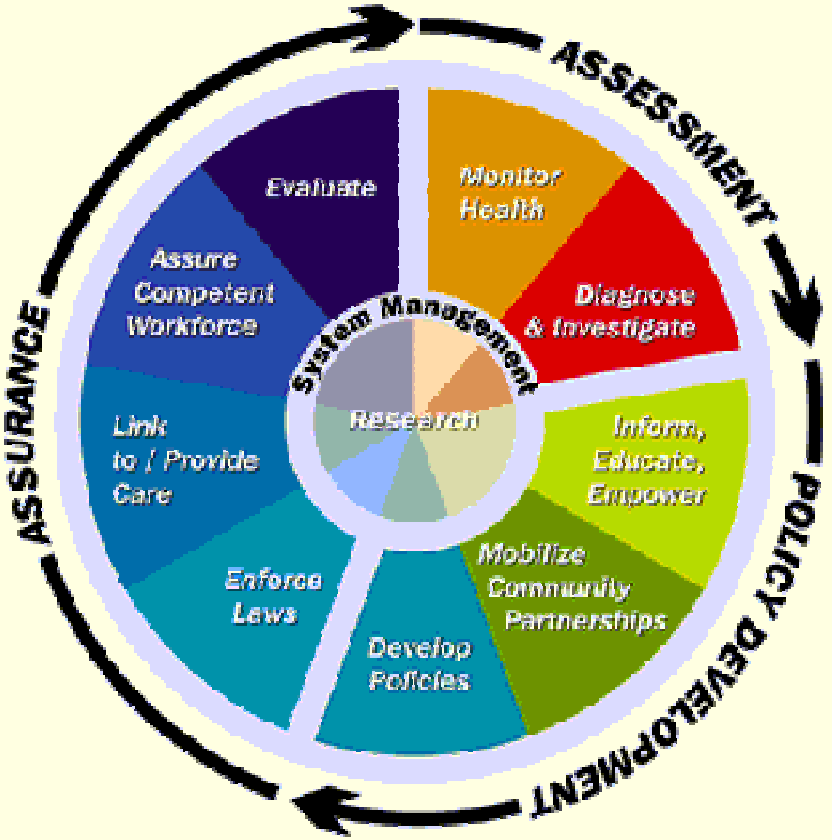
Buildings Burn and Fall as Onlookers Search for Elusive Safety

President Vows to Exact Punishment for 'Evil'

A Somber Bush Says Terrorism Cannot Prevail

Essential Public Health Services

- 10 Essential public health services
  - Assure a competent public health workforce
- Competencies
  - Demonstration of applied knowledge, skills, & abilities necessary to the effectiveness
  - Support provision of essential public health services



9 CDC Core Emergency Preparedness Competencies

- **Assessment**
  - **Recognize** deviations from the norm
  - **Describe** public health role
- **Policy Development**
  - **Demonstrate** use of communication equipment
  - **Describe** communication role(s)
  - **Apply** creative problem solving
  - **Describe** chain of command
  - **Identify** & **locate** emergency response plan
- **Assurance**
  - **Describe & demonstrate** his/her functional roles
  - **Identify** limits to own knowledge/skill/authority

Unique Challenges of Rural Communities

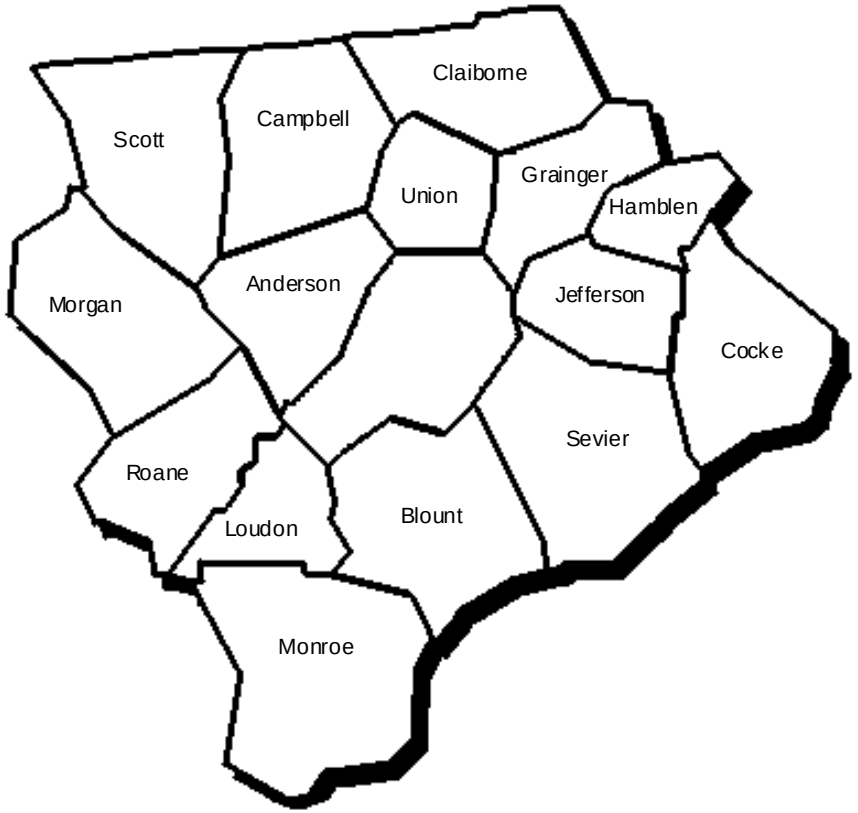
- Known disparities for both health status & personnel
- Shortages of primary care, mental & oral health providers
- Little known about EP competence of rural PH workforce
- Prime location for food & energy production
  - Far-reaching impacts if disrupted by disaster

