PUBLIC HEALTH INFORMATION NETWORK (PHIN)

PHIN COMMUNICATION AND ALERTING (PCA) IMPLEMENTATION GUIDE

Version 1.0

April 15, 2007

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
0.1	Robb Chapman	02/25/2006			Initial Draft (partial)
0.2	Don Nestor	3/6/06			Formatting changes
0.3	Robb Chapman	3/29/2006			Completing draft
0.4	Robb Chapman	2/12/2007			Significant modification to incorporate EDXL
0.5	Robb Chapman	4/15/2007			Fixes to EDXL implementation
1.0	Robb Chapman	5/16/2007			Release

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1 INTRODUCTION

This Implementation Guide discusses technical specifications for systems that support Public Health Information Network (PHIN) Communication and Alerting (PCA). In particular, this document defines the:

- format for communications and alerts when delivered to human recipients,
- format for communications and alerts when stored and retrieved by systems,
- format for communications and alerts when transmitted from one system to another, and
- data attributes, vocabulary, and data structures to be used when developing communications and alerts.

Among other things, this document defines specifications for the Emergency Data Exchange Language (EDXL) V 1.0 Distribution Element EDXL and Common Alerting Protocol (CAP) V 1.1 as adopted for use by PCA. These specifications are not intended to be a tutorial for CAP, XML, or interfacing in general. The reader is expected to have a basic understanding of interface concepts, CAP, and XML.

1.1 DOCUMENT STRUCTURE

This document contains the following major sections.

- **Background and Problem Domain**: Describes the underlying business problem of cross-jurisdictional alerting. Explains the reason PCA requires data and vocabulary standards to pertain to individual systems, as well as inter-system messages.
- **Application Requirements and Data Flows**: Defines a public health alerting system and its major functions. Describes how alert audiences are specified.
- **Alert Message Object Model**: Defines the underlying information object model for PCA alerts.
- **PCA Alert Attributes**: Defines the set of alert attributes with which all PCA alerting systems must be semantically compatible, their vocabulary and semantics, and how alerting systems must populate, use, manage and process each attribute.
- **Vocabulary and Valid Value Sets**: Defines the vocabulary employed within the PCA domain.
- **Common Alerting Protocol Data Dictionary**: Defines the data dictionary for CAP V1.1 and provides a mapping of the CAP elements to the PCA alert attributes.
- **Schema: Common Alerting Protocol V1.1**: Defines the XML schema for CAP V1.1.
- **Sample Message**: Contains a sample PCA cross-jurisdictional alert implemented as a CAP V1.1 message.

1.2 OBJECTIVES

The objective of the *PHIN Partner Communication and Alerting Implementation Guide* is to provide a complete and comprehensive description of the functional aspects of sending and receiving public health alert messages.

The PHIN initiative is a comprehensive architecture of data and information systems standards intended to advance the development of efficient, integrated and interoperable public health information systems. PHIN development, along with the work of related initiatives such as e-Health Initiative (eHI) and emergency management communication protocols (including CAP and EDXL) is based on the fundamental understanding that exchange of health-related information between public health agencies, healthcare providers, and other civic and emergency response organizations is an essential aspect of response to public health events and emergencies.

As a consequence, messaging (the electronic exchange of data between computerized information systems) and the adoption of uniform data vocabulary and semantics is a key element of the PHIN architecture.

1.3 AUDIENCE

This guide is designed to be used by analysts who require a better understanding of the contents of PCA alerts and by implementers who develop PHIN-compliant alerting systems. Understanding and using this guide is a key factor in establishing PHIN compatibility. Applications that perform PHIN-compliant alerting and partner communications must send and receive messages in a manner that conforms to the requirements of this guide.

2 BACKGROUND AND PROBLEM DOMAIN

A working group of CDC and state health department representatives began developing components of the PCA standards during the spring and summer of 2004. Ongoing refinement and revision of this work continues under the direction of the CDC's National Center for Public Health Informatics (NCPHI) and a new working group.

2.1 CROSS-JURISDICTIONAL ALERTING ISSUES

The management of alerts transmitted across public health jurisdictions is the most challenging issue addressed during the development of the PCA standards, and also the most challenging historically. This issue stems from the need for rapid and comprehensive distribution of alerts and information to public health workers across multiple jurisdictions and organizations, while at the same time respecting the autonomous authority of each agency to control the flow of information within its jurisdiction of responsibility and among its workforce. Much of the PCA functional requirements and implementation specifications have been specifically developed to address this problem.

The PCA standards at least partially address this challenge through a clear definition of the following:

- Cross-jurisdictional alerting
- Direct alerting
- Cascade alerting
- Common Alerting Protocol (CAP), the message protocol used to implement cascade alerts for PCA.

Business protocols and inter-organizational agreements help further address this challenge, but are beyond the scope of this document.

2.1.1 Cross-Jurisdictional Alerting

Cross-jurisdictional alerting occurs when a public health organization must issue an alert to an audience that includes people and organizations outside of its own jurisdiction. Examples of cross-jurisdictional alerting include a:

- Federal agency system communicating to state or local health department workers, or to physicians, laboratories, etc. within a state's jurisdiction.
- State health department system communicating to local health department workers or federal agency workers.
- Local health department system communicating to state or federal workers.
- State health department system communicating to workers in another state's health department.

2.1.2 Direct Alerting

Direct alerting occurs whenever an organization's alerting system delivers an alert to a human recipient. This is the normal mode of alerting when the recipient works within the organization or its jurisdiction. However, direct alerting can also be used to accomplish cross-jurisdictional alerting, when the recipient works within a different jurisdiction.

2.1.3 Cascade Alerting

Cascade alerting is the preferred method of performing cross-jurisdictional alerting, although it is more difficult to implement. In cascade alerting, an alert is routed from the original alerting system to another alerting system operated by another public health organization, which in turn delivers the alert to recipients within its jurisdiction. Cascade alerting involves the transmission of a system-to-system message containing the alert, along with several parameters describing how and to whom the message should be delivered.

Because of the relatively higher level of sophistication and system complexity required, PHIN partners are *not* required to have the capacity to send or to receive and process cascade alerts. As is detailed in the *PHIN Partner Communications and Alerting Functional Requirements* specification, cross-jurisdictional alerts *must* be sent using cascade alerting only when both the sending and receiving jurisdiction have the capability of doing so..

PCA Cascade Alerts are implemented using a standardized message format and a transport protocol. The message format employs two XML message protocols: Emergency Data Exchange Language (EDXL) Distribution Element, and the Common Alerting Protocol (CAP). The transport protocol in ebXML

2.1.3.1 Emergency Data Exchange Language (EDXL) Distribution Element

The Emergency Data Exchange Language (EDXL) Distribution Element is an XML-based message developed by a consortium of emergency management organizations. It is intended to facilitate emergency information sharing and data exchange across the local, state, tribal, national and non-governmental organizations of different professions that provide emergency response and management services. The primary purpose of the Distribution Element is to facilitate the routing of any properly formatted XML emergency message to recipients. The Distribution Element may be thought of as a "container". It provides the information to route "payload" message sets (such as Alerts or Resource Messages), by including key routing information such as distribution type, geography, incident, and sender/recipient EDXL is being widely adopted

in the emergency management world; consequently, it has been adopted for use in the message format for PCA cascade alerts.

2.1.3.2 Common Alerting Protocol (CAP)

The Common Alerting Protocol (CAP) is an XML-based specification for alerting and emergency communication messages developed by a consortium of emergency management organizations in an effort to enable cross-organizational and cross-system exchange of emergency information. The Department of Homeland Security supports CAP for use in emergency communications, and the Office of Management and Budget mandates it for use by federal agencies to achieve interoperable emergency communications. Additionally, CAP is being widely adopted in the emergency management world. As a result, CAP has been adopted for use in the message format for PCA cascade alerts.

The CAP message may be thought of as the “payload” contained within the EDXL Distribution Element "container".

Because CAP and EDXL are general purpose emergency alerting protocols and are not specifically oriented toward addressing public health emergencies and events, it has been necessary to make adaptations for use in PCA. In these adaptations, only some of the EDXL and CAP attributes are employed, specific PCA-oriented attribute vocabularies are mandated, and a few PCA-oriented attributes are appended. Since these message were designed to be extensible, these adaptations are easily accommodated.

2.1.3.3 ebXML

PHIN partners exchanging PCA Cascade Alerts messages are required to secure and transmit these messages using the ebXML protocol defined in the document, “PHIN Preparedness: Cross Functional Components Requirements”, , located at http://www.cdc.gov/phin/preparedness/CFC_RSv1.0.pdf.

2.2 REQUIREMENT FOR UNIFORMITY IN PARTNER COMMUNICATIONS AND ALERTING

The PCA standards focus on achieving a certain level of uniformity regarding the structure and nomenclature of public health alerts and the behavior and capabilities of public health alerting systems across all public health jurisdictions. This focus extends beyond the issue of cascade alerting.

Public health alerting systems should employ uniform structure and nomenclature because:

- many, if not most, public health alerts will be cross-jurisdictional in scope, regardless of whether they are delivered using direct or cascade alerting.
- any particular recipient in any jurisdiction may be subject to receiving alerts from different health departments or public health jurisdictions.
- in the event of an emergency or time-critical event, uniformity of structure, vocabulary, and semantics is critical to achieving clarity and

accuracy in communications and reducing the risk of communications being mismanaged or misunderstood across multiple organizations and jurisdictions.

Because a primary objective of PCA is to establish the ability for public health organizations to communicate effectively within their jurisdictions and with each other during emergencies, PHIN-compliant alerting systems *must*:

- Be consistent in the type of information sent to human recipients,
- Comply with, or be at least semantically consistent with, a standard set of attributes and vocabularies,
- Be functionally consistent in how alert attributes govern system behavior, and
- Be consistent in the type of information stored for historical and auditing purposes.

This PCA Implementation Guide therefore addresses:

- a common set of PCA attributes and vocabularies;
- the content of information in human-readable alerts;
- the mapping of PCA attributes to system functionality;
- the requirements for persistent storage of information about alerting activities;
- the composition and interpretation of a PCA Cascade message.

