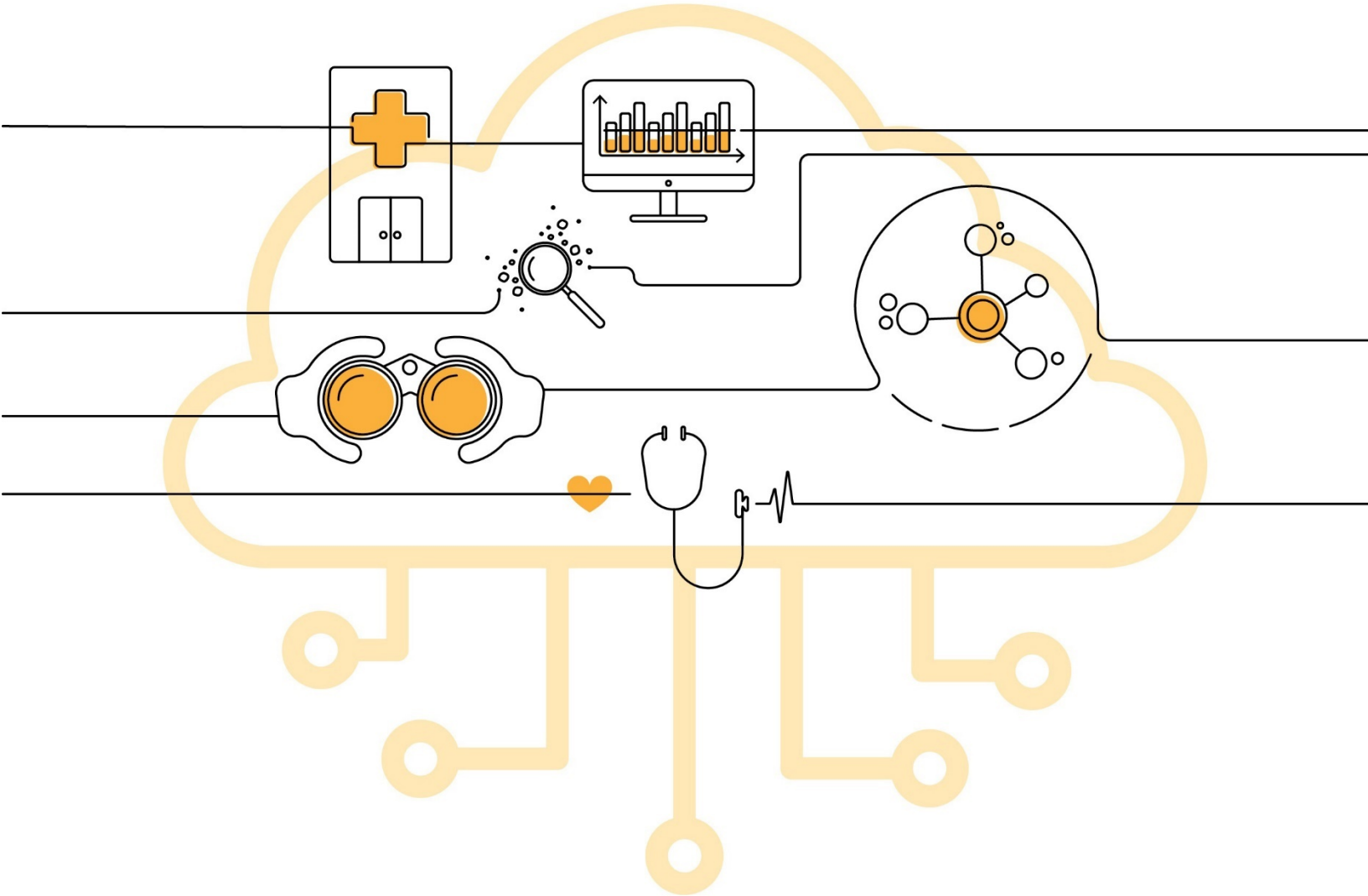
September 2020

New Facility Onboarding

Guide for the BioSense Platform



Centers for Disease Control and Prevention
Center for Surveillance, Epidemiology, and Laboratory Services

Division of Health Informatics and Surveillance

Technical Assistance: support.syndromicsurveillance.org

The National Syndromic Surveillance Program (NSSP) promotes and advances development of the cloud-based BioSense Platform, a secure integrated electronic health information system that hosts standardized analytic tools and facilitates collaborative processes. The BioSense Platform is a product of the Centers for Disease Control and Prevention (CDC).

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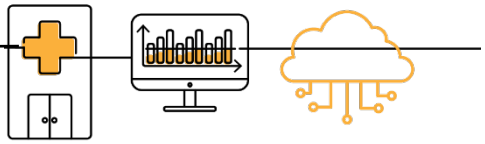
1 OVERVIEW



► Use with Job Aid "New Facility: Onboarding Overview"

This guide describes the tools, processes, and activities for onboarding new facilities to the Centers for Disease Control and Prevention (CDC) National Syndromic Surveillance Program's BioSense Platform. The **National Syndromic Surveillance Program (NSSP)** is CDC's initiative for capturing, analyzing, storing, and sharing syndromic data. The NSSP is a collaboration among local, state, and national public health programs to facilitate the timely exchange and use of targeted syndromic surveillance data. These data help public health officials detect, monitor, and respond quickly to local public health threats and events of public health importance.

NSSP's **BioSense Platform** is the core component of this integrated, nationwide system for public health syndromic surveillance. The BioSense Platform is a secure, cloud-based computing environment that enables public health agencies to conduct syndromic surveillance and analyze and share syndromic data on a common platform. Everyone has access to the same analytic and surveillance tools, follows the same standards for exchanging data, and uses the same process to transmit syndromic data.

At the conclusion of onboarding, the NSSP onboarding team and site and facility personnel will have worked together to successfully transmit compliant data.

1.1 Audience

The purpose of this guide is to help site administrators onboard new facilities and feeds. The guide contains useful information for facility managers, technical staff, vendors, health information exchanges, and individual hospitals or medical facilities that transmit syndromic data as part of CDC's NSSP infrastructure. For onboarding information specific to your local public health jurisdiction, please work directly with your site.

1.2 How to Use this Guide

This guide is designed to be used with NSSP Onboarding Job Aids (Appendix F) and the standards and guidance documents listed throughout.

1.3 Organization

Overview (Chapter 1)—introduces CDC's NSSP BioSense Platform.

Onboarding Basics (Chapter 2)—describes NSSP's approach to onboarding, introduces basic terminology, and explains how to get general and technical support.

New Facility Planning (Chapter 3)—explains how to add facilities and set up an *initial* data connection, presents options for technical support, describes how to map data correctly to facilities, and introduces the concept of facility recruitment to improve representativeness.

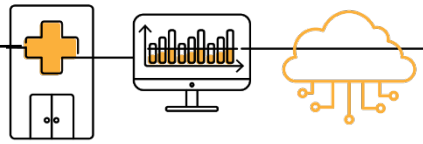
Onboarding (Chapter 4)—introduces NSSP's four-phase onboarding process (Engage, Connect, Operate, and Validate), expands on Validate Phase by delving into data requirements and compliance, and describes data elements.

Data Integration (Chapter 5)—describes how to build a valid data set for syndromic surveillance and lists the required data elements. **This step is time-consuming. Please plan accordingly.**

Frequently Asked Questions (Chapter 6)

Appendixes—contains site and facility forms, CDC's Authorization to Operate, list of training and other resources, and job aids for planning and onboarding.

2 ONBOARDING BASICS



2.1 NSSP's Onboarding Approach

NSSP is a collaboration among CDC, federal partners, local and state health departments, and academic and private sector partners who have formed the NSSP Community of Practice. They collect, analyze, and share electronic patient encounter data received from emergency departments, urgent and ambulatory care centers, inpatient healthcare settings, and laboratories.

The electronic health data are integrated through a shared platform—the BioSense Platform. The public health community uses various tools on the platform to analyze data received as early as 24 hours after a patient's visit to a participating facility. Public health officials use these timely and actionable data to detect, characterize, monitor, and respond to events of public health concern.

NSSP groups facilities under *administrative* authorities called sites. A **site** is a public health department (local, state, county, or federal) that serves as the administrative hub for any number of facilities that will transmit data to the BioSense Platform (Figure 1). The primary site contact—the *site administrator*—will build relationships with facility staff and oversee all aspects of onboarding. Whether a site administrator oversees 1 facility or 500, the tools and processes are identical.

Although the term "site" is often used interchangeably with public health "jurisdiction," the terms are not the same. "Sites" originated as logical groupings of public health departments that operated in the same geographic areas—*but not necessarily under the same public health authority*.[1] Within a site, facility data are pooled to get a better understanding of community health.

Facility onboarding is a planning and four-phase process (Figure 2) in which site administrators help local health information exchanges, facilities, and vendors prepare for transmitting data to the BioSense Platform; review data for adherence and completeness; and approve facilities for live operation. Facility onboarding occurs year-round, depending on facility and site readiness.

[1] A "public health authority" is an agency or authority of the United States government, a State, a territory, a political subdivision of a State or territory, or Indian tribe that is responsible for public health matters as part of its official mandate, as well as a person or entity acting under a grant of authority from, or under a contract with, a public health agency. See 45 CFR 164.501. Examples of a public health authority include state and local health departments, the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention, and the Occupational Safety and Health Administration (OSHA). See https://www.hhs.gov/hipaa/for-professionals/special-topics/public-health/index.html

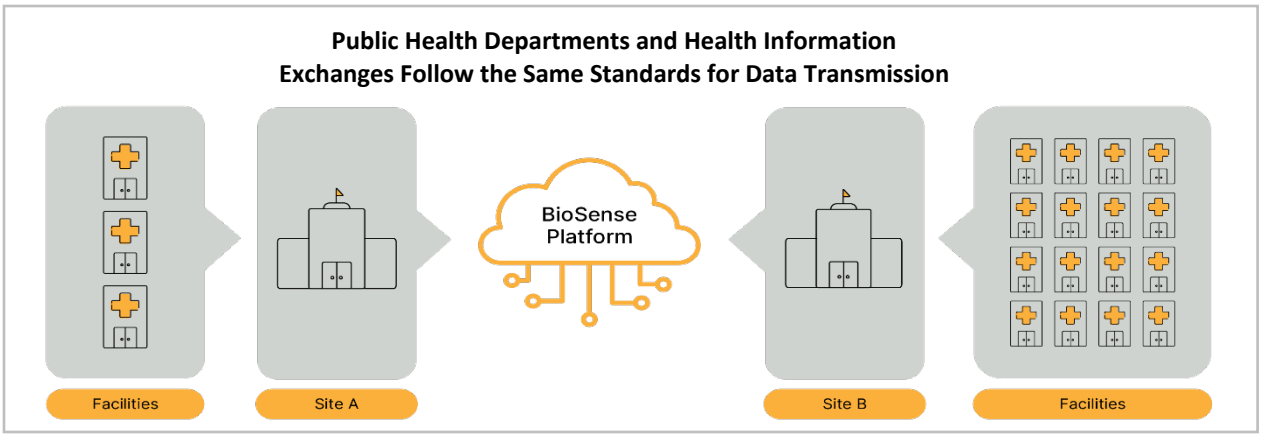


Figure 1. Onboarding Requirements are the Same for All NSSP Participants. Site A has fewer facilities (and data feeds) than Site B. Both sites, however, have identical processes for transmitting data to the BioSense Platform. Both sites follow the same standards for data exchange, meet the same criteria for data quality, and access and create reports to regularly check data compliance against standards.

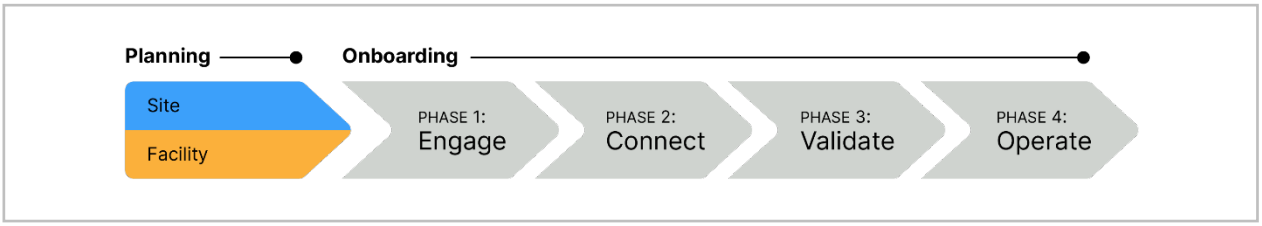


Figure 2. NSSP Planning and Onboarding Phases. Site planning and facility planning have different administrative objectives. However, NSSP's four-phase onboarding process for each is identical.

2.2 How to Request Onboarding Support

The **NSSP Service Desk** is a central repository for support requests, including requests for facility management; technical problems related to message transmission; and ad hoc requests (e.g., *How do I access the BioSense Platform? How long does it take to onboard?*).

Sites may submit support requests to the NSSP Service Desk when transitioning from one phase of the onboarding process to the next or when someone asks questions and support is needed. For example, interaction with the Master Facility Table (MFT), such as updating a facility status, may trigger the need for support.

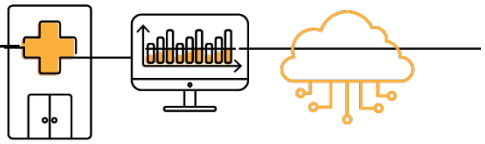
Once a site enters the Planning Phase, a primary point of contact should register for access to the NSSP Service Desk. To register, go to http://support.syndromicsurveillance.org. Once registered, sites may submit support requests, monitor progress on open requests, and review closed requests.

2.3 Onboarding Terminology

Table 1. Terminology	
Term	**Definition**
AC	Ambulatory Care
ADT	HL7-based healthcare facility message type for Admit, Discharge, and Transfer activity
AHA	American Hospital Association
AMC	Access & Management Center
ATO	Authorization to Operate
BioSense Platform	Cloud-based computing environment; core component of the National Syndromic Surveillance Program
BOPA	BioSense Platform Onboarding Process Acknowledgment
C&A	Certification and Accreditation
CA	Certifying Authority
CDC	Centers for Disease Control and Prevention
CMS	Centers for Medicare and Medicaid Services
CWE	Coded With Exception
DAA	Designated Approving Authority
DOH	Department of Health for a site's public health jurisdiction (i.e., state, county, or other)
DUA	Data Use Agreement
ED	Emergency Department
EHR	Electronic Health Record
Facility	Health organizations including outpatient clinics, ambulatory care centers, and hospital emergency departments
FIPS	Federal Information Processing Standard
FISMA	Federal Information Security Management Act
HIE	Health Information Exchange
ICD	International Classification of Diseases
MFT	Master Facility Table
PI	Promoting Interoperability
NIST	National Institute of Science and Technology
NPI	National Provider Identifier
NSSP	National Syndromic Surveillance Program
OIDS	Globally unique ISO (International Organization for Standardization) identifier
ONC	Office of the National Coordinator for Health Information Technology
PHDSC	Public Health Data Standards Consortium
PHIN	Public Health Information Network

Table 1. Terminology	
Term	**Definition**
PHINMS	Public Health Information Network Messaging System (CDC-provided software for secure data exchange)
PII	Personally Identifiable Information
SFTP	Secure File Transfer Protocol
Site	The NSSP model groups facilities (i.e., hospital emergency department, outpatient clinic) that provide data under a data administrative authority, called a site administrator. These facilities and the site administrator constitute a site.
SSH	Secure Shell; protocol allows remote login and enables secure network operation
UC	Urgent Care
VADS	Vocabulary Access and Distribution System

3 NEW FACILITY PLANNING



3.1 Overview

New facility onboarding occurs year-round and largely depends on facility and site readiness. Sites that are in the Operate Phase may onboard facilities at any time with the assistance of the onboarding team.

This chapter will help site administrators understand the process and their roles; onboard an initial facility (or small number of facilities); and understand what is needed to prioritize, plan, and onboard facilities as a *continual* process.

► Use with Job Aid "New Facility: Planning"

The "New Facility: Planning" job aid is for site administrators who work with facility administrators, initiate engagement with software development vendors, and enforce compliance with the National Institute of Science and Technology standards and *PHIN Messaging Guide for Syndromic Surveillance*.

The job aid is a step-by-step explanation that refers to the information contained in this chapter and other resources. After reading this chapter and using the job aid, facility staff should be able to:

1. Sign and submit necessary onboarding documents;
2. Be familiar with team roles and responsibilities;
3. Know where to find training and other resources;
4. Start developing and testing HL7 messages; and
5. Prepare facility for onboarding.

3.2 Prerequisites

BioSense Platform Onboarding Process Site Acknowledgment

NSSP recommends that site administrators and facility staff sign a BioSense Platform Onboarding Process Acknowledgment, or "BOPA," as a gesture of good faith. The BOPA states that personnel are familiar with the requirements of the latest *PHIN Messaging Guide for Syndromic Surveillance*, have read the *New Facility Onboarding Guide to the BioSense Platform*, and have a general understanding of the onboarding process. One BOPA is tailored for site administrators and another for facility administrators (see Appendixes A and B).

As additional facilities are added, site administrator should ask the facility contact to fill out a Facility BOPA *before* HL7 messages are developed. Everyone involved in developing, maintaining, or updating the syndromic surveillance interface should be aware of the expectations. The facility contact should submit the signed BOPAs to the site administrator who, in turn, will submit the Facility BOPAs to the NSSP Service Desk.

Develop HL7 Messages

Technical Contacts need to prepare HL7 syndromic surveillance messages for the BioSense Platform that include the required elements listed in the latest *PHIN Messaging Guide for Syndromic Surveillance*.

Note: Software developers should always use the latest version of the *PHIN Messaging Guide for Syndromic Surveillance*, which is located on the CDC PHIN website.

The guidelines in Table 2 are recommended for sites and facilities when developing HL7 messages for the site administrator's review.

Table 2. HL7 Message Guidelines
Make sure you can create and test the following message types:
A01 – Admit/Visit
A03 – Discharge/End Visit
A04 – Registration
A08 – Update Patient Information
Testing:
Test at least two samples of each messages type. Go to the National Institute of Science and Technology (NIST) website tool to correct errors: https://hl7v2-ss-r2-testing.nist.gov/ss-r2/.
Resolve all HL7 message errors *before* requesting additional assistance. **Avoid engaging the BioSense Platform Service Desk or site administrator until you have attempted to resolve the issues yourself and need additional help**.
Download the NIST HL7 Validation Report; submit it and a copy of the test messages to the site administrator.