- Research focused on:
  - Competency & training needs of personnel
  - In a rural regional health department
    - Serving 15 counties in Appalachia

Location:

Source: *World Atlas* Website: http://worldatlas.com/webimage/countrys/namerica/usstates/tn.htm Accessed 22 July 2006.

East Tennessee Region 2



Source: *Health Assessment of the East Tennessee Region.* Third Edition, 2006.

Why East Tennessee for This Study?

- **Region sits on natural earthquake fault**
- **Home to Oak Ridge National Lab**
  - International nuclear energy, physical & life science research facility
- **Geographic proximity to 2 nuclear plants/reactors**
- **East Tennessee Regional Health Office**
  - Serves 15 counties
  - Region population: 663,334 (2000 census data)
  - 7 County Directors
  - 3 Health Officers
  - 94 Regional level employees
  - 416 Regional & county level employees

Research Objectives

- Assess self-perceived emergency preparedness of rural public health workers
  - Confidence levels
  - Training needs
- Describe preferred training modalities
  - Barriers to training
  - Motivations for pursuing training/education
  - Learning settings & technology preferences

Methods

- Subjects:
  - All staff (n=416) employed by regional health office
- Instrument:
  - 148 item self-assessment instrument
  - Developed & adapted with permission from Northwest Center for Public Health Preparedness

Methods (Cont.)

- Instrument (Cont.)
  - 4-point Likert-like scale to identify self-perceived:
    - Level of confidence in completing identified task
      - (1 = Not at all confident; 4 = Very confident)
    - Need for training
      - (1 = No need; 4 = High need)
  - 10 Demographic items
  - 44 Training preference items
    - (Barriers, motivation, & preferred learning modalities)
- Administration
  - Online (MR-Interview)
  - Pilot-tested/revised with metropolitan health department