3 APPLICATION REQUIREMENTS AND DATA FLOWS

3.1 DEFINITION OF ALERTING SYSTEM

This document frequently uses the terms "public health alerting systems", or "alerting systems". In many PHIN partner organizations, PCA functionality will be implemented using a combination of one or more information systems and manual business processes. The terms "public health alerting system" and "alerting system" within this document are intended to mean the totality of all of the systems and processes employed by a given PHIN partner to implement the PCA functionality. These terms do not imply any requirement for a single information system that performs all of the functions defined in the PHIN *Partner Communications and Alerting Functional Requirements* specification.

Further, there is no requirement that a PHIN partner organization own or operate its own alerting system. Under many circumstances it may be practical or preferable for organizations to share the use of a system. For example, a city health department might reasonably make use of an alerting system operated by the state health department within whose jurisdiction it lies, or a health department may make use of an alerting system operated by another branch of government. The requirement is that PHIN partner organizations have an alerting capability, through whatever arrangement, that meets the functional specifications described for PHIN.

3.2 MAJOR SYSTEM FUNCTIONS

A public health alerting system has the following major functions:

- Alert message authoring and editing
- Audience specification
- Transmission and delivery of alerts to human recipients, including:
  - Recipient authentication in the event of sensitive message
  - Receipt acknowledgement
  - Rendering of information to fit various delivery device types; e.g. "long text" for email and web presentation, "short text" for SMS and pagers, and automated voice delivery by phone
- Monitoring of delivery status in real time
- Archival and retrieval of alert information for historical reporting
- Cascade alert creation and transmission (optional)
- Cascade alert receipt and processing (optional)

Of these, the functions that have technical specifications and implementation requirements are addressed in the following sections.

3.3 AUDIENCE SPECIFICATION

As described in the specification "Implementing the Public Health Information Network (PHIN) - SUPPLEMENTAL INFORMATION: COMMUNICATE",

public health alerting systems should have the capacity to direct alerts to people in terms of:

- specific individuals

and/or

- a combination of the parameters:
  - role
  - public health jurisdiction
  - jurisdictional level.

Within the scope of their own organization and jurisdiction(s), PHIN partner organizations are free to implement audience specification in any way that fits their internal needs. However, whenever PHIN partners must share audience specifications with each other, a standardized set of attributes and attribute vocabularies must be used. This is true during cascade alerting, but is also true of any other situation in which PHIN partners need to coordinate an alert audience specification across jurisdictional boundaries. As detailed later in Sections 4 and 5 of this document, a PHIN-compliant alerting system must be able to translate its internal information into required PCA-standard attributes and vocabularies. Therefore, a PHIN-compliant alerting system must be able to express alert audience specifications in the manner described here.

The conceptual model underlying audience specification is:

People play a role within one or more jurisdictions
And/or
People play a role within an organization;
And an organization has responsibility for (one or more) jurisdictions;
Therefore the people play their roles within these jurisdictions.

A jurisdiction has a jurisdictional level (national, state, territorial, local).
Therefore, a person plays a role at a jurisdictional level.

The intent of PCA is that a public health alerting system can specify a target audience in terms of role players (people who have particular responsibilities) within a set of jurisdictions. This is so that the organization initiating an alert need know very little about the people and the division of jurisdictional responsibility within another organization; it needs only to know the types of public health officials or experts that should receive the alert and the set of jurisdictions – the geographic area - affected by the event. The set of jurisdictions can then be mapped to a set of organizations, and the set of organizations and roles can be mapped to specific people.

Audience specification is intended to be straight-forward and interpretable using common sense. A PCA audience specification consists of one or more of the following lists populated with values:

- Recipients (individual people)
- Roles
- Jurisdictions
- Jurisdictional levels

If the list of Recipients is empty, then no individual people are targeted. If the Recipient list contains values, then the individuals listed are targeted.

The lists for Role, Jurisdiction, and Jurisdictional Level work in tandem; the combination of values in these lists comprise an audience specification. If all three of these lists are empty, then no role-players are targeted. If any of these lists is populated, then role-players are targeted. If role players are targeted and any of these lists is empty, it means no value has been specified for the corresponding parameter, and therefore, *all values of that parameter are selected*.

Despite any seeming complexity, this is actually the simplest plain-English interpretation of these lists, as can be seen by examination of the examples in APPENDIX 1 – AUDIENCE SPECIFICATION EXAMPLES.

The following pseudo-code details how to interpret an audience specification:

```
Send the alert to a person IF
{
        ( the person's identity has a value equal to any value in the Recipient list )
}
OR
{
        ( at least one Role, one Jurisdiction, or one Jurisdictional Level has been specified )
        AND
        {
                ( the list of Roles is empty )
                OR
                ( any Role of the person has a value equal to any value in the Role list) )
        }
        AND
        {
                ( the list of Jurisdictions is empty )
                OR
```

(any Jurisdiction of the person has a value equal to any value in the Jurisdiction list)

}

AND

{

(the list of Jurisdictional Levels is empty)

OR

(any Jurisdictional Level of the person has a value equal to any value in the Jurisdictional Level list)

}

}

The set of all possible permutations of audience specification lists, populated with example values and accompanied by an interpretation, is found in APPENDIX 1 – AUDIENCE SPECIFICATION EXAMPLES.

These lists of recipients, roles, jurisdictions, and jurisdictional levels become very concrete in Cascade Alerting, because they correspond to specific XML attributes. Outside of Cascade Alerting, they serve currently simply as a conceptual framework for communicating an audience specification across jurisdictions. This list framework can be easily implemented in a variety of situations. It would, for example, be straight-forward to convey an audience specification in a plain-text email using lists of attribute-value pairs.

The requirement for PHIN partners is to have the ability to represent an audience specification in this form.

3.4 TRANSMISSION AND DELIVERY OF ALERTS TO HUMAN RECIPIENTS

This section makes reference to PCA attributes and attribute values. Public health alerting systems are *not* required to use these attributes and values internally; they must simply use attributes and values that can, in principle, be translated to these values.

The following implementation requirements exist for transmission and delivery of alerts to human recipients.

An alerting system must render alert content in a manner appropriate to the characteristics of the device on which the recipient will receive it; e.g. “long text” for email and web presentation, “short text” for SMS and pagers, and voice delivery or automated voice delivery by phone

An alerting system must convey certain critical information to the recipient. For example, it is critical that the recipient be made aware if an alert requires an acknowledgement. Information that is required to be included in alerts is specified in Section 4: PCA Attributes..

An alerting system must be operationally capable of delivering alerts within the timeframe specified in each alert's *deliveryTime* attribute. For example, to support the *deliveryTime* value of 60 (minutes), an alerting system will need to be operational nights and weekends.

If the *sensitive* attribute of the alert is set to "Sensitive", then:

- The alert must be sent using a secure delivery method. A secure delivery method is one that requires the identity of the recipient to be authenticated prior to delivery, and in which the message content is not easily subject to interception by unauthorized recipients. Plain-text email is not a secure method and cannot be used to deliver sensitive content.
- The alert must inform recipients that the alert content is sensitive.

If the *acknowledge* attribute is set to "Yes", then:

- The alert must inform recipients that acknowledgement is required.
- The alerting system must provide methods for recipients to indicate acknowledgement. This acknowledgement must require conscious, deliberate action on the part of the recipient, such as pressing a specific key on a telephone.
- The alerting system must be able to record each recipient's acknowledgement and report it.
- The alerting system must attempt to obtain acknowledgement by trying alternate methods of reaching each recipient, for a reasonable period of time.

3.5 MONITORING OF DELIVERY STATUS IN REAL TIME

There are no specific implementation requirements regarding real-time monitoring of delivery status.

3.6 ARCHIVAL AND RETRIEVAL OF ALERT INFORMATION FOR HISTORICAL REPORTING

An alerting system must store certain critical information when archiving alerts, and must be able to recreate this information when retrieving and reconstructing alerts. This capability is critical in enabling PHIN partners to accurately report on the disposition of an alert that was sent across multiple jurisdictions. Information that is required to be stored as part of the alert archive is listed in Section 4: PCA Attributes.

Within the scope of their own system and jurisdiction, PHIN partner organizations are free to locally preferred attributes and vocabularies for this archive information. However, whenever PHIN partners must share this information with each other, a standardized set of attributes and attribute vocabularies must be used. This is true during cascade alerting, but is also true

of any other situation in which PHIN partners need to collaborate on the disposition of a multi-jurisdictional alert. As detailed in Sections 4 and 5 of this document, a PHIN-compliant alerting system must be able to translate its internal information into required PCA-standard attributes and vocabularies.

3.7 CASCADE ALERTING (OPTIONAL)

Cascade alerting is the preferred method for delivering cross-jurisdictional alerts; however, the ability to support cascade alerting is *optional* for PCA-compliant alerting systems.

For alerting systems that *are* capable of sending cascade alerts, the following capabilities must be in place and processing steps executed:

- The system must have a facility for constructing, routing, and transporting ebXML messages compliant with the PHIN implementation of ebXML messaging, as described in the document document, "PHIN Preparedness: Cross Functional Components Requirements", , located at http://www.cdc.gov/phin/preparedness/CFC_RSv1.0.pdf. .
- If PHIN MS is used to meet the ebXML messaging requirements, then:
    - There must be a PHIN MS instance that can be used for Cascade Alert messages, and a PHIN MS queue or queues established for the purpose of handling inbound and outbound Cascade Alert messages.
    - A means must be established whereby external partners can authenticate themselves and obtain authorization to push PHIN MS messages through the organizations firewall. This information is captured in a PHIN MS "CPA file" and shared with the authorized partners.
    - The system must be able to write messages to and pull messages from the PHIN MS queues, and otherwise manage the queue information.

To send a cascade alert:

- Whenever sending a cross-jurisdictional alert, a cascade alert message must be sent to all partner organizations within the alert distribution that are capable of receiving cascade alert messages.
- The system must be able to identify what other partner organizations are capable of receiving cascade alert messages.are also capable of Cascade Messaging.
    - The CDC PHIN Communication and Alerting team will distribute XML documents listing these organizations and the information needed for routing of ebXML messages.
- The system must be able to convert information about an alert, in whatever form it is expressed internally, into the Cascade Alert Format specified in "Section 6: PCA Cascade Message Formats" of this document. This message format in turn employs two XML message formats: the Emergency Data Exchange Language (EDXL) V 1.0 Distribution Element, and the Common Alerting Protocol (CAP) Version 1.1.
- The system must be able to produce a PHIN MS-compatible ebXML message containing the PCA Cascade Message and ebXML routing information, and

transmit it. The system must be able to monitor the delivery status information provided by ebXML.