3.3 Site Roles and Responsibilities

To avoid confusion and duplication of effort during onboarding, site staff need to know what they are accountable for, others' expectations, and how their duties contribute to onboarding. The minimum recommended roles and responsibilities for site staff are shown below (Table 3), although one person may fill multiple roles. As needed, site staff may identify additional responsibilities for onboarding.

Some responsibilities that will be introduced during planning are ongoing activities that apply to several onboarding phases. For example, site administrators will often use the Access & Management Center to set data-sharing privileges or to access the Master Facility Table when they check facility feed status.

Table 3. Site Roles and Responsibilities	
Onboarding Coordinator	The site onboarding coordinator is the primary site contact for the onboarding team. The site onboarding coordinator will work with others to onboard new feeds and facilities.
Site Administrator	This person (or multiple people) is the primary site contact for syndromic surveillance. The site administrator can approve and remove users and set data-sharing preferences for the site. The site administrator must have the authority to represent the site and to ensure that data comply with relevant state and local regulations.
Feed Administrator	The feed administrator is the primary contact for connecting the feed to NSSP.
Technical Resource	The technical resource helps ensure site data are compliant before submittal to the BioSense Platform. The technical resource should have a good understanding of data specifications and local technical infrastructure (e.g., data manipulation, MIRTH or Rhapsody processing, and HL7 message specifications).
Epidemiologist	Epidemiologists may access the system and some level of their site's detailed or aggregate data as determined by the site administrator. Epidemiologists may also access shared data from other sites when made available to them by the sharing site's site administrator.

See Section 3.5, Master Facility Table (MFT), for insight into people's roles and interactions.

3.4 Support Models

▶ Use with Job Aid "New Facility: Site Support Model"

Onboarding is not a one-size-fits-all process. Site personnel have a range of expertise and resources. Some sites have robust teams with considerable experience and well-honed processes for onboarding and validation. These sites are prepared to independently onboard facilities before engaging NSSP. In contrast, some sites need NSSP's assistance with most aspects of onboarding.

The NSSP onboarding team can provide whatever technical support is needed. Three support models are available. The choice of model will affect how NSSP prioritizes onboarding requests and assigns resources:

- **Self Support**—Sites complete the Engage, Connect, Validate, and Operate onboarding phases with minimal support from the NSSP onboarding team.
- **Blended Support**—The NSSP onboarding team provides variable levels of support across Engage, Connect, and Validate phases, as needed by the site.
- **Full Support**—The site and associated facilities require significant assistance from the NSSP onboarding team across all phases of the onboarding process.

QUICK TIPS

Not sure which site support model to select?

If you read this section and are unsure or have questions, please contact the NSSP Service Desk. (An account is required.)

Site administrators should carefully consider the support level needed. If they select the full-support model instead of self-support or blended-support models, they will have less scheduling flexibility. Site administrators who select full support will receive the highest level of support when onboarding and will undergo foundational and supplemental checks, as discussed in the **data validation** section.

Self-Support Model

The preferred model is self support (Table 4). Sites that select self support get priority during registration and onboarding. This model provides the most control over target onboarding dates.

Table 4. Self-Support Model

Phase	Responsibility	Characteristics
Engage	Site	Guides facilities through onboarding processes
Connect	Site/Onboarding	Guides facility connectivity to the BioSense Platform
Validate	Site	Validates raw and processed data
Operate	Site/Onboarding	Monitors facility activity and timeliness; performs production support and implements improvement initiatives

Blended-support Model

Sites that request blended support (Table 5) receive varying priority during onboarding based on the expected level of NSSP support.

Table 5. Blended-Support Model

Phase	Responsibility	Characteristics
Engage	Site/Onboarding	Guides facilities through onboarding processes
Connect	Site/Onboarding	Guides facility connectivity to the BioSense Platform
Validate	Site/Onboarding	Validates raw and processed data (optional); requests onboarding support if needed
Operate	Site/Onboarding	Monitors facility activity and timeliness; performs production support and implements improvement initiatives

Full-Support Model

If a site selects the full-support model (Table 6), the NSSP onboarding team will schedule activities. NSSP will involve the site administrator at each step and in every activity. NSSP's expectation is that site administrators will gain proficiency and eventually move from the full-support to blended- or self-support model. Sites that request full support receive the lowest priority during registration and onboarding and have the least control over their target onboarding dates.

Table 6. Full-Support Model		
Phase	**Responsibility**	**Characteristics**
Engage	Onboarding	Guides sites through onboarding activities with facilities
Connect	Onboarding	Guides facility connectivity to the BioSense Platform
Validate	Onboarding	Assesses quality of the facility's raw and processed data and gives feedback to site
Operate	Onboarding	Monitors facility activity and timeliness; recommends improvements to site administrator

3.5 Master Facility Table

Each site has its own Master Facility Table (MFT) that contains all necessary information for processing facility data (metadata). Having a site-specific MFT ensures data are mapped correctly from each facility to the BioSense Platform and are easily identifiable when queried. Site administrators will find the MFT indispensable throughout facility onboarding and should start using it during the Engage phase.

Site administrators are responsible for updating the MFT. Go to the Access & Management Center (AMC) and click the MFT tab (Figure 3). After inputting facility information into the MFT, add, review, and modify facility information as needed. As a best practice, check the MFT's accuracy quarterly. The NSSP onboarding team relies on the MFT to make sure facility data feeds transmit accurately and produce data that meet expectations.

When you first enter facility information into the MFT, check, then re-check, to make sure the information is correct. This will allow for a smooth process once the facility begins transmitting data to NSSP. Any discrepancies between the site administrator's entries and facility data being sent could raise issues. For example, if the site administrator enters a FacilityID_UUID into the MFT that differs from the data being sent, the incoming data would not map to the facility listed in the MFT. Data would not be processed and, instead, would continue to be routed to the exceptions table until the issue is resolved.

See the *BioSense Platform Quick Start Guide to Using the Master Facility Table (MFT)* for MFT use and functionality.

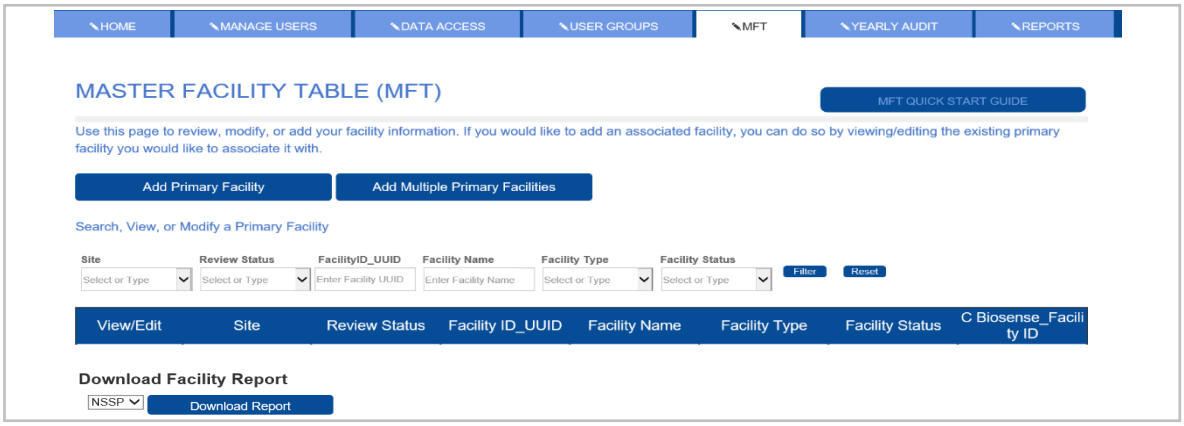


Figure 3. Master Facility Table (MFT) Tab

3.6 Recruitment Plan

A recruitment plan is a strategic approach for identifying and onboarding facilities whose data will expand the site's ability to identify disease clusters and size, track an outbreak's trajectory, identify and monitor affected populations, and monitor the use of healthcare resources. Sites are encouraged to develop a recruitment plan that includes a rough timeline for desired onboarding.

The recruitment plan should be based on the answers to these questions:

- Will data from different hospital EDs improve visit coverage in the BioSense Platform?
- Will coverage of geographic locations increase?
- Will facility characteristics change, or will populations served be more diverse?

The site administrator is not required to share the recruitment plan with the NSSP onboarding team; however, this information will be useful when adding facilities to the BioSense Platform Master Facility Table. Upon request, the NSSP team can provide site administrators with coverage information that indicates what proportion of ED visits in the geographic area are covered by NSSP data.

Site administrators should prioritize facilities for recruitment. The NSSP onboarding team will consider the site administrator's request and several other factors to determine facility priority and scheduling. For example, NSSP prioritizes EDs and urgent care facilities over ambulatory and inpatient facilities.

Here are some factors the NSSP onboarding team will consider:

- Degree of ED coverage
- Facility type
- Onboarding support model
- Public health jurisdiction experience
- Public health jurisdiction capacity
- Facility vendor and electronic health record (EHR) capability
- Interface developer capacity

Although not required, the NSSP onboarding team recommends that a site's prioritization process align with that of NSSP to achieve optimal results.

QUICK TIPS

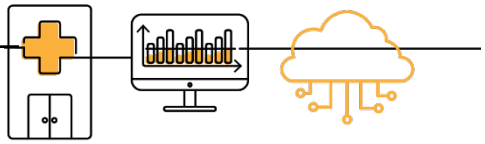
The BioSense Platform accepts facility messages in the following order:

1. Emergency Departments
2. Urgent Care Centers
3. Inpatient Facilities
4. Ambulatory Care Centers

3.7 Data Sharing and Intra-site Access

Site administrators should anticipate what data they may want to share with other sites. They should also examine the circumstances in which data provided by other sites might be useful. Although planning for data sharing—both internal and site-to-site—does not need to be completed until after a site is in the Operate Phase, planning should start much earlier. For more information on data sharing, please submit a ticket through the NSSP Service Desk for assistance.

4 ONBOARDING



4.1 Overview

Onboarding is a collaborative process in which site and facility staff work with the NSSP team, public health department, vendor for electronic health records (EHR), or health information exchange (HIE) to transmit syndromic surveillance data from internal medical record systems to the NSSP BioSense Platform.

Before beginning a live data feed to the BioSense Platform, the messages must comply with the syndromic surveillance message standards (see *PHIN Messaging Guide for Syndromic Surveillance*). This guide supports the Centers for Medicare and Medicaid Services Promoting Interoperability programs (formerly called Meaningful Use) that employ health information technology to improve the quality and value of American healthcare.

NSSP uses a four-phase approach for onboarding facilities (Figure 4) to the BioSense Platform:

- Phase 1: **Engage**
- Phase 2: **Connect**
- Phase 3: **Validate**
- Phase 4: **Operate**

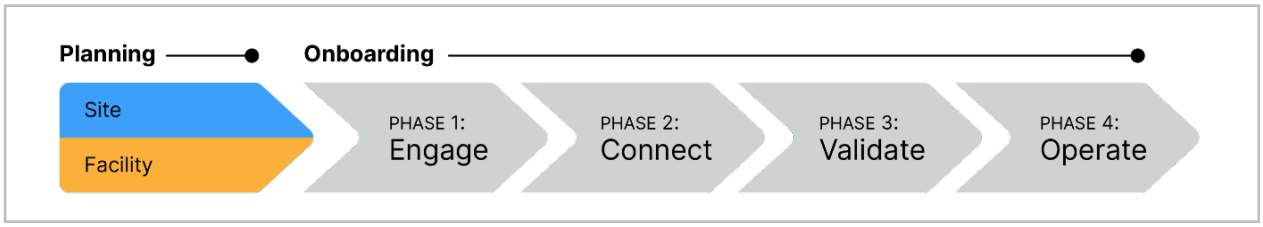


Figure 4. NSSP Planning and Onboarding Phases

4.2 Engage

The Engage Phase (Figure 5) begins when a site administrator first contacts the facility and NSSP to onboard a facility.

► Use with Job Aid "New Facility: Engage"

The "New Facility: Engage" job aid provides a step-by-step explanation of activities that take place during the first phase of the onboarding process. After reading this section and using the job aid, the site administrator should be able to:

1. Engage with facilities for onboarding;
2. Add onboarding facilities to the Master Facility Table (MFT); and
3. Prepare a facility for connectivity.

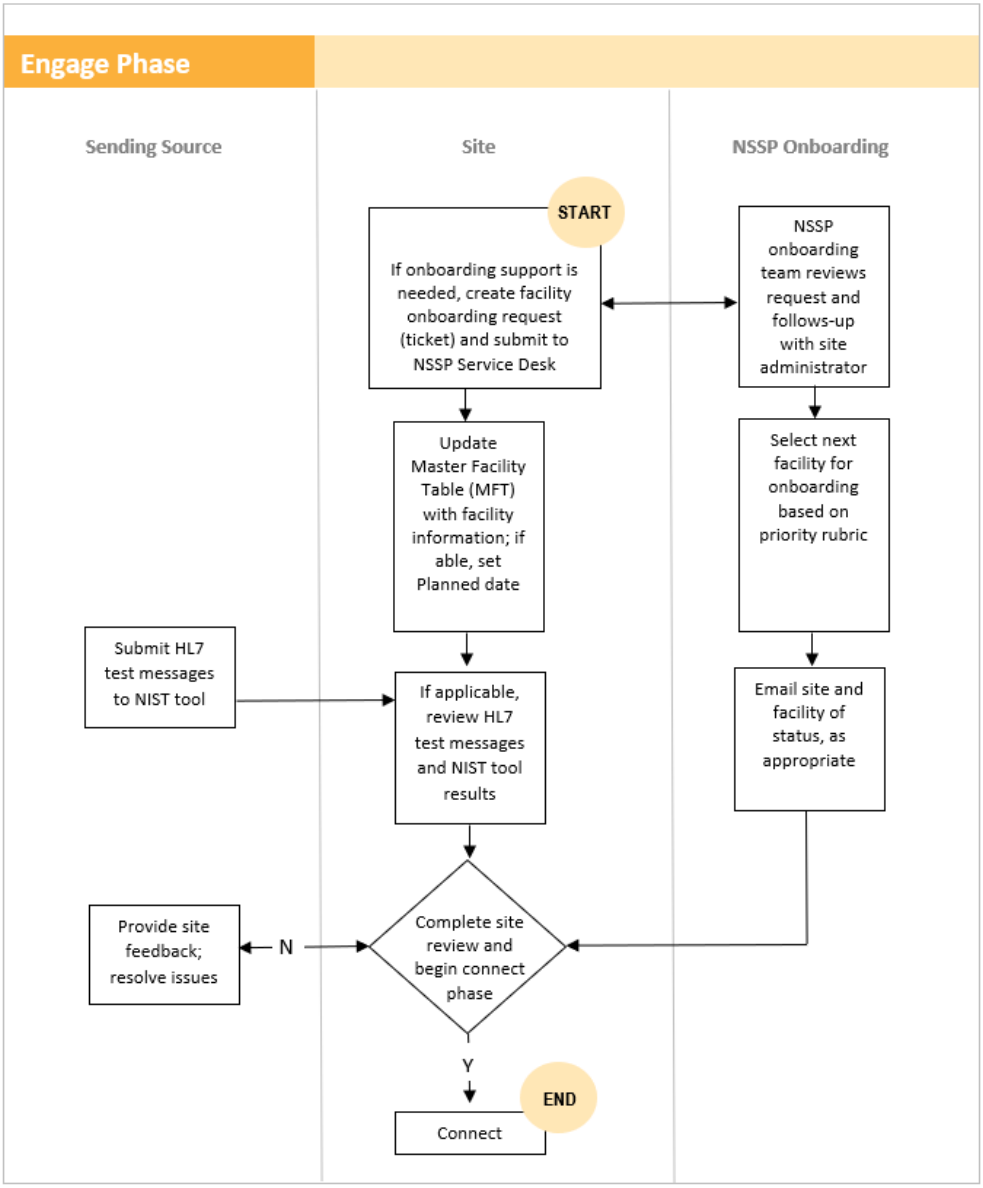


Figure 5. Engage Phase

4.3 Connect

The Connect Phase (Figure 6) begins once a new facility is ready to begin connecting to the NSSP onboarding environment after onboarding facility information has been entered into the MFT.

▶ Use with Job Aid "New Facility: Connect"

The "New Facility: Connect" job aid provides a step-by-step explanation of the activities that take place during the second phase of the onboarding process. After reading this section and using the job aid, the site administrator should be able to:

- Choose between SFTP and PHINMS secure data exchange technologies;
- Establish a successful connection with BioSense Platform servers; and
- Upload a "hello world" test message to BioSense Platform servers.

