ANEJO VI

Syndromic Surveillance Onboarding Guide

DEPARTAMENTO DE SALUD

Syndromic Surveillance Onboarding Guide TEMPLATE

V3

1/10/2023

Table of Contents

Revision History	Issue Date	Summary
v1.0	12/22/2022	Guide based on the following guides: https://a816-dohbesp.nyc.gov/IndicatorPublic/beta/key-topics/climatehealth/syndromic/ https://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/pi/syndromic-surveillance/az-ss-implementation-guide.pdf https://dhhs.ne.gov/Pages/Syndromic-Surveillance.aspx https://www.healthy.arkansas.gov/programs-services/topics/syndromic-surveillance https://health.alaska.gov/dph/Epi/id/Pages/synd_surv/default.aspx https://dph.illinois.gov/data-statistics/syndromic-surveillance.html https://doh.wa.gov/public-health-healthcare-providers/healthcare-professions-and-facilities/data-exchange-0/syndromic-surveillance-rhino https://doh.wa.gov/public-health-healthcare-providers/healthcare-professions-and-facilities/data-exchange-0/syndromic-surveillance-rhino/onboarding
v.2.0	1/4/2023	Edits from Alyaa Altabbaa
v.3.0	1/10/2023	Edits from Corey Cooper and Michael Coletta

What is syndromic surveillance?

Syndromic surveillance is the collection of health-related data that is received as early as possible when illness begins to provide overall population-based awareness of the spread of disease. Emergency Department (ED) data is often considered the primary data source, however, many other types of data are used for syndromic surveillance, such as school absenteeism, over the counter and prescription medication sales, reports to poison control, and Emergency Medical Service ambulance data. Puerto Rico's Department of Health (PRDoH) collects data for each emergency or urgency room visits from participating facilities.

These data include demographics (age, gender, race, and ethnicity), time and date of visit, location of the visit, and residential ZIP code. Geographic information will allocate visits by Patient Location (based on the patient's ZIP code) and Facility Location (based on where the visit occurred).

The most critical data elements are the chief complaint, the diagnoses, and sometimes the triage notes.

A chief complaint is a short phrase, preferably in the patient's own words, that describes the reason for the visit.

The earliest data collected by PRDoH is January 2021, with complete coverage increasing over time. Most facilities send data in near real-time and are accessible within hours of the visit presented to the ED. However, some facilities delay sending data by 24 hours. ***NOTE that sending data every 24 hours with a payload of data from much longer than 24 hours is not acceptable.***

Why is Syndromic Surveillance important?

Syndromic Surveillance is often the only source of information available in the early phase of an emerging event of public health interest. It is used to inform early decisions on how to respond and what additional surveillance is needed to understand and intervene in the event to protect the public's health.

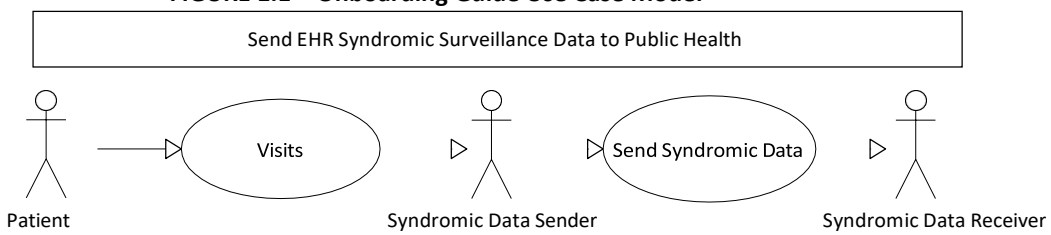
There are many potential uses for the surveillance data, including:

- Evaluating the effectiveness of population health interventions
- Tracking outbreaks and emerging conditions
- Identifying notifiable conditions (e.g., Zika, measles)
- Monitoring trends in illnesses that are not reportable (e.g., varicella, Guillain Barré Syndrome)
- Monitoring asthma-related emergency department (ED) visits
- Monitoring trends in traffic-related injuries
- Monitoring trends in opioid overdose incidents
- Tracking ED visits for respiratory irritation during wildfires or other events that impact air quality.

Use Case Model

This Onboarding Guide use case model focuses on the transmission of electronic health data from hospitals (Syndromic data senders) to the PRDOH (Syndromic data receiver), the Public Health Authority (PHA) (see figure 1.1). An inpatient or emergency department patient visit triggers the data being sent from the hospital to the PHA. The health data are captured in an EHR during the patient's visit to the hospital. The hospital then sends the health data to the PHA. The hospital must be capable of generating and transmitting HL7 messages containing the patient visit data semantically and syntactically consistent with the syndromic data receiver's requirements. The syndromic data sender may be the aggregator of the data – e.g. the EHR vendor or the hospital. The receiving entity is identified as PRDOH, which serves as the SS data receiver and data processor. The use cases's goal is to provide secure, reliable delivery of batches of syndromic surveillance data to PHAs.

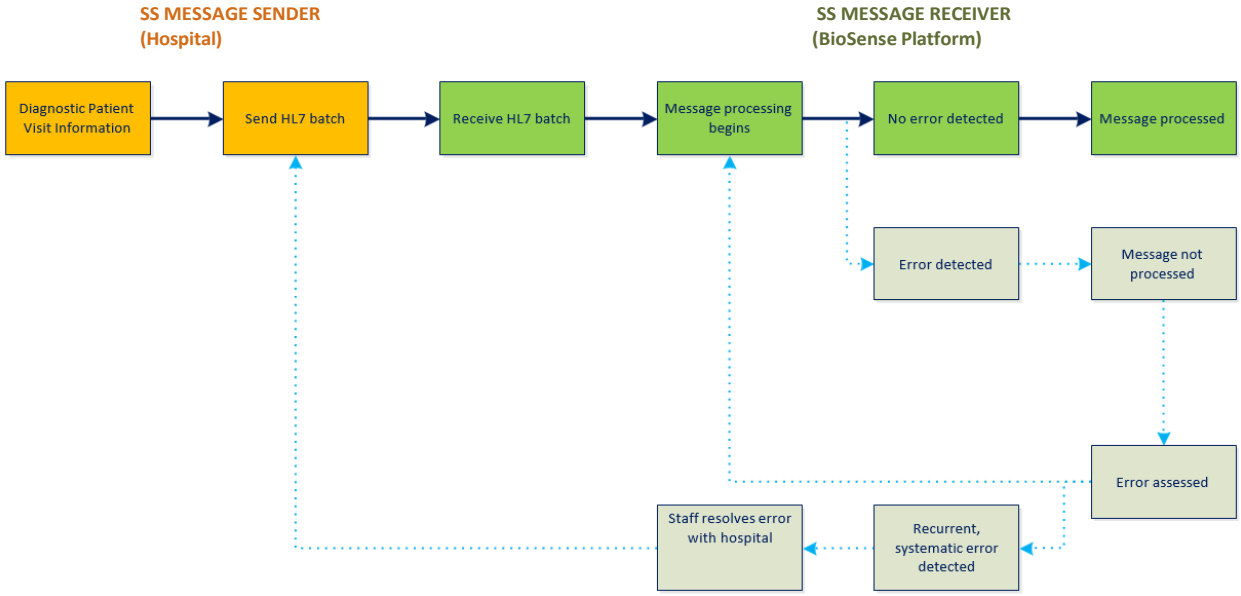
FIGURE 1.1 – Onboarding Guide Use Case Model



Overview – Interaction Dynamics

The Onboarding Guide supports a regularly monitored, unidirectional batch messaging protocol in which the hospital sender transmits a batch of patient visit information. The batch messaging protocol does not allow exchanging acknowledgment messages between the sending and receiving applications. Acknowledgment messages are outside the scope of this document. If the receiving application encounters an error with an incoming HL7 message, the PRDOH team will examine the source of the error. Recurrent sender errors identified by PRDoH will be reported to the hospital for root cause analysis. The hospital will make the necessary changes and resubmit the message(s).