To receive a Cascade Alert:

- The system must poll its ebXML transport mechanism for incoming Cascade Alert messages.
- The system must retrieve and parse an incoming message and convert its content into information about an alert that is useable internally.
- The system must be able to produce a PHIN Cascade Acknowledgement Message and transmit it back to the partner originating the alert, using the same ebXML routing and transport facilities identified above.
- The system must act on the alert. The attributes and attribute values in a cascade alert message are directives that specify the intentions of the originator of the alert with regard to processing and handling of the alert. These attributes and values have a direct correspondence with PCA Attributes, and consequently a direct correspondence to the desired behavior of an alerting system in processing the alert, as specified in Section 4: PCA Attributes.

4 PCA ALERT ATTRIBUTES

Table 4.2: PCA Alert Attributes (following) lists all of the attributes used for description and specification of a PCA alert.

Public health alerting systems are *not* required to use these attributes internally; they may use other local attributes and attribute names instead. Alerting systems may also bundle or combine information into attributes in a different manner than specified here. The attributes listed here, and their corresponding vocabularies, are for use when information about an alert must be conveyed between two or more PHIN partners. This is true when Cascade Alerting is used, but it is also true whenever partners need to coordinate alerting efforts using other automated or manual processes.

In order for an alerting system to be PHIN-compliant, the information about alerts that it uses and stores must have a semantic correspondence, and have the capacity to be translated, at least in principle, to the *required* attributes specified here and the corresponding vocabularies specified in Section 5. If the information about alerts managed within an alerting system can be translated in this way, then the alerting system meets PCA requirements with regard to attributes and vocabularies.

Example:
The table specifies that there is a Jurisdiction attribute encoded using either a two-digit FIPS state code, or a five-digit FIPS state-plus-county code (two-digit state code followed by a three-digit county code). A particular public health alerting system could instead have an attribute named "Delivery Area" that is encoded as a string containing the two-letter postal abbreviation for state, optionally followed by a city or county name.

In principle, this information can be transformed into the PCA-standard encoding specified for Jurisdiction. Therefore, this particular alerting system meets the attribute and vocabulary requirements pertaining to the Jurisdiction attribute.

This table defines how a PHIN-compatible public health alerting system is to support and use each attribute or its semantic equivalent. It defines:

- the vocabulary and semantics of the attribute values;
- whether and how the meaning of attribute values must be conveyed to human alert recipients;
- whether and how each attribute's value affects or corresponds to a functional behavior of the alerting system;
- whether each attribute must be stored persistently as part of the information about an alert event;
- whether and how each attribute corresponds to a CAP element.

4.1 TABLE ELEMENTS

Table 4.2: PCA Alert Attributes (following) contains the following columns of information about each attribute.

Attribute Name
The PCA attribute name

Req
Indicates whether the attribute must be *supported* by alerting systems. *Support* of an attribute means that the system and/or its operators must be able to translate attributes and vocabularies used locally by an alerting system into the standard attribute and associated encoding, if any, specified here. If "Y", support for the attribute is required. If "N", support for the attribute is optional. If "COND", support for the attribute is required only under certain circumstances specified in the **Description** column.

Description
A general description of the attribute and its meaning.

EDXL v1.0 Attribute
Name of the corresponding attribute in the EDXL v1.0 Distribution Element, if there is one, given as the EDXL Element and Sub-Element name. If this column is blank, there is no corresponding attribute in the EDXL v1.0 Distribution Element specification.
In a few cases, there is a corresponding attribute in *both* the EDXL and CAP specification.

CAP v1.1 Attribute
Names of the corresponding attribute in the CAP v1.1 specification, if there is one, given as the CAP Class and Attribute name. If this column is blank, there is no corresponding attribute in the CAP v1.1 specification.
In a few cases, there is a corresponding attribute in *both* the EDXL and CAP specification.

System Behavior
Specifies whether the attribute governs the alerting system behavior; that is, whether the value of the attribute corresponds to some aspect of how the system should function in delivering the alert. These attributes are of particular importance in cross-jurisdictional alerting, since they represent the intentions of the agency originating the message regarding how the alert is to be treated or managed. If this column is blank, the attribute has no effect on system behavior.

Convey To Recipient
Specifies whether there is a requirement that the information contained in the attribute be conveyed to human alert recipients, and the conditions under which there is a requirement, and the device types (long text, short text, voice) to which the requirement pertains. Implementers of public health alerting systems should use their

own judgment in determining the best form and wording for conveying the information on various device types.

Example:
It is important for an alert recipient to know whether the alert contains sensitive information. Therefore the table specifies that when the **Sensitive** attribute is set to the value "Sensitive", this must be conveyed to human alert recipients, on all device types. In a long text (email or web page) rendition, this might be conveyed using a text string such as "Caution: Sensitive Message" in bold text. In a short text (SMS or pager) rendition, this might be conveyed as "Sensitive!" (to conserve characters). In a voice rendition, this might be conveyed as "This message is sensitive, please use caution". When the Sensitive attribute is set to "NotSensitive", there is no need to explicitly convey this to recipients.

Archive
Specifies whether the attribute (or the semantically corresponding information) must be recorded by the alerting system when the alert is archived for logging and historical reporting purposes. The set of all attributes that must be recorded comprises the sum of what can be known and reconstructed about a past alert.

Encoding
Specifies the encoding that must be used for the attribute value, or the encoding into which the attribute value must be capable of being transformed.

4.2 TABLE 4.2: PCA ALERT ATTRIBUTES

Attribute Name	Req	Description	EDXL v1.0 Attribute	CAP v1.1 Attribute	System Behavior	Convey To Recipient	Archive	Encoding
agencyIdentifier	Y	Unique identifier of the agency originating the alert. The human-friendly rendering of this identifier is in the attribute: agencyName.	EDXLDistribution.senderID	alert.sender		N	Y(1)	Object Identifier (OID) of the agency originating the alert. See also: the vocabulary element "Originating Agency Identifier" in Section 6: Vocabulary.
agencyName	Y	Human readable name of the agency originating the alert. Corresponds to the human-unfriendly OID encoding in agencyIdentifier.		Info.senderName		Required: long, voice. For short, agencyAbbreviation is recommended instead.	N	Text string containing the full official name of the agency originating the alert.
agencyAbbreviation	Y	Human readable abbreviated name of the agency originating the alert. Corresponds to the human-unfriendly OID encoding in agencyIdentifier.				Recommended: short.	N	Text string containing abbreviated name of the agency originating the alert, encoded as *Originating Agency Abbreviation*. Encoding for Originating Agency Abbreviation is specified in Section 6: Vocabulary.
agencyEmergencyContact	COND	Emergency contact information for the person or office at the agency originating the alert who is responsible for providing follow-up and further information. Required only for alerts having a severity of		info.contact		Suggested: long, voice		Phone number and/or email address. May optionally include name or title of person.

Attribute Name	Req	Description	EDXL v1.0 Attribute	CAP v1.1 Attribute	System Behavior	Convey To Recipient	Archive	Encoding
		"Extreme" or "Severe", or having a sendTime of 15 or 60.						
sourceName	N(5)	Name of the official initiating the alert.				Suggested: long, voice		Text string
sourceTitle	N(5)	Title of the official initiating the alert.				Suggested: long, voice		Text string
alertProgram	Y	Identity of the alerting program.		info.event		Suggested: long, short, voice	Y	Enumeration values are listed in the Vocabulary element "Alerting Program" in Section 6: Vocabulary.
alertIdentifier	Y	Unique alert message identifier.	EDXLDistribution.distributionID	alert.identifier		Required: long	Y	Every alerting program must have a unique namespace and its own protocol for generating unique alert identifiers. The Protocols for unique alert identifiers for various alerting programs are specified in APPENDIX 3 PROTOCOLS FOR UNIQUE ALERT IDENTIFIERS.
sendTime	Y	Date and time the alert is sent	EDXLDistribution.dateTimeSent	alert.sent		Required: long, voice	Y	ISO 8601 format (e. g., "2005-05-24T16:49:00-07:00" for 24 May 2005 at 16: 49 PDT).
severity	Y	Indication of the severity of the event.		info.severity		Required: long, short, voice	Y	Enumeration values: "Extreme", "Severe", "Moderate", "Minor", "Unknown". See the vocabulary element "Severity" in Section 6: Vocabulary.
acknowledge	Y	Indication of whether recipients are required		info.parameter.acknowledge	Y	If value = "Yes",	Y	Enumeration values: "Yes", "No". See the vocabulary

Attribute Name	Req	Description	EDXL v1.0 Attribute	CAP v1.1 Attribute	System Behavior	Convey To Recipient	Archive	Encoding
		to acknowledge receipt of alert.				required: long, short, voice (4)		element "Acknowledge" in Section 6: Vocabulary.
deliveryTime	Y	Target time frame during which alert must be delivered to all recipients. If acknowledge="Yes", target time frame during which alert must be delivered to all recipients and recipients must acknowledge receipt.		info.parameter.deliveryTime	Y	Suggested: long, voice	Y	Enumeration values: 15, 60, 1440, 4420. See the vocabulary element "Delivery Time" in Section 6: Vocabulary.
sensitive	Y	Indication of whether the alert contains sensitive content.	EDXLDistribution.distributionType contentObject.confidentiality *and* EDXLDistribution.combinedConfidentiality		Y	If value="Sensitive", required: long, short, voice (4)	Y	Enumeration values: "Sensitive", "NotSensitive". See the vocabulary element "Sensitive" in Section 6: Vocabulary.
status	Y	Indication of whether this is an actual alert, an exercise, or a test.	EDXLDistribution.distributionStatus	alert.status		If value = "Exercise" or "Test", required: long, short, voice	Y	Enumeration values: "Actual", "Execise", "Test". See the Vocabulary element "Status" in Section 6: Vocabulary.
msgType	Y	Indication of whether this is an original alert, an update to a previous alert, or a cancellation of a previous alert.	EDXLDistribution.distributionType	alert.msgType		If value = "Update" or "Cancel", required: long, short, voice	Y	Enumeration values: "Alert", "Update", "Cancel", "Error". See the Vocabulary element "Message Type" in Section 6: Vocabulary.