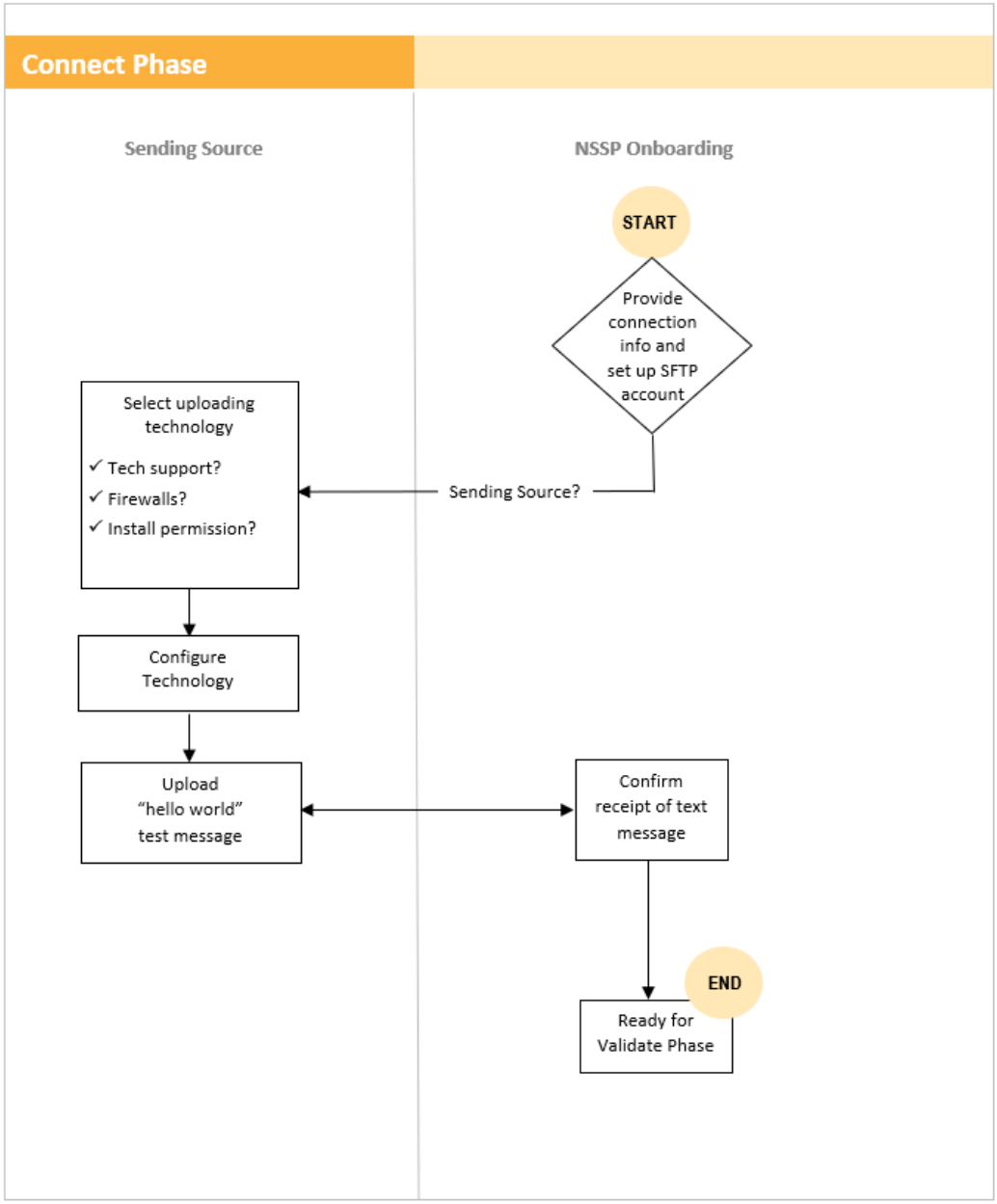


Figure 6. Connect Phase

4.4 Validate

The Validate Phase (Figure 7) measures whether the received messages comply with the *PHIN Messaging Guide for Syndromic Surveillance* and BioSense Platform requirements.

Because the objectives are the same for site and facility staff, everyone follows the same steps and standards to validate data. Sites, however, will request validation from NSSP, whereas facilities will request validation from the site.

A site may have additional data compliance or quality standards yet choose to accept the *minimum* data compliance guidelines administered by the NSSP. Also, a site's involvement during the Validate Phase can vary depending on its selection of onboarding support model.

► Use with Job Aid "New Facility: Validate"

The "New Facility: Validate" job aid provides a step-by-step explanation of activities that take place during the third phase of the onboarding process. After reading this section and using the job aid, the site administrator should be able to:

- Validate data timeliness, validity, and completeness in the onboarding environment;
- Identify and resolve data issues to achieve required message quality;
- Strive to improve data quality in all areas beyond minimum requirements;
- Make MFT updates in preparation of facility activation; and
- Prepare facility feed to transmit to production environment.

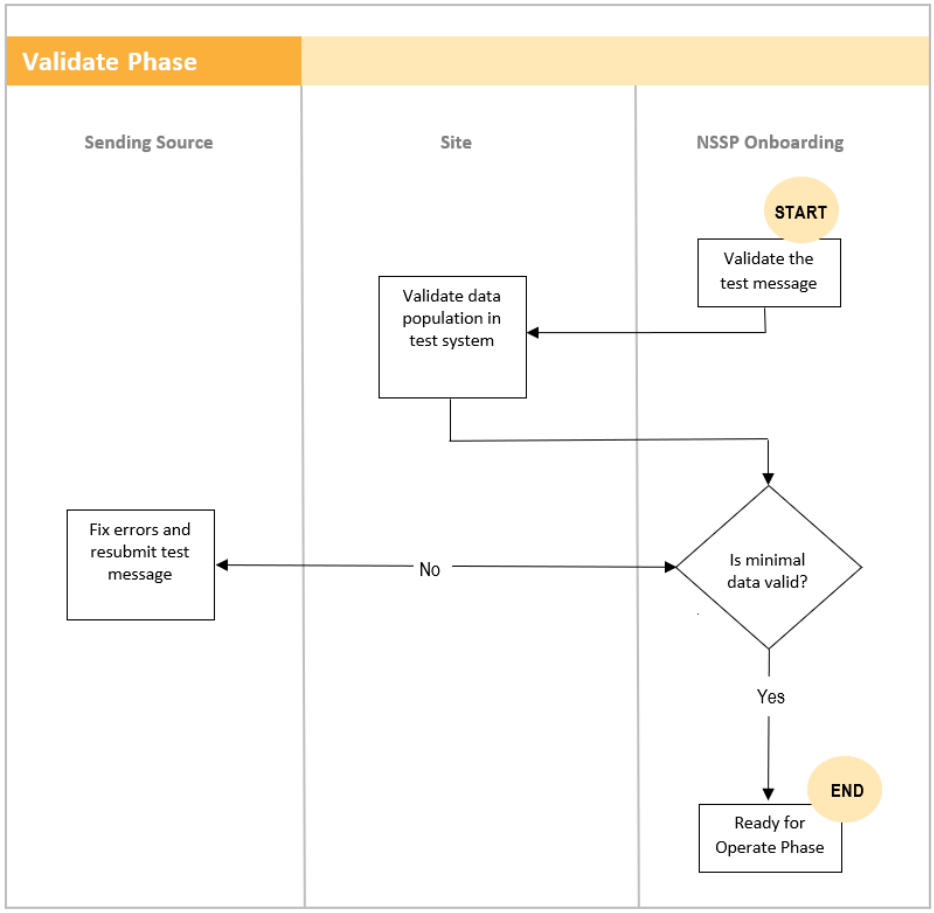


Figure 7. Validate Phase

File Format and Naming Conventions

During the Validate Phase, the file format and naming conventions need to be verified. Files uploaded to the BioSense Platform cannot be processed unless the file format and naming convention are valid (Table 7).

File Name Convention

{Site_Name}_{Provider}_{Date}_{Time}_(FileNumber}.{Suffix}

Example: GA_MetroClinic_20190101_1500_001.hl7

Note: No white-space characters are permitted in the file name.

Table 7. File-Naming Convention	
Name Segment	**Description**
State	2-letter state abbreviation where the feed originates
Provider	An abbreviated provider name or acronym
Date	A date in form YYYYMMDD
Hour	A 2-digit military hour (00-23)
FileNumber	Unique number/counter used when more than one file is sent per hour to ensure each file has a unique filename
Suffix	hl7 used for HL7 formatted content

File Name and Batching Guidelines

- Avoid the use of white-space characters in the file name (e.g., space, tab, vertical tab, new lines, or form feeds).
- Submit files in batches (a minimum of once every 24 hours and maximum of once every 15 minutes. **The NSSP recommendation is to submit files once every hour.**
- Avoid files that exceed 500 MB. NSSP prefers file sizes of 100 MB or less.
- Avoid transmitting empty files.

Test Message

Each feed must submit a valid test message to the BioSense Platform:

- Log in to your feed's account in the onboarding environment using WinSCP or FileZilla.
- Upload a valid test message with the correct file name convention and correct batch and message structure.

Minimum Requirements for Validation

Data Submittal—Syndromic data must be timely to be useful. NSSP requires that data be submitted within 24 hours of the date and time of the patient's initial *encounter* (visit to an ED or other facility). Subsequent updates to a patient's record must also be submitted within 24 hours of the information (transaction) being added to the patient record.

Here are two options for transmitting data:

- Transmit batches in 15- to 60-minute increments (**preferred**); or
- Transmit batches at least once every 24 hours.

Site-required Data Elements—A site may require facilities to submit specific data elements. Site and facility administrators should discuss this requirement when beginning the onboarding process. Site-required data elements are outside the scope of this guide.

Minimum Data Requirements—The *PHIN Messaging Guide for Syndromic Surveillance* facilitates the electronic exchange of syndromic data by promoting the use of standards and by defining functional and technical requirements. Data that do not comply with the PHIN guide jeopardize the utility of the NSSP BioSense Platform, which could lead to inaccurate analysis and results. NSSP encourages sites and facilities to achieve 100% compliance with data completeness, timeliness, and validation.

QUICK TIPS

NSSP Data Completeness Reports help the NSSP onboarding team, site administrators, facility administrators, and HL7 message developers check completeness of messages being sent to the BioSense Platform.

Use the Data Completeness Reports to complement NIST 2015 Edition ONC Health IT Certification Test Tools and not as a replacement for proper testing with the NIST tool.

The NSSP team understands that it is challenging to develop production-ready HL7 messages that fully comply with the messaging guide. The messages can require considerable time and planning to implement correctly, and some nice-to-have changes may need to be rolled into future vendor software upgrades. Challenges can also result from outdated documentation, vendor mergers, and user errors. Given the potential obstacles, **NSSP provides two levels of minimum data quality requirements:**

1. Minimum Required Data Elements to onboard to NSSP BioSense Platform (compliance with *PHIN Messaging Guide for Syndromic Surveillance*); and
2. Minimum Required Data Elements to comply with the Office of the National Coordinator for Health Information Technology (ONC)[2] certification

The following tables list the data elements that comply with these guidelines.

[2] The Office of the National Coordinator for Health Information Technology (ONC) supports adoption of health information technology and promotes nationwide health information exchange to improve healthcare. See HealthIT.gov at https://www.healthit.gov/topic/about-onc

Minimum Required Data Elements to Onboard

The complete set of required data elements is defined in the *PHIN Messaging Guide for Syndromic Surveillance*. A **subset of these data elements is essential** to successfully process data and conduct simple analysis of syndromic data.

This subset of data elements, titled "Minimum Required to Onboard," does not supersede site-defined minimum onboarding requirements or relieve a facility from satisfying ONC's minimum certification requirements. Instead, NSSP allows a site to bring the facility onboard once it meets this *minimum* set of requirements (Table 8) and then grants *additional* time for the facility to comply with the full set of requirements.

For details on priority data elements, see Appendix E.

Timeline: Valid up to 12 months.

Table 8. Minimum Required Data Elements for Onboarding		
NSSP Processed Column	**HL7 Location**	**Comments**
Sending_Application	MSH.3.1	
Sending_Facility_ID	MSH-4.2	
Trigger_Event	MSH.9.2	
Processing_ID	MSH.11.1	
Treating_Facility_ID	EVN-7.2	
C_Unique_Patient_ID	PID-3.1	See Data Dictionary for Processing Rules
Patient_Zip	PID.11.5	
C_Death	PID.30.1	See Data Dictionary for Processing Rules
Diagnosis_Code	DG1-3.1, DG1-3.4	
Diagnosis_Description	DG1-3.2, DG1-3.5	
Patient_Class_Code	PV1-2.1	
Visit_ID	PV1-19.1	
Admit_Date_Time	PV1-44.1	
Admit_Reason_Description	PV2-3.2, PV2-3.5	
Facility_Type_Code	OBX-2, OBX-3, OBX-5	See Data Dictionary for Processing Rules
C_FacType_Patient_Class	OBX-2, OBX-3, OBX-5	See Data Dictionary for Processing Rules
C_Patient_Age	OBX-2, OBX-3, OBX-5	See Data Dictionary for Processing Rules
C_Patient_Age_Years	OBX-2, OBX-3, OBX-5	See Data Dictionary for Processing Rules
Chief_Complaint_Text	OBX-2, OBX-3, OBX-5	See Data Dictionary for Processing Rules

Minimum Required Data Elements for ONC Compliance

The syndromic surveillance community has identified that the data elements shown below provide the *minimal* information needed for meaningful and detailed analysis of syndromic data (Table 9). These elements were voted on, approved, and submitted to ONC for Health IT Certification for Syndromic Surveillance.

Timeline: Required within 12 months after approval for production.

QUICK TIPS

The NSSP team audits facility compliance with ONC Health IT Certification. Facilities that do not comply may be disconnected from the BioSense Platform.

ONC Health IT Certified Syndromic Surveillance applications comply with all Required, "R," and Required but may be Empty, "RE," data elements listed in the *PHIN Messaging Guide for Syndromic Surveillance* (release 2.0). **Vendors should comply with this certification criteria.**

Table 9. Minimum Required Data Elements to Comply with ONC Certification

Processed Column	HL7	Comments
Version_ID	MSH-12.1	
Message_Profile_ID	MSH-21.1	
Sending_Facility_ID_Source	MSH-4.1	
Message_Date_Time	MSH-7.1	
Message_Type	MSH-9.1	
Message_Structure	MSH-9.3	
Recorded_Date_Time	EVN-2.1	
Race_Code	PID-10.1	
Patient_City	PID-11.3	
Patient_State	PID-11.4	
Patient_Country	PID-11.6	
C_Patient_County	PID-11.9	See Data Dictionary for Processing Rules
Ethnicity_Code	PID-22.1	
Ethnicity_Description	PID-22.2	
First_Patient_ID	PID-3.1	
Medical_Record_Number	PID-3.1	See Data Dictionary for Processing Rules
Administrative_Sex	PID-8.1	
Discharge_Disposition	PV1-36.1	
Discharge_Date_Time	PV1-45.1	
Diagnosis_Type	DG1-6.1	
Chief_Complaint_Code	OBX-2, OBX-3, OBX-5	See Data Dictionary for Processing Rules
Age_Reported	OBX-2, OBX-3, OBX-5	See Data Dictionary for Processing Rules
Age_Units_Reported	OBX-2, OBX-3, OBX-6	See Data Dictionary for Processing Rules

Note: These data elements are in addition to the Minimum Required to Onboard.
ONC: Office of the National Coordinator for Health Information Technology

How to Access Data Quality Reports to Measure Compliance

Until the SAS Staging Data-Quality-on-Demand tool is released, please contact the NSSP onboarding team to obtain data quality reports.

COMING SOON—Please refer to the *Staging Data-Quality-on-Demand Guide,* scheduled for fall 2020 publication.

> **QUICK TIPS**
>
> Each morning, NSSP provides site administers and designees with a **Daily Summary**. It gives a snapshot of processing metrics and flags concerns that could affect data quality.

As data are processed in the onboarding environment, site administrators may use the SAS Staging Data-Quality-on-Demand tool to download Data Quality Reports. Site administrators have the option to run these reports themselves and are encouraged to share the results with facility administrators, particularly the Exceptions and Completeness metrics from the Completeness reports. These reports will provide a breakdown of data quality for a specific facility. Sites may run reports on data timeliness, completeness, and validity.

How to Use Data Quality Reports to Measure Compliance

Exceptions Metrics

Data processing exceptions indicate data failures that inhibit processing. Site administrators should follow these simple steps to review exceptions:

1. Click on the **Exceptions** tab (Figure 8).

Figure 8. Exceptions Tab

2. Check **Processed % (C)** column to make sure the entry is 100% (Figure 9).

NSSP Exceptions Report->Site: 001
Centers for Disease Control and Prevention
Exceptions Report Week: 20171007
Based On OnBoarded Data Selected By Arrived_Date from 2017-10-01 to 2017-10-07
Run On 03OCT2017 at 4:42 AM

Report_Type:=Exceptions

Identification						Total Facilities and Processed							
							A	B	C	D	E	F	G
Feed Name	C Biosense Facility ID	C Facility ID	Facility Name	Sending Facility ID	Treating Facility ID	Facility Cnt	Records Processed and Excepted	Processed Records	Processed %	Min Arrived Date Time	Max Arrived Date Time	Min C Visit Date Time	Max C Visit Date Time
$ALL	$0	$ALL	$ALL	$ALL	$ALL	6	1,605	1,605	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	05Jul17:10:00:00	02Oct17:06:55:00
sftp	$0	$ALL	$ALL	$ALL	$ALL	6	1,605	1,605	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	05Jul17:10:00:00	02Oct17:06:55:00
sftp	18001	169305443	City View Hospital	169305443	169305443	1	409	409	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	26Aug17:23:47:00	02Oct17:05:58:00
sftp	18002	169305444	Mercy Hospital	169305444	169305444	1	449	449	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	26Sep17:22:09:00	02Oct17:06:43:00
sftp	18003	169305445	Mountainside Hospital	169305445	169305445	1	91	91	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	29Sep17:19:52:00	01Oct17:23:44:00
sftp	18004	169305446	Creekside Hospital	169305446	169305446	1	330	330	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	30Sep17:01:50:00	02Oct17:06:32:00
sftp	18005	169305447	Bayside Hospital	169305447	169305447	1	235	235	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	28Sep17:16:27:00	02Oct17:06:23:00
sftp	18006	169305448	Riverside Hospital	169305448	169305448	1	91	91	100.0%	01Oct17:11:06:25	02Oct17:11:02:34	26Sep17:03:36:00	02Oct17:01:12:00

Figure 9. Exceptions

- **A, B,** and **C** indicate message counts and percentages of processed messages.
- **D** and **E** indicate when NSSP received the data. **Check for discrepancies.**
  - Older visits may indicate non-ADT triggers sending data.
    Example: billing updates

3. If **Processed** < 100% or **Exceptions** > 0%, investigate the exception types (Figure 10):

Total Exceptions H						Total Raw I					Processed J		
Exceptions Records	Exceptions %	Min Arrived Date Time	Max Arrived Date Time	Min C Visit Date Tim	Max C Visit Date Tim	Total Raw Records	Filtered ions	Filtered %	Min Arrived Date Time	Max Arrived Date Time	Visits	Patients	Processed Records
0	0.0%	.	.	.	.	24,045	0	0.0%	.	.	16,678	16,531	24,045
0	0.0%	.	.	.	.	24,045	0	0.0%	.	.	16,678	16,531	24,045
0	0.0%	.	.	.	.	0	0	.	.	.	244	242	409
0	0.0%	.	.	.	.	0	0	.	.	.	266	266	449
0	0.0%	.	.	.	.	0	0	.	.	.	49	49	91
0	0.0%	.	.	.	.	0	0	.	.	.	202	202	330
0	0.0%	.	.	.	.	0	0	.	.	.	166	166	235
0	0.0%	.	.	.	.	0	0	.	.	.	71	71	91

Figure 10. Filtered Messages

- **H** indicates total exceptions in data processing.
- **I** indicates total records received and if messages were "Filtered." The BioSense Platform *cannot* process filtered messages.
- **J** indicates records processed and *estimates* visits generated on the BioSense Platform.