Data Analysis

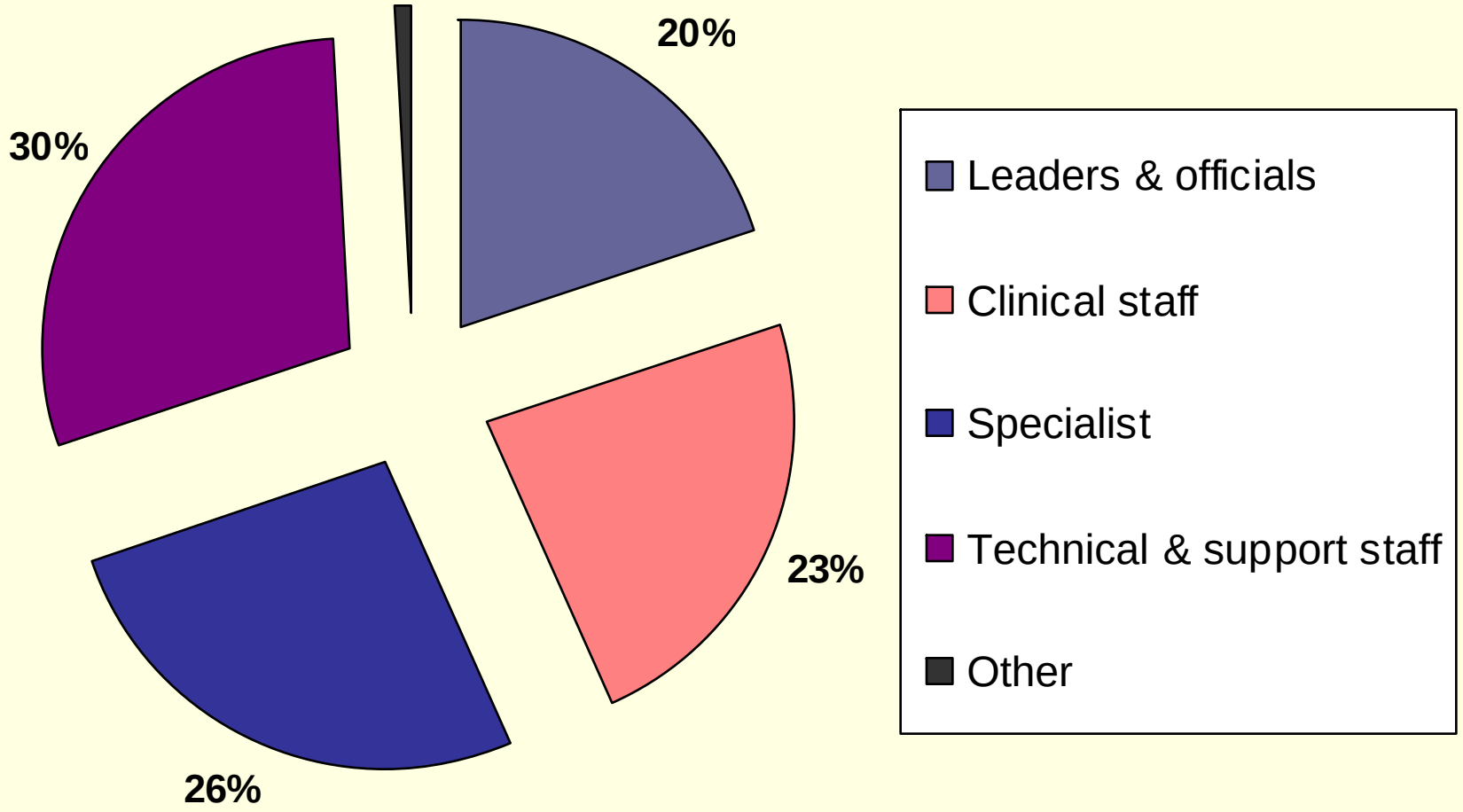
- **Descriptive statistics:**
  - Describe respondents
  - Level of confidence & training needs for each competency
  - Training preferences

- **Summary scores**:
  - **Mean +/- standard deviation**
    - Calculated for confidence level & training needs for each essential service
  - **Pearson correlation**
    - Confidence measures correlated with corresponding training need
  - **Multiple analysis of variance (MANOVA)**
    - Described personnel overall & by 4 position classifications
      - Leaders/officials, clinical staff, specialists, technical/support staff
    - Correlated education with experience (current position, health department & public health) & confidence level for each essential service