Attribute Name	Req	Description	EDXL v1.0 Attribute	CAP v1.1 Attribute	System Behavior	Convey To Recipient	Archive	Encoding
reference	COND	For alerts with a msgType of *Update* or *Cancel*, this attribute must contain the unique identifier (that is, the value of the alertIdentifier attribute) of the original alert being updated or cancelled. If msgType = "Alert", then this attribute has no meaning and is not used.	EDXLDistribution.distributionReference	alert.references		If msgType = "Update" or "Cancel", required: long, voice	Y	For PCA purposes, *reference* must contain the *alertIdentifier* of the referenced previous message. The EDXL requires *reference* to include the *alertIdentifier* (distributionID) and *agencyIdentifier* (senderID) and *sendTime* (dateTimeSent) of the referenced previous message, separated by comma delimiters. Similarly (but not identically) the CAP format requires that *reference* include *agencyIdentifier*, *alertIdentifier*, and *sendTime*, separated by commas.
recipients	Y	A list of unique identifiers corresponding to named individuals to whom this alert is to be sent.	EDXLDistribution.explicitAddress.explicitAddressValue		Y (3)	Do *not* convey	Y	Comma separated list. When the list is cross-jurisdictional in scope or is to be shared across organizations, the unique identifiers must be email addresses. The email address is intended to function as an identifier for the person and not necessarily a delivery address. (3)
jurisdiction	Y	A list of public health jurisdictions in which this alert is to be	EDXLDistribution.targetArea.locCodeUN		Y (3)		Y	Comma-separated list of Federal Information Processing Standards (FIPS) codes. See the vocabulary

Attribute Name	Req	Description	EDXL v1.0 Attribute	CAP v1.1 Attribute	System Behavior	Convey To Recipient	Archive	Encoding
		distributed. (3)						element "Jurisdiction" in Seciton 6: Vocabulary.
jurisdictionalLevel	Y	A list of jurisdictional levels at which this alert is to be distributed. (3)		info.parameter.jurisdictionalLevel	Y (3)		Y	Comma separated list. Enumeration values: "National", "State", "Territorial", "Local". See the Vocabulary element "Jurisdictional Level" in Section 6: Vocabulary.
role	Y	A list of public health roles to which this alert is to be distributed. (3)	EDXLDistribution.recipientRole.value		Y (3)	Suggested: long, voice	Y	Comma-separated list. Enumeration values are listed in the vocabulary element "Role" in Section 6: Vocabulary.
title	Y	Title or "Subject Line" of the alert		info.headline		Required: long, short (2), voice	Y	Text string
message	Y	The main message text.		info.description		Required: long, voice. For short, suggested that as much of message be included as possible.	Y	Text string
dissemination	N(5)	Instructions for sharing the information further.		info.instruction		Suggested: long, voice	N	Text string
followUpTime	N(5)	Estimated time for follow up.				Suggested: long, voice	N	Text string
approved	N(5)	Indicates whether alert content has been authoritatively				Suggested: long, voice	N	Enumeration values: "Yes", "No".

Attribute Name	Req	Description	EDXL v1.0 Attribute	CAP v1.1 Attribute	System Behavior	Convey To Recipient	Archive	Encoding
		approved, e.g. represents an official position or recommendation of the originating agency.						
distributionType	N(7)	Required by EDXL but not by PCA.	EDXLDistribution.distributionType			No	N	Standard enumeration values are listed in the EDXL v1.1 Distribution Element Data Dictionary. PCA cascade messages will always use the value "Report".
urgency	N(7)	Required by CAP but not by PCA.		info.urgency		No (6)	N	Standard CAP enumeration values are listed in the Element Name "urgency" in the Common Alerting Protocol Data Dictionary. A PHIN alerting system may use these standard CAP values, or may use other urgency classification values used by an alerting program, e.g. "HAN Alert", "HAN Advisory", "HAN Notification", "Epi-X Alert", etc.
scope	N(7)	A code required by CAP to indicate the intended distribution of the alert. PCA addresses this in other attributes.		alert.scope		No	N	CAP specifies several standard enumeration values which are listed in the Element Name "scope" in the Common Alerting Protocol Data Dictionary. Alerts sent by PHIN alerting systems should always use the value "Restricted", meaning for dissemination only to

Attribute Name	Req	Description	EDXL v1.0 Attribute	CAP v1.1 Attribute	System Behavior	Convey To Recipient	Archive	Encoding
								users with a known operational requirement.
category	N(8)	A code used by CAP to indicate the category of the event – e.g. meteorological, environmental, etc.		info.category		No	N	CAP specifies several standard enumeration values which are listed in the Element Name "category" in the Common Alerting Protocol Data Dictionary. Alerts sent by PHIN alerting systems should always use the value "Health" – meaning medical and public health.
certainty	N(7)	A code required by CAP to indicate the certainty or likelihood of the event described in the alert.		info.certainty		No	N	CAP specifies several standard enumeration values which are listed in the Element Name "certainty" in the Common Alerting Protocol Data Dictionary. PHIN alerting systems should most probably use the value "Very Likely", which means "Highly likely (p > ~ 85%) or certain".

Exceptions and notes:

(1) AgencyIdentifier needs to be stored persistently only if the alerting system is capable of receiving and processing inbound cascade alerts. Otherwise, agencyIdentifier logically can take on one value - the value for the agency operating this system – and is therefore supurfluous.

(2) Title should be conveyed in short text rendition to the extent that it fits after other required attributes have been accommodated – e.g. it may be necessary to truncate.

(3) The attributes "role", "jurisdiction", and "jurisdictionalLevel" work together to form an audience specification. Refer to Section 3.3 Audience Specification

(4) If value = "No", does not have to be conveyed to recipients.

(5) Many of the optional attributes listed here are items of information that various workgroups over time have recommended for standard adoption in health alerts and other public health communications. Many were consequently listed in the PHIN *Partner Communications and Alerting Functional Requirements* specification. These might better be classified as *information that may be important to convey in an alert, and that particular alerting programs may choose to require,* rather than *attributes* that would be managed as such by an information system e.g. as database columns or message elements. In general, they are simply information elements that may be useful to include in the alert text. They are included here in the interest of completeness and consistency with previous documents, and because it is possible that some may become required attributes at some future time.

(6) It is up to each alerting program whether *urgency* must be conveyed to human alert recipients.

(7) These attributes are required in either the EDXL or the CAP message protocol but are of no value to PCA. Therefore, they are only of consequence to PHIN alerting systems that send Cascade Alert messages, in order to be able to construct a valid XML message, and to the extent that these EDXL/CAP messages may someday be received by systems in emergency response domains other that public health/PHIN. PHIN alerting systems that receive Cascade Alert messages can disregard these.

(8) These attributes are optional in the EDXL and/or the CAP protocol, and are of no value to PCA, and are of consequence only to the extent that these EDXL/CAP messages may someday be received by systems in emergency response domains other that public health/PHIN, e.g. by police or emergency management systems.

5 VOCABULARY AND VALID VALUE SETS

The following table of Vocabularies and Valid Value Sets is a complete list of all PHIN-specific (i.e. non-standard) vocabularies used for description and specification of a PCA alert.

Public health alerting systems are *not* required to use these vocabularies internally; they may use other local vocabularies instead. The vocabularies listed here, and their corresponding attributes in Section 4, are for use when information about an alert must be conveyed between two or more PHIN partners. This is true when Cascade Alerting is used, but it is also true whenever partners need to coordinate alerting efforts using other automated or manual processes.

In order for an alerting system to be PHIN-compliant, the information about alerts that it uses and stores must have a semantic correspondence, and have the capacity to be translated, at least in principle, to the vocabularies specified here and the corresponding attributes specified in Section 4. If the information about alerts managed within an alerting system can be translated in this way, then the alerting system meets PCA requirements with regard to attributes and vocabularies.

Example:
The table specifies that there is a Jurisdiction attribute encoded using either a two-digit FIPS state code, or a five-digit FIPS state-plus-county code (two-digit state code followed by a three-digit county code). A particular instance of a public health alerting system could instead have an attribute named “Delivery Area” that is encoded as a string containing the two-letter postal abbreviation for state, optionally followed by a city or county name.

In principle, this information can be transformed into the PCA-standard encoding specified for Jurisdiction. Therefore, this instance of an alerting system meets the attribute and vocabulary requirements pertaining to the Jurisdiction attribute.