4. If **Exceptions** are found, look for the Exception Reasons as indicated in **K** (Figure 11).

Exceptions Counts K										
Message did not include valid C_Unique_Patient_ID 01	Message did not include valid C_Visit_Date_Time 02	Message did not include Facility_ID 03	C_Facility_ID was not found on the Operational Crosswalk 04	C_Facility_ID was not an active facility at time of message processing 05	Site_ID is null 06	Feed_Name is null 07	Message Arrived Datetime is null or Invalid 08	Create_Raw Date_Time is null or Invalid 09	Invalid Message ID 10	C_Visit_Date_Time is set in the future 11
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.
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.	.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.	.

Exception Code

Exception Description

Figure 11. Exception Reasons

5. If **Filtered** messages were indicated in Step 3, check the Filter Reasons (Figure 12) as shown in **L**.

Filtered Counts L				
Filtered Errors	Unknown 0	No message date/time from MSH-7.1 Segment 1	MSH_9.1 Not Equal To ADT 2	No Facility Info MSH_4.1 or MSN_4.2 Empty 3
0	0	0	0	0
0	0	0	0	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.

Filter Code

Filter Description

Figure 12. Filtered Reasons

Completeness Metrics

Data Completeness reports tabs include calculated completeness percentages for each data element listed in the *PHIN Messaging Guide for Syndromic Surveillance*. The following illustrations provide guidance for reviewing the completeness results.

1. Click the **Feed** tab (Figure 13) that contains the facilities you are validating.

Figure 13. Facility Completeness Tab

2. Review illustration items **A** to **F** for column details and information (Figure 14).

	A	B	C	D	E	F	G	H	I	J	K	L
1	A	B	C	D	E	0 $ALL	City View Hospital	Mercy Hospital	Mountainside Hospital	Creekside Hospital	Bayside Hospital	Riverside Hospital
2	Processed Column	PRI	Use Group	Required	HL7	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits
3	Visits	1	Stats	X		16,678	244	266	49	202	166	71
4	Facility Count	1	Stats	x		78	1	1	1	1	1	1
5	Overall	1	Overall	CR		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	C_BioSense_ID	99	ID	CR	NA	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
7	C_Processed_BioSense_ID	99	ID	CR	NA	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
8	C_Unique_Patient_ID	1	ID	CR	PID.3.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
9	C_Unique_Patient_ID_Source	99	ID	C	PID.3.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
10	First_Patient_ID	2	ID	R	PID-3.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
11	First_Patient_ID_Type_Code	2	ID	O	PID-3.5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12	First_Patient_ID_Assigning_Authority	2	ID	O	PID-3.4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
13	First_Patient_ID_Assigning_Facility	2	ID	O	PID-3.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
14	Medical_Record_Number	2	ID	R	PID.3.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15	Medical_Record_Number_Assigning_Authority	3	ID	O	PID.3.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
16	Medical_Record_Number_Assigning_Facility	3	ID	O	PID.3.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
17	Visit_ID	1	ID	R	PV1.19.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
18	Visit_ID_Assigning_Authority	2	ID	O	PV1.19.4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
19	Visit_ID_Assigning_Facility	2	ID	O	PV1.19.6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
20	Patient_Account_Number	2	ID	O	PID.18.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
21	Alternate_Visit_ID	2	ID	O	PV1.50	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
22	Feed_Name	1	Facility	X	NA	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
23	C_Facility_ID	1	Facility	CR	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
24	C_Facility_ID_Source	99	Facility	C	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
25	C_Biosense_Facility_ID	1	Facility	CR	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
26	C_Processed_Facility_ID	99	Facility	CR	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
27	Facility_Type_Code	1	Facility	R	OBX-2, OBX-3, OBX-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 14. Facility Completeness Overview

- **A** represents the ***XX_Processed*** column name from the database. Data elements are mapped from the HL7 data element value **E** to the processed column in **A**.
- **B** represents the NSSP BioSense Platform *priority*. Site administrators may amend priorities, as needed, with approval from the NSSP onboarding team.
  - **Priority 1** = Minimum Required for onboarding; required *before* sending to production
  - **Priority 2** = Minimum Required for ONC Certification Compliance; required within 12 months after sending to production
  - **Priority 3** = Optional values
  - **Priority 99** = System-generated values; for NSSP internal use only
- **C** represents BioSense Platform's internally used categories for grouping data element types, if desired.
- **D** represents data element requirements described in the *PHIN Messaging Guide for Syndromic Surveillance*.
  - **R** = Required
  - **RE** = Required but may be Empty (**required when value is captured during visit**)
  - **O** = Optional
  - **CR/CRE** = Fields calculated by BioSense Platform based on required data elements; may be a combination of one or more required data elements
- **E** contains the HL7 data element location used for BioSense Platform data mapping.
- **F** represents the individual facilities and the compliance percentages for each facility.

> **QUICK TIPS**
>
> Refer to the *NSSP Data Dictionary* for processing and mapping details.

Validity Metrics

These metrics answer the question "*Do pertinent data elements comply with standards?"* by examining data as follows:

- Targets data elements of interest that have an associated vocabulary (e.g., Administrative Sex)
- Calculates conformance at
  - "record level" (# and percent of records that conform)
  - "visit level" (# of visits that conform)
    - Mirrors collapsing rules used by ESSENCE during ingestion
    - Yields one record per visit
- Categorizes missing data as nonconforming
- Facilitates assessment of incoming data (and data as appearing in ESSENCE)

NSSP Values Report->Site: Site_ID-Site_Name Year: 2016 By Arrived_Date

Values are selected from all records within a visit

(based on NSSP Site_Name data as of 02DEC2016 at 9:21 AM)

				% Conforming by Feed_Name and Facility					
				$ALL $ALL Facilities			Feed_Name001 $ALL Facilities		
DQ Column	DQ Standard	Use Group No	Use Group	% Records	% Visits	% Patients	% Records	% Visits	% Patients
Administrative_Sex	PHVS_Gender_SyndromicSurveillance	6	Demographics	99.999%	100.0%	100.0%	100.0%	100.0%	100.0%
Admission_Type	PHVS_AdmissionType_HL7_2x	5	VisitInfo	80.8%	74.21%	79.925%	92.873%	96.673%	92.002%
Admit_Source	PHVS_AdmitSource_HL7_2x	5	VisitInfo	80.847%	87.792%	90.545%	73.398%	95.359%	94.34%
Age_Calculated		6	Demographics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Age_Reported		6	Demographics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Age_Units_Calculated	PHVS_AgeUnit_SyndromicSurveillance	6	Demographics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Age_Units_Reported	PHVS_AgeUnit_SyndromicSurveillance	6	Demographics	98.903%	99.62%	99.634%	95.66%	97.573%	96.809%
Body_Mass_Index		9	Vitals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
C_Chief_Complaint		7	CC_Diagnostic	96.816%	98.027%	97.159%	89.84%	94.857%	88.788%
C_Death		5	VisitInfo	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
C_Factype_Patient_Class		5	VisitInfo	68.697%	73.196%	74.627%	98.318%	97.373%	97.008%
C_MFT_Patient_Class	PHVS_PatientClass_SyndromicSurveill	5	VisitInfo	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
C_Patient_Age		6	Demographics	99.935%	99.98%	99.972%	100.0%	100.0%	100.0%
C_Patient_Age_Units	PHVS_AgeUnit_SyndromicSurveillance	6	Demographics	99.94%	99.982%	99.975%	100.0%	100.0%	100.0%
C_Patient_Age_Years		6	Demographics	99.935%	99.98%	99.971%	100.0%	100.0%	100.0%
C_Patient_Class	PHVS_PatientClass_SyndromicSurveill	5	VisitInfo	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
C_Patient_County	PHVS_County_FIPS_6-4	6	Demographics	47.58%	39.165%	30.299%	88.188%	95.077%	93.938%
Diagnosis_Code	PHVS_AdministrativeDiagnosis_CDC_I	7	CC_Diagnostic	54.02%	83.211%	76.453%	49.367%	91.2%	89.987%
Diagnosis_Type	PHVS_DiagnosisType_HL7_2x_V1	7	CC_Diagnostic	53.364%	82.874%	78.147%	49.367%	90.968%	90.858%
Diastolic_Blood_Pressure_Units		9	Vitals	52.203%	56.83%	67.721%	0.0%	0.0%	0.0%

Figure 15. Example of Validity Reports—Summary

NSSP Values Report->Site: Site_ID-Site_Name Year: 2016 By Arrived_Date
Values are selected from all records within a visit
(based on NSSP Site_Name data as of 02DEC2016 at 9:21 AM)
Standard(Link Below): PHVS_AdmitSource_HL7_2x
http://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.918

DQ Column:=Admit_Source

Feed Name	Facility ID	Facility Name	Clas	Value	Facility Cnt	Records	% Records	Visits	% Visits	Patients	% Patients	M C D T
$ALL	**$ALL**	**Facilities**	**0**	**$ALL-Total**	**28**	**2,889,420**	**100.0%**	**505,052**	**100.0%**	**251,723**	**100.0%**	**1**
$ALL	**$ALL**	**Facilities**	**1**	**$ALL_Conforming**	**25**	**2,336,012**	**80.847%**	**443,397**	**87.792%**	**227.923**	**90.545%**	**1**
$ALL	$ALL	Facilities	1	01	1	27,677	0.958%	4,479	0.887%	1,643	0.653%	2
$ALL	$ALL	Facilities	1	07	1	203	0.007%	46	0.009%	20	0.008%	2
$ALL	$ALL	Facilities	1	1	20	1,045,332	36.178%	220,194	43.598%	132,113	52.483%	1
$ALL	$ALL	Facilities	1	2	16	117,304	4.06%	13,446	2.662%	7,100	2.821%	1
$ALL	$ALL	Facilities	1	4	21	72,871	2.522%	7,147	1.415%	4,601	1.828%	2
$ALL	$ALL	Facilities	1	5	17	57,629	1.994%	9,952	1.97%	6,011	2.388%	0
$ALL	$ALL	Facilities	1	6	16	10,353	0.358%	1,008	0.2%	704	0.28%	2
$ALL	$ALL	Facilities	1	7	4	413,194	14.3%	94,727	18.756%	29,404	11.681%	0
$ALL	$ALL	Facilities	1	8	9	8,911	0.308%	1,325	0.262%	607	0.241%	1
$ALL	$ALL	Facilities	1	9	23	582,538	20.161%	91,073	18.032%	45,720	18.163%	0
$ALL	**$ALL**	**Facilities**	**2**	**$ALL_NonConforming**	**8**	**553,408**	**19.153%**	**61,655**	**12.208%**	**23,800**	**9.455%**	**1**
$ALL	$ALL	Facilities	2	$Missing	8	542,592	18.779%	59,758	11.832%	22,782	9.05%	2
$ALL	$ALL	Facilities	2	105	1	10,354	0.358%	1,808	0.358%	952	0.378%	1
$ALL	$ALL	Facilities	2	106	1	15	0.001%	2	0.0%	1	0.0%	0
$ALL	$ALL	Facilities	2	D	1	408	0.014%	78	0.015%	61	0.024%	0
$ALL	$ALL	Facilities	2	E	1	39	0.001%	9	0.002%	4	0.002%	1

Figure 16. Example of Validity Reports—Detail for Data Element

How to Identify and Resolve Issues with Priority 1 and 2 Data Elements

For detail on priority data elements, see Appendix E.

Priority 1 Required Data Elements

1. To identify issues with Priority 1 data elements (Table 17), filter "PRI" and select "1."

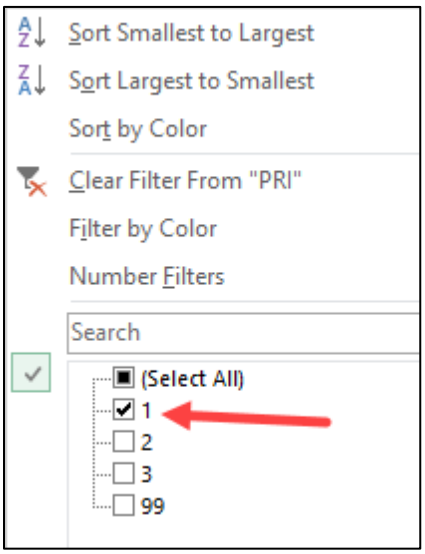


Figure 17. Identifying Priority 1 Data Elements

2. Resolve all issues identified in Priority 1 (Figure 18).

	A	B	C	D	E	F	G	H	I	J	K	L
1						0 $ALL	City View Hospital	Mercy Hospital	Mountainside Hospital	Creekside Hospital	Bayside Hospital	Riverside Hospital
2	Processed Column	PRI	Use Group	Required	HL7	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits
3	Visits	1	Stats	X		1,605	244	266	49	202	166	678
4	Facility Count	1	Stats	x		6	1	1	1	1	1	1
7	C_Unique_Patient_ID	1	ID	CR	PID.3.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
16	Visit_ID	1	ID	R	PV1.19.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
21	Feed_Name	1	Facility	X	NA	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
22	C_Facility_ID	1	Facility	CR	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
24	C_Biosense_Facility_ID	1	Facility	CR	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
26	Facility_Type_Code	1	Facility	R	OBX-2, OBX-3, OBX-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
29	Sending_Facility_ID	1	Facility	R	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
31	Treating_Facility_ID	1	Facility	R	EVN.7.2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
34	Admit_Date_Time	1	Visitdate	R	PV1.44.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
41	C_Visit_Date	1	Visitdate	CR		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
43	C_Visit_Date_Time	1	Visitdate	CR		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
55	Patient_Class_Code	1	VisitInfo			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
56	C_FacType_Patient_Class	1	VisitInfo			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
58	C_Patient_Class	1	VisitInfo			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
61	C_Death	1	VisitInfo			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
85	C_Patient_Age	1	Demographics			100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
88	C_Patient_Age_Years	1	Demographics	CR		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
101	Patient_Zip	1	Demographics	RE	PID.11.5	98.921%	99.59%	93.609%	100.0%	99.505%	100.0%	100.0%
106	Admit_Reason_Code	1	CC_Diagnostic	RE	PV2-3.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	[illegible]
107	Admit_Reason_Description	1	CC_Diagnostic	RE	PV2-3.2	99.994%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
112	Chief_Complaint_Text	1	CC_Diagnostic	RE	OBX-2, OBX-5	19.139%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
114	C_Chief_Complaint	1	CC_Diagnostic	CRE	NA	99.994%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
119	Diagnosis_Code	1	CC_Diagnostic	RE	DG1.3.1	35.826%	1.23%	0.0%	0.0%	0.0%	16.265%	35.2[illegible]
120	Diagnosis_Description	1	CC_Diagnostic	RE	DG1.3.2, DG1.3.3	[illegible].551%	1.23%	0.0%	0.0%	0.0%	15.663%	[illegible].894%
182	Arrived_Date_Time	1	Operations	CR	NA	100.0%	100.0%	100.0%	100.0%	100.0%	[illegible]	100.0%

Example of issues to fix before production ready

Figure 18. Resolving Priority 1 Issues

Priority 2 Required Data Elements

Facility staff should resolve as many data quality issues as possible before moving to production. Once approved for production, facilities have 12 months to resolve these issues. Site administrators may use NSSP tools such as the NSSP Data Quality (DQ) Dashboard and SAS Studio to monitor their data in production. After 12 months, facilities may be removed from production if they fail to comply.

Steps for using staging reports to examine Priority 2 data elements:

1. To identify Priority 2 data elements (Figure 19), filter "PRI" and select "2."

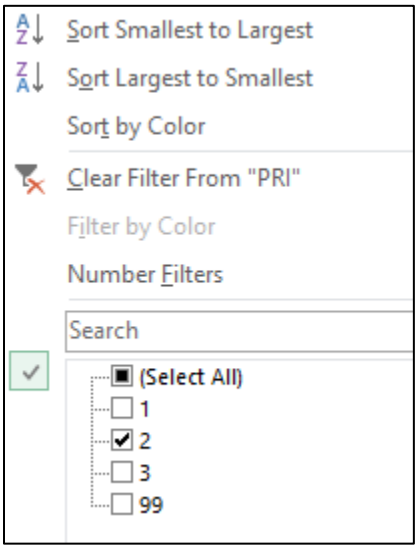


Figure 19. Identifying Priority 2 Data Elements

2. Resolve all issues identified in Priority 2 (Figure 20).

	A	B	C	D	E	F	G	H	I	J	K	L
1						0 $ALL	City View Hospital	Mercy Hospital	Mountainside Hospital	Creekside Hospital	Bayside Hospital	Riverside Hospital
2	Processed Column	PRI	Use Group	Required	HL7	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits
9	First_Patient_ID	2	ID	R	PID-3.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
13	Medical_Record_Number	2	ID	R	PID.3.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	Sending_Facility_ID_Source	2	Facility	R	MSH-4.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
39	Message_Date_Time	2	Visitdate	R	MSH.7.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
40	Recorded_Date_Time	2	Visitdate	R	EVN.2.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
52	Discharge_Disposition	2	VisitInfo	RE	[illegible]	26.25%	62.705%	78.947%	93.878%	72.277%	0.0%	63.38%
53	Discharge_Date_Time	2	VisitInfo	[illegible]	[illegible]	59.108%	62.705%	79.323%	97.959%	72.772%	72.289%	64.789%
80	Administrative_Sex	2	Demographics	[illegible]	[illegible]	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
82	Age_Reported	2	Demographics	[illegible]	[illegible]	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
84	Age_Units_Reported	2	Demographics	[illegible]	[illegible]	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
93	Race_Code	2	Demographics	[illegible]	[illegible]	62.076%	74.59%	0.0%	0.0%	0.0%	93.373%	87.324%
96	Ethnicity_Code	2	Demographics	[illegible]	[illegible]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
97	Ethnicity_Description	2	Demographics	[illegible]	[illegible]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
99	Patient_City	2	Demographics	[illegible]	[illegible]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
100	Patient_State	2	Demographics	RE	[illegible]	98.921%	99.59%	93.609%	100.0%	99.505%	100.0%	100.0%
102	C_Patient_County	2	Demographics	CRE	PID-11.9	98.921%	99.59%	93.609%	100.0%	99.505%	100.0%	100.0%
104	Patient_Country	2	Demographics	RE	PID.11.6	10.973%	16.393%	0.0%	0.0%	0.0%	0.0%	0.0%
110	Chief_Complaint_Code	2	CC_Diagnostic	RE	OBX-2, OBX-3, OBX-5	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
122	Diagnosis_Type	2	CC_Diagnostic	RE	DG1.6.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
174	Message_Profile_ID	2	Operations	R	MSH.21.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
175	Message_Structure	2	Operations	R	MSH.9.3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
176	Message_Type	2	Operations	R	MSH.9.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
177	Processing_ID	2	Operations	R	MSH.11.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
179	Trigger_Event	2	Operations	R	MSH.9.2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
180	Version_ID	2	Operations	R	MSH.12.1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Example of issues to fix within 12 months after moving to Production