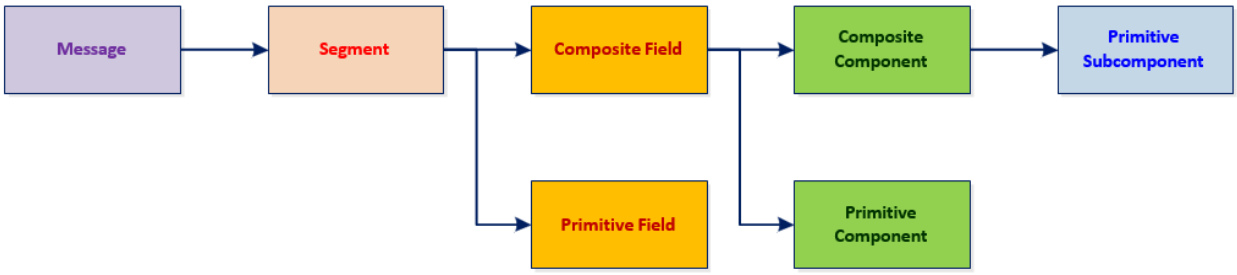
FIGURE 1.2 – Batch Messaging Protocol Interaction Model



HL7 Message Framework

Implementers will benefit from understanding the basics of the HL7 message framework, including how information is organized in a **message** (see Figure 1.3). A standard HL7 **message** is comprised of a group of **segments**, which are arranged in a defined sequence. Each **segment** is comprised of a group of **fields** that are also organized in a defined sequence. **Fields** may be divided into **components**, which may be further divided into **subcomponents**, depending on their *data types*. *Data types* are largely divided into two categories: (1) *Primitive* data types are populated as string or numeric values. (2) *Composite* data types are an arranged group of values. For example, fields with composite data types are divided into a group of **components**. **Components can** be either primitive or composite. **Components** with composite data types consist of **subcomponents**, which are always assigned primitive data types.

FIGURE 1.3 – Data Element Hierarchy in a Standard HL7 Message



When constructing a message, special characters should be designated as delimiter values to separate segments, fields, components, and subcomponents. Special characters may also differentiate multiple occurrences of data elements and special formats within a field, where allowed (see Table 1.1). These characters are designated in the first two fields of the message header segment (MSH)—segment beginning a new message—and establish delimitation rules throughout the message. Due to the use of the batch messaging protocol, delimiter values also appear in the first two fields of the file header (FHS) and batch header (BHS) segments. Specific examples of how delimiter values are used, along with detailed explanations, are provided in the subsequent pages of this guide. Standard HL7 delimiters shown in Table 1.1 are required for syndromic surveillance implementations. Further information on delimiters can be obtained in the full HL7 version 2.5.1 standard.

TABLE 1.1 – HL7 Standard Message Delimiters

Delimiter	Required Value	Description
Segment Terminator	<cr>	ASCII-013 carriage return character used to terminate a segment record. This value cannot be changed by implementers.
Field Separator	|	Separates two adjacent data fields within a segment. It also separates the segment ID from the first data field in each segment.
Component Separator	^	Separates adjacent components within a field.
Repetition Separator	~	Separates multiple occurrences of a field where allowed.
Escape Character	\	Used in instances where special character formatting is needed.
Subcomponent Separator	&	Separates adjacent subcomponents within a component.

HL7 Messaging Conventions

The HL7 messaging conventions used in this Onboarding Guide strictly adhere to the PHIN Messaging Guide for Syndromic Surviellance. The descriptions provided below are summarized based on the source document. Table 1.2 provides definitions of the attributes that appear throughout this guide. Please consult the HL7 2.5.1 standard for additional clarifications.

TABLE 1.2 – Message Element Attributes

Attribute	Definition
SEQ	Sequence of the elements as numbered in the HL7 message element.

Message Structure	Contains three-character code for the segments—e.g. MSH, EVN, PID—and the following abstract syntax: **XXX** Required **[XXX]** Optional **{ XXX }** Repeating **[{ XXX }]** Optional and repeating – synonymous with **{[XXX]}** Segment groups can also be expressed within the braces and brackets.
LEN	Maximum length of the element. Lengths are provided only for primitive data types, and should be considered recommendations, not absolutes.
DT	Data type. Determines the format in which the field, component or subcomponent is to be populated.
Usage	Usage of the segment, segment group or field. **R** Required **RE** Required, but can be empty if the information is unavailable. If the sender has the data, it should be sent. **C** Requirement is conditional on other field(s) – Description/Comments section describes the algorithm defining the conditionality. **X** Not used in this guide
Cardinality	Minimum and maximum number of times the message element may appear. **[0..0]** Field never present **[0..1]** May be omitted or have no more than one occurrence **[0..*]** May be omitted or repeat an unlimited number of times **[1..1]** Exactly one occurrence **[1..*]** At least one occurrence and may repeat an unlimited number of times
TBL#	HL7 defined or external table used for the field.
Element Name	HL7 descriptor of the message element.
Required/Recommended/ Literal Value	Value and usage designations for components and subcomponents. **Required** Element is required for the message to be considered complete. **Recommended** Element must be populated if the information is available. **Literal** Absolute value for the element that must appear in the message exactly as shown.
Description/Comments	Context and usage for the element.

Admission, Discharge, and Transfer (ADT) Message Structure

This guide is specific to the Admission, Discharge, and Transfer (ADT) use case specifications for the data exchange of core Syndromic Surveillance elements from healthcare providers to Public Health. It has been constructed to highlight data element usage requirements and utilize the color gray to

indicate an unused segment or attribute. As shown below, a **file** comprises a single **batch** containing an unlimited number of **messages**. Enclosed within each **message** is a series of segments that possess their own attributes. For example, a single message may contain an unlimited number of observations, diagnoses and procedures. Because of this, the message headers must be arranged in their respective segment groups.

Also note there are two different ADT message structures, defined by the trigger events. If the hospital is sending an A01 (Admit/Visit Notification), A04 (Register a Patient), or A08 (Update Patient Information) message, the message structure indicated below is required. These trigger events require a different order for the OBX, DG1, and PR1 segments within the message structure compared to Table 1.4.

TABLE 1.3 – Message Structure for ADT^A01, ADT^A04 and ADT^A08

Message Structure	Segment Description	Usage	Cardinality
FHS	File Header	R	[1..1]
BHS	Batch Header	R	[1..1]
	—Message begins		
{		R	[1..*]
MSH	Message Header	R	[1..1]
EVN	Event Type	R	[1..1]
PID	Patient Identification	R	[1..1]
PV1	Patient Visit	R	[1..1]
[PV2]	Patient Visit Additional Information	RE	[0..1]
{ OBX }	Observation/Result	R	[1..*]
[{ DG1 }]	Diagnosis	RE	[0..*]
[{ PR1 }]	Procedures	O	[0..*]
[{ IN1 }]	Insurance	O	[0..*]
}	*—Message ends*		
BTS	Batch Trailer	R	[1..1]
FTS	File Trailer	R	[1..1]

For trigger events A01 (Admit/Visit Notification), A04 (Register a Patient) and A08 (Update Patient Information), the above ADT message structure is used.

TABLE 1.4 – Message Structure for ADT^A03

Message Structure	Segment Description	Usage	Cardinality
FHS	File Header	R	[1..1]
BHS	Batch Header	R	[1..1]
	—Message begins		
{		R	[1..*]
MSH	Message Header	R	[1..1]
EVN	Event Type	R	[1..1]
PID	Patient Identification	R	[1..1]
PV1	Patient Visit	R	[1..1]
[PV2]	Patient Visit Additional Information	RE	[0..1]
[{ DG1 }]	Diagnosis	RE	[0..*]
[{ PR1 }]	Procedures	O	[0..*]
{ OBX }	Observation/Result	R	[1..*]
[{ IN1 }]	Insurance	O	[0..*]
}	*—Message ends*		
BTS	Batch Trailer	R	[1..1]
FTS	File Trailer	R	[1..1]

For trigger event A03 (Discharge/End Visit), the above message structure is used.

How to Read HL7 Segments

This section provides a quick tutorial for first-time implementers of HL7 on the basics of reading, understanding and analyzing the contents within HL7 segments.