Vocabulary Element	Description	Valid values	Description of Valid Value
Originating Agency Identifier	A guaranteed-unique identifier for the agency originating the alert.	The OID of the agency originating the alert. Pending completion of an OID and ebXML registry for PHIN, these OIDs are currently managed by the PCA implementation team at CDC. Contact the PHIN for assistance (contact information given at the end of this document).	
Originating Agency Abbreviation	An abbreviated, human-readable name of the agency originating the alert. It is used when space limitations prevent the use of the full, official name of the agency, for example, in SMS messages. It corresponds to the human-unfriendly OID encoding in "Originating Agency Identifier".	For national PHIN partners (which currently consist of only the CDC), the originating agency abbreviation is the commonly used agency acronym. For state public health partners, the originating agency abbreviation is the two character postal abbreviation for the state name. For county public health partners, the originating agency abbreviation is the concatenation of: the two character postal abbreviation for the state in which the agency is located; a dash (-); the name of the county, excluding any special characters or embedded blanks (e.g., alpha-numeric characters only); a dash (-), and the word "COUNTY. For city public health partners, the originating agency abbreviation is the concatenation of: the two character postal abbreviation for the state in which the agency is located; a dash (-); the name of the city, excluding any special characters or embedded blanks (e.g., alpha-numeric characters only); a dash (-); and the word "CITY" **E**xamples are provided APPENDIX 2 –ORIGINATING AGENCY ABBREVIATIONS.	
Alerting Program	Identifier of the alerting program sending this alert. An alerting program is a cross-jurisdictional public health function or program that engages in alerts and communications and uses PCA as a vehicle for their delivery.	HAN	Health Alert Network
		Epi-X	Epi-X
Severity	"Severity" indicates the level of significance of the event. The values used for this vocabulary element are equivalent to those used in the CAP protocol.	Extreme	Extraordinary threat to life or health; warrants immediate action or attention

Vocabulary Element	Description	Valid values	Description of Valid Value
		Severe	Significant threat to life or health; warrants immediate action or attention
		Moderate	Possible threat to life or health; may require immediate action
		Minor	Minimal or non-existent threat to life or health; unlikely to require immediate action
		Unknown	Unknown level of threat to life or health; may require immediate action
Delivery Time	"Delivery Time" indicates the target timeframe for delivery of the alert, and if acknowledgement is required, for delivery and acknowledgement of the alert.	*15*	no more than 15 minutes should elapse
		60	no more than 60 minutes should elapse
		1440	no more than 24 hours should elapse
		4320	no more than 72 hours should elapse
Acknowledge	"Acknowledge" indicates whether a manual acknowledgement on the part of the recipient is required to confirm that the alert was received. When the "Acknowledge" attribute has a value of "Yes", all appropriate defined device types for each recipient should be tried, and should be retried for a reasonable time period, in an attempt to obtain an personal acknowledgement. If possible, alternate contacts for recipients should be tried also.	*Yes*	indicates that the alert requires a manual acknowledgement from the recipient (e.g., "Press 9 to acknowledge"" on phoned alerts)
		No	indicates that the alert does not require a manual acknowledgement from the recipient.
Jurisdiction	"Jurisdiction" indicates the political jurisdictional entities (state, county, etc) affected by the public health event, and/or within which alert recipient(s) are targeted.	Federal Information Processing Standards (FIPS) codes for states and counties will be used to indicate the jurisdiction targeted by the alert. Partners may visit www.census.gov/geo/www/fips/fips.html, among other resources, for more information regarding FIPS codes. Each code can be (1) a 2 digit state FIPS code or (2) a 5 digit code consisting of a 2 digit state FIPS code followed by a 3 digit FIPS county code. It is acknowledged that the FIPS state and county codes are not adequate to describe cities, regions, and other jurisdiction entities used by some PHIN partners. The PCA working group has decided, however, that this vocabulary provides the best, most reasonable fit for the present, until a more comprehensive effort can be made to establish an optimal encoding.	

Vocabulary Element	Description	Valid values	Description of Valid Value
Jurisdictional Level	"Jurisdictional level" indicates whether role players in organizations serving at the national, state, territorial, or local level are targeted as alert recipients.	National	indicates national recipients
		State	indicates state recipients
		Territorial	indicates territorial recipients
		Local	indicates local recipients
Sensitive	"Sensitive" indicates whether the alert contains sensitive content. .	Sensitive	indicates the alert contains sensitive content
		NotSensitive	indicates non-sensitive content
Status	"Status" indicates whether the alert is related to an actual event or to a test scenario.	Actual	indicates that the alert refers to a live event
		Exercise	indicates that designated recipients must respond to the alert
		Test	Test - indicates that the alert is related to a technical, system test and should be disregarded
Message Type	"Message Type" indicates whether the alert is an original alert or is a follow-on to a prior alert.	Alert	indicates an original alert
		Update	indicates prior alert has been updated and superseded
		Cancel	indicates prior alert has been cancelled
		Error	indicates prior alert has been retracted
	"Role" indicates a set of recipients targeted to receive an alert on the basis of the public health function for which they are responsible. Roles represent a combination of program functions and expertise.	Health Officer	Responsible for the direction and administration of the jurisdiction's Department of Health.
		Terrorism Coordinator	Responsible for the administration of all BioTerrorism related activities within the jurisdiction.
		Health Alert Network Coordinator	Responsible for the coordination, implementation, and maintenance of the public health alert and information network for the agency or jurisdiction.
		Laboratory Director	Responsible for the coordination of the laboratory testing and reporting for the agency or jurisdiction.

Vocabulary Element	Description	Valid values	Description of Valid Value
Role		Public Health Administrator	Responsible for the management of the jurisdiction's Department of Public Health.
		Emergency Management Coordinator	Responsible for the coordination of emergency response activities. Coordinates response activities with other agencies and jurisdictions.
		Chief Epidemiologist	Responsible for the coordination of the public health surveillance, investigation and response activities within the jurisdiction.
		Public Information Officer	Responsible for the coordination of public information and emergency risk communications for the jurisdiction.
		Communicable/ Infectious Disease Coordinator	Responsible for the coordination of all communicable and infectious disease surveillance and investigations and response within the jurisdiction.
		Health Officer	Responsible for the direction and administration of the jurisdiction's Department of Health.
		Terrorism Coordinator	Responsible for the administration of all BioTerrorism related activities within the jurisdiction.
		Health Alert Network Coordinator	Responsible for the coordination, implementation, and maintenance of the public health alert and information network for the agency or jurisdiction.
		Laboratory Director	Responsible for the coordination of

Vocabulary Element	Description	Valid values	Description of Valid Value
			the laboratory testing and reporting for the agency or jurisdiction.
		Public Health Administrator	Responsible for the management of the jurisdiction's Department of Public Health.
		Emergency Management Coordinator	Responsible for the coordination of emergency response activities. Coordinates response activities with other agencies and jurisdictions.
		Chief Epidemiologist	Responsible for the coordination of the public health surveillance, investigation and response activities within the jurisdiction.
		Additional, optional Roles are listed in APPENDIX 4 PUBLIC HEALTH ROLES – Table 2: Optional Public Health Roles	

6 PCA CASCADE ALERT MESSAGE FORMATS

Alerting systems that are capable of sending cascade alerts must be capable of creating, receiving, and interpreting messages that conform to PHIN Communication and Alerting Cascade Alert Message Formats. Two message formats are defined.

1. PCA Cascade Alert – the format used for alert messages.
2. PCA Cascade Acknowledgement – the format used to acknowledge receipt of a Cascade Alert.

6.1 PCA CASCADE ALERT

The PCA Cascade Alert is formatted using two XML message formats:

- Emergency Data Exchange Language (EDXL) V 1.0 Distribution Element
- Common Alerting Protocol (CAP) Version 1.1.

The EDXL Distribution Element may be thought of as a "container" or “envelope”. It provides the information to route "payload" messages by including key routing information such as distribution type, sender, recipient, and geography. The CAP message may be thought of as the alert message “payload” contained within the EDXL Distribution Element "container". Specifically, the CAP portion of the message is contained within the ContentObject.XMLContent.EmbeddedXMLContent element of the EDXLDistribution.

The message format is defined in two tables below. The first table lists the elements of the EDXL Distribution Element that are used in PCA Cascade Alert Messages. The second table lists the elements of the CAP protocol that are used in PCA Cascade Alert Messages.

Further information and complete specifications for these two XML message formats can be found at:

Emergency Data Exchange Language (EDXL) V 1.0 Distribution Element:

http://docs.oasis-open.org/emergency/edxl-de/v1.0/EDXL-DE_Spec_v1.0.pdf

Common Alerting Protocol (CAP) V 1.1:

http://www.oasis-open.org/committees/download.php/15135/emergency-CAPv1.1-Corrected_DOM.pdf

6.1.1 Table 6.1.1: Cascade Alert "Container" using Emergency Data Exchange Language (EDXL) V 1.0 Distribution Element

Element	PCA Alert Attribute	Type	Optionality/ Multiplicity	Definition	Comments
EDXLDistribution		XML Structure	REQUIRED. Once.	The container of all of the elements related to the distribution of the content messages.	The <EDXLDistribution> element may include one or more <targetArea> and <contentObject> blocks.
distributionID	alertIdentifier	xsd:string	REQUIRED. Once.	The unique identifier of this distribution message.	MUST be a properly formed -escaped if necessary- XML string.
senderID	agencyIdentifier	xsd:string	REQUIRED. Once.	The unique identifier of the sender.	1. The identifier MUST be a properly formed -escaped if necessary- XML string. 2. The EDXL specification requires that senderID be unique and be in the form: actor@domain-name. The PCA specification uses Object Identifier (OID) as a unique identifier for the agency originating the alert. In order to meet the EDXL requirement, PCA Cascade Messages will adopt the form: agencyIdentifier@domain-name, where agencyIdentifier is the agency OID and domain-name is the agency's domain name. A valid domain name belonging to the agency should be used, however for PCA Cascade Messages it is only present to meet EDXL formatting requirements and is of no consequence to systems receiving the Cascade Alert.
dateTimeSent	sendTime	xsd:dateTime	REQUIRED. Once.	The date and time the distribution message was sent.	The Date Time combination must include the offset time for time zone. Must be in the W3C format for the XML dateTime data type.