Figure 20. Resolving Priority 2 Issues

How to Use the NSSP Data Dictionary

NSSP provides a Data Dictionary to help site administrators work with their team to resolve data mapping issues (see NSSP Technical Resource Center). In the example below (Figure 21), the Chief Complaint Text is Failing, but the C_Chief_Complaint is Passing:

	A	B	C	D	E	F	G	H	I	J	K	L
1						0 $ALL	City View Hospital	Mercy Hospital	Mountainside Hospital	Creekside Hospital	Bayside Hospital	Riverside Hospital
2	Processed Column	PRI	Use Group	Required	HL7	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits	% Visits
3	**Visits**	**1**	**Stats**	**X**		**1,605**	**244**	**266**	**49**	**202**	**166**	**678**
101	Patient_Zip	1	Demographics	RE	PID.11.5	98.921%	99.59%	93.609%	100.0%	99.505%	100.0%	100.0%
106	Admit_Reason_Code	1	CC_Diagnostic	RE	PV2-3.1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
107	Admit_Reason_Description	1	CC_Diagnostic	RE	PV2-3.2	99.994%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
112	Chief_Complaint_Text	1	CC_Diagnostic	RE	OBX-2, OBX-3, OBX-5	19.139%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
114	C_Chief_Complaint	1	CC_Diagnostic	CRE	NA	99.994%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
119	Diagnosis_Code	1	CC_Diagnostic	RE	DG1.3.1	35.826%	1.23%	0.0%	0.0%	0.0%	16.265%	35.211%
120	Diagnosis_Description	1	CC_Diagnostic	RE	DG1.3.2, DG1.3.3	13.551%	1.23%	0.0%	0.0%	0.0%	15.663%	32.394%
182	Arrived_Date_Time	1	Operations	CR	NA	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 21. Completeness Chief Complaint

1. Go to the NSSP Technical Resource Center and locate the **Data Dictionary.**
2. Open the Data Dictionary Excel document, and select the **ArchiveProcessed** tab (Figure 22).

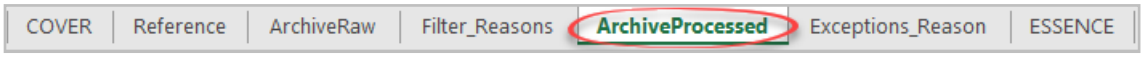


Figure 22. Data Dictionary Archive Processed Tab

3. Locate Chief_Complaint in the spreadsheet (Figure 23). Note the following:
   - **Chief_Complaint_Text – (1, 2)** maps to OBX segments in the HL7 message.
   - **C_Chief_Complaint – (3, 4)** maps to the first "non-null" value of either:
     - Chief_Complaint_Text, or
     - Admit_Reason_Description

In other words, C_Chief_Complaint is the BioSense Platform's attempt to calculate a chief complaint from either the Chief_Complaint_Description or the Admit_Reason_Text field.

To maintain compliance with the *PHIN Messaging Guide* and ONC Certification, the BioSense Platform requires that the facility map chief complaints accurately to the OBX segment by using the correct code and description.

> **QUICK TIPS**
>
> You can filter columns by Element Name or HL7 Archive Processed Name.

		PHIN Guide						Ingestion Process – HL7 Archive	
Element Name	**Description**	**Core Element?**	**HL7 Segment(s)**	**Required?**	**Cardinality**	**Element Type**	**PHIN VADS Links**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**
Chief Complaint/ Reason for Visit	Patient's self-reported chief complaint or reason for visit	Yes	OBX-2, OBX-3, OBX-5.1	N/A	[0..*]	CWE		**Chief_Complaint_Code**	OBX-5.1, OBX-5.4 segments where: * OBX-3 Observation Identifier is 8661-1 and/or 11292-0 * OBX-2 = "CWE" or "CW" Select first non-null value and concatenate if repeating
Chief Complaint/ Reason for Visit	Patient's self-reported chief complaint or reason for visit	Yes	OBX-2, OBX-3, OBX-5.1	N/A	[0..*]	TX		**Chief_Complaint_Text**	OBX-5 segments where: * OBX-3 Observation Identifier is 8661-1 and/or 11292-0 (1) * OBX-2 = "TX" or "CWE" or "CW" Select all non-null values and concatenate: IF OBX-2="TX" then Chief_Complaint_Text = OBX-5.1 IF OBX-2="CWE" or "CW" then Chief_Complaint_Text = concatenate(OBX-5.9, OBX-5.2, OBX-5.5) (2)
Chief Complaint/ Reason for Visit - Segment	Patient's self-reported chief complaint or reason for visit; if sending system treated this as a coded element, the segment will be stored	Yes	OBX-2, OBX-3, OBX-5.1	N/A	[0..*]	CWE		**Chief_Complaint_Segment**	Entire OBX segment where: * OBX-3 Observation Identifier is 8661-1 and/or 11292-0
Chief Complaint/ Reason for Visit - Segment	Patient's self-reported chief complaint or reason for visit; if sending system treated this as a coded element, the segment will be stored	Yes	OBX-2, OBX-3, OBX-5.1	N/A	[0..*]	CWE		**Chief_Complaint_Combo**	Store Chief_Complaint_Code and Chief_Complaint_Description in this field, accounting for null values. For Repeating Codes store the values using the following methodology: Code Description;Code Description;... Note the space between Code and Description
Chief Complaint/ Reason for Visit - Type	Describes if the chief complaint was sent as text or as a coded element	No	N/A	N/A	N/A	N/A		**Chief_Complaint_Type**	Stores the type of information reflected in the Chief_Complaint_Text field. Acceptable values: "CWE" or "TX" or "CW" or "CWE/TX" or "CW/CWE" or "CW/TX"
Calculated Chief Complaint	Calculated field that stores the patient's reported chief complaint as well as the admit reason from the physician	No	N/A	N/A	N/A	N/A	https://phinvads.cdc.gov/vads/ViewValueSet.action?oid=2.16.840.1.114222.4.11.909	**C_Chief_Complaint**	Hierarchically defined (select first non-null): * Chief_Complaint_Text (3) * Admit_Reason_Description (4)
Calculated Chief Complaint - Source	Stores the source(s) of the calculated chief complaint field	No	N/A	N/A	N/A	N/A		**C_Chief_Complaint_Source**	Select the value that populated C_Chief_Complaint. Valid Values: * Chief_Complaint_Text * Admit_Reason_Description * null (if C_Chief_Complaint is null)

Figure 23. Data Dictionary Locate Chief Complaint

4.5 Operate

The Operate Phase (Figure 24) begins once a feed or facility has been approved to send live data into production. The site and facilities share a common goal, which is to ensure feeds transmit compliant data on schedule. Site administrators have access to reports that show daily facility and feed status and data quality (timeliness, completeness, validity). They can use these reports to set quality targets.

► Use with Job Aid "New Facility: Operate"

The "New Facility: Operate" job aid provides a step-by-step explanation of activities that take place during the fourth phase of the onboarding process. After reading this section and using the job aid, the site administrator should be able to:

1. Monitor feed and facility connections;
2. Use NSSP tools to monitor data timeliness, validity, and completeness;
3. As needed, collaborate to improve data quality.

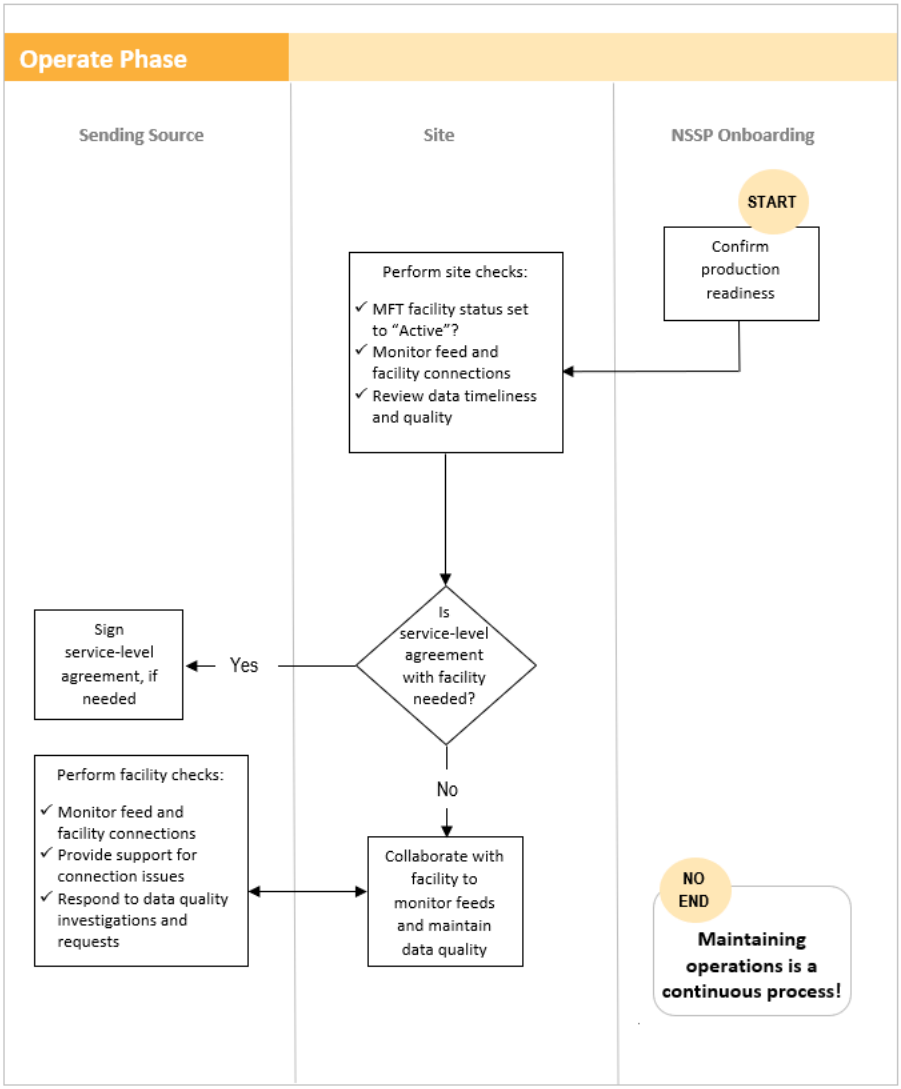


Figure 24. Operate Phase

5 DATA INTEGRATION

Building a valid data set for syndromic surveillance is the most time-consuming aspect of the onboarding process. Careful and deliberate planning should be exercised.

5.1 Syndromic Surveillance HL7 Implementation Guide

The BioSense Platform is based on the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings*. During HL7 message development, pay careful attention to include all required data elements.

5.2 Excluded Data Elements Containing PII

While not emphasized well in the *PHIN Messaging Guide for Syndromic Surveillance*, be cautious and **limit sending personally identifiable information (PII) to the BioSense Platform**. Table 10 lists the data elements to **exclude** from HL7 messages that will be sent to the BioSense Platform.

Table 10. Personally Identifiable Information (PII) to EXCLUDE from HL7 Messages

HL7 Segment/Field	HL7 Description
PID.5.1-6	Patient Name
PID.5.8-12	Patient Name
PID.6	Mother's Maiden Name
PID.9	Patient Alias
PID.11.1-2	Patient Address (**Note:** Patient ZIP, County, and City are required.)
PID.11.8	Patient Address (**Note:** Patient ZIP, County, and City are required.)
PID.13-17	Patient Phone Number
PID.19-21	Social Security Number (SSN), Driver's License Number, Mother's Identification
PID.23-28	Birth Information
PID.30.2	Patient Death Indicator
NK Segments	Next of Kin
MRG.7	Merge Patient Information
IN1.16	Name of Insured
IN1.19	Address of Insured
GT1.3-6	Guarantor Name, Address, Phone
GT1.12	Guarantor SSN
GT1.19	Guarantor Employee ID Number

5.3 Facility Mapping Considerations

Follow the guidelines below to make sure data are ready to validate.

- Specify the Sending Facility ID in MSH-4.2.
- Specify the Treating/Event Facility ID in EVN-7.2.
- Make sure the MFT lists every facility that will transmit HL7 messages for the site. If the facility is not listed, its data cannot be processed.

5.4 Required Data Elements

The BioSense Platform must receive all "**R**" and "**RE**" data elements defined for syndromic surveillance (see *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings*, Release 2.0; April 21, 2015). "R" designates a required element; "RE" designates a required field that may remain empty when the initial message is generated.

The required data elements are shown below (Table 11):

Table 11. Required Data Elements for NSSP BioSense Platform

No.	Element Name	HL7 Segment(s)	HL7 Archive Processed Name	HL7 Archive Processing Description	Requirement per message	Requirement per Visit
1	Admit or Encounter Reason–Code	PV2-3.1, PV2-3.4	Admit_Reason_Code	Direct input from HL7 message: * PV2-3.1 * PV2-3.4 Select first non-null value	RE	R
2	Admit or Encounter Reason–Description	PV2-3.2, PV2-3.5	Admit_Reason_Description	Direct input from HL7 message: * PV2-3.2 * PV2-3.5 Select first non-null value and concatenate if repeating	RE	R
3	Chief Complaint/ Reason for Visit	OBX-2, OBX-3, OBX-5.1	Chief_Complaint_Code	OBX-5.1, OBX-5.4 segments where: * OBX-3 Observation Identifier is 8661-1 and/or 11292-0 * OBX-2 = "CWE" or "CW" Select first non-null value and concatenate if repeating	RE	R

Table 11. Required Data Elements for NSSP BioSense Platform						
No.	**Element Name**	**HL7 Segment(s)**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**	**Requirement per message**	**Requirement per Visit**
4	Chief Complaint/ Reason for Visit	OBX-2, OBX-3, OBX-5.1	Chief_Complaint_Text	OBX-5 segments where: * OBX-3 Observation Identifier is 8661-1 and/or 11292-0 * OBX-2 = "TX" or "CWE" or "CW" Select all non-null values and concatenate: IF OBX-2="TX" then Chief_Complaint_Text = OBX-5.1 IF OBX-2="CWE" or "CW" then Chief_Complaint_Text = concatenate (OBX-5.9, OBX-5.2, OBX-5.5)	RE	R
5	Age–Reported (from message)	OBX-2, OBX-3, OBX-5	Age_Reported	OBX-5 segment where OBX-3 observation identifier of 21612-7 AGE-REPORTED (LOINC) and OBX-2 Value Type="NM"	RE	R
6	Age Units–Reported (from message)	OBX-2, OBX-3, OBX-6	Age_Units_Reported	OBX-6 segment where OBX-3 observation identifier of 21612-7 AGE-REPORTED (LOINC) and OBX-2 Value Type="NM"	RE	R
7	Patient Class–Code	PV1-2.1	Patient_Class_Code	Direct input from HL7 message PV1-2.1	R	R
8	Facility/Visit Type–Code	OBX-2, OBX-3, OBX-5.1	Facility_Type_Code	OBX-5 Segment where * OBX-3 Observation Identifier SS003^Facility/visit type * OBX-2="CWE" Populate this field with only the OBX-5.1 values (code)	R	R

Table 11. Required Data Elements for NSSP BioSense Platform						
No.	**Element Name**	**HL7 Segment(s)**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**	**Requirement per message**	**Requirement per Visit**
9	Facility/Visit Type–Description	OBX-2, OBX-3, OBX-5.2	Facility_Type_Description	OBX-5 Segment where * OBX-3 Observation Identifier SS003^Facility/visit type * OBX-2="CWE" Populate this field with only the OBX-5.2 values (descriptions)	R	R
10	Event Facility/ Facility Identifier (Treating)	EVN-7.2	Treating_Facility_ID	Direct input from HL7 message EVN-7.2	R	R
11	Sending Facility	MSH-4.1, MSH-4.2	Sending_Facility_ID	Direct Input from HL7 Message: MSH-4.2 MSH-4.1 Select the first non-null value	R	R
12	Admit or Encounter Date/ Time	PV1-44.1	Admit_Date_Time	Direct input from HL7 message PV1-44.1	R	R
13	Discharge or Disposition Date/Time	PV1-45.1	Discharge_Date_Time	Direct input from HL7 message PV1-45.1	RE	R
14	Procedure Date/Time	PR1-5.1	Procedure_Date_Time	Direct input from HL7 message PR1-5.1 If repeating, select the earliest date	R	R

Table 11. Required Data Elements for NSSP BioSense Platform						
No.	**Element Name**	**HL7 Segment(s)**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**	**Requirement per message**	**Requirement per Visit**
15	Message (Event) Date/Time (Recorded Date/Time)	EVN-2.1	Recorded_Date_Time	Direct input from HL7 message EVN-2.1	R	R
16	Date/Time of Message	MSH-7.1	Message_Date_Time	Direct input from HL7 message MSH-7.1	R	R
17	Date of Message	MSH-7.1	Message_Date	Date portion of message_date_time	R	R
18	Time Zone	MSH-7.1	Time_Zone	Direct input from HL7 message MSH-7 Take any characters after the plus (+) or minus (-) sign in the MSH-7	R	R
19	Unique Patient Identifier (First)	PID-3.1	First_Patient_ID	Direct input from HL7 messagePID-3.1 Select the FIRST non-null value in the PID-3 segment regardless of the Type (PID-3.5)	R	R
20	Unique Patient Identifier (First)	PID-3.4	First_Patient_ID_Assigning_Authority	Direct input from HL7 message PID-3.4 value Take only the value associated with the first non-null PID-3.1 value	R	R
21	Unique Visit Identifier	PV1-19.1	Visit_ID	Direct input from HL7 message PV1-19.1	R	R
22	Unique Visit Identifier–Assigning Authority	PV1-19.4	Visit_ID_Assigning_Authority	Direct input from HL7 message PV1-19.4	R	R