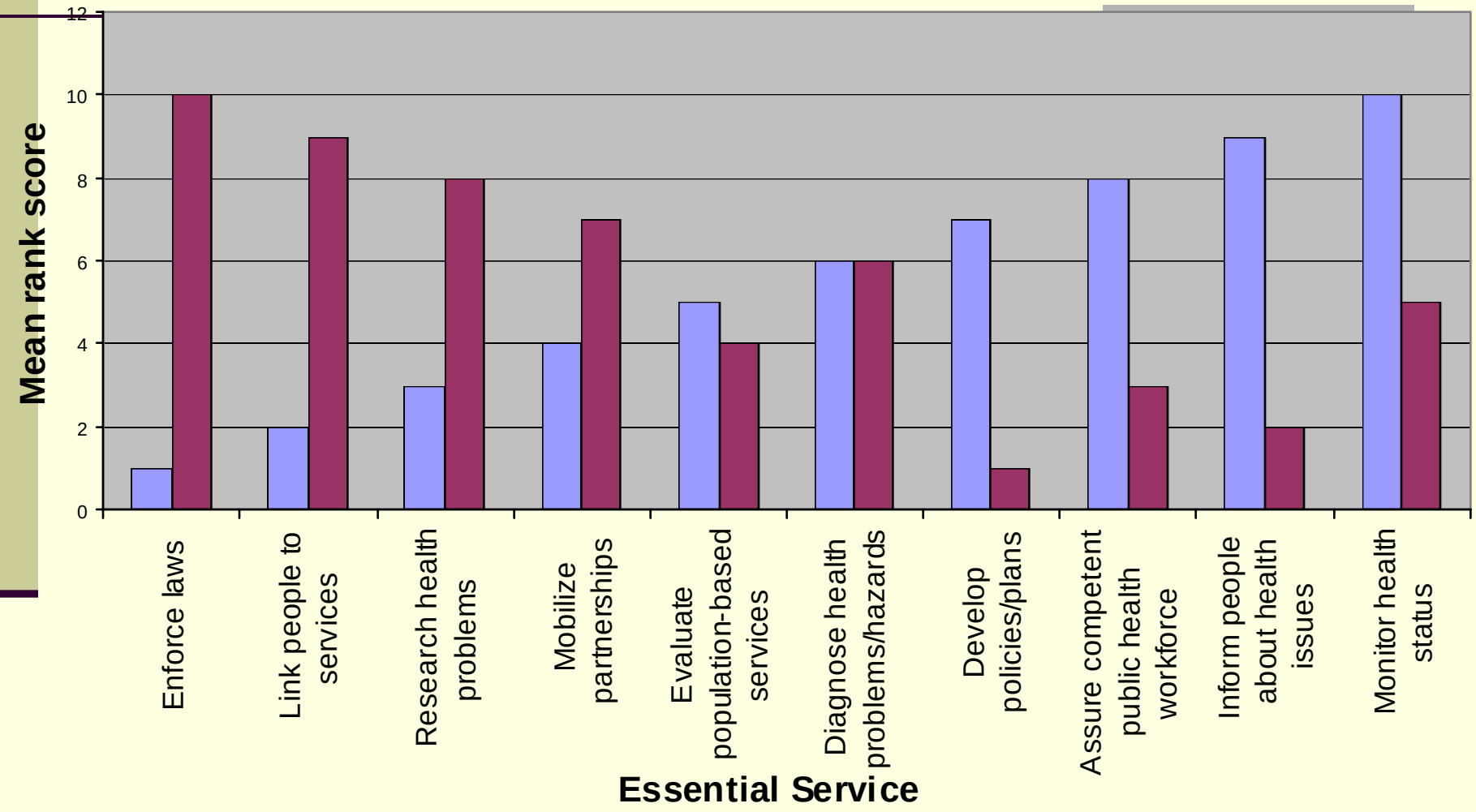
Results: Respondent Demographics

- 416 personnel contacted
- 224 completed survey
- 54% response rate
- Respondents
  - 95% full-time
  - 73% county level
  - 97% white
  - 91% female
  - 11.6 yrs in public health
  - 7 yrs in current position
- Education levels
  - 25% Associate degree
  - 48% Bachelor degree
  - 15% Graduate degree
    - 3% MPH
  - 1% Public Health Certificate

Results: Respondent Job Titles



Results: Competency Scores



Confidence & Training Needs

- Confidence in essential services correlated with
  - Training needs, in general ($r=-0.348$ - 0.608; $p<0.001$)
- Confidence in “diagnose & investigate”
  - Differ by position classification
    - Leaders & officials, clinical staff more confident compared to technical & support staff
  - Correlated with education ($r=0.159$; $p<0.05$)
- Training need for “enforce laws & regulations”
  - Differ by position classification
  - Leaders & officials have higher training need compared to specialists

Results: Training Modalities

- Barriers to Training
  - Cost
  - Time during work
- Motivations for Training
  - Broaden skill base
  - Develop better understanding of area of importance to current job
  - Increase salary potential
  - Remain current in the field
- Learning Setting Preferences
  - Most preferred
    - On-site instructor-led multi-day workshop
    - Instructor-led regional training
  - Least preferred
    - Phone conferencing
    - Self-directed learning

Discussion/Lessons Learned

- In general, low confidence & high training need
  - Staff confidence range = 1.96-2.81
  - Subjects were all public health workers
- Findings consistent with tribal health services study (Pearson et al.)
  - Staff confidence range = 2.31-3.17
  - Subjects were those 'most knowledgeable about local public health & emergency preparedness issues'
- No differences by position title
  - All indicated high training need
  - Impacts capacity of public health agency to respond in emergency

Implications for Staff Development

- **Training program design**
  - On-site training
  - Face-to-face learning
  - Interaction between instructor & learner
- **Training program marketing**
  - Motivation to gain knowledge related to their field
  - Emphasize how training will make them better at doing their job
  - Tie directly to work they currently do or job assignment in event of emergency
- **Overcoming barriers**
  - Policies to support
    - Costs: registration, travel, other expenses
    - Time during workday to complete

Priorities for Training

High priority competency areas

- Enforce laws
- Link people to services
- Research health problems

Low priority competency areas

- Assure competent public health workforce
- Inform people about health issues
- Monitor health status

Limitations:

- Self reported data
  - Difficult for individuals to assess what they know & what they need to learn
  - Better approach
    - Follow up with other objective measurements such as knowledge tests, exercises, drills (Kerby et al, 2005; Kruger et al, 1999)
- Self-selected respondents
  - Slightly greater than half; limited by self-selection
  - All personnel authorized computer access & work-time to complete survey

Conclusions

- Confidence negatively correlated with training need
- Low confidence overall
- Provides direction for addressing training needs
- Objective measurement follow-up is needed
  - Knowledge tests, exercises/drills, etc

- Future research could explore
  - True differences versus self-perception
  - Comparisons to other components of public health system
    - Rural/metro agencies, local hospitals, non-profit, voluntary health care organizations, political leaders, EMS, police/fire, church groups, etc

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