	distributionStatus	status	xsd:string with restrictions	REQUIRED. Once	Indication of whether this is an actual alert, an exercise, or a test	Values: Actual, Exercise, Test. MUST be a properly formed -escaped if necessary- XML string.
	distributionType	msgType	xsd:string with restrictions	REQUIRED. Once.	Indication of whether this is an original alert, an update to a previous alert, or a cancellation of a previous alert.	Values: “Alert”, “Update”, “Cancel”, “Error”. The type MUST be a properly formed -escaped if necessary- XML string.
	combindedConfidentiality	sensitive	xsd:string	REQUIRED. Once.	Confidentiality of the combined distribution message’s content	Enumeration values: “Sensitive”, “NotSensitive”.
	recipientRole	role	List and Associated Value(s)	OPTIONAL. Multiple.	A list of public health roles to which this alert is to be distributed.	The list and associated value(s) is in the form: <recipientRole> <valueListUrn>valueListUrn</valueListUrn> <value>value</value> </recipientRole> where the content of <valueListUrn> is the Uniform Resource Name of a published list of values and definitions, and the content of <value> is a string (which may represent a number) denoting the value itself. Multiple instances of the <value>, MAY occur with a single <valueListUrn> within the <recipientRole> container. Multiple instances of <recipientRole> MAY occur within a single <EDXLDistribution> container.
	distributionReference	reference	xsd:string	CONDITIONAL. Multiple.	For alerts with a distributionType (msgType) of *Update* or *Cancel*, this attribute must contain a	The <distributionID> and <senderID> and <dateTimeSent> of the referenced previous message,

					reference to the original alert being updated or cancelled.	concatenated with a comma delimiter. This element should appear at least once in any message which updates, cancels or otherwise refers to another message. MUST be a properly formed -escaped if necessary- XML string
	explicitAddress		XML Structure	OPTIONAL. Multiple.	A list of unique identifiers corresponding to named individuals to whom this alert is to be sent.	The explicit address of a recipient in the form: <explicitAddress> < explicitAddressScheme> explicitAddressScheme </ explicitAddressScheme> <explicitAddressValue> explicitAddressValue </ explicitAddressValue> </ explicitAddress > where the content of <explicitAddressScheme> is the distribution addressing scheme used, and the content of <explicitAddressValue> is a string denoting the addressees value. Multiple instances of the < explicitAddressValue >, MAY occur with a single < explicitAddressScheme > within the < explicitAddress > container. Multiple instances of < explicitAddress > MAY occur within a single <EDXLDistribution> container.
		explicitAddressScheme		xsd:string	REQUIRED. Once.	The distribution addressing scheme used for the individuals.	For PCA Cascade Messages, the value is “email”.
		explicitAddressValue	recipients	xsd:string	REQUIRED.	A string denoting the identifier for	Email address of an individual to whom

		Multiple.	a named individual to whom this alert is to be sent.	this alert is to be sent. Note that this is intended to function as an identifier for the person and not necessarily a delivery address.
targetArea		XML Structure	OPTIONAL. Multiple.	The container element for location information	Multiple <targetArea> blocks may appear in a single <EDXLDistribution> element, in which case the target area for the current message is the union of all areas described in the various <targetArea> structures.
	country		xsd:string	OPTIONAL. Multiple.	The code of the country.	The two-character ISO 3166-1 Country Code for the country concerned. More specific target location information can be defined in the <subdivision> elements. MUST be a properly formed -escaped if necessary- XML string.
	locCodeUN	jurisdiction	xsd:string	OPTIONAL. Multiple.	A list of U.S. public health jurisdictions in which this alert is to be distributed.	The two first digits are the two character ISO3166-1 Country Code for the country in which the place is located. The following three characters are the UN/LOCODE designator for the particular location within that country. No spaces or punctuation are used within this designator. MUST be a properly formed -escaped if necessary- XML string.
contentObject			XML Structure	OPTIONAL. Multiple	The container element for message data and content.	
	confidentiality	sensitive	xsd:string	OPTIONAL. Once.	Indication of whether the alert contains sensitive content.	MUST be a properly formed -escaped if necessary- XML string. Enumeration values: “Sensitive”, “NotSensitive”.

		xmlContent		XML Structure	Required for PCA Cascade Messages.		
			embeddedXMLContent		xsd:string	Required for PCA Cascade Messages.	The <embeddedXMLContent> element is an open container for valid XML from an explicit namespaced XML Schema.	The content MUST be a separately-namespaced well-formed XML document. **For PCA Cascade Messages, this element will contain the CAP message.** The enclosed XML content MUST be explicitly namespaced as defined in the enclosing <embeddedXMLContent> tag. Enclosed XML content may be encrypted and/or signed within this element.

6.1.2 Table 6.1.2: PCA Cascade Alert "Payload" using Common Alerting Protocol (CAP) Version 1.1

Element	PCA Attribute	Context. Class. Attribute Representation	Optionality	Definition	Notes, Value Domain, and PCA usage
Alert	group	cap. alert. group	REQUIRED	The container for all component parts of the CAP alert message	(1) Surrounds CAP alert message subelements (2) MUST include the xmlns attribute referencing the CAP URN as the namespace, e.g.: <cap:alert xmlns:cap="urn:oasis:names:tc:emerge ncy:cap:1.1"> [sub-elements] </cap:alert> (3) In addition to the specified subelements, MAY contain one or more <info> blocks.
identifier	alertIdentifier	cap. alert. identifier	REQUIRED	The identifier of the alert message	(1) A number or string uniquely identifying this message, assigned by the sender (2) MUST NOT include spaces, commas or restricted characters (< and &) (3) For PCA Cascade Messages, every alerting program must have a unique namespace and its own protocol for generating unique alert identifiers.
sender	agencyIdentifier	cap. alert. sender. identifier	REQUIRED	The identifier of the sender of the alert message	(1) Identifies the originator of this alert. Guaranteed by assigner to be unique globally. (2) MUST NOT include spaces, commas or restricted characters (< and &) (3) For PCA Cascade Messages, the OID of the organization originally generating and sending this alert.

	sent	sendTime	cap. alert. sent. time	REQUIRED	The time and date of the origination of the alert message	(1) The date and time is represented in [dateTime] format (e. g., "2002-05- 24T16:49:00-07:00" for 24 May 2002 at 16: 49 PDT). (2) Alphabetic timezone designators such as “Z” MUST NOT be used. The timezone for UTC MUST be represented as “-00:00” or “+00:00. (3) For PCA cascade messages, this is the date and time that the message was originally sent by the originating agency.
	status	alert.status	cap. alert. status. code	REQUIRED	The code denoting the appropriate handling of the alert message	Code Values: “Actual” - Actionable by all targeted recipients “Exercise”- Actionable only by designated exercise participants; exercise identifier should appear in <note> “Test” - Technical testing only, all recipients disregard. PCA has no identified need for the additional values supported by CAP: “System” or “Draft”.
	msgType	msgType	cap. alert. type. code	REQUIRED	The code denoting the nature of the alert message	Code Values: “Alert” - Initial information requiring attention by targeted recipients “Update” - Updates and supersedes the earlier message(s) identified in <references> “Cancel” - Cancels the earlier message(s) identified in <references> PCA will not use the values "Ack" or “Error” at this time.
	scope	scope	cap. alert. scope.	REQUIRED	The code denoting the intended	Code Values: “Public” - For general dissemination to unrestricted audiences. “Restricted” - For dissemination only to users with a

			code		distribution of the alert message	known operational requirement. "Private" - For dissemination only to specified addresses. PCA does not require or regard this element but must populate it when using the CAP. Therefore PCA will always use the value "Restricted" to indicate that dissemination should be limited to the PCA systems targeted.
	references	reference	cap. alert. references. group references. group	CONDITIONAL	The group listing identifying earlier message(s) referenced by the alert message	(1) The extended message identifier(s) (in the form sender, identifier, sent) of an earlier CAP message or messages referenced by this one. (2) For PCA Cascade Messages, if msgType = "Update" or "Cancel" this attribute must contain a reference to the original alert. Due to the CAP format requirements, this reference must consist of agencyIdentifier, alertIdentifier, and sendTime, separated by commas. If msgType = "Alert", then this attribute is not used.
	info		cap. alertInfo. info. group	For PCA Cascade Messages, REQUIRED	The container for all component parts of the info sub-element of the alert message	CAP allows for multiple occurrences within a single <alert>. However, at least currently, PCA Cascade Messages will contain a single <info> block.
		category	category	cap. alertInfo. category. code	REQUIRED	The code denoting the category of the subject event of the alert message	PCA does not require or regard this element but must populate it when using the CAP. PHIN alerts will always set this attribute to "Health".
		event	alertProgram	cap. alertInfo. event.	REQUIRED	The text denoting the type of the	PCA uses this to indicate the alerting program (alertProgram), which may take the values: HAN, Epi-X. Other alerting programs may come into being in the future.

				text		subject event of the alert message	
		urgency	urgency	cap. alertInfo. urgency. code	REQUIRED	The code denoting the urgency of the subject event of the alert message	Code Values supported by CAP are: "Immediate" - Responsive action SHOULD be taken immediately "Expected" - Responsive action SHOULD be taken soon (within next hour) "Future" - Responsive action SHOULD be taken in the near future "Past" - Responsive action is no longer required "Unknown" - Urgency not known. PCA does not require or regard this element but must populate it when using the CAP. An alerting program can use the standard CAP values or may use this for an urgency classification particular to the alerting program, e.g. "HAN Alert", "HAN Advisory", "HAN Notification" - - "Epi-X" Alert", etc.
		severity	severity	cap. alertInfo. severity. code	REQUIRED	The code denoting the certainty of the subject event of the alert message	Code Values: "Extreme" - Extraordinary threat to life or property "Severe" - Significant threat to life or property "Moderate" - Possible threat to life or property "Minor" - Minimal threat to life or property "Unknown" - Severity unknown
		certainty	certainty	cap. alertInfo. certainty. code	REQUIRED	The code denoting the certainty of the subject event of the	PCA does not require or regard this element but must populate it when using the CAP. Since most health alerts describe events known to be happening, PCA alerting systems should most probably use the value "Very Likely", which means "Highly likely (p > ~ 85%) or certain".

						alert message	
		senderName	agencyName	cap. alertInfo. sender. name	For PCA Cascade Messages, REQUIRED	The text naming the originator of the alert message	Required for PCA. Must contain the full official name of the agency originating the alert.
		headline	title	cap. alertInfo. headline. text	For PCA Cascade Messages, REQUIRED	The text headline of the alert message	The "subject:" or “title” of the alert.
		description	message	cap. alertInfo. description. text	For PCA Cascade Messages, REQUIRED	The text describing the subject event of the alert message	The main alert text.
		contact	agencyEmergencyContact	cap. alertInfo. contact. text	For PCA Cascade Messages, CONDITIONAL	The text describing the contact for follow-up and confirmation of the alert message	Emergency contact information for the person or office at the agency originating the alert that is responsible for providing follow-up and further information. Required only for alerts having a severity of “Extreme” or “Severe”, or having a sendTime of 15 or 60. Phone number and/or email address. May optionally include name or title of person.
		parameter		cap. alertInfo. parameter. group	For PCA Cascade Messages, REQUIRED	A system-specific additional parameter associated with the alert message	Required for PCA Cascade Alerting. PHIN Alerting uses this element to hold the following PHIN-specific attributes: acknowledge deliveryTime jurisdictionalLevel

			acknowledge	acknowledge		For PCA Cascade Messages, REQUIRED	A PCA-specific additional attribute inidicating whether alert recipients are required to manually acknowledge receipt.	Enumeration values: “Yes”, “No”
			deliveryTime	deliveryTime		For PCA Cascade Messages, REQUIRED	A PCA-specific additional attribute inidicating, in minutes, how quickly the alert must be delivered to recipients (and acknowledged, when acknowledgement is required).	Enumeration values: 15, 60, 1440, 4320 These values in minutes translate to 15 minutes, 60 minutes, 24 hours, and 72 hours.
			jurisdictionalLevel	jurisdictionalLevel		For PCA Cascade Messages, CONDITIONAL	A PCA-specific additional attribute inidicating the "jurisdictional level" to which the alert is to be distributed	Enumeration values: National, State, Territorial, Local Required when role and/or jurisdiction values are present.