Table 11. Required Data Elements for NSSP BioSense Platform						
No.	**Element Name**	**HL7 Segment(s)**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**	**Requirement per message**	**Requirement per Visit**
23	Unique Visit Identifier–Assigning Facility	PV1-19.6	Visit_ID_Assigning_Facility	Direct input from HL7 message PV1-19.6	R	R
24	Medical Record Number	PID-3.1	Medical_Record_Number	Direct input from HL7 message, select the first non-null PID-3.1 value WHERE PID-3.5 = "MR" (Medical Record Number)	R	R
25	Medical Record Number–Assigning Authority	PID-3.4	Medical_Record_Number_Assigning_Authority	Direct input from HL7 message PID-3.4 value WHERE PID-3.5 = "MR" (Medical Record Number) Take only the value associated with the PID-3.1 value stored in Medical_Record_Number	R	R
26	Patient ZIP	PID-11.5	Patient_Zip	Direct input from HL7 message PID-11.5	RE	R
27	Patient County	PID-11.9, PID-12.1	C_Patient_County	Return the first non-null value from: * PID-11.9 * PID-12.1	RE	R
28	Diagnosis Code	DG1-3	Diagnosis_Code	Direct input from HL7 message. DG1-3.1, DG1-3.4 Select first non-null value and concatenate if repeating. (Note: semicolon is placed in first character to facilitate searches.)	RE	R

Table 11. Required Data Elements for NSSP BioSense Platform						
No.	**Element Name**	**HL7 Segment(s)**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**	**Requirement per message**	**Requirement per Visit**
29	Diagnosis Code Description	DG1-3	Diagnosis_Description	Direct input from HL7 message: DG1-3.2, DG1-3.5 Select first non-null value and concatenate if repeating	RE	R
30	Diagnosis Type	DG1-6	Diagnosis_Type	Direct input from HL7 message DG1-6.1 Concatenate repeating values	RE	R
31	Discharge Disposition	PV1-36	Discharge_Disposition	Direct input from HL7 message PV1-36.1	RE	R
32	Gender/ Administrative Sex	PID-8	Administrative_Sex	Direct input from HL7 message PID-8.1	RE	R
33	Race–codes	PID-10.1	Race_Code	Direct input from HL7 message: PID-10.1, PID-10.4 Select first non-null value and concatenate if repeating	RE	R
34	Race–code values	PID-10.2	Race_Description	Direct input from HL7 message: PID-10.2, PID-10.5 Select first non-null value and concatenate if repeating	RE	R
35	Ethnicity–codes	PID-22.1	Ethnicity_Code	Direct input from HL7 message: PID-22.1, PID-22.4 Select first non-null value and concatenate if repeating	RE	R

Table 11. Required Data Elements for NSSP BioSense Platform						
No.	**Element Name**	**HL7 Segment(s)**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**	**Requirement per message**	**Requirement per Visit**
36	Ethnicity–code values	PID-22.2	Ethnicity_Description	Direct input from HL7 message: PID-22.2, PID-22.5 Select first non-null value and concatenate if repeating	RE	R
37	Patient City/Town	PID-11.3	Patient_City	Direct input from HL7 message PID-11.3	RE	R
38	Hospital Unit–code	OBX-2, OBX-3, OBX-5.1	Hospital_Unit_Code	OBX-5.1, OBX-5.4 segment where: * OBX-3 = "56816-2" Patient Location (LOINC) * OBX-2 = "CWE" Select first non-null value and concatenate if repeating	RE	R
39	Hospital Unit–code description	OBX-2, OBX-3, OBX-5.2	Hospital_Unit_Description	OBX-5.2, OBX-5.5, OBX-5.9 segment where: * OBX-3 = "56816-2" Patient Location (LOINC) * OBX-2 = "CWE" Select first non-null value and concatenate if repeating	RE	R

Table 11. Required Data Elements for NSSP BioSense Platform						
No.	**Element Name**	**HL7 Segment(s)**	**HL7 Archive Processed Name**	**HL7 Archive Processing Description**	**Requirement per message**	**Requirement per Visit**
40	Event Type Code	EVN-1.1	Event_Type_Code	Direct input from HL7 message EVN-1.1	RE	R
41	Insurance Plan ID	IN1-2		Not Ingested	R	R
42	Insurance Company ID	IN1-3	Insurance_Company_ID	Direct input from HL7 message: IN1-3.1	R	R
43	Patient Name	PID-5		Not Ingested	R	R

ADT = Admit Discharge Transfer
CWE = Coded With Exceptions
ID = Identifier
LOINC = Logical Observation Identifiers Names and Codes
OBX = Observation Identifier
PID = Patient Identifier
R = Required Element
RE = Required but may be Empty

5.5 Message Timeliness

A characteristic of syndromic surveillance data is its timeliness. Data must be submitted within 24 hours of the date and time of the patient's initial encounter. Subsequent updates to a patient's record must be submitted within 24 hours of the information (transaction) being added to the patient record. NSSP's BioSense Platform team recommends that the message sender either batch and submit syndromic data hourly OR, at a minimum, batch and transmit data once every 6 hours.

The recommended message characteristics are shown below (Table 12).

Table 12. Message Size and Frequency Recommendations

Message Parameter	Recommendation	Notes
Message frequency	15–60 minutes	▪ 15–60 minutes is recommended ▪ Other frequencies are accepted ▪ Batched files must be sent at least every 6 hours
Message size	> 0 bytes	▪ Cannot be empty
Message batching	Required	▪ Message must be batched ▪ Individual messages are not acceptable

5.6 Facility Types

The BioSense Platform can receive syndromic surveillance data for all facility types but has limited capacity to onboard facilities other than emergency departments. For this reason, the NSSP team asks that site administrators be selective when deciding whether to receive messages from all facility types in their public health jurisdiction. NSSP recommends that new facility types be added slowly because of the potential impact on analytic processes and trends. Start by following a few large EDs to become familiar with data characteristics and volume.

The BioSense Platform accepts messages from facilities in the following order:

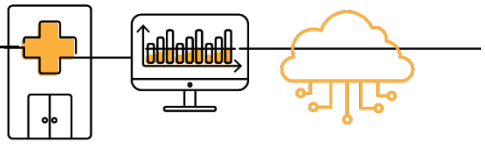
1. Emergency Department (ED)
2. Urgent Care (UC)
3. Inpatient (I)
4. Ambulatory Care (AC) (requires NSSP and site approval)

5.7 Message Triggers

Valid message triggers follow:

- ADT^A04 – Emergency Department Registration
- ADT^A03 – Discharge/End Visit
- ADT^A01 – Inpatient Admission
- ADT^A08 – Updates to previously sent A01 and A04 messages

6 FREQUENTLY ASKED QUESTIONS



This chapter answers the questions commonly asked during onboarding. While not exhaustive, this is a starting point before submitting a support request. The FAQs are categorized by topic:

- *PHIN Messaging Guide for Syndromic Surveillance*
- Differences in Site and PHIN Requirements
- Content Guidance and HL7 Specifications for Key Data Elements
- Message Transport, Frequency, and Acknowledgments
- Master Facility Table

6.1 PHIN Messaging Guide for Syndromic Surveillance

What is the relationship between the *Final Recommendation: The Care Processes & EHR Requirements of Public Health Syndromic Surveillance* (PHSS) document and the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings* released by CDC?

The purpose of the *Final Recommendation* document is "…to define the core of public health syndromic surveillance practice and the electronic health record (EHR) data requirements widely needed to support the core." In accord with that document, CDC's *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings* provides technical specifications and implementation guidance to support the exchange of core syndromic surveillance data from healthcare to public health.

Is information on data types provided in the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings*?

The guide includes a section about data types that are supported. Some complex data types are expanded in various sections of the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings*. For information about these data types, please see HL7 standards, Version 2.5.1, Chapter 2A.

What data sources are supported by the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings*?

The guide supports inpatient, urgent care, ambulatory care, and emergency department data sources. As eligible hospitals and health professionals adopt, implement, and upgrade their electronic health records (EHR) systems through the Centers for Medicare and Medicaid Services (CMS) EHR incentive programs (Promoting Interoperability), public health agencies have the opportunity to routinely receive health data from settings other than urgent care centers and emergency departments. Given the factors and complex relationships that affect EHR data quality, a collaborative approach that includes public health, healthcare, and EHR technology developers is the best way to determine how EHR data can be meaningfully used for surveillance. When considering to onboard ambulatory care facilities, site administrations should note that these are prioritized below other facility types. It is wise to start with a few large emergency departments to get familiar with the different characteristics and volume of data.

Why is an ADT message used in the *PHIN Messaging Guide for Syndromic Surveillance* rather than an Observation Result/Patient Referral Message (ORU/REF)?

The decision to use ADT message constructs instead of the ORU message construct was reviewed and approved by CDC partners, including the Public Health Data Standards Consortium (PHDSC). Compared to ORU structure, the ADT structure provides more flexibility for message exchange by health information systems that capture data from emergency department (ED) and urgent care (UC) patient visits before sending those data to a public health authority. Although Health Information Exchanges (HIE) transmit ADT messages as part of normal operation and configurations, HIEs generally lack the ability to *transmit* observation-related data through ORU messages. HIEs typically *receive* such messages.

Does the *PHIN Messaging Guide for Syndromic Surveillance* describe how to send laboratory results to NSSP?

Laboratory orders and results are discussed in the guide's Extended Data Elements section, Table 4.2.2, data element 37, Laboratory Results data set.

For laboratory results, data submitters can reference the *HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health, Release 1 (US Realm)*, available on the HL7 website at https://www.hl7.org/store/index.cfm.

How will the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings* be updated in the future?

CDC will update and issue the guide as needed to modify the syndromic surveillance business standards and data requirements. CDC will collaborate with the NSSP Community of Practice by adding its input along with public comments, feedback from state and local public health agencies and vendors, and input from public health partner organizations. For updates, please refer to the NSSP Technical Resource Center.

6.2 Differences between Site and PHIN Requirements

My state requires triage notes for each patient visit and a clinical impression of the diagnosis for syndromic surveillance. However, the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings* states that triage notes and clinical impression data elements are optional. Can my site require that these data elements be added?

Sites may require specific data elements. Sites may add data elements, modify data element usage, or constrain message elements to support local requirements, laws, and regulations.

If the public health site is authorized to collect the medical record number, should it be a required field?

PID-3, Patient Identifier List, which populates medical record number, is required in the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings*. Data submitters should check with their local site administrator to determine if sending the medical record number in this field is necessary.

Note: The PID (Patient Identifier) being sent *should not* be the facility medical record number. Instead, the PID should be unique for locating the original medical record number.

Is PID-7, Date of Birth, month, and year required? How should it be handled if the patient age (or age unit) cannot be obtained for the OBX segment since both are required?

PID-7, Date of Birth, is an optional field in HL7 and the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings*. The data type is TS (YYYYMMDD), which allows a minimum population of just the year (YYYY).

Sites may require a level of specificity beyond populating the year. On the other hand, Age and Age Units are both required (Usage = R) and sent in the OBX segment. The value of “Unknown” has been added to the value set to allow for instances where the patient age unit may not be available. The Age field sent (OBX-5) can contain zero (0), whereas the Age Unit field (OBX-6) can be populated with the value of “Unknown.” Age is a critical element to epidemiology and syndromic surveillance. Every effort should be made to populate appropriate age and age units. If that is not possible, and it is locally allowable, then reporting the Date of Birth is acceptable.

6.3 Content Guidance and HL7 Specifications for Key Data Elements

What does the NSSP onboarding team look for when they validate data quality?

NSSP's approach to validating data quality provides two levels of minimum data quality requirements:

- ***Priority 1 Data Elements***—Minimum Required Data Elements to onboard to NSSP BioSense Platform (compliance with *PHIN Messaging Guide for Syndromic Surveillance*); and
- ***Priority 2 Data Elements***—Minimum Required Data Elements to comply with the Office of the National Coordinator for Health Information Technology (ONC) certification. ONC supports adoption of health information technology and promotes nationwide health information exchange to improve healthcare. See HealthIT.gov at https://www.healthit.gov/topic/about-onc.

NSSP encourages sites and facilities to achieve 100% compliance with data completeness, timeliness, and validation. Sometimes, however, considerable effort is needed to develop production-ready HL7 messages that fully comply with the messaging guide. Changes to messages can require considerable time and planning to implement correctly. Some nice-to-have changes might not be identified until late in the onboarding process, becoming prime candidates for integration into vendor software upgrades. Issues can also result from outdated documentation, vendor mergers, and user errors. Given these potential obstacles, having two levels of minimum data quality requirements is a practical solution.

What is the preferred way to send a chief complaint?

Where possible, send a Chief Complaint in an OBX segment, and populate the Observation Value as **free text expressed in a patient's own words**. Coded values are secondary and only sought in addition to free text or if free text is unavailable. By using "coded with exceptions" (CWE), you allow for the possibility of coding systems and free text. If these data flow through an intermediary or third party, the intermediary or third party must keep the original text (CWE-9) of the transmission. Implementers should ask their local site administrators for their version of an adopted coding system.

According to the *PHIN Messaging Guide for Syndromic Surveillance*, this field is the patient's self-reported chief complaint or reason for visit. It is distinct from the Admit Reason field, which is the provider's reason for admitting the patient. Senders should provide the most complete description of the patient's chief complaint. Sometimes this entails sending multiple chief complaint values.

Note: If an electronic health record (EHR) system provides only drop-down choices for chief complaint values and does not allow free text, always concatenate the text of the selected drop-down choices into one text field. If the vendor is receptive to comment, please express your disappointment at the loss of the patient's words and advocate to input the information into the system.

Can sites submit personally identifiable information?

Avoid—*or reduce to the full extent possible*—sending personally identifiable information (PII) to the BioSense Platform. NSSP implements measures to scrub PII from specific fields listed in the *New Facility Onboarding Guide for the BioSense Platform.* **PII sent in other fields (those not listed) cannot be scrubbed and should not be sent.** NSSP issues weekly PII reports to alert sites of problems and works with site administrators to identify solutions.

What is the timeline for onboarding new facilities to the BioSense Platform?

The timeline will vary depending on facility and vendor readiness, facility connection to the data feed, and identification of issues throughout onboarding.

Once a new facility establishes a data flow to the onboarding environment, the site administrator may request a review of the data by submitting a ticket to the NSSP Service Desk or by changing the Facility Status on the Master Facility Table to Active:

- If no data quality issues are identified, the facility will usually be approved within 1 to 2 business days.
- If data quality issues are identified or facility prioritization is a concern, approval for production can take about 2 weeks. On average, 2 weeks are needed for the NSSP onboarding team to communicate the issue to the site administrator and for the site administrator to either resolve or respond to each problem.

Admit Reason may be used for patients admitted to the hospital in an ED setting. Is this different from Chief Complaint?

Admit Reason and Chief Complaint are not always the same. Chief Complaint is expected to be the patient's own words in free text and provides granularity beyond that of Admit Reason. Admit Reason is a short description of the provider's reason for admitting the patient. Although Admit Reason can include free text in PV2-3.2, it often uses ICD-10 (International Classification of Diseases) codes or, if located in an OBX, will use free text. For this reason, whenever possible, capturing both is preferred.

Note: Ideally, Chief Complaint should be a rich text description in the patient's own words relating the patient's complaint upon arrival. Coded values for Chief Complaint are far less useful.

If a sender does not have a value for a data element with a usage type of "RE" and the data element is sent in an OBX segment, is it necessary to include an OBX segment for that data element with an empty OBX-5 field?

"RE" indicates a field that is required but may remain empty when the initial message is generated. Although omitting an empty OBX segment with an empty OBX-5 field is acceptable, you must send an update message including OBX segment when the information becomes available and you update the data value. "RE" is **NOT** optional.

Can multiple addresses be sent in a single message? PID-11, Patient Address, shows only one repeat, which is considered the "Current" address.

PID-11, Patient Address, expects to receive only the patient's primary (current) address information. NSSP does not collect the full patient address—only the patient ZIP code, county, city, and country.

The time stamp fields for PID-29, Patient Death Date and Time, and PV1-45, Discharge Date/Time, show the minimum acceptable precision to the nearest minute. Is it acceptable to send the date only?

PID-29, Patient Death Date and Time, and PV1-45, Discharge Date/Time, are *not* required fields. Being precise by sending *all available data* is desirable, but NSSP processing rules allow you to send the date only.

Can Patient Age be sent in years, or does it need to be a separate OBX for years and months, or possibly days?

Per the *PHIN Messaging Guide for Syndromic Surveillance*, "…for age to be de-identified, age must be rounded to an integer. For a patient's age greater than or equal to (>=) 2 years old, report in whole years. Unit value should be Year. For patients younger than (<) 2 years old, report age in integer months. Do not report days or weeks."

For more information, see the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings*.

How do I remove patient identification in PID-5 (Patient Name)?

To de-identify data, insert "~^^^^^^S" in PID-5, illustrating that the information is removed. You should, however, send the patient ID and other information that does *not identify* the patient. For more information on data elements, please refer to the *Onboarding Guide's* description of **Excluded Data Elements Containing PII.**

For "MSH-4, Sending Facility" and "EVN-7, Event Facility," what values are expected?

"MSH-4, Sending Facility" is a unique identifier for the facility that *sends the message*. "EVN-7, Event Facility" identifies the facility where *the event occurred*. The message should contain both "MSH-4, Sending Facility" as the sending facility and "EVN-7, Event Facility" where the patient was treated.

What IDs should public health expect or request for MSH-4, Sending Facility? Do facilities use National Provider Identifiers (NPIs) or list individual physicians?

The *PHIN Messaging Guide for Syndromic Surveillance* recommends the use of NPIs, a unique identification number for covered healthcare providers. The use of NPIs should be discussed during the implementation process because local sites may differ on their use of identifiers for this field.

Please refer to *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient and Ambulatory Care Settings*, Table 4.2, Item 1, for further information or to the Centers for Medicare and Medicaid Services NPI information at https://www.cms.gov/Regulations-and-Guidance/Administrative-Simplification/NationalProvIdentStand/.

Should race and race category be defined according to HL7 specifications?