Figure 1.4 illustrates a sample MSH segment, in which the fields and components are read in sequence. The segment begins with a three-letter segment ID that determines the arrangement of contents throughout the rest of the segment. MSH-1 indicates the field separator, and MSH-2 indicates the set of delimiter values. Designating special characters in the first two fields of MSH establishes delimitation rules throughout the message, allowing MSH-3 and all subsequent segments to be separated using the appropriate delimiter values. In the case of batch messaging protocol, delimiter values also appear in the first two fields of the file header (FHS) and batch header (BHS) segments. Special characters must always be positioned in the fixed order shown below.

FIGURE 1.4 – Sample Message Header Segment

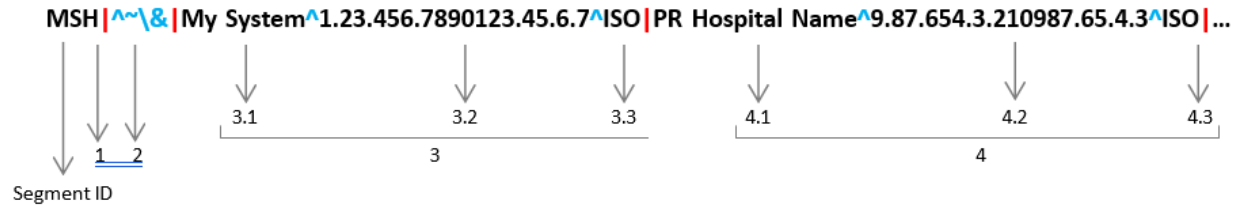
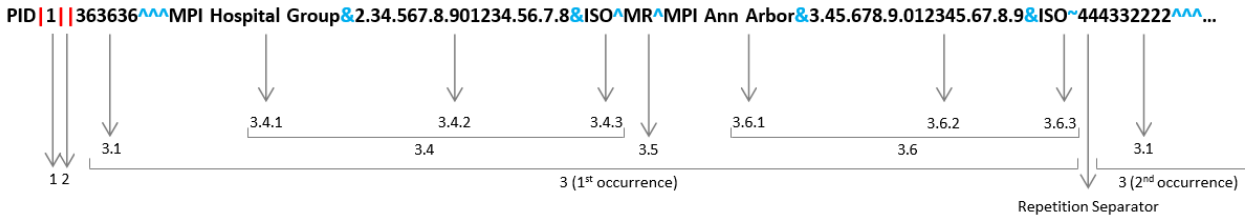


Figure 1.5 demonstrates the process of reading the fields, components, and subcomponents within a sample PID segment. It is important to note that PID-1 is the value populated after the first field separator. This is because the delimiter values are already established in the MSH segment, which precedes the PID segment. PID-2 is not present since there is no populated value between the enclosing field separators. PID-3 is a large field comprising components and subcomponents, all separated by the designated delimiters. PID-3.2 and 3.3 are not present for the same reason that applies to PID-2. PID-3.4 and 3.6 are each divided into three subcomponents. A repetition separator marks the end of the first occurrence of PID-3 as well as the beginning of the second occurrence, which begins with its own first component.

FIGURE 1.5 – Sample Patient identification Segment



Examples of What is Sent

Data Submission
Scope of Messaging Participating facilities and providers within Puerto Rico should submit syndromic surveillance messages **from all visits with no filtering** done prior to submission to PRDoH.

Multi-state networks should discuss implementation details with each state in which they operate. Emergency departments, urgent care centers, and non-urgent ambulatory care centers shall send syndromic surveillance messages from all visits by all patients, regardless of the nature of the visit. Hospitals providing inpatient care shall send syndromic surveillance messages from all inpatient stays, regardless of the source of admission. Inpatient records should include patients classified as observation or obstetric (e.g., labor and delivery). Hospitals may exclude records pertaining to patients classified as outpatient, preadmit, or recurring.

Facility Identification
Puerto Rico's facility registration process will not replace the need to include facility identification details in the HL7 messages sent for syndromic surveillance. Information about the treating facility (e.g., facility name (EVN-7.1), facility identifier (EVN-7.2), and facility type (OBX)) shall be included in each message.

Patient & Visit Identification
The facility-provided **Patient ID** and **Visit ID** are the key link for circumstances that require follow-up by the health department. The combination of **Patient ID** and **Visit ID** provided in a syndromic surveillance message must allow the sending facility to identify the patient and visit that triggered the message of interest.

- **Patient ID** is intended to provide a single unique identifier per patient within a facility or network**.**
- **Visit ID** must provide a single unique identifier for a distinct patient encounter. This unique **Visit ID** must be used for all messages triggered by any activity associated with that patient encounter, including changes in patient class, such as emergency department to inpatient admission.

(From the April 2015 PHIN Guide, "ALL messages constrained by this guide that are produced as a result of a single patient encounter for the purpose of Syndromic Surveillance, SHALL have the same value for PV1-19.1 (Visit ID). Messages constrained by this guide that are produced as a result of different patient encounters for the purpose of Syndromic Surveillance, SHALL NOT have the same value for PV1-19.1 (Visit ID).")

Message Frequency
PRDoH requests that syndromic surveillance data be submitted in **hourly batches**. The timing of files may be adjusted up or down in frequency as is convenient for data submitters. Files must, at a minimum, be sent as early as possible after **midnight** and contain all visits from the previous 24 hours. **Data submission should occur 24 hours a day, 7 days a week. HL7 batch protocol, as specified in Appendix E, must be used to submit messages in batches**.

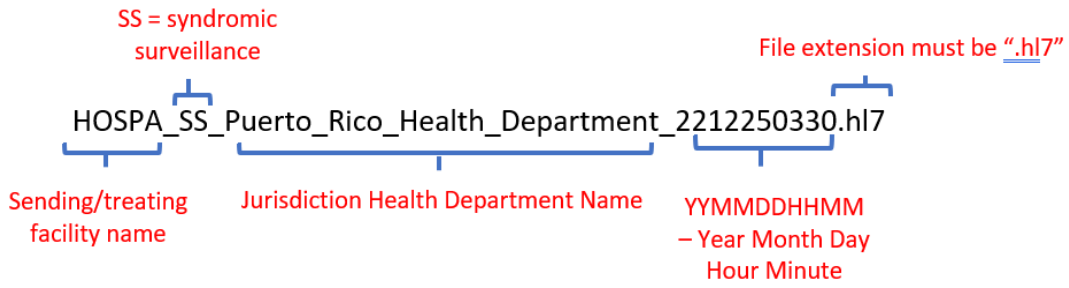
Message Parameters

Message File Size Files should, on average, not exceed 10MB in size.

Message File Names
PRDoH requests that message file names indicate the sending or treating facility, syndromic surveillance, and the time of file transmission**. Each file transmitted must have a unique filename**.

This could take the form "HOSPA_SS_YYYYMMDDhhmm.hl7" where HOSPA is a generic placeholder for the sending or treating facility name.

If you are submitting messages in real-time and using a timestamp to create unique filenames, you will likely need to extend the precision of the timestamp to millisecond to avoid producing files with duplicate names.
Do not begin file names with "DSPR" or "PRDoH", and do not include spaces. If your organization needs to include "PRDOH"" in the file name for internal purposes, please use the form "HOSPA_SS_PRDOHYYMMDDHHMM.hl7". The file extension must be ".hl7" to ensure proper routing and processing.



Message Updates
PRDoH supports patient updates. When any of the requested data elements described in the messaging guides are updated in the data provider's system, whether before or after discharge, an update message (ADT^A08) should be triggered. The information contained shall be cumulative, including all previously sent information that remains correct and adding the new or changed information. (From the April 2015 PHIN Guide, "When data elements are updated in the sender's system, the entire record (i.e., all specified elements sent in previous messages) SHALL be resent.") **Please review your protocol for triggering syndromic message updates to ensure that unrelated changes to the patient record do not trigger syndromic message updates, as this produces a high volume of duplicative messages**. Message Acknowledgement Senders using Puerto Rico Health Information Exchange (PRHIE) will receive an ACK message when a file is successfully received by the health department. Sender Usage Requirements Data fields of interest for syndromic surveillance have sender usage requirements designated as "R" (Required), "RE" (Required but may be empty), or "O" (Optional).

