Orientation to the National Health Security Preparedness Index

Glen P. Mays, University of Kentucky
Anna Goodman Hoover, University of Kentucky
Michael Childress, University of Kentucky

Available at: https://works.bepress.com/glen_mays/192/
Orientation Virtual Meeting
National Advisory Committee for the
National Health Security Preparedness Index

1-2pm EST | February 2, 2015
Web link for presentation slides: http://connect.uky.edu/nhspi_nac/
Phone line for audio: 1-877-394-0659 | access code: 7754838037#
(please mute computer speakers if using phone audio)

NHSPI Program Management Office
University of Kentucky
Meeting Objective

Orient members of the National Advisory Committee to the Index structure, methodology, and processes for future development and refinement.
Agenda

- Welcome, Introductions, and Charge to the Committee
  Paul Kuehnert, Robert Wood Johnson Foundation
  Glen Mays, University of Kentucky Program Management Office

- Reflections on Index History and Progress to Date
  Tom Inglesby, UPMC Center for Health Security

- Orientation to the Program Management Office
  Anna Goodman Hoover, University of Kentucky Program Management Office

- Orientation to the Index Current Structure and Methodology
  Michael Childress, University of Kentucky Program Management Office

- Possible Directions for Index Development and Refinement
  Glen Mays

- Next Steps and Conclusion
  Glen Mays
Welcome and Introductions

Paul Kuehnert, DNP, RN
Director and Senior Program Officer, Robert Wood Johnson Foundation

Glen Mays, PhD MPH
Professor, University of Kentucky
Director, Program Management Office
National Advisory Committee Members | 2015

1. Tom Inglesby, (Chair) UPMC Center for Health Security
2. Robert Burhans, Emergency Management Consultant
3. Anita Chandra, RAND
4. Ana-Marie Jones, Collaborating Agencies Responding to Disasters
5. Eric Klinenberg, New York University
6. Jeff Levi, Trust for America’s Health
7. Nicole Lurie, Assistant Secretary for Preparedness and Response
8. Stephanie Lynch, Caddo Parish (LA) Commissioner
9. Suzet McKinney, Chicago Department of Public Health
10. Stephen Redd, CDC Office of Public Health Preparedness & Response
11. Richard Reed, American Red Cross
12. Martin Jose Sepulveda, IBM Corporation
13. Claudia Thompson, NIH National Institute of Environmental Health Sci.
14. John Wiesman, Washington State Secretary of Health
National Advisory Committee Charge

Provide scientific and strategic guidance on ways of improving the Index as a tool for advancing health security, preparedness and community resiliency
Reflections on Index History & Progress to Date

Tom Inglesby, MD
CEO, UPMC Center for Health Security
Chair National Advisory Committee
Guiding Principles for the Index

- Health security is multifactorial
- Health security is a shared responsibility – all sectors
- Broad definition of preparedness from PPD-8
- Disaster risk reduction and primary prevention as core concepts
- Must be practical and value-added
- Build on existing data sources: low-burden
- Align with existing capabilities and frameworks
- Accurately and completely reflect state and national preparedness
- Use transparent development process that is stakeholder driven, continuously improving, based on real-world experience
- Value of composite information exceeds sum of the parts
- Advance the science of preparedness measurement
Overarching Goals for the Index

- Increase awareness & understanding
- Stimulate dialogue, debate & discussion
- Encourage coordination & collaboration
- Facilitate planning & policy development
- Support benchmarking & quality improvement
- Drive research & development
Orientation to the Program Management Office

Anna Goodman Hoover, PhD
Assistant Professor, University of Kentucky
Deputy Director, Program Management Office
Orientation to the Program Management Office

- Homefront Communications
  - National Coordinating Center for Public Health Services & Systems Research
    - PBRNs
      - PHSSR Stakeholders
  - National Advisory Committee
    - Stakeholder Communications Workgroup
      - Messages, Uses, Tools, Applications
    - Model Design Workgroup
      - Frameworks, Domains, Constructs, Indicators
    - Methodology & Analysis Workgroup
      - Scaling, Weighting, Validation, Comparisons, Trends, Visualizations
- RWJF
  - UK Center for Business and Economic Research
  - UK Division of Risk Sciences
- RAND
- Consultants
Workgroup Candidates

Model Design
- Chris Nelson, RAND (CHAIR)
- Tim Sellnow, UKY
- Susan Cutter, Univ SC
- James Kendra, U Delaware
- Pat Sweeney, LHD director
- Jennifer Horney, TAMU
- John J. Grefenste, UPitt
- Robert Burhans, NY
- Jim Blumenstock, ASTHO*
- Daniel Hanfling, M.D. (chair of the healthcare task force)*
- Jim Craig (past chair of directors of public health preparedness)*
- Jackie Scott (DVM, preparedness director state of Michigan)*
- Erin Sutton (Virginia Beach Emergency Management)*

Analytic Methodology
- Chris Bollinger, UKY (CHAIR)
- Cristine Bevc, UCF
- Jon Links, JHU
- Wilbert van Panhuis, Upitt
- Nathan Hubert, Cornell
- Ann Marie Mieir, UNC
- Bridget Booske Catlin, UWI
- Julie Ivy, NCSU
- David Eisenman, UCLA
- Robyn Gershon, UCSF
- Erica Martin, SUNY
- Jackie Merrill, Columbia U
- Joseph S. Mayunga, TAMU
- James Rajotte (from RI)*
- Eric Carbone (CDC)*