The *PHIN Messaging Guide for Syndromic Surveillance* recommends consistency across promoting interoperability meaningful use public health reporting by using the CDC value set "Race Category." This is the same value set used in *HL7 Version 2.5.1: Implementation Guide for Immunization Messaging* and *HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health*.

If medical staff check a patient's vital signs several times during a visit (also called a "patient encounter"), should all values be reported? For example, if a patient temperature is captured three times during an emergency room visit, should the facility send an HL7 message that contains the three temperature readings, or should the HL7 message contain only the final value?

Report only the latest vital signs. However, if the blood pressure is being updated from that reported in a previous HL7 message and, for example, the admit reason and diagnosis code were previously sent, include this information with the blood pressure update. Otherwise, the medical information previously received could be overwritten in ESSENCE.

Is the DG1-15 message segment "Diagnosis Priority" required? Does DG1-15 need to be part of the HL7 message?

Although the *PHIN Messaging Guide* **does not support** DG1-15 Diagnosis Priority, this message segment is potentially helpful for syndromic surveillance and is allowed as a **Priority 3 Optional field** for NSSP data processing.

Does NSSP processing of HL7 messages distinguish between C_Death and Patient_Death_Indicator?

C_Death is calculated during NSSP processing and populated with either "Yes" or "No" once certain criteria are met. Site personnel should make sure that Patient Death Indicator and Patient Death Date Time are populated only if the patient has expired. The PV1-36.1 Discharge Disposition is required for every patient, regardless of disposition, and should contain one of these codes if the patient has expired. If the field requirements are not met, NSSP processing rules "assume" the patient has not expired despite information included in other fields.

If the NIST validation tool reports that OBX-3 segment ID 29553-5 (required for Age_Calculated and Age_Units_Calculated) is <u>not</u> in the expected value set, then should Age_Calculated and Age_Units_Calculated be submitted in the HL7 messages sent to the NSSP?

The NIST Validation tool looks for Age Reported because that's the only option offered in the *PHIN Messaging Guide*. Some sites, however, allow the Age Calculated LOINC code to be used as a Priority 3 Optional field in NSSP processing. If an electronic health record calculates patient age to populate the Patient Age field, this would be the correct LOINC to send. Shown below is an OBX segment created by altering the *PHIN Messaging Guide* example for Age Reported:

OBX|4|NM|29553-5^AGE – CALCULATED^LN||43|a^YEAR^UCUM|||||F|||20110217

Does the NSSP mapping and processing of data elements C_Patient_Age, C_Patient_Age_Years depend upon sending Age_Reported, Age_Calculated, or the pair of data elements C_Visit_Date, Birth_Date?

Yes, with the following stipulations. C_Patient_Age is calculated during NSSP data processing when the below criteria are met and will be populated with the Patient Date of Birth, Age Reported, or Age Calculated. If Patient Date of Birth is received, NSSP data processing will use this information to calculate the patient's age at the time of the visit to populate the C_Patient_Age field. Otherwise, Age Reported or Age Calculated will be used. C_Visit_Date is calculated based on the following criteria:

Return the first non-null value from—

* Admit Date/Time (PV1-44.1)
* Earliest Date/Time from:
** Discharge Date/Time (PV1.45.1)
** Procedure Date/Time (PR1.5.1)
** Patient Death Date/Time (PID.29.1)
** Recorded Date/Time of Message (EVN.2.1)
** Date/Time of Message (MSH.7.1)

If this field is null, the record will not be processed into the Archive successfully (i.e., Exceptions table).

A best practice is to populate Admit Date Time with the date/time the visit was initiated, as it most accurately reflects the date of the actual visit, and **never change this field throughout the patient encounter**. The way in which C_Visit_Date is calculated ensures that the field is always populated in the processed tables and in ESSENCE. C_Patient_Age_Years is calculated from C_Patient_Age, accounting for whether the patient is under 24 months old and translating age into years.

6.4 Message Transport, Frequency, and Acknowledgments

Can a single batch contain different types of syndromic surveillance messages?

Yes, batches may contain all admit, discharge, and transfer (ADT) message types for syndromic surveillance. Examples follow:

- ADT^A01 Admit/Visit Notification
- ADT^A04 Register a Patient
- ADT^A08 Update Patient Information
- ADT^A03 Discharge/End Visit

Are receivers required to acknowledge all syndromic surveillance messages?

The *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings v2.0* specifies the contents of an acknowledgment message, but both sender and receiver must decide whether to acknowledge a specific data exchange.

How often should I send syndromic surveillance messages?

A business rule in the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings v2.0* states that data for syndromic surveillance must be timely. On page 23, this is stated as "Therefore, data must be submitted at least within 24 hours of the date and time of the patient's initial encounter. Any subsequent updates to a patient's record must also be submitted within 24 hours of the information (transaction) being added to the patient record. Real time data transmission, or very frequent batch data transmission, is preferred. If batch transmission mode is utilized, batches must be transmitted at least once every 6 hours."

When setting up connections, does NSSP require an SSH-2 RSA 2048-bit RSA key pair for encryption?

Yes, NSSP requires every site to have its own 2048-bit RSA key pair. Sites must provide their public keys to NSSP in SSH-2 format (or in a format that can be converted to SSH-2). Site administrators are responsible for maintaining the security of their private keys and for storing their private keys in a format compatible with the SSH File Transfer Protocol (SFTP) solution being used.

May we use SCP instead of SFTP to connect to the BioSense Platform? We would use the same OpenSSH server.

The NSSP onboarding team has not seen a significant security difference between Secure Copy Protocol (SCP) and SSH File Transfer Protocol (SFTP). Both protocols leverage SSH to authenticate and provide an encrypted tunnel for transferring data.

The use of SCP might make detecting a transfer failure easier. However, the OpenSSH 8.0 release notes (4/17/2019) contain the following security note:

> *"The SCP protocol is outdated, inflexible, and not readily fixed. We recommend the use of more modern protocols like SFTP and RSync for file transfer instead."*

If a system has SCP available, SFTP will usually be installed (for example, Red Hat allows you to install SSH, SFTP, and sSCP). Before publication of the OpenSSH 8.0 security note, the traditional guidance was to use SCP for noninteractive file copy operations (particularly over high-latency networks) and to use SFTP for interactive operations or when the ability to interrupt and resume file transfers is critical.

If the SSH private key is not encrypted, it is easy to automate SCP and SFTP. SFTP uses the -b (batch file) option to automate data transfer.

If the SSH private key is password protected, SCP will require an interactive user to supply the password. SFTP will not prompt for an interactive password while in batch mode. Both SCP and SFTP can use an expect script to supply the password, eliminating the need for a user to enter a password. Assuming access to the server and job configuration is adequately secured by other controls, the private key may be stored unencrypted on disk. Another option is to store the key in encrypted format while storing the passphrase to decrypt it in another file on the same server.

6.5 Master Facility Table (MFT)

Why is it important to keep information in the Master Facility Table current during onboarding?

Everyone wants the onboarding process to progress smoothly and be error free. By updating the Master Facility Table (MFT) regularly and keeping it current, you decrease the likelihood of discrepancies once the facility begins transmitting data to NSSP. Any discrepancies between what the site administrator *enters* into the MFT and what the facility *sends* could raise issues. For example, if the site administrator entered a FacilityID_UUID into the MFT which is *different* from that submitted in the data, the mismatched identifiers will prevent incoming data from mapping accurately to the facility listed in the MFT. Worse yet, data will not be processed and will continue to be routed to the exceptions table until the issue is resolved. (Tip: This is a good reason to check Data Quality reports in WinSCP for staging exceptions data or the Data Quality Dashboard and SAS Data Quality [DQ] On Demand for production exceptions data.)

How can I identify multiple facilities in the MFT that submit data using the same FacilityID?

Multiple facilities associated with a primary facility may send data under a single FacilityID if they are entered as associated facilities in the MFT. Data from primary and associated facilities are viewed as a single facility in ESSENCE. If you prefer to view these facilities separately, enter each facility into the MFT as an individual facility and submit data under unique FacilityIDs. If you have questions, please contact the NSSP onboarding team or submit a Service Desk ticket. Please consult the *BioSense Platform Quick Start Guide to Using the Master Facility Table (MFT)* for more information on associated facilities.

How can I identify a facility in the MFT that has multiple care settings and multiple patient classes?

It is possible to include multiple care settings and multiple patient classes in the same facility. You can do this by adding associated facilities under the primary facility that is listed in the MFT. Please consult the *BioSense Platform* Quick Start Guide to Using the Master Facility Table (MFT) for information about adding associated facilities to your site's MFT.

Is it possible for me to view associated facilities as individual facilities in ESSENCE?

Unfortunately, ESSENCE does not allow *associated facilities* to be viewed separately from the *primary facility*. If you want the ability to view facilities separately, enter the facilities into the MFT as *primary facilities* so that each is assigned a unique FacilityID. Please consult the *BioSense Platform Quick Start Guide to Using the Master Facility Table (MFT)* for more information on primary facilities and associated facilities.

Some facilities have multiple IDs. When this occurs, should I add multiple lines for the same facility to include each unique ID?

When facilities use multiple unique identifiers (IDs) for the same facility, the way in which you enter this information determines how NSSP–ESSENCE will view these data. A batch template can contain only one facility ID, but additional associated IDs may be added manually:

1. **To create multiple facilities**, enter separate lines for each identifier during the batch upload.
2. **To create (and view as) a single facility**, enter one identifier during the batch upload. Later, add additional identifiers either as an *associated facility* or as an additional *Primary_FacilityID_UUID.* Both methods will map messages from unique identifiers to the main facility.

An ideally formed HL7 message will have the main facility ID in the MSH-4.2 and the individual departments in the EVN-7.2.

Am I required to have related facilities, such as facilities with the same parent organization, entered as associated facilities under a primary facility?

This depends on how you want to view facility data. If you want to view each facility separately, then you'll want to add each facility to the MFT as a *primary facility*, each using a unique FacilityID. If you want to view all data from all facilities under the parent organization together, you could add each facility as an *associated facility* under a *primary facility* in the parent organization. Please consult the *BioSense Platform* *Quick Start Guide to Using the Master Facility Table (MFT)* for more information on *primary facilities* and *associated facilities*.

I have a lot of facilities that I want to add to the MFT at once. Is there an alternative method of entering facilities that doesn't require me to enter them one facility at a time?

Yes, multiple *primary facilities* may be added at the same time. There is an option in the MFT to "Add Multiple Primary Facilities." Select this option and follow the prompts. Please consult the *BioSense Platform* *Quick Start Guide to Using the Master Facility Table (MFT)* for more information on adding multiple primary facilities to the MFT.

Can the Primary FacilityID_UUID (in the MFT) and facility National Provider Identifier, or NPI, be the same number?

Yes, these can be the same number if that is what the site chooses to use as its FacilityID_UUID.

I entered a new facility or made a change in an existing facility. Now the Record Status/Review Status states "Pending OB Review." What does this mean?

A review status of "Pending OB Review" means that the NSSP onboarding team is required to review and approve specific additions or changes you made to the facility record in the MFT. Several events can trigger a review, including:

- Status change to (or from) Active
- Feed Name is "unknown"
- Facility NPI, Sending Facility ID, or AHA ID already exists in another site
- Primary FacilityID_UUID value has changed
- Associated facility added with an ID that differs from the primary
- Facility Type is Emergency Care and no AHA ID has been entered

Please consult the *BioSense Platform* *Quick Start Guide to Using the Master Facility Table (MFT)* for more information on Facility Review, Review Status, or Record Status.

I am adding a new facility. What Facility Status should I select?

The Facility Status selected depends on the immediate or near-future plans for the facility. As a general practice, the NSSP onboarding team recommends that you base your selection on what will occur in the next 60 days. Here are your options:

- **Not Planned**: Site does not yet have a date set to begin work with this facility.
- **Planned**: Site has a plan and start date to begin work with this facility.
- **Onboarding**: Facility is ready to begin sending data to the BioSense Platform or will be ready within a reasonable timeframe of 6 months.

Other statuses become available once the facility has been set to Onboarding. Please consult the *BioSense Platform Quick Start Guide to Using the Master Facility Table (MFT)* for information about Facility Status.

Some facilities have multiple IDs. When this occurs, should I add multiple lines for the same facility to include each unique ID?

When facilities use unique identifiers (IDs) for the same building, the way in which you enter this information determines how NSSP–ESSENCE will view these data. A batch template can contain only one facility ID, but additional associated IDs may be added manually:

1. **To create multiple facilities**, enter separate lines for each identifier during the batch upload.
2. **To create (and view as) a single facility**, enter one identifier during the batch upload. Later, add additional identifiers either as an *associated facility* or as an additional *Primary_FacilityID_UUID.* Both methods will map messages from unique identifiers to the main facility.

An ideally formed HL7 message will have the main facility ID in the MSH-4.2 and the individual departments in the EVN-7.2.

APPENDIX A: SITE BOPA

BioSense Platform Onboarding Process
Site Acknowledgment

Site Name: _____

Site Administrator Name: _____

I acknowledge the following BioSense Platform onboarding processes and principles as a best effort attempt to adhere to the *PHIN Messaging Guide for Syndromic Surveillance*, which is the basis for the Office of the National Coordinator for Health Information Technology Vendor Certification:

- ☐ The BioSense Platform gives highest priority to emergency and urgent care facilities; ambulatory and inpatient onboarding are performed on a "best effort" basis.
- ☐ Site administrators maintain the following authority over facilities within their jurisdictions:
  - Authority to establish additional onboarding requirements to those already required for the BioSense Platform.
  - Authority to provide final approval for onboarding facilities to the BioSense Platform.
  - Authority to recommend disconnection of a facility from the BioSense Platform.
- ☐ Effective syndromic surveillance relies on continuous improvement of the quality and content of data submitted for syndromic surveillance; meeting the minimum requirements for production should only be a first step.
- ☐ Updates to the *PHIN Messaging Guide for Syndromic Surveillance* may result in requests to comply with updated guidelines.
- ☐ A facility may be given *contingent* (temporary) approval to send data to production if it does not meet the minimum requirements.
- ☐ At the discretion of the site administrator, expiration of *contingent* approval may result in disconnection from the BioSense Platform.

Acknowledgment of Receipt of Latest Documentation

Initials	Acknowledgment Description
	I have reviewed the **latest** copy of the *PHIN Messaging Guide for Syndromic Surveillance,* located at http://www.cdc.gov/phin/resources/PHINguides.html.
	I have reviewed the **current** onboarding guidance and supporting documents, located at http://www.cdc.gov/nssp/biosense/onboarding.html.

Name: _____

Position/Title: _____

Date Signed: _____

Revised April 2020

APPENDIX B: FACILITY BOPA

BioSense Platform Onboarding Process
Facility Acknowledgment

Facility Technical Engineer Lead Name:_____

I acknowledge the following BioSense Platform onboarding processes and principles as a best effort attempt to adhere to the *PHIN Messaging Guide for Syndromic Surveillance*, which is the basis for the Office of the National Coordinator for Health Information Technology Vendor Certification:

- ☐ The BioSense Platform gives highest priority to emergency and urgent care facilities; ambulatory and inpatient onboarding are performed on a "best effort" basis.
- ☐ My local site administrator has authority to establish additional requirements for onboarding.
- ☐ My local site administrator has final approval authority for onboarding a facility onto the BioSense Platform.
- ☐ My local site administrator has authority to recommend disconnection for a facility from the BioSense Platform.
- ☐ Effective syndromic surveillance relies on continuous improvement of the quality and content of data submitted for syndromic surveillance; meeting the minimum requirements for production should only be a first step.
- ☐ My organization may be given c*ontingent* (temporary) approval to send data to production if we do not meet the minimum requirements.
- ☐ Expiration of contingent approval may result in disconnection from the BioSense Platform.
- ☐ Updates to the *PHIN Messaging Guide for Syndromic Surveillance* may result in requests to meet updated guidelines.

Acknowledgment of Receipt of Latest Documentation

Initials	Acknowledgment Description
	I have reviewed the **latest** copy of the *PHIN Messaging Guide for Syndromic Surveillance,* located at http://www.cdc.gov/phin/resources/PHINguides.html.
	I have reviewed the Facility Onboarding Checklist on the BioSense Platform Onboarding Website: http://www.cdc.gov/nssp/biosense/onboarding.html.
	I have distributed a copy of this acknowledgment document among all team members for this facility.
	I will provide a list of facilities (FacilityID_UUID, Facility Name, Facility City, Facility ZIP Code, and Facility State) for whose data integration I am responsible to the BioSense Platform onboarding team.

Name: _____

Position/Title: _____

Date Signed: _____

Revised July 2016

APPENDIX C: Recommended Training and Resources

Technical Support

- NSSP Service Desk: http://support.syndromicsurveillance.org (account required)
- NSSP Mailbox: nssp@cdc.gov
- NSSP BioSense Platform Technical Resource Center
  https://www.cdc.gov/nssp/biosense/publications.html
- NSSP BioSense Platform Onboarding Website
  https://www.cdc.gov/nssp/biosense/onboarding.html

BioSense Platform Applications

- Access & Management Center (AMC)—for updating user profiles and managing data access, facilities, and connection privileges for BioSense Platform tools.
  https://www.cdc.gov/nssp/biosense/docs/BioSense-AMC-User-Manual.pdf
- Data Quality Dashboard—for performing data quality checks on validity and completeness
  https://www.cdc.gov/nssp/data-quality-corner/nssp-dq-dashboard.html
- Data Quality on Demand—for accessing data quality reports within SAS.
  https://www.cdc.gov/nssp/biosense/docs/Data-Quality-On-Demand_User_Manual.pdf
- Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE)—for conducting syndromic surveillance (detect, monitor, analyze).
  https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-ESSENCE.pdf
- Master Facility Table—for managing facility and feed status.
  https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-MFT.pdf
- RStudio Pro—for heavy data query analysis and visual data analytics.
  https://www.cdc.gov/nssp/biosense/docs/biosense-platform-quick-start-guide-for-rstudio-pro.pdf
- SAS Studio—for heavy data query analysis and data analytics.
  https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-SAS-Studio.pdf

Standards (Data Quality, Validation)

- CDC PHIN Vocabulary Access and Distribution System (VADS)
  https://phinvads.cdc.gov/vads/SearchVocab.action
- HL7 Messaging Standard Version 2.5.2 (HL7 Manual)
  http://www.HL7.org
- National Institute of Science and Technology (NIST) Data Validation Tools
  https://hl7v2-ss-r2-testing.nist.gov/ss-r2
- ONC Health IT Certification for Syndromic Surveillance
  https://www.healthit.gov/policy-researchers-implementers/2015-edition-test-method
- Public Health Information Network (PHIN) Tools and Resources, PHIN Guides
  http://www.cdc.gov/phin/resources/PHINguides.html
  (**Note:** Always use the current version of the *PHIN Messaging Guide for Syndromic Surveillance*.)