Sender Usage	Sender Usage Description
R : Required	Data fields marked "R" must be present in all messages transmitted.
RE : Required but may be empty	Data fields marked "RE" are required when the data is present in the patient record (expected in the majority of situations.) ***"RE" does not mean optional.*** A certified EHR is expected to support collection and transmission of all RE data elements. "RE"-designated information may legitimately be missing in some circumstances, e.g., information on patient demographics when the patient arrives unconscious or if specific data is not collected routinely as part of the standard clinical workflow.
O : Optional	PRDoH supports and requesting all "Optional" data fields. These fields are of interest for improving the performance of syndromic surveillance. However, each sender may make their own determination if some "Optional" fields will be excessively burdensome to provide.

Requirements by Patient Care Setting
In general, information in this guide shall apply to all care settings eligible for participation in the submission of syndromic surveillance data (emergency, urgent, non-urgent ambulatory, and inpatient care settings). Any required distinctions among these care settings are noted explicitly in the implementation notes for specific data fields in Appendices A-C.

Supported HL7 Messages
In alignment with the 2015 Edition of the ONC Certification Criteria for EHR Technology, PRDoH requires all syndromic surveillance messages submitted under Meaningful Use to be HL7 version 2.5.1. PRDoH will not be grandfathering in facilities that began sending HL7 version 2.3.1 messages prior to 2014.

Syndromic surveillance in Puerto Rico will use information from HL7 2.5.1 messages of types ADT (Admit, Discharge, Transfer). ADT messages form the basis of syndromic surveillance; all required data elements are transmitted by ADT messages.

Usage of each message type is expected as follows:

ADT^A04: Registration
A patient has arrived or checked in. This includes one-time and recurring patients.

ADT^A08: Patient Information Update
Patient information has changed or new information has become available, but no other trigger event has occurred. These A08 update messages shall be sent when the new or changed information becomes available, whether before *or after* discharge. The information they contain shall be cumulative, presenting all previously sent information that remains correct and adding the new or changed information.

ADT^A03: Discharge

A patient's stay in a healthcare facility has ended, and their status is changed to discharged.

ADT^A01: Admission

A patient is undergoing the admission process, which assigns the patient to a bed for inpatient care. It signals the beginning of a patient's stay in a healthcare facility.

HL7 Message type requirements by care setting

Patient Care Setting	**ADT**			
Message Trigger Types	A04	A08	A03	A01
Eligible hospitals providing inpatient care	R	R	R	R
Eligible hospitals providing emergency care ONLY	R	R	R	C
Eligible professionals (urgent and non-urgent ambulatory care)	R	R	C	C

R = Required

C= Required only if used during normal flow of business

O = Optional but strongly requested

Resources

Syndromic surveillance messaging standards referenced by the 2015 edition of the ONC Certification Criteria for EHR Technology:

PHIN Messaging Guide for Syndromic Surveillance: Emergency Departments, Urgent Care, Inpatient and Ambulatory Care Settings (Release 2.0, April 2015)
http://www.cdc.gov/nssp/documents/guides/syndrsurvmessagguide2_messagingguide_phn.pdf

Erratum to the PHIN Messaging Guide for Syndromic Surveillance: Emergency Departments, Urgent Care, Inpatient and Ambulatory Care Settings (Release 2.0, April 21 2015)
http://www.cdc.gov/nssp/documents/guides/erratum-to-the-cdc-phin-2.0-implementation-guide-august2015.pdf

Messaging and terminology standards and validation:

National Institute of Standards and Technology (NIST) Syndromic Surveillance 2015 edition validation tool
http://hl7v2-ss-r2-testing.nist.gov/ss-r2/#/home

PHIN 2.0 Implementation Guide Meaningful Use Clarifying Document http://hl7v2-ss-r2-testing.nist.gov/ss-r2/api/documentation/doc?name=NIST-SS-Clarifications-andValidation-Guidelines-V1-5.pdf

Health Level Seven International (HL7) standards development organization http://www.hl7.org/

PHIN Vocabulary Access and Distribution System (VADS) http://phinvads.cdc.gov/

International Classification of Diseases, Ninth Revision (ICD9) http://icd9.chrisendres.com/

International Classification of Diseases, Tenth Revision (ICD10) http://www.icd10data.com/

Logical Observation Identifiers Names and Codes (LOINC) resource http://loinc.org/

Systematized Nomenclature of Medicine-Clinical Terms (SNOMED CT) http://www.ihtsdo.org/snomed-ct/

American Medical Association Current Procedural Terminology (CPT) http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billinginsurance/cpt.page

Questions?

For questions about this guide or about syndromic surveillance submission to the Puerto Rico State Department of Health, please contact the Department of Health Syndromic Surveillance Program by email at: **vigilanciasindromica@salud.pr.gov**

APPENDIX A: ADT MESSAGE DATA ELEMENTS, SPECIFIC GUIDANCE

* Usage column indicates a different Sender Usage requirement than that found in PHIN Release 2.0 guidance

Name	Field	Usage	Syndromic Surveillance Implementation Notes	
MESSAGE HEADER	**MSH**	**R**	**INFORMATION FOR PARSING AND PROCESSING MESSAGE** MSH segments per message: one (1)	
Field Separator	MSH-1	R	Use the literal value "|"	
Encoding Characters	MSH-2	R	Use the literal value "^~\&"	
Sending Application	MSH-3	O	Uniquely identifies the sending application among all applications in the network enterprise	
Sending Facility	MSH-4	R	The name of the sending facility may differ from the name of the treating facility.	
MSH-4 implementation differs depending on message transport mechanism:		**For facilities sending data via HIE:**		**For facilities sending data directly to DOH via sFTP or other transport:**
NamespaceID	MSH-4.1	R*	Use the organization ID provided for your organization during registration with HIE	Use a business name abbreviation descriptive enough to clearly identify the sending facility
Universal ID	MSH-4.2	R	Use the facility-level OID assigned by HIE	OID or NPI is preferred
Universal ID Type	MSH-4.3	R	Use literal value "ISO"	Use literal value "ISO" for OID, "NPI" for NPI
Receiving Application	MSH-5	R*	Use literal value {NOTE JURISIDICTION MUST FILL IN WHAT IS DESIRED HERE}	
Receiving Facility	MSH-6	R*	Use literal value {NOTE JURISIDICTION MUST FILL IN WHAT IS DESIRED HERE}	
Date/Time Of Message	MSH-7	R	Date/time that the sending system created the message; minimum precision is to the nearest minute: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]	
Message Type	MSH-9	R	"ADT^A01^ADT_A01","ADT^A03^ADT_A03","ADT^A04^ADT_A04" or "ADT^A08^ADT_A08"	
Message Control ID	MSH-10	R	Each unique message should have a message control ID that is unique at least within the sending application	
Processing ID	MSH-11	R	Use literal value "T" during testing and validation; use literal value "P" once the messages have been fully validated and are in production	
Version ID	MSH-12	R	Use the literal value "2.5.1"	
Message Profile Identifier	MSH-21	R	The Department will not be sending acknowledgement messages. Use one of the following literal values: "PH_SS-NoAck^SS Sender^2.16.840.1.114222.4.10.3^ISO" or "PH_SS-Batch^SS Sender^2.16.840.1.114222.4.10.3^ISO"	