6.1.3 SAMPLE PCA CASCADE ALERT MESSAGE

Following is a sample PCA Cascade Alert Message. This example is annotated to show the corresponding PCA Attribute for each element of the message. This example shows a test update to a HAN message from the CDC.

PCA Attribute	PCA Cascade Message Example
	<?xml version="1.0" encoding="UTF-8" ?>
	<EDXLDistribution xmlns="**urn:oasis:names:tc:emergency:EDXL:DE:1.0**">
alertIdentifier	<distributionID>**CDC-2006-183**</distributionID>
agencyIdentifier	<senderID>**2.16.840.1.114222.4.20.1.1@cdc.gov**</senderID>
sendTime	<dateTimeSent>**2006-11-07T21:25:16.512-05:00**</dateTimeSent>
status	<distributionStatus>**Test**</distributionStatus>
msgType	<distributionType>**Update**</distributionType>
sensitive	<combinedConfidentiality>**SENSITIVE**</combinedConfidentiality>
role	<recipientRole>
	<valueListUrn>**urn:phin:role**</valueListUrn>
	<value>**Public Health Administrator**</value>
	<value>**Emergency Management Coordinator**</value>
	<value>**Chief Epidemiologists**</value>
	<value>**Communicable/Infectious Disease Coordinators**</value>
	<value>**Environmental Health Directors**</value>
	</recipientRole>
reference	<distributionReference>**CDC-2006-182,2.16.840.1.114222.4.20.1.1@cdc.gov,2006-11-05T13:02:42.121-05:00**</distributionReference>

recipients
```
<explicitAddress>
    <explicitAddressScheme>e-mail</explicitAddressScheme>
    <explicitAddressValue>johnsmith@healthdept.gov</explicitAddressValue>
    <explicitAddressValue>maryjones@healthdept.gov</explicitAddressValue>
</explicitAddress>
```
jurisdiction (optional ->)
```
<targetArea>
    <country>US</country>
    <locCodeUN>01091</locCodeUN>
    <locCodeUN>01003</locCodeUN>
</targetArea>
```
jurisdiction
```
<targetArea>
    <locCodeUN>28059</locCodeUN>
    <locCodeUN>28047</locCodeUN>
    <locCodeUN>28045</locCodeUN>
</targetArea>
```
jurisdiction
```
<targetArea>
    <locCodeUN>22071</locCodeUN>
    <locCodeUN>22087</locCodeUN>
    <locCodeUN>22075</locCodeUN>
    <locCodeUN>22051</locCodeUN>
</targetArea>
<contentObject>
```
sensitive
```
    <confidentiality>Sensitive</confidentiality>
    <xmlContent>
        <embeddedXMLContent>
            <ns1:alert xmlns:ns1="urn:oasis:names:tc:emergency:cap:1.1">
```

alertIdentifier	<ns1:identifier>**CDC-2006-183**</ns1:identifier>
agencyIdentifier	<ns1:sender>**2.16.840.1.114222.4.20.1.1**</ns1:sender>
sendTime	<ns1:sent>**2006-11-07T21:25:16.512-05:00**</ns1:sent>
Status	<ns1:status>**Test**</ns1:status>
msgType	<ns1:msgType>**Update**</ns1:msgType>
	<ns1:references>**2.16.840.1.114222.4.20.1.1,CDC-2006-182,2006-11-05T13:02:42.121-05:00**</references>
Scope	<ns1:scope>**Restricted**</ns1:scope>
	<ns1:info>
Category	<ns1:category>**Health**</ns1:category>
alertProgram	<ns1:event>**HAN**</ns1:event>
Urgency	<ns1:urgency>**Expected**</ns1:urgency>
Severity	<ns1:severity>**Severe**</ns1:severity>
Certainty	<ns1:certainty>**Very Likely**</ns1:certainty>
senderName	<ns1:senderName>**Centers for Disease Control and Prevention**</ns1:senderName>
title	<ns1:headline>**Cases of Vibrio vulnificus identified among Hurrican Katrina evacuees**</ns1:headline>
message	<ns1:description>**To date, seven people in the area effected by Hurricane Katrina have been reported ill from the bacterial disease Vibrio vulnificus.**</ns1:description>
dissemination	<ns1:instruction>**Please distribute to health providers and officials within your jurisdiction as deemed appropriate**</ns1:instruction>
	<ns1:parameter>
sensitive	<ns1:valueName>**Sensitive**</ns1:valueName>
	<ns1:value>**Yes**</ns1:value>
	</ns1:parameter>
	<ns1:parameter>

acknowledge

```
            <ns1:valueName>Acknowledge</ns1:valueName>
            <ns1:value>Yes</ns1:value>
        </ns1:parameter>
        <ns1:parameter>
```

deliveryTime

```
            <ns1:valueName>DeliveryTime</ns1:valueName>
            <ns1:value>1440</ns1:value>
        </ns1:parameter>
        <ns1:parameter>
```

jurisdictionLevel

```
            <ns1:valueName>Level</ns1:valueName>
            <ns1:value>StateLocal</ns1:value>
        </ns1:parameter>
    </ns1:info>
</ns1:alert>
</embeddedXMLContent>
</xmlContent>
</contentObject>
</EDXLDistribution>
```

6.2 PCA CASCADE ACKNOLWDGEMENT

The PCA Cascade Acknowledgement is formatted using the Emergency Data Exchange Language (EDXL) V 1.0 Distribution Element . The message format is defined in the table below.

6.2.1 Table 6.2.1: PCA CASCADE ACKNOWLEDGEMENT Using Emergency Data Exchange Language (EDXL) V 1.0 Distribution Element

Element	PCA Alert Attribute	Type	Optionality/ Multiplicity	Definition	Comments
EDXLDistribution		XML Structure	REQUIRED. Once.	The container of all of the elements related to the distribution of the content messages.	The <EDXLDistribution> element may include one or more <targetArea> and <contentObject> blocks.
distributionID	alertIdentifier	xsd:string	REQUIRED. Once.	The unique identifier of this distribution message.	MUST be a properly formed -escaped if necessary- XML string. For Cascade Acknowledgement Messages, use the alertIdentifier of the original message being acknowledged, followed by a comma (“,“) followed by the agencyIdentifier of the organization that is acknowledging the alert.
senderID	agencyIdentifier	xsd:string	REQUIRED. Once.	The unique identifier of the sender.	For Cascade Ack Messages use the agencyIdentifier of the organization that is acknowledging the alert. 1. The identifier MUST be a properly formed -escaped if necessary- XML string. 2. The EDXL specification requires that senderID be unique and be in the form: actor@domain-name. The PCA specification uses Object Identifier

						(OID) as a unique identifier for the agency originating the alert. In order to meet the EDXL requirement, PCA Cascade Messages will adopt the form: agencyIdentifier@domain-name, where agencyIdentifier is the agency OID and domain-name is the agency's domain name. A valid domain name belonging to the agency should be used, however for PCA Cascade Messages it is only present to meet EDXL formatting requirements and is of no consequence to systems receiving the Cascade Alert.
	dateTimeSent		xsd:dateTime	REQUIRED. Once.	The date and time the distribution message was sent.	For Cascade Ack Messages, use the date & time of the acknowledgement. The Date Time combination must include the offset time for time zone. Must be in the W3C format for the XML dateTime data type.
	distributionStatus	status	xsd:string with restrictions	REQUIRED. Once	Indication of whether this is an actual alert, an exercise, or a test	Values: Actual, Exercise, Test. For Cascade Ack Messages use the same value used in the alert being acknowledged. MUST be a properly formed -escaped if necessary- XML string.
	distributionType		xsd:string with restrictions	REQUIRED. Once.	Indication of whether this is an original alert, an update to a previous alert, or a cancellation of a previous alert.	For Cascade Ack Messages, the value must be ""Ack". The type MUST be a properly formed -escaped if necessary- XML string.
	combindedConfidentiality	sensitive	xsd:string	REQUIRED. Once.	Confidentiality of the combined distribution message's content	Enumeration values: "Sensitive", "NotSensitive". For Cascade Ack Messages use the same value used in the alert being acknowledged.

	distributionReference	reference	xsd:string	CONDITIONAL. Multiple.	For alerts with a distributionType (msgType) of *Ack*, this attribute must contain a reference to the original alert being acknowledged.	The <distributionID> and <senderID> and <dateTimeSent> of the referenced previous message, concatenated with a comma delimiter. This element must appear in a Cascade Ack Message. MUST be a properly formed -escaped if necessary- XML string

6.2.2 SAMPLE PCA CASCADE ACKNOWLEDGEMENT MESSAGE

Following is a sample PCA Cascade Acknowledgement Message. This example is annotated to show the corresponding PCA Attribute for each element of the message. This example shows an acknowledgement to the example test update HAN message from the CDC shown in 6.1.3.