Syndromic Surveillance

- **NSSP Community of Practice Knowledge Repository**—Consortium of resources maintained by the syndromic surveillance community to advance science and practice. Includes use cases, success stories, webinars and trainings, syndromes and queries, abstracts, technical papers and studies, and toolkits and publications.
  https://knowledgerepository.syndromicsurveillance.org/
- **NSSP Community of Practice Data Quality Subcommittee Calls**—Monthly call organized by the community that offers an open discussion of topics put in place by community members regarding syndromic surveillance. To join the group and be part of the monthly calls please go to https://www.cste.org/page/nsspcop
- **NSSP Community of Practice Monthly Calls**—Community-selected discussion topics that affect syndromic surveillance. To see the calendar of community calls and activities, visit the NSSP Community of Practice at https://knowledgerepository.syndromicsurveillance.org/community-practice-monthly-calls.

Training

- ESSENCE Training and Webinars
  https://knowledgerepository.syndromicsurveillance.org/search?f%5B0%5D=field_primary_topic_areas%3A11
  ESSENCE Online Training Course
  ESSENCE Training—Building Queries
  ESSENCE Training—Using Queries
  ESSENCE Training—Sharing Queries
  ESSENCE Q & A 1
  ESSENCE Q & A 2
  ESSENCE Q & A 3
  ESSENCE Q & A 4
  ESSENCE Q & A 5
  ESSENCE YouTube Channel
  NSSP ESSENCE Training at PHI Conference
- RStudio Training Webinars
  https://www.surveillancerepository.org/search/webinars?f%5b0%5d=field_primary_topic_areas%3A1463
- SAS Studio Training Webinars
  https://knowledgerepository.syndromicsurveillance.org/biosense-platform-introduction-sas-studio-basics

APPENDIX D: Security and CDC Authorization to Operate

This appendix describes CDC's approach for making the BioSense Platform secure and includes details about CDC's Authorization to Operate.

All CDC IT systems must obtain a signed Authorization to Operate (ATO) before connecting to the BioSense Platform. The ATO represents CDC management's approval to place a system into operation at CDC. An ATO is granted *after* an IT system fully complies with the Certification and Accreditation (C&A) process, which includes:

- Security Certification
- Security Accreditation
- E-Authentication
- Business Continuity Planning

When an IT system requires full C&A, that system must be approved by the designated approving authority (DAA). The DAA is typically a senior management official, division level or above, in a CDC Center, Institute, or Office.

In addition, the approval of a certifying authority (CA) must be obtained during C&A in accord with Federal Information Processing Standard Publication (FIPS PUB) 199 (see sidebar). CAs are typically the application sponsor, business steward, system owner, chief information security officer, or other designated approval authority.

There are two different ATO forms: The Non-reportable System/Application ATO and the Reportable System/Application ATO. The choice of form depends on what's called an *impact level*, which is determined by the system's functionality and data it contains.

- The CA must use the *reportable* ATO form if the system has a high FIPS PUB 199 impact level or has critical inventory systems.
- The CA must use the *non-reportable* ATO form if the system has a low or moderate FIPS PUB 199 impact level.

What is FIPS PUB 199?

The Federal Information Security Managements ACT (FISMA) requires federal agencies to *"develop, document, and implement an information security and protection program."* To comply with FISMA, the National Institute for Standards and Technology (NIST) was tasked with developing the standards for federal agencies.

NIST developed FIPS Publication 199, *Standards for Security Categorization of Federal Information and Information Systems,* as part of a suite of standards and guidelines to improve the security of federal information systems.

Note: The Office of the Chief Information Security Officer (OCISO) will not grant an ATO to a Web-based system if the application scan shows high vulnerabilities. Before an ATO can be granted, the CA must collaborate with the Office of the chief Information Security Officer (OCISO) to lower system vulnerabilities to an acceptable level. The project officer must sign and submit an ATO, in PDF format, as part of the C&A package. The CA will sign the ATO upon approval of the accepted package.

For more information about full compliance, refer to the C&A process guides on CDC's Unified Process website: https://www2.cdc.gov/cdcup/.

APPENDIX E: Priority Data Elements

The National Syndromic Surveillance Program (NSSP), working with the syndromic surveillance community, has assigned *priority levels* to data elements contained within syndromic HL7 messages. Priority levels are used when sites onboard new facilities and, occasionally, to "re-onboard" disconnected facilities. Priority levels help to guarantee the quality of data that will be included in the production environment. These data elements are described in the *PHIN Messaging Guide for Syndromic Surveillance 2.0*. Data element processing is described in the *NSSP Data Dictionary*.

Priority 1 Data Elements

Priority 1 data elements (Table 13) are the *minimum required* to perform surveillance activities. These fields are required to maintain a minimum level of 80% completeness and validity for the facility to achieve and maintain production status

Table 13. Priority 1 Data Elements

Processed Column	Priority	Required	HL7
Admit_Date_Time	1	R	PV1-44.1
Admit_Reason_Description	1	RE	PV2-3.2, PV2-3.
C_Chief_Complaint	1	CRE	OBX or PV2-3
C_Death	1	CRE	PID.30.1
C_Facility_ID	1	CR	EVN-7.2, MSH-4.2 or MSH-4.1
C_FacType_Patient_Class	1	CR	OBX-2,3,5
C_Patient_Age	1	CRE	OBX-2,3,5
C_Patient_Age_Years	1	CRE	OBX-2,3,5
C_Patient_Class	1	CR	PV1.2.1 or calculate
C_Unique_Patient_ID	1	CR	PID.3.1
Chief_Complaint_Text	1	RE	OBX-2,3,5
Diagnosis_Code	1	RE	DG1-3.1, DG1-3.4
Diagnosis_Description	1	RE	DG1-3.2, DG1-3.5
Facility_Type_Code	1	R	OBX-2,3,5
Patient_Class_Code	1	R	PV1.2.1
Patient_Zip	1	RE	PID.11.5
Processing_ID	1	R	MSH.11.1
Sending_Facility_ID	1	R	MSH-4.2 or MSH-4.1
Treating_Facility_ID	1	R	EVN.7.2
Trigger_Event	1	R	MSH.9.2
Visit_ID	1	R	PV1.19.1

CR = Calculated and Required field; required for every record and visit
CRE = Calculated and Required field that may remain Empty; field required once per visit
R = Required
RE = Required field that may remain Empty when the initial message is generated

Priority 2 Data Elements

Priority 2 data elements (Table 14) are also useful for surveillance activities and may be required by sites before approving a facility for production. NSSP requires that these data elements meet minimum standards of completeness and validity **within 12 months** of a facility achieving production status.

Table 14. Priority 2 Data Elements			
Processed Column	**Priority**	**Required**	**HL7**
First_Patient_ID	2	R	PID-3.1
Medical_Record_Number	2	R	PID.3.1
Sending_Facility_ID_Source	2	R	MSH-4.1
Message_Date_Time	2	R	MSH.7.1
Recorded_Date_Time	2	R	EVN.2.1
Discharge_Disposition	2	RE	PV1.36.1
Discharge_Date_Time	2	RE	PV1.45.1
Administrative_Sex	2	RE	PID.8.1
Age_Reported	2	RE	OBX.5.1
Age_Units_Reported	2	RE	OBX.6.2
C_Patient_Age_Units	2	C	OBX.6.2
Race_Code	2	RE	PID-10.1
Ethnicity_Code	2	RE	PID-22.1
Ethnicity_Description	2	RE	PID-22.2
Patient_City	2	RE	PID.11.3
Patient_State	2	RE	PID.11.4
C_Patient_County	2	CRE	PID-11.9
Patient_Country	2	RE	PID.11.6
Admit_Reason_Code	2	RE	PV2-3.1, PV2-3.
Chief_Complaint_Code	2	RE	OBX-2,3,5
Diagnosis_Type	2	RE	DG1.6.1
Version_ID	2	R	MSH.12.1

R = Required field
RE = Required field that may remain Empty when the initial message is generated

Priority 3 Data Elements

Priority 3 data elements (Table 15) are mostly optional—still useful for surveillance activities, but not required by most sites. Currently, the NSSP does not require that these fields be populated in incoming data.

Table 15. Priority 3 Data Elements			
Processed Column	**Priority**	**Required**	**HL7**
First_Patient_ID_Type_Code	3	O	PID-3.5
First_Patient_ID_Assigning_Authority	3	O	PID-3.4
First_Patient_ID_Assigning_Facility	3	O	PID-3.6
Medical_Record_Number_Assigning_Authority	3	O	PID.3.1
Medical_Record_Number_Assigning_Facility	3	O	PID.3.1
Visit_ID_Assigning_Authority	3	O	PV1.19.4
Visit_ID_Assigning_Facility	3	O	PV1.19.6
Patient_Account_Number	3	O	PID.18.1
Alternate_Visit_ID	3	O	PV1.50
Facility_Type_Description	3	O	OBX-2,3,5
Receiving_Facility	3	O	MSH.6.1
Diagnosis_Date_Time	3	O	DG1.5.1
Procedure_Date_Time	3	O	PR1.5
Observation_Date_Time	3	O	OBX.14.1
Onset_Date	3	O	OBX.5.1
Patient_Death_Indicator	3	O	PID.30.1
Death_Date_Time	3	O	PID.29.1
Admission_Type	3	O	PV1.4
Admit_Source	3	O	PV1.14
Ambulatory_Status	3	O	PV1.15
Hospital_Service	3	O	PV1.10
Insurance_Company_ID	3	O	IN1-3
Insurance_Coverage	3	O	IN1-15
Previous_Hospital_Unit	3	O	PV1-6
Provider_Type_Code	3	O	OBX-2,3,5
Provider_Type_Combo	3	O	OBX-2,3,5
Provider_Type_Description	3	O	OBX-2,3,5
Unique_Physician_Identifier	3	O	PV1-7.1
Unique_Physician_Identifier_Assigning_Authority	3	O	PV1-7.9
Hospital_Unit_Code	3	O	OBX-2,3,5
Hospital_Unit_Description	3	O	OBX-2,3,5
Age_Calculated	3	RE	OBX.5.1
Age_Units_Calculated	3	RE	OBX.6.2
Birth_Date_Time	3	O	PID.7.1
Race_Description	3	O	PID-10.2

Table 15. Priority 3 Data Elements			
Processed Column	**Priority**	**Required**	**HL7**
Triage_Notes	3	O	OBX.5.1
Diagnosis_Priority	3	O	DG1.15
Event_Type_Code	3	O	EVN.1.1
Procedure_Code	3	O	PR1.3.3
Procedure_Description	3	O	PR1.3.2
Clinical_Impression	3	O	OBX-2,3,5
Initial_Acuity_Code	3	O	OBX.5.1
Initial_Acuity_Description	3	O	OBX.5.1
Initial_Evaluation_Note	3	O	OBX-2,3,5
Medication_Code	3	O	OBX.5.1
Medication_Description	3	O	OBX.5.1
Medication_List	3	O	OBX.5.1
Problem_List_Code	3	O	OBX.5.1
Problem_List_Description	3	O	OBX.5.1
Travel_History	3	O	OBX-2,3,5
Initial_Temp	3	O	OBX-5
Initial_Temp_Units	3	O	OBX-6
Initial_Pulse_Oximetry	3	O	OBX-5
Initial_Pulse_Oximetry_Units	3	O	OBX-6
Diastolic_Blood_Pressure	3	O	OBX-5
Diastolic_Blood_Pressure_Units	3	O	OBX-6
Str_Diastolic_Blood_Pressure	3	O	OBX-5
Systolic_Diastolic_Blood_Pressure	3	O	OBX-5
Systolic_Diastolic_Blood_Pressure_Units	3	O	OBX-6
Systolic_Blood_Pressure	3	O	OBX-5
Systolic_Blood_Pressure_Units	3	O	OBX-6
Pregnancy_Status_Code	3	O	OBX-2,3,5
Pregnancy_Status_Description	3	O	OBX-2,3,5
Smoking_Status_Code	3	RE	OBX-2,3,5
Smoking_Status_Description	3	RE	OBX-2,3,5
Body_Mass_Index	3	O	OBX-5
Height	3	RE	OBX-5
Height_Units	3	RE	OBX-6
Weight	3	RE	OBX-5
Weight_Units	3	RE	OBX-6
Assigned_Patient_Location	3	O	PV1-3
Time_Zone	3	O	MSH-7.1

O = Optional field
RE = Required field that may remain Empty when the initial message is generated

APPENDIX F: Onboarding Series Job Aids

The job aids are designed to be used with this guide and the resources listed in Appendix C. Job aids are available for site and facility planning (pre-onboarding) and for NSSP's four-phase onboarding process (Engage, Connect, Validate, and Operate).

Job aids: New Facility Onboarding Series

1. New Facility: Onboarding Overview
2. New Facility: Site Support Model
3. New Facility: Planning (Pre-Onboarding)
4. New Facility: Engage
5. New Facility: Connect
6. New Facility: Validate
7. New Facility: Operate

NSSP Job Aid
New Facility Onboarding Series

ONBOARDING OVERVIEW

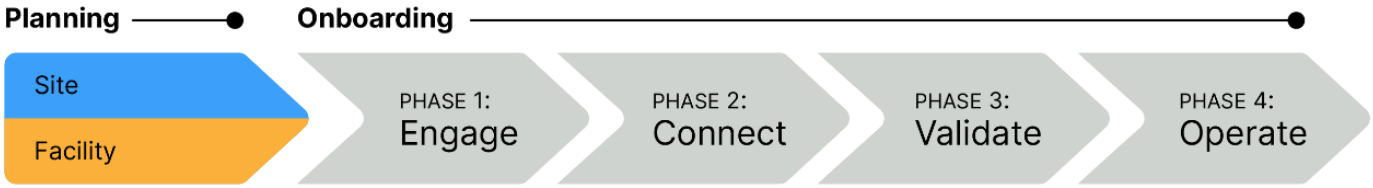
Onboarding is a collaborative process. The National Syndromic Surveillance Program (NSSP) and site teams will work with a facility, health department, electronic health records (EHR) vendor, or health information exchange (HIE) to transmit syndromic data from medical record systems to the NSSP BioSense Platform, comply with messaging guidance, and begin a live data feed.

NSSP's BioSense Platform is the core component of this integrated, nationwide system for public health syndromic surveillance. The BioSense Platform is a secure, cloud-based computing environment that enables public health agencies to conduct syndromic surveillance and analyze and share syndromic data on a common platform. Everyone has access to the same analytic and surveillance tools, follows the same standards for data exchange, and uses the same process to transmit syndromic data.

The "ONBOARDING OVERVIEW" job aid describes each phase in the process. At the conclusion of onboarding, site and facility staff will have worked with the NSSP onboarding team to successfully transmit compliant data.

Job aids are available for planning and onboarding. Use these job aids with each other and the *New Facility Onboarding Guide for the BioSense Platform*.

NEW FACILITY ONBOARDING OVERVIEW



NSSP uses a four-phase approach to bring facilities onboard the BioSense Platform:

- **Phase 1: Engage** begins when a site administrator creates an NSSP Service Desk ticket and requests onboarding for a facility. A site administrator can also initiate the process by adding a new facility to the Master Facility Table (MFT) and setting the facility status to Onboarding. During Engage, the site will:
  - Engage with facility and NSSP for onboarding,
  - Prepare the facility for onboarding by adding the facility details to the MFT,
  - Prepare HL7 messages to be sent to the onboarding environment for testing and validation, and
  - Prepare facility for connectivity.

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NEW FACILITY ONBOARDING OVERVIEW, cont.

- **Phase 2: Connect** begins once a new facility starts the process of connecting to a feed. As part of the Connect phase, the site will either connect the facility to an existing feed or request setup for a new feed via the NSSP Service Desk. In this scenario, the site will:
  - Choose between SFTP and PHINMS secure data exchange technologies (SFTP is preferred),
  - Successfully connect with BioSense Platform servers,
  - Upload a "hello world" test message, and
  - Submit live facility data to the onboarding feed.
- **Phase 3: Validate** measures whether the received messages comply with *PHIN Messaging Guide for Syndromic Surveillance* and BioSense Platform requirements. During the Validate phase, the site will:
  - Ensure timeliness of message delivery is consistently maintained, preferably with messages received within 24 to 48 hours of the visit;
  - Identify and resolve data issues to achieve requirements for validity, completeness;
  - Strive to improve data quality in all areas beyond minimum requirements;
  - Update facility status in MFT to Active and receive approval from NSSP; and
  - Submit live facility data to the production feed.
- **Phase 4: Operate** begins once a feed or facility has been approved to send live data into production. As part of the Operate phase, sites will:
  - Maintain data feeds;
  - As needed, collaborate to improve data quality;
  - Monitor data feeds for timeliness and consistency; and
  - Monitor feed, facility connections, and data quality by using NSSP tools such as:
    - Data Quality Dashboard
    - Data Quality on Demand
    - ESSENCE
    - RStudio
    - SAS Studio

RESOURCES

- *BioSense Platform User Manual for the Access & Management Center (AMC).* Use the AMC to manage user and data access, facilities, and connection to BioSense Platform tools.
  https://www.cdc.gov/nssp/biosense/docs/BioSense-AMC-User-Manual.pdf
- *BioSense Platform Quick Start Guide to Using RStudio Pro*. Use RStudio to perform heavy data query analysis and visual data analytics.
  https://www.cdc.gov/nssp/biosense/docs/biosense-platform-quick-start-guide-for-rstudio-pro.pdf
- *BioSense Platform Quick Start Guide to Using SAS Studio.* Use SAS to perform heavy data query analysis and data analytics.
  https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-SAS-Studio.pdf
- *BioSense Platform Quick Start Guide to Using ESSENCE*
  https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-ESSENCE.pdf

QUESTIONS?

- Email the NSSP Service Desk at http://support.syndromicsurveillance.org (account and log-in required).
- Include your question or brief description of assistance needed.

FOR MORE INFORMATION

Visit the NSSP Technical Resource Center, Onboarding, at https://www.cdc.gov/nssp/biosense/onboarding.html.