Name	Field	Usage	Syndromic Surveillance Implementation Notes	
EVENT TYPE	**EVN**	**R**	**TRIGGER EVENT INFORMATION** EVN segments per message: one (1)	
Recorded Date/Time	EVN-2	R	Expected to be the system date/time that the transaction was entered (NOTE, EVN-2 does not have to equal MSH-7); minimum precision is to the nearest minute: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]	
Event Facility	EVN-7	R	This field shall identify the individual facility where the patient was treated	
NamespaceID	EVN-7.1	RE	Use and abbreviation descriptive enough to clearly identify the treating facility	
EVN-7.2 & 7.3 implementation differs depending on message transport mechanism:			**For facilities sending data via HIE:**	**For facilities sending data directly to DOH via sFTP or other Transport:**
Universal ID	EVN-7.2	R	Use a facility-level (aka child) OID assigned by HIE that identifies the individual facility providing service	OID or NPI is preferred, and must identify the individual facility providing service; If no existing OID or NPI uniquely identifies the facility providing service, see https://www.hl7.org/oid/index.cfm for information on registering and OID for the facility
Universal ID Type	EVN-7.3	R	use literal value "ISO"	Use literal value "ISO" for OID, "NPI" for NPI
PATIENT IDENTIFICATION	**PID**	**R**	**PATIENT IDENTIFYING AND DEMOGRAPHIC INFORMATION** PID segments per message: one (1)	
Set ID - PID	PID-1	R	Use the literal value "1"	
Patient Identifier List	PID-3	R	Patient's unique identifier(s) from the submitting facility/organization; identifiers should be strong enough to remain unique across submitting organizations PID-3 is a repeating field that can accommodate multiple patient identifiers	
ID Number	PID-3.1	R	The identifier provided should allow the treating facility to retrieve information on the patient if requested by Public Health. Use the following hierarchy: (1) Master patient index, if available (2) Medical record number, if available (3) Patient account number, if available (4) Other internal patient identifier, if none of the above patient identifiers are available	
Assigning Authority	PID-3.4	O	This field shall identify the organizational entity responsible for assigning the unique Patient ID Number specified in PID-3.1 for all ADT messages associated with the patient visit	
Identifier Type Code	PID-3.5	R	Use literal value: "PT" for Master Patient Index; "MR" for medical record number; "AN" for account number; "PI" for patient internal identifier	

Name	Field	Usage	Syndromic Surveillance Implementation Notes
Assigning Facility	PID-3.6	O	
Patient Name	PID-5	R	If name is intentionally excluded or is unknown, PID-5 shall be valued as either "^^^^^^~^^^^^^S" or "^^^^^^~^^^^^^U" respectively
Family Name	PID-5.1	O	Patient's last name
Given Name	PID-5.2	O	Patient's first name
Name type	PID-5.7	R	If patient legal name is provided, use literal value "L"; if patient name is known but intentionally excluded, use literal value "S"; if patient name is unknown, use literal value "U"
Date/Time of Birth	PID-7	O	Expressed with minimum precision to the month: YYMM[DD]. Leave blank if unknown or unavailable.
Administrative Sex	PID-8	RE	Use value set PHVS_Gender_SyndromicSurveillance - https://phinvads.cdc.gov/vads/ViewValueSet.action?id=6358110D-9517-E011-87A0-00188B39829B
Race	PID-10	RE	Prefer if single race, however, patient may have more than one race defined. Leave blank if race is unknown.
Identifier	PID-10.1	RE	Use value set PHVS_RaceCategory_CDC https://phinvads.cdc.gov/vads/ViewValueSet.action?id=67D34BBC-617F-DD11-B38D-00188B398520
Text	PID-10.2	O	Concept name associated with code in PID-10.1
Name of Coding System	PID-10.3	CE	**Condition Predicate**: If PID-10.1 (Identifier) is valued, then 10.3 shall be valued "CDCREC"
Patient Address	PID-11	RE	Transmit patient's primary/current address
City or Town	PID-11.3	RE	Free text
State or Province	PID-11.4	RE	For US residents, use value set PHVS_State_FIPS_5-2; otherwise, use local code https://phinvads.cdc.gov/vads/ViewValueSet.action?id=80D34BBC-617F-DD11-B38D-00188B398520
ZIP or Postal Code	PID-11.5	RE	USPS 5 digit code for US residents; otherwise, use local postal code
Country	PID-11.6	RE	Use value set PHVS_Country_ISO_3166-1 https://phinvads.cdc.gov/vads/ViewValueSet.action?id=40BCCA82-819B-E111-972B-0050568D00F8
County/Parish Code	PID-11.9	RE	For US residents, use value set PHVS_County_FIPS_6-4 https://phinvads.cdc.gov/vads/ViewValueSet.action?id=DB0465C3-61CC-E611-8E51-0017A477041A
Patient Account Number	PID-18	O	
Ethnic Group	PID-22	RE	Leave blank if unknown.
Identifier	PID-22.1	RE	Use value set PHVS_EthnicityGroup_CDC https://phinvads.cdc.gov/vads/ViewValueSet.action?id=35D34BBC-617F-DD11-B38D-00188B398520
Text	PID-22.2	O	Concept name associated with code in PID-22.1
Name of Coding System	PID-22.3	CE	**Condition Predicate**: If PID-22.1 (Identifier) is valued, then 22.3 shall be valued "CDCREC"
Patient Death Date and Time	PID-29	CE	Date/time at which patient death occurred, expressed with minimum precision to the nearest minute: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ] **Condition Predicate:** If PV1-36 (Discharge Disposition) is valued "20", "40", "41", or "42", then PID-29 shall be populated
Patient Death Indicator	PID-30	CE	**Condition Predicate**: If PV1-36 (Discharge Disposition) is valued "20", "40", "41", or "42", then PID-30 shall be valued "Y"
Last Update Date/Time	PID-33	O	Last update date/time for the data contained in the PID segment
Last Update Facility	PID-34	O	Identifies the facility which last updated the data contained in the PID segment

Name	Field	Usage	Syndromic Surveillance Implementation Notes
PATIENT VISIT	**PV1**	**R**	**VISIT-SPECIFIC INFORMATION** PV1 segments per message: one (1)
Set ID - PV1	PV1-1	RE	Use the literal value "1"
Patient Class	PV1-2	R	Use value set PHVS_PatientClass_SyndromicSurveillance; Data providers should include ALL classes of patients cared for at their facility EXCEPT Preadmit and Recurring. Hospitals may additionally exclude records for patients classified as Outpatient. https://phinvads.cdc.gov/vads/ViewValueSet.action?id=564F8F8B-E1DE-E411-8970-0017A477041A
Assigned Patient Location	PV1-3	O	Indicates patient's initial assigned location or the location to which the patient is being moved
Admission Type	PV1-4	O	This field indicates the circumstances under which the patient was or will be admitted (e.g. routine, emergency, elective, etc.); use value set PHVS_Admission_Type_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=08D34BBC-617F-DD11-B38D-00188B398520
Previous Hospital Unit	PV1-6	O	Unit where patient was prior to the current transaction
Physician Identifier	PV1-7	O	Attending doctor; recommend use of physician's NPI
Hospital Service	PV1-10	O	Treatment or type of surgery the patient is scheduled to receive; Use HL7 Table 0069
Admit Source	PV1-14	O	Indicates setting from which the patient was admitted; Use value set PHVS_AdmitSource_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=09D34BBC-617F-DD11-B38D-00188B398520
Ambulatory Status	PV1-15	O	Indicates any permanent or transient handicapped condition
Visit Number	PV1-19	R	Uniquely identifies the patient visit among all visits at the facility/organization
ID Number	PV1-19.1	R	All syndromic surveillance messages produced as a result of a single patient encounter must have the same value for PV1-19.1; messages produced as a result of different patient encounters must not share PV1-19.1 values
Assigning Authority	PV1-19.4	O	This field shall identify the organizational entity responsible for assigning the unique patient Visit ID Number specified in PV1-19.1 for all syndromic surveillance messages associated with the patient visit
Identifier Type Code	PV1-19.5	R	Use the literal value "VN"
Assigning Facility	PV1-19.6	O	
Discharge Disposition	PV1-36	RE (A08) R(A03)	Use the value set PHVS_DischargeDisposition_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=9C24960D-3B7D-4B6A-B86B-8F101867BD4F This field shall not be populated in an A01 or A04 message; data shall be sent in an A03 at the end of a discrete patient visit (e.g. discharged to home, transferred to another facility, expired, admitted as inpatient), and included in subsequent updates (A08s). Data may be updated throughout encounter (e.g., Final ED disposition vs. Final inpatient disposition). This field is not required in ambulatory settings.
Admit Date/Time	PV1-44	R	Date/time of patient presentation, expressed with minimum precision to the nearest minute: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]. Hold this value constant across all messages for a specific visit.

Name	Field	Usage	Syndromic Surveillance Implementation Notes
Disposition or Discharge Date/Time	PV1-45	RE*(A08) R*(A03)	Date/time of patient disposition or discharge, expressed with minimum precision to the nearest minute: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ] This field shall not be populated in A01 or A04 messages; field shall be populated in A03 discharge messages when available, and subsequent A08 updates. This field is not required in ambulatory settings.