PCA Attribute	PCA Cascade Acknowledgement Example
	<?xml version="1.0" encoding="UTF-8" ?>
	<EDXLDistribution xmlns="**urn:oasis:names:tc:emergency:EDXL:DE:1.0**">
alertIdentifier	<distributionID>**CDC-2006-183, 2.16.840.7.1234567.5.82.2.1**</distributionID>
agencyIdentifier	<senderID>**2.16.840.7.1234567.5.82.2.1@state.healthdept.gov**</senderID>
sendTime	<dateTimeSent>**2006-11-07T21:29:42.119-06:00**</dateTimeSent>
status	<distributionStatus>**Test**</distributionStatus>
msgType	<distributionType>**Ack**</distributionType>
sensitive	<combinedConfidentiality>**SENSITIVE**</combinedConfidentiality>
reference	<distributionReference>**CDC-2006-183,2.16.840.1.114222.4.20.1.1@cdc.gov,2006-11-07T21:25:16.512-05:00**</distributionReference>

APPENDIX 1 – AUDIENCE SPECIFICATION EXAMPLES

Following is a complete set of all possible permutations of the audience specification lists, populated with example values and accompanied by an interpretation.

These are expressed here as simple attribute value pairs for readability.

Permutation 1

Recipients = {johnsmith@healthdept.gov, maryjones@healthdept.gov}

Interpretation: The individuals John Smith and Mary Jones.

Permutation 2

role = {Health Officer, Public Health Administrator, Chief Epidemiologist}

jurisdictionLevel = {State, Local}

jurisdiction = {01, 12, 13191, 13127, 13039, 13049}

Interpretation: The Health Officers, Public Health Administrators, and Chief Epidemiologists working at the state and local health department level in Alabama, Florida, and four Georgia counties (McIntosh, Glynn, Camden and Charlton)

Permutation 3

role = {Chief Epidemiologist}

jurisdiction = {01, 12, 13}

Interpretation: The Chief Epidemiologists responsible for the states of Alabama, Florida, and Georgia. Since no jurisdictionLevel parameter is specified, the Chief Epidemiologists at all levels – local, territorial, state, and federal – are targeted.

Permutation 4

jurisdictionLevel = {State, Local}

jurisdiction = {01, 12, 13}

Interpretation: All possible alert recipients who are located in, have an association with, or have responsibility within state and local level jurisdictions in Alabama, Florida, and Georgia.

Permutation 5

jurisdiction = {01, 12, 13}

Interpretation: All possible alert recipients who are located in, have an association with, or have responsibility within state Alabama, Florida, and Georgia. Note that this would include federal level role players since no jurisdictional level was specified.

Permutation 6

jurisdictionLevel = {State, Local}

Interpretation: All possible alert recipients who are located in, have an association with, or have responsibility within any state or local level jurisdiction.

Permutation 7

role = {Chief Epidemiologist}

Interpretation: All chief epidemiologists, in every jurisdiction, and working at any jurisdictional level (local, territorial, state, federal).

Permutation 8

recipients = {johnsmith@healthdept.gov, maryjones@healthdept.gov}

role = {Chief Epidemiologist}

jurisdictionLevel = {State, Local}

jurisdiction = {01, 12, 13}

Interpretation:: All Chief Epidemiologists working at the state and local health department level in Alabama, Florida, and Georgia, and John Smith and Mary Jones.

APPENDIX 2 –ORIGINATING AGENCY ABBREVIATIONS

For national PHIN partners (which currently consists of only the CDC), the originating agency abbreviation is the commonly used agency acronym.

For state public health partners, the originating agency abbreviation is the two character postal abbreviation for the state name.

For county public health partners, the originating agency abbreviation is the concatenation of:

- The two character postal abbreviation for the state in which the agency is located
- A dash (-)
- The name of the county, excluding any special characters or embedded blanks (e.g., alpha-numeric characters only)
- A dash (-)
- The word "COUNTY"

For city public health partners, the originating agency abbreviation is the concatenation of:

- The two character postal abbreviation for the state in which the agency is located
- A dash (-)
- The name of the city, excluding any special characters or embedded blanks (e.g., alpha-numeric characters only)
- A dash (-)
- The word "CITY"

Examples:

National partners

- CDC – Centers for Disease Control and Prevention
- FBI – Federal Bureau of Investigation

State partners

- AL – Alabama Department of Public Health
- AK – Alaska Division of Public Health

County partners

- AL-AUTAUGA-COUNTY – Autauga County, Alabama
- LA-STJOHNTHEBAPTIST-COUNTY – St. John the Baptist County, Louisiana

City partners

- NY-NEWYORKCITY-CITY – New York City, New York
- MO-STLOUIS-CITY – St. Louis, Missouri

APPENDIX 3 PROTOCOLS FOR UNIQUE ALERT IDENTIFIERS

Every alerting program must have a unique namespace and its own protocol for generating unique alert identifiers.

For Health Alerts (HAN) the alert identifier protocol is:

Originating agency abbreviation
Dash ("-")
Four digit year
Dash ("-")
Sequence number

Examples:

CDC-2007-107

Centers for Disease Control and Prevention. 107th Health Alert issued in 2007.

AL-2007-14

Alabama Department of Public Health. 14th Health Alert issued in 2007.

LA-STJOHNTHEBAPTIST-COUNTY-2007-38

St. John the Baptist Parish, Louisiana. 38th Health Alert issued in 2007.

NY-NEWYORKCITY-CITY-2007-2

New York City. 2nd Health Alert issued in 2007.

APPENDIX 4 PUBLIC HEALTH ROLES

The tables in this appendix define the 35 public health roles that support PCA. Table AP4.1 includes roles that must be assigned within the jurisdictional levels indicated. Table AP4.2 includes additional roles that a jurisdiction should assign.

Table AP4.1 - Required Public Health Roles

#	PRIMARY ROLE	NATIONAL, STATE, TERRITORIAL	COUNTY	DEFINITION
1	Health Officer	X	X	Responsible for the direction and administration of the jurisdiction's Department of Health.
2	Terrorism Coordinator	X	X	Responsible for the administration of all BioTerrorism related activities within the jurisdiction.
3	Health Alert Network Coordinator	X	X	Responsible for the coordination, implementation, and maintenance of the public health alert and information network for the agency or jurisdiction.
4	Laboratory Director	X	X	Responsible for the coordination of the laboratory testing and reporting for the agency or jurisdiction.
5	Public Health Administrator	X	X	Responsible for the management of the jurisdiction's Department of Public Health.
6	Emergency Management Coordinator	X	X	Responsible for the coordination of emergency response activities. Coordinates response activities with other agencies and jurisdictions.
7	Chief Epidemiologist	X	X	Responsible for the coordination of the public health surveillance, investigation and response activities within the jurisdiction.
8	Public Information Officer	X	X	Responsible for the coordination of public information and emergency risk communications for the jurisdiction.
9	Communicable/ Infectious Disease Coordinator	X	X	Responsible for the coordination of all communicable and infectious disease surveillance and investigations and response within the jurisdiction.
10	Strategic National Stockpile Coordinator	X	X	Responsible for the coordination of the pharmaceutical stockpile planning for the agency or jurisdiction.

#	PRIMARY ROLE	NATIONAL, STATE, TERRITORIAL	COUNTY	DEFINITION
11	Environmental Health Director	X	X	Responsible for the coordination and direction of the jurisdiction's Environmental Health department.
12	Chief Veterinarian	X	X	Responsible for the coordination of animal disease outbreak response activities for the agency.
13	Behavioral Health Director	X	X	Responsible for the coordination of the mental health services within the agency or jurisdiction.
14	Emergency Medical Services Authority	X	X	Coordinates all medical response activities. Coordinates with other agencies and jurisdictions and respond to medical emergencies.
15	Public Health Nursing Director	X	X	Responsible for coordinating the jurisdiction's public health nursing activities.
16	Public Health Logistics Coordinator	X	X	Responsible for transportation, facility setup, personnel protective equipment, supplies and other logistical requirements in an emergency response situation.
17	Cross-Jurisdiction Alert Coordinator	X		Responsible for awareness and management of all alerts received from other jurisdictions and for re-distribution of received alerts within their jurisdiction.

Table AP 4.2 - Optional Public Health Roles

#	PRIMARY ROLE	NATIONAL, STATE, TERRITORIAL	COUNTY	DEFINITION
18	Immunization Director	X	X	Responsible for management of immunization services within the jurisdiction.
19	Emergency Training Coordinator	X	X	Responsible for the coordination of the WMD and other emergency training, education, and distance learning activities for the agency.
20	Quarantine Officer	X	X	Individual responsible for quarantine enactment and coordination at the local level to include international and travel issues for a region
21	Laboratory BT	X	X	Responsible for the administration of BioTerrorism laboratory testing within the jurisdiction.
22	Medical Director	X	X	Responsible for medical/health services in the jurisdiction
23	Medical Examiner/Coroner		X	Responsible for performing autopsies in the jurisdiction
24	Poison Control Center	X		Office responsible for handling poison injury calls in a region
25	Border Health Director	X		Responsible for cross-border health issues, coordination and communication
26	Microbiologist	X	X	A laboratorian that specializes in performing microbial testing for the jurisdiction.
27	Epidemiologist	X	X	Individual who performs analysis of communicable disease and/or BT information for their jurisdiction.

#	PRIMARY ROLE	NATIONAL, STATE, TERRITORIAL	COUNTY	DEFINITION
28	Technical Training Liaison	X	X	Coordinates training on the use of technical systems including those for IT//communication
29	Emergency Operations Center Coordinator	X	X	Responsible for managing the EOC and for brining together the Individuals who participate as a members of the Emergency Operations Center
30	Medical Society	X	X	Organization responsible for maintaining directory information and communications with the physician community
31	Infection Control Practitioner			Responsible for nosocomial and infectious disease in a hospital
32	Emergency Room Director			Responsible for running the hospital emergency room
33	School District Nurse		X	Responsible for school health in a school district
34	FBI WMD/BT Agent	X		Responsible for FBI activities and response in a WMD/BT event
35	Public Health Investigator/Contact Tracer	X	X	Individual skilled at tracking down contacts to TB, HIV or STD cases
36	Animal Control Director		X	Responsible for animal bites and quarantine

7 FOR FURTHER INFORMATION AND SUPPORT

For more information about this document, or for additional information and guidance about implementation of PHIN Partner Communication and Alerting, please contact:

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National Center for Public Health Informatics
Phone: 1-800-532-9929 or 770-216-1299
Email: PHINTech@cdc.gov