Stakeholder
- Cathy Slemp
- Kathleen Kimball-Baker
- Gerrit Bakker, ASTHO
- Nicole Dunifon, NACCHO
- Andrew Jahier, FEMA
- Doug Farquhar, National Conference of State Legislatures
- Claire Reiss, National League of Cities
- Kelly DeGräff, Corporation for National and Community Service
- Jayne Lux, National Business Group on Health
- Liam O'Fallon, NIEHS/NIH
- Sarah, NYC OEPR
- CDC Representative (TBD)
- SAMHSA Representative (TBD)
Current Index Structure and Methodology

Michael Childress  MS
UK Center for Business & Economic Research
Program Manager, PMO
Current Index Structure and Methodology

Overall

- Health Security Surveillance
  - Health Surveillance & Epidemiological Investigation
  - Biological Monitoring & Laboratory Testing
  - Management of Volunteers during Emergencies
  - Social Capital & Cohesion

- Community Planning & Engagement
  - Cross-Sector / Community Collaboration
  - Children & Other At-Risk Populations

- Incident & Information Management
  - Incident Management & Multi-Agency Coordination
  - Emergency Public Information & Warning
  - Legal & Administrative

- Healthcare Delivery
  - Prehospital Care
  - Inpatient Care
  - Long-Term Care
  - Mental & Behavioral Healthcare
  - Home Care

- Countermeasure Management
  - Medical Materiel Management, Distribution, & Dispensing
  - Countermeasure Utilization & Effectiveness

- Environmental & Occupational Health
  - Food & Water Security
  - Environmental Monitoring

PREPARED
NATIONAL HEALTH SECURITY PREPAREDNESS INDEX
**Current Index Structure and Methodology**

- 194 individual measures
  - Unweighted average
- 18 subdomains
  - Unweighted average
- 6 domains
  - Unweighted average
- State overall values
  - Unweighted average
- National overall values

**Scaling**

- Dichotomous: value of 0 or 10
- Continuous: % of maximum state value x10, remove outliers >+2SD
- Missing values imputed as average of nonmissing measures within subdomain
2014 Index Results

- National average: 7.5
- State overall results range from 6.5 to 8.4
Directions for Development & Refinement

Glen Mays, PhD MPH
Professor of Health Services Research, UK
Director, PMO
Validation studies with 2014 Index

- *Internal Consistency Reliability (ICR)*: testing at domain and subdomain levels
- *Multi-Trait Scaling Analysis (MTS)*: item to scale comparisons for convergence and discrimination
- *Sensitivity analyses*: testing alternative scaling, weighting, imputation algorithms
- *Comparison and trend tests*: use Bayesian latent variable methods to address uncertainty
Validation studies with 2014 Index

% Impact on Final Index Score
## Validation studies with 2014 Index

### Internal Consistency Reliability Estimates

<table>
<thead>
<tr>
<th>Domain</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health security surveillance</td>
<td>0.377</td>
</tr>
<tr>
<td>Community planning &amp; engagement</td>
<td>0.382</td>
</tr>
<tr>
<td>Incident &amp; information management</td>
<td>0.455</td>
</tr>
<tr>
<td>Healthcare delivery</td>
<td>0.354</td>
</tr>
<tr>
<td>Countermeasure management</td>
<td>0.231</td>
</tr>
<tr>
<td>Environmental/occupational health</td>
<td>0.546</td>
</tr>
<tr>
<td>Overall</td>
<td>0.311</td>
</tr>
</tbody>
</table>
Directions for Expansion and Refinement

- **Consolidation**: reduce correlated, redundant & noisy measures
- **Composition**: expand social, environmental economic indicators of preparedness & resiliency
- **Alignment**: with established national frameworks
- **Grouping & weighting**: use empirical methods for internal consistency, discriminant power
- **Scaling**: reflect distributional properties
- **Comparisons**: address accuracy and uncertainty
- **Trending**: track changes via backward compatibility

PREPARED
NATIONAL HEALTH SECURITY PREPAREDNESS INDEX
Stakeholder engagement

- NAC provides overall scientific & strategic guidance
- Workgroups contain representatives from key scientific, policy, and operational sectors
- Solicit online comments and feedback from much larger groups of stakeholders
- Use iterative online Delphi ratings to inform key decisions on measures & methodology updates
- In-person workgroup meetings to make final decisions
- Monitor and evaluate utilization and utility
2015 Timeline

- **2014 Release**
  - Call for new measures
  - Validation studies
    - Refine framework, constructs
    - Secure data sources
    - Refine measure set & specifications
      - Test new scaling, weighting, imputation
      - Test comparisons & trending
      - Sensitivity analysis/simulation

- **2015**
  - Finalize index calcs
  - Update website
  - Messaging

- **2016 Release**
Next Steps

- In-person NAC meeting
- Quarterly virtual meetings
Concluding questions and comments

Glen Mays, PhD MPH
Professor, University of Kentucky
Director, Program Management Office
For More Information

Glen P. Mays, Ph.D., M.P.H.  glen.mays@uky.edu
Anna Goodman Hoover, Ph.D. Anna.Hoover@uky.edu
Michael Childress, M.S.  Michael.childress@uky.edu

Email:    NHSPI@uky.edu
Web: www.publichealthsystems.org
Journal: www.frontiersinPHSSR.org
Archive: works.bepress.com/glen_mays
Blog: publichealtheconomics.org