PATIENT VISIT, ADD'L INFO	**PV2**	**RE**	**ADMIT REASON INFORMATION** PV2 segments per message: none or one (0-1)
Admit Reason	PV2-3	RE	*Clinician's* description of reason for patient encounter or admission
Identifier	PV2-3.1	RE	Use ICD-9CM, ICD-10CM, or SNOMED CT codes
Text	PV2-3.2	RE	It is strongly recommended that text be sent to accompany any identifier; if only free text is used to capture admit reason, it is communicated in this component. If structured text is captured, concatenate all values and include in this field.
Name of Coding System	PV2-3.3	C	**Condition Predicate**: If PV2-3.1 (Identifier) is valued, PV2-3.3 shall be valued to one of the literal values in the set ("I9C", "I10C", "I10", "SCT")

OBSERVATION/RESULT	**OBX**	**R/RE/O**	**OBSERVATION INFORMATION** (of variable structure) OBX segments per message: expect at least 5 (absolute minimum of 2 in rare circumstances; maximum is unlimited) **See Appendix B for full description of all OBX segment data of interest**

DIAGNOSIS	**DG1**	**RE**	**DIAGNOSIS INFORMATION** DG1 segments per message: none to many (0 - max unlimited)
Set ID - DG1	DG1-1	R	The first occurrence of a DG1 Segment SHALL have the literal value of "1"; each following occurrence shall be numbered consecutively; maintain the ranking of diagnosis
Diagnosis Code - DG1	DG1-3	R	Include all diagnoses including E-, V-, W-, X-, Y-, and T- codes; the first code should be the primary diagnosis. Provider diagnoses are preferred to billing codes. Updates to diagnoses may be sent after discharge.
Identifier	DG1-3.1	R	Use ICD-9CM, ICD-10CM, or SNOMED CT codes
Text	DG1-3.2	RE	It is strongly recommended that text be sent to accompany any identifier
Name of Coding System	DG1-3.3	R	DG1-3.3 shall be valued to one of the literal values in the set ("I9C", "I10C", "SCT")

Name	Field	Usage	Syndromic Surveillance Implementation Notes
Diagnosis Date/Time	DG1-5	O	Date/time that diagnosis was determined
Diagnosis Type	DG1-6	R	Use value set PHVS_DiagnosisType_HL7_2x; submit all Admitting, Working, and Final diagnosis types. Does not apply in ambulatory settings. https://phinvads.cdc.gov/vads/ViewValueSet.action?id=25D34BBC-617F-DD11-B38D-00188B398520

PROCEDURES	**PR1**	**O**	**INFORMATION ABOUT PROCEDURES PERFORMED** PR1 segments per message: none to many (0 - max unlimited)
Set ID – PR1	PR1-1	R	Numbers the repetitions of the segment, beginning with 1
Procedure Code	PR1-3	R	
Identifier	PR1-3.1	RE	Procedure codes may be sent as CPT-4, CPT-5, ICD-9-CM-PCS, ICD-10-PCS, or SNOMED CT
Text	PR1-3.2	RE	It is strongly recommended that text be sent to accompany any identifier
Name of Coding System	PR1-3.3	CE	**Condition Predicate**: If PR1-3.1 (Identifier) is valued, then PR1-3.3 shall be valued to one of the literal values in the set ("C4", "C5", "I9C", "I10P", "SCT")
Procedure Date/Time	PR1-5	R	Date/time the procedure was performed

INSURANCE	**IN1**	**O**	**INFORMATION ABOUT INSURANCE POLICY COVERAGE** IN1 segments per message: none to many (0 - max unlimited)
Set ID – IN1	IN1-1	R	Numbers the repetitions of the segment, beginning with 1
Insurance Plan ID	IN1-2	O*	Unique identifier for the insurance plan
Insurance Company ID	IN1-3	R	Use National Health Plan Identifier (HPID) in field IN1-3.1
Plan Type	IN1-15	O	Plan type, e.g. Medicare, Medicaid, Blue Cross, HMO, etc.; may use value set: PHVS_SourceOfPaymentTypology_PHDSC https://phinvads.cdc.gov/vads/ViewValueSet.action?id=94B1E80E-12A1-E611-912C-0017A477041A

APPENDIX B: ADT OBX SEGMENT SUMMARY AND SPECIFICATIONS

Appendix B contains comprehensive guidance for OBX segment implementation in syndromic surveillance ADT messages. Most of this guidance reflects national guidance; specific usage differences are indicated with an *asterisk.

Summary of OBX segment requirements, by care setting

(ED = emergency department, IN = inpatient, AC = non-urgent ambulatory care, UC = urgent care)

An absolute minimum of one OBX segment is expected with each syndromic surveillance message:

Care setting:	ED	IN	AC	UC	specific notes
Treating Facility Location	RE	RE	RE	RE	This information should be captured during the registration process.
Facility/Visit Type	R	R	R	R	Values should match the type of care provided at the treating facility
Age	RE	RE	RE	RE	Initial messages should not be delayed if age information is not immediately available; an update message shall be sent as soon as age information becomes available
Hospital Unit/Service Location	O	O	O	O	Although optional, this information is STRONGLY requested
Chief Complaint/Reason for Visit	RE	RE	RE	RE	Providing original free text as relayed by *patient* is STRONGLY requested

The following eleven OBX segments are encouraged for improving syndromic surveillance and supporting population health services:

Care setting:	ED	IN	AC	UC	Notes
Height	O*	RE	RE	O*	If sending a Height OBX segment, a Weight OBX segment is also required
Weight	O*	RE	RE	O*	If sending a Weight OBX segment, a Height OBX segment is also required
Body Mass Index	O*	O	O	O*	
Provider Type	O	O	O	O	
Smoking Status	O*	RE	RE	O*	
Initial Temperature	O	O*	O*	O	
Triage Notes	O	X	X	O	
Clinical Impression	O	X	O	O	
Date of Onset	O	X	O	O	
Initial Pulse Oximetry	O	O*	O*	O	
Systolic Blood Pressure	O*	O*	O	O*	If sending a SBP segment, a DBP segment is also required

Care setting:	ED	IN	AC	UC	Notes
Diastolic Blood Pressure	O*	O*	O	O*	If sending a DBP segment, a SBP segment is also required
Initial Acuity	O	O	O	O*	
Problem List	O	O	O	O	
Medication List	O	O	O	O	
Medications Prescribed or Dispensed	O	O	O	O	
Travel History	O	O	O	O	

OBX Segment Specifications (Consolidated guidance for syndromic surveillance messages)

Segment Usage column abbreviations:

ED = emergency department, IN = inpatient, AC = non-urgent ambulatory care, UC = urgent care

Treating Facility Location If multiple locations exist within an organization, provide the address that specifies where the service was provided	ED: RE IN: RE AC: RE UC: RE	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"XAD"
		OBX-3.1	Obs Identifier	"SS002"
		OBX-3.3	Name of Coding System	"PHINQUESTION"
		OBX-5.1	Facility Street Address	Street address of facility where patient received care
		OBX-5.2	Other Designation ***(Opt)***	Additional address information may be placed here ***(Optional)***
		OBX-5.3	Facility City	
		OBX-5.4	Facility State	From value set: PHVS_State_FIPS_5-2 https://phinvads.cdc.gov/vads/ViewValueSet.action?id=80D34BBC-617F-DD11-B38D-00188B398520
		OBX-5.5	Facility ZIP Code	USPS zip code
		OBX-5.6	Facility Country	From value set: PHVS_Country_ISO_3166-1 https://phinvads.cdc.gov/vads/ViewValueSet.action?id=40BCCA82-819B-E111-972B-0050568D00F8
		OBX-5.9	Facility County	From value set: PHVS_County_FIPS_6-4 https://phinvads.cdc.gov/vads/ViewValueSet.action?id=68730513-5384-E411-8338-0017A477041A
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520

