

Public Health Information Network Preparedness

National Center for Public Health Informatics
Centers for Disease Control and Prevention



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Agenda

- PHIN Preparedness Overview
- Certification Process
- Partner Technical Assistance Needs
- Direct Assistance Opportunities
- PHIN conference



PHIN Preparedness

Public health events have demonstrated the value of information systems to public health activities.

For example:

- Anthrax: consistent exchange of data
- West Nile and MonkeyPox: vector and conveyance tracking
- SARS: communicable disease contact tracing
- Smallpox program: value of data management in response administration
- All: communication and incident coordination

Until now our only systems expectations have been for public health to have e-mail and fax capabilities.



PHIN Preparedness

In transition from:

- *Information systems can help and you should use these standards if you build them.*

to

- *You need to have systems that do specific things and they must be regularly used to achieve optimal public health outcomes.*
- Having these systems consistently in place (and in clinical care) = new public health benefits



PHIN Preparedness – Why Now?

- Partners requested more specificity about systems needs and applicable PHIN standards
- Enable state and local IT investment
- Develop certification to ensure that standards are met and systems meet the needs of public health preparedness and work together



Public Health Information Network - Preparedness

Early Event Detection

Outbreak
Management

Connecting Laboratory
Systems

Countermeasure and
Response
Administration

Partner
Communications and
Alerting

Cross Functional
Components



Federal Health
Architecture &
Consolidated
Health Informatics,
NHII



PHIN Preparedness - Process

1. Document functional requirements to support public health professionals (regional meetings with ASTHO, NACCHO, state and local health departments)
2. Identify relevant industry standards (PHIN standards and specifications)
3. Ensure all public health partners can achieve functional requirements
4. Make software available that can support these functions for those who need it
5. Support certification of the functions and specifications



Outbreak Management

Managing the many data needs of an attack / outbreak

- Integrated with possible case, case and supportive data of early event detection
- Tracking who may be ill, linking lab results to confirm cases
- Tracing others who may have been exposed
- Managing conveyance in a plane, in a building or to an infectious person or animal
- System manages linkages, public health officials do analysis and response planning



Outbreak Management Functional Requirements

Case and contact investigation and exposure source identification require outbreak management systems that:

- Support the development of case definitions
- Collect common data elements (case, contact, exposure, relationships, travel history, conveyance, treatments, lab results, etc.)
- Support the development of electronic libraries of questionnaires defined and validated by investigators
- Allow for new entities (place, person, or thing) to be defined
- Support monitoring and follow-up activities
- Support collecting and shipping of specimens



OM Functional Requirements, cont'd

- Maintain detailed and comprehensive linkages to support contact tracing, determine the exposure source and identify at-risk populations
 - Link locations and events to subjects, subjects to lab tests, cases to multiple contacts, etc.
 - Use dynamic linkages to define an entity specific to an event (e.g., creation of an invoice for an animal shipment and linking to multiple prairie dogs, or creation of an identified lot of salsa, and linking to multiple restaurants)
- Provide analysis, visualization, and reporting capabilities
 - Include pre-formatted queries and reports to enable faster and more accurate reporting
 - Support flexible, ad-hoc reporting
 - Produce individual reports for each emergency team member or investigator



OM Functional Requirements, cont'd

- System Integration and Data Exchange
 - Integrate with other preparedness systems to
 - Exchange case and suspect case reports
 - Exchange lab test orders and test results
 - Exchange countermeasures requested and administered
 - Data exchange must be bi-directional and secure, using industry standards for messaging and destination and source authentication.



Early Event Detection

Identification of bioterrorism and naturally occurring health events in communities

- Detect events early, determine their size, localize them, determine spread, support investigation and integrate with public health management needs
- Secondary use of health data
- Electronic “case” reporting
- 7 x 24 call triage, tracking and alerting
- Complement well trained clinicians and public health professionals



Connecting Laboratory Systems

Sharing lab results on critical agents with systems doing early event detection, outbreak management and response administration

- HL7 industry standard result messages
- Accepting test requests from field systems
- Sharing tests “ordered” for early event detection, reagent distribution and capacity assessment
- Real time reporting from Laboratory Response Network Labs, clinical settings, commercial labs



Partner Communications and Alerting

Distributing alerts, supporting secure communication among health professionals and informing the public

- Sending alerts to public health and clinical personnel (e-mail, call, page, PDA) – including HAN
- Directories of personnel, their locations and roles
- Secure web sites that support professionals' needs to share concerns and enhance watchfulness
- Public web sites for information dissemination



Countermeasure / Response Administration

Delivery of treatment, prophylaxis, vaccination and management of isolation

- Organization and management of response
- Systems to support and track administration of drugs, vaccines, and isolation
- Managing limited supplies
- Ensuring coverage of exposed individuals
- Tracking “take” and adverse events



Possible Systems and Services

- Outbreak Management System
- NEDSS Base System
- LRN Result Messenger
- BioSense
- Countermeasure and Response Administration System
- Countermeasure allocation and distribution
- Call triage service
- Directory and alerting service



Timeline

- PHIN Preparedness Regional Requirements Meetings (fall 2004)
 - functional requirements reviewed in conjunction with ASTHO, NACCHO, CSTE and APHL
 - 145 participants in 6 locations (epi, lab, IT and health officials)
- Functional requirements for systems and key performance measures
 - Drafts available at www.cdc.gov
 - Version 1 – available 3/05
- Except for errata, will remain static for a year
 - Reengage review process to continue refining
- Self-testing tools available 3/05 – automated on-line message validation by 4/05



