National Collaborative for Bio-Preparedness

Charles B. Cairns, MD, FACEP, FAHA
Professor & Chair
Department of Emergency Medicine
University of North Carolina - Chapel Hill

David D. Potenziani, PhD
Executive Director
National Collaborative for Bio-Preparedness
Every minute counts when public health is at risk.

Federal and state agencies recognize the urgent need to accurately detect and rapidly analyze biological hazards to ensure public health and safety.

The National Collaborative for Bio-Preparedness (NCB-Prepared) responds to this need with a comprehensive system that both improves surveillance, awareness and responsiveness to emergent threats, and supports better care and health outcomes for Americans.

Bio-security depends on bio-preparedness.

Public / Private Partnership
“Our national preparedness is the shared responsibility of all levels of government, the private and nonprofit sectors, and individual citizens. Everyone can contribute to safeguarding the Nation from harm.”

• Formed and expanding Public/Private Partnership
• Taking advantage of tsunami of data that has never been used for this purpose
• Applying world-class analytics
• Bridging across sectors to access and integrate data sources by providing value back
• Serving as a model and provide assistance to build a nationwide system
Emergency Department Data Shared with CDC BioSense

North Carolina is a recognized leader in syndromic surveillance
32 States collect and use the NEMSIS data format
57 Poison Centers across the nation use a common data format
NCB-Prepared Goals

- Improving early recognition of outbreaks
- Augmenting biosurveillance
- Improving situational awareness
- Faster and more accurate information for decision makers
- Integration with emergency management and law enforcement
Analytics

Reactive vs. Proactive

Current Practice
NCB-Prepared 1st Year
NCB-Prepared 3 Year Goal

What happened?
What actions are needed?
Where exactly is the problem?
How many, how often, where?
Why is this happening?
What if these trends continue?
What will happen next?
What's the best that can happen?
Data Resources & Studies

State-Wide Data Resources

• Emergency Medical Services (EMS)
• Carolinas Poison Center (CPC)
• Emergency Department Visits (ED)
• NC Agriculture Food Safety Complaints
• NC Restaurant Inspections
• NOAA Weather Data

Exemplar Case Studies

• GI Distress in EMS (earlier detection)
• Modeling for Unknown Toxic Agent (bath salts) in CPC
• ILI Syndrome in EMS & ED (earlier detection and geo-location)
• Alerts from Disposition Data (independent of syndrome and includes geo-location)
• Sensitivity Simulations (intentional attack)
Sequence of Alerts
Early alerts based on advanced analytics

GI Distress by Date
NC EMS Data

Jan 3, 2010
Dec 6, 2009
Feb 3, 2010
Jan 31, 2010
Jan 24, 2010
Jan 17, 2010
Dec 6, 2009
High number of GI-related EMS calls
Data to Information

Data Biosphere
- Social Media
- Organizational
- Clinical (Human)
- Clinical (Non-Human)
- Biological
- Physical

Federal Agencies
- DOD
- VA
- EPA
- USDA
- DHS
- HHS

States

Local Agencies

Private Sector
Viewing the Incident

Incident

Federal
Emerg. Med
Emerg. Mgmt
Local
State
Public Health
Early Successes

- Partners have a working system that can alert officials earlier
- Applying state-of-the-art analytics on data
- Spans data sources and applies analytics for proven better results
- Provides earlier situational awareness and incident characterization across data sets
- Using standard data formats can expand across state borders
- Provide actionable insights based on health trends