Facility / Visit Type	ED: R IN: R AC:R UC:R	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“CWE”
		OBX-3.1	Obs Identifier	“SS003”
		OBX-3.3	Name of Coding System	“PHINQUESTION”
		OBX-5.1 OBX-5.2	Coded Identifier Text	For emergency department: ”261QE0002X^Emergency Care” For urgent ambulatory care: “261QU0200X^Urgent Care” For non-urgent ambulatory care: “261QP2300X^Primary Care” OR “261QM2500X^Medical Specialty” For inpatient care: “1021-5^Inpatient Practice Setting” For observation: “1021-5^Inpatient Practice Setting” From value set: PHVS_FacilityVisitType_SyndromicSurveillance https://phinvads.cdc.gov/vads/ViewValueSet.action?id=43E2BA38-DFDE-E411-8970-0017A477041A
		OBX-5.3	Name of Coding System	“HCPTNUCC”
		OBX-5.4	Alternate Identifier	If the sender records visit type using a coding system other than NUCC provider codes, provide values from the implemented coding system in OBX-5.4, 5.5, and 5.6
		OBX-5.5	Alternate Text	
		OBX-5.6	Name of Alt Coding Sys	
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Age	ED: RE IN: RE AC: RE UC: RE	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“NM”
		OBX-3.1	Obs Identifier	“21612-7”
		OBX-3.3	Name of Coding System	“LN”
		OBX-5.1	Numeric Value	*Enter the numeric value of the patient's age in years at the time of the visit*; for patients less than 2 years of age, report age in months. Round values to the nearest integer.
		OBX-6.1	Units Identifier	Use literal value "a" or “mo” From value set: 'PHVS_AgeUnit_SyndromicSurveillance') https://phinvads.cdc.gov/vads/ViewValueSet.action?id=5002CD54-9317-E011-87A0-00188B39829B
		OBX-6.3	Units Coding System	“UCUM”
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520

Hospital Unit (Inpatient) / Service Location (Outpatient) *Although optional, this data is STRONGLY requested	ED: O IN: O AC: O UC: O	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“CWE”
		OBX-3.1	Obs Identifier	“56816-2”
		OBX-3.3	Name of Coding System	“LN”
		OBX-5.1	Coded Identifier	From value set: NHSNHealthcareServiceLocationCode https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.113883.13.19
		OBX-5.2	Text	Text associated with code from the value set specified
		OBX-5.3	Name of Coding System	“HSLOC”
		OBX-5.4	Alternate Identifier	If the sender records service location using a different coding system than that provided in the value set 'NHSNHealthcareServiceLocationCode', values from the alternate system must be provided in fields OBX 5.4, 5.5, and 5.6 of this segment
		OBX-5.5	Alternate Text	
		OBX-5.6	Name of Alt Coding Sys	
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
		OBX-14.1	Date/Time of Obs **(Optional)**	YYYYMMDDHHMM[SS[.S...]] [+/-ZZZZ] (Datetime that information was recorded in system)

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Chief Complaint / Reason for Visit (patient-reported)	ED: RE IN: RE UC: RE AC: RE	**Free text in patient's words (strongly requested)**		
		OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	"TX"
		OBX-3.1	Obs Identifier	"8661-1"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Original Text	Enter original free text recorded from **patient’s** reported reason for visit; If structured text is also captured (e.g., drop-down pick list), include those values as well. Include ALL values captured in a pick-list. Maintain original value in all messages.
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Height and Weight: Both must be sent (two separate OBX segments) to enable BMI calculation				
Height	ED: O* IN: RE AC: RE UC: O*	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“NM”
		OBX-3.1	Obs Identifier	“8302-2”
		OBX-3.3	Name of Coding System	“LN”
		OBX-5.1	Numeric Value	Enter the numeric value of the patient's height at this visit
		OBX-6.1	Units Identifier	From value set: PHVS_HeightUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=9DD34BBC-617F-DD11-B38D-00188B398520 Transmit height in original units in which it was recorded
		OBX-6.2	Units Description	Include Preferred Concept Name from value set: PHVS_HeightUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=9DD34BBC-617F-DD11-B38D-00188B398520
		OBX-6.3	Units Coding System	“UCUM”
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Weight	ED: O* IN: RE AC: RE UC: O*	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"NM"
		OBX-3.1	Obs Identifier	"3141-9"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Numeric Value	Enter the numeric value of the patient's weight at this visit
		OBX-6.1	Units Identifier	From value set: PHVS_WeightUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=9ED34BBC-617F-DD11-B38D-00188B398520 Transmit weight in original units in which it was recorded
		OBX-6.2	Units Description	Include Preferred Concept Name from value set: PHVS_WeightUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=9ED34BBC-617F-DD11-B38D-00188B398520
		OBX-6.3	Units Coding System	"UCUM"
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Body Mass Index	ED: O* IN: O AC: O UC: O*	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"NM"
		OBX-3.1	Obs Identifier	"59574-4"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Numeric Value	Enter the numeric value of the patient's BMI at this visit
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Provider Type	ED: O IN: O AC: O UC: O	OBX-1	Set ID	Use the literal value of "1"
		OBX-2	Value Type	
		OBX-3.1	Obs Identifier	"54582-2"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Coded Identifier	From value set: PHVS_ProviderCodes_NUCC https://phinvads.cdc.gov/vads/ViewValueSet.action?id=9DDB681D-D355-E211-AD04-001A4BE7FA90
		OBX-5.2	Text	Text associated with code from the value set specified
		OBX-5.3	Name of Coding System	"NUCC"

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Smoking Status	ED: O* IN: RE AC: RE UC: O*	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"CWE"
		OBX-3.1	Obs Identifier	"72166-2"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Coded Identifier	From value set: PHVS_SmokingStatus_MU https://phinvads.cdc.gov/vads/ViewValueSet.action?id=E7943851-2633-E211-8ECF-001A4BE7FA90
		OBX-5.2	Text	Text associated with code from the value set specified
		OBX-5.3	Name of Coding System	"SCT"
		OBX-5.4	Alternate Identifier	If the sender records smoking status using a different coding system than that provided in the value set 'PHVS_SmokingStatus_MU', values from the alternate system must be provided in fields OBX 5.4, 5.5, and 5.6 of this segment https://phinvads.cdc.gov/vads/ViewValueSet.action?id=E7943851-2633-E211-8ECF-001A4BE7FA90
		OBX-5.5	Alternate Text	
		OBX-5.6	Name of Alt Coding Sys	
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Initial Temperature	ED: O IN: O* AC: O* UC: O	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"NM"
		OBX-3.1	Obs Identifier	"11289-6"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Numeric Value	Enter the numeric value of the patient's first temperature reading during this visit
		OBX-6.1	Units Identifier	From value set: PHVS_TemperatureUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=88D34BBC-617F-DD11-B38D-00188B398520
		OBX-6.2	Units Description	Include Preferred Concept Name from value set: PHVS_TemperatureUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=88D34BBC-617F-DD11-B38D-00188B398520
		OBX-6.3	Units Coding System	"UCUM"
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
		OBX-14.1	Date/Time of Obs **(Optional)**	YYYYMMDDHHMM[SS[.S...]] [+/-ZZZZ] (Datetime of patient measurement)

Triage Notes	ED: O IN: X AC: X UC: O	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“TX”
		OBX-3.1	Obs Identifier	“54094-8”
		OBX-3.3	Name of Coding System	“LN”
		OBX-5.1	Text data	Enter original free text of triage notes for the patient visit
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Clinical Impression	ED: O IN: X AC: O UC: O	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“TX”
		OBX-3.1	Obs Identifier	“44833-2”
		OBX-3.3	Name of Coding System	“LN”
		OBX-5.1	Text data	Provide the clinician’s preliminary diagnosis as free text
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Date of Onset	ED: O IN: X AC: O UC: O	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“TS”
		OBX-3.1	Obs Identifier	“11368-8”
		OBX-3.3	Name of Coding System	“LN”
		OBX-5.1	Time	YYYYMMDD[HHMM] (Date of onset of symptoms associated with reason for visit)
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Initial Pulse Oximetry	ED: O IN: O* AC: O* UC: O	OBX-1	Set ID	Use the literal value “1”
		OBX-2	Value Type	“NM”
		OBX-3.1	Obs Identifier	“59408-5”
		OBX-3.3	Name of Coding System	“LN”
		OBX-5.1	Numeric Value	Enter the numeric value of the patient's first pulse oximetry reading
		OBX-6.1	Units Identifier	“%” (from value set: PHVS_PulseOximetryUnit_UCUM) https://phinvads.cdc.gov/vads/ViewValueSet.action?id=A7453ADB-5505-E011-9273-00188B39829B
		OBX-6.2	Units Description	Include Preferred Concept Name from value set: PHVS_PulseOximetryUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=A7453ADB-5505-E011-9273-00188B39829B
		OBX-6.3	Units Coding System	“UCUM”
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
		OBX-14.1	Date/Time of Obs **(Optional)**	YYYYMMDDHHMM[SS[.S...]] [+/-ZZZZ] (Datetime of patient measurement)