Compliance and Compatibility

- Compliance - the exact use of PHIN Standards, Specifications, and Technical Artifacts for creation of a given system.
 - Exact implementation of the PHIN Logical Data Model as the relational table structure for a system
 - Exact implementation of the PHIN LDAP Schema as the operational directory for a system
- Compatibility – The ability to perform all the required functionality and can interact with other PHIN compatible systems
 - System that uses different data model but (for example) maps vocabulary into a PHIN standard message structure to share with other systems
- Certification –
 - We will certify compatibility of systems



Functional Requirements, Standards, and Key Performance Measures

- **PHIN Functional Requirements** – Expression of “what” functionality is necessary to support public health activities in a particular area. Some are mandatory and others specify enhanced functionality.
- **PHIN Standards** – Industry, federal, and health standards that align with e-Government, National Health Infrastructure (NHII), Federal Health Architecture (FHA), and Consolidated Health Informatics (CHI) initiatives.
- **Key Performance Measures (KPMs)**– Discrete testable technical or operational capabilities. Implementation guides or specifications are defined for KPMs.



Functional Requirements, Standards, and Key Performance Measures - Examples

- **PHIN Functional Requirements**

- Systems designed to support OM must offer configuration flexibility so that new data fields, entities, and relationships may be added to capture information unique to each particular outbreak

- **PHIN Standards and Specifications**

- Standards

- Logical Observation Identifiers, Names and Codes [LOINC] & SNOMED - vocabulary
- HL7-Message structure
- ebXML – Secure message transport

- Specifications

- implementation guides - PHIN Laboratory Result Message Implementation Guide



Key Performance Measures - Examples

Key Performance Measure

- Systems must exchange and acknowledge messages for laboratory results in accordance with the PHIN Laboratory Result Message Implementation Guide:

(www.cdc.gov/phin/messaging)

- Systems must send, receive, and manage call-down alerts on a 24 x 7 x 365 basis to key public health personnel, deliver the alerts within timeframes appropriate to each circumstance, and assure and report on delivery to all recipients in accordance with:

PHIN Public Health Alert Implementation Guide (under development)



Public Health Information Network – PHIN Preparedness Areas

Early Event Detection

Outbreak
Management

Connecting Laboratory
Systems

Countermeasure/
Response
Administration

Partner
Communications and
Alerting

Cross Functional
Components



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Architecture &
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NHII



Certification Process

Functional Requirements

- Review functional requirements documents – 5 functional areas and Cross Functional Components
- Perform self-assessment using functional self assessment tool (leverage TA)
- Determine solution:
 - Existing system(s) meet functionality
 - Enhance existing system(s)
 - Purchase or develop system
 - Use CDC-developed system on an interim or long-term basis
- If needed, iteratively perform self-assessment (leverage TA)
- Contact Certification team for formal assessment
- Work with certification team to achieve functional certification



Certification Process

Key Performance Measures

- Review Key Performance Measures
 - Message exchange KPMs
 - Alerting KPMs
- Self-Validation
 - Message Exchange KPMs – Self- validate using message validation tool
 - Alerting KPMs – Self validate against implementation guide
- Determine solution:
 - Existing (s) meet functionality
 - Enhance existing system(s)
 - Purchase or develop system
 - Use CDC-developed system on an interim or long-term basis
- Iteratively perform self-validation (leverage TA)
- Contact Certification team for formal validation
- Work with certification team to achieve KPM certification



Roadmap to Certification



or



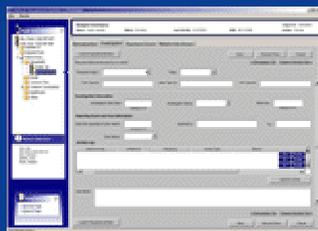
Self-testing



Have an application
for a functional area



Functional Area:
1. "Requirements"
2. Key
Performance
Measures



Use certified
application
that is available



PHIN External
certification



Teams and Roles

- Technical Assistance
 - Self-assessment
 - Interpreting requirements
 - Understanding implementation guides and specifications
- Certification Team
 - Provide functional self-assessment and message validation tools
 - Conduct formal certification for functional areas and KPMs



Technical Assistance

- Partner support important focus for NCPHI
- Coordinated informatics support - bringing together HAN and TADA support capabilities
- PHIN Helpdesk, PHIN Deployment Team, Certification Team
- System Developer's Workshops:
 - Case report messaging
 - Early event detection systems
 - Others?
- Understand partner needs



Direct Assistance

- Financial assistance mechanism providing good or services in lieu of cash
- Personnel, equipment, contracts
- Must be obligated in the FFY that the funds were appropriated (possible April-May supplement)
- All requests for DA must be discussed with OTPER project officer prior to inclusion in application



Direct Assistance

Possible areas for DA:

- Laboratory Information Management Systems/Integration
- Call triage service
- Directory and alerting service
- Laboratory Vocabulary Mapping of Results
- Others?



3rd Annual PHIN Conference

May 10-12, 2005

Hyatt Regency Atlanta

Call for Abstracts and online submission of abstracts can be found at www.cdc.gov/phn

Abstracts due March 4, 2005

PHIN2005@cdc.gov



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