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Blood Pressure: If sending, systolic and diastolic blood pressure must both be sent (two separate OBX segments)				
Systolic Blood Pressure (BP)	ED: O* IN: O* AC: O UC: O*	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"NM"
		OBX-3.1	Obs Identifier	"8480-6"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Numeric Value	Enter the numeric value of the patient's most recent systolic BP
		OBX-6.1	Units Identifier	"mm[Hg]"
		OBX-6.2	Units Description	Include Preferred Concept Name from value set: PHVS_BloodPressureUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=12D34BBC-617F-DD11-B38D-00188B398520
		OBX-6.3	Units Coding System	"UCUM"
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
		OBX-14.1	Date/Time of Obs **(Optional)**	YYYYMMDDHHMM[SS[.S...]] [+/-ZZZZ] (Datetime of patient measurement)
Diastolic Blood Pressure (BP)	ED: O* IN: O* AC: O UC: O*	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"NM"
		OBX-3.1	Obs Identifier	"8462-4"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Numeric Value	Enter the numeric value of the patient's most recent diastolic BP
		OBX-6.1	Units Identifier	"mm[Hg]"
		OBX-6.2	Units Description	Include Preferred Concept Name from value set: PHVS_BloodPressureUnit_UCUM https://phinvads.cdc.gov/vads/ViewValueSet.action?id=12D34BBC-617F-DD11-B38D-00188B398520
		OBX-6.3	Units Coding System	"UCUM"
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
		OBX-14.1	Date/Time of Obs **(Optional)**	YYYYMMDDHHMM[SS[.S...]] [+/-ZZZZ] (Datetime of patient measurement)

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Initial Acuity	ED: O IN: O AC: O UC: O*	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"CWE"
		OBX-3.1	Obs Identifier	"11283-9"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Coded Identifier	May use values 1-5 with 1 indicating most severe. May also use value set: PHVS_AdmissionLevelOfCareCode_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=07D34BBC-617F-DD11-B38D-00188B398520
		OBX-5.2	Text	Text associated with code from the value set specified
		OBX-5.3	Name of Coding System	"HL70432"
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
		OBX-14.1	Date/Time of Obs (Opt)	YYYYMMDDHHMM[SS[.S...]] [+/-ZZZZ] (Datetime of assessment)
Problem List	ED: O IN: O AC: O UC: O	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"TX"
		OBX-3.1	Obs Identifier	"11450-4"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Text data	Narrative description of conditions currently being monitored
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Medication List	ED: O IN: O AC: O UC: O	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"TX"
		OBX-3.1	Obs Identifier	"10160-0"
		OBX-3.3	Name of Coding System	"LN"
		OBX-5.1	Text data	Narrative description of current medications
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520

OBX Segment Data	Segment Usage	Segment-specific implementation		
		Field	Field Name	Literal values (in quotes) and implementation notes
Medications Prescribed or Dispensed	ED: O IN: O AC: O UC: O	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"CWE"
		OBX-3.1	Obs Identifier	"8677-7"
		OBX-3.3	Name of Coding	"LN"
		OBX-5.1	Coded Identifier	Medication code from RxNorm
		OBX-5.2	Text	Description of medication code
		OBX-5.3	Name of Coding	
		OBX-5.4	Alternate Identifier	
		OBX-5.5	Alternate Text	
		OBX-5.6	Name of Alt Coding	
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520
Travel History	ED: O IN: O AC: O UC: O	OBX-1	Set ID	Use the literal value "1"
		OBX-2	Value Type	"TX"
		OBX-3.1	Obs Identifier	"10182-4"
		OBX-3.3	Name of Coding	"LN"
		OBX-5.1	Text data	Provide any information about travel history collected
		OBX-11	Obs Result Status	From value set: PHVS_ObservationResultStatus_HL7_2x https://phinvads.cdc.gov/vads/ViewValueSet.action?id=55D34BBC-617F-DD11-B38D-00188B398520

APPENDIX E: HL7 BATCH PROTOCOL

* in Usage column indicates a different Sender Usage requirement than that found in PHIN Release 1.1 guidance

Name	Field	Usage	Syndromic Surveillance Implementation Notes	
FILE HEADER	**FHS**	**R**	FHS segments per file: One (1)	
File Field Separator	FHS-1	R	Use the literal value "|"	
File Encoding Characters	FHS-2	R	Use the literal value "^~\&"	
File Sending Application	FHS-3	R*	Uniquely identifies the sending application among all applications in network enterprise	
File Sending Facility	FHS-4	R*	The name of the sending facility may differ from the name of the treating facility. If the message is sent by a vendor on behalf of a health care facility, use the name of the vendor	
FHS-4 implementation differs depending on message transport mechanism:			**For facilities sending data via HIE:**	**For facilities sending data directly to DOH via sFTP or Other Transport:**
NamespaceID	FHS-4.1	R*	Use the organization ID provided for your organization during registration with HIE	Use a business name abbreviation descriptive enough to clearly identify the sending facility
Universal ID	FHS-4.2	R*	Use the organizational level OID assigned by HIE	OID or NPI is preferred
Universal ID Type	FHS-4.3	R*	Use literal value "ISO"	Use literal value "ISO" for OID, "NPI" for NPI
File Receiving Application	FHS-5	R*	Use literal value "{DOHUPDATEWITHVALUE}^2.16.840.1.113883.3.237.4.6^ISO"	
File Receiving Facility	FHS-6	R*	Use literal value "dn1fro00"	
File Creation Date/Time	FHS-7	R*	YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]	

Name	Field	Usage	Syndromic Surveillance Implementation Notes	
BATCH HEADER	**BHS**	**R**	BHS segments per file: One (1)	
Batch Field Separator	BHS-1	R	Use the literal value "|"	
Batch Encoding Characters	BHS-2	R	Use the literal value "^~\&"	
Batch Sending Application	BHS-3	R	Uniquely identifies the sending application among all applications in network enterprise	
Batch Sending Facility	BHS-4	R	The name of the sending facility may differ from the name of the treating facility. If the message is sent by a vendor on behalf of a health care facility, use the name of the vendor	
BHS-4 implementation differs depending on message transport mechanism:			**For facilities sending data via HIE**	**For facilities sending data directly to DOH via sFTP or Other Transport:**
NamespaceID	BHS-4.1	R	Use the organization ID provided for your organization during registration with HIE	Use a business name abbreviation descriptive enough to clearly identify the sending facility
Universal ID	BHS-4.2	R	Use the organizational level OID assigned by HIE	OID or NPI is preferred
Universal ID Type	BHS-4.3	R	Use literal value "ISO"	Use literal value "ISO" for OID, "NPI" for NPI
Batch Receiving Application	BHS-5	R	Use literal value "{DOHUPDATEWITHVALUE}^2.16.840.1.113883.3.237.4.6^ISO"	
Batch Receiving Facility	BHS-6	R	Use literal value "dn1fro00"	
Batch Creation Date/Time	BHS-7	R	Date/time that the sending system created the batched file; minimum precision is to the nearest minute: YYYYMMDDHHMM[SS[.S[S[S[S]]]]] [+/-ZZZZ]	
(Body of batch file containing HL7 Syndromic Surveillance messages)				
BATCH TRAILER	**BTS**	**R**	BTS segments per file: one (1)	
Batch Message Count	BTS-1	R	The number of messages contained in the batch	

Batch Comment	BTS-2	O	Limit of 80 characters if populated
FILE TRAILER	**FTS**	**R**	FTS segments per file: one (1)
File Batch Count	FTS-1	R	Must be “1” (only one batch per file)
File Trailer Comment	FTS-2	O	Limit of 80 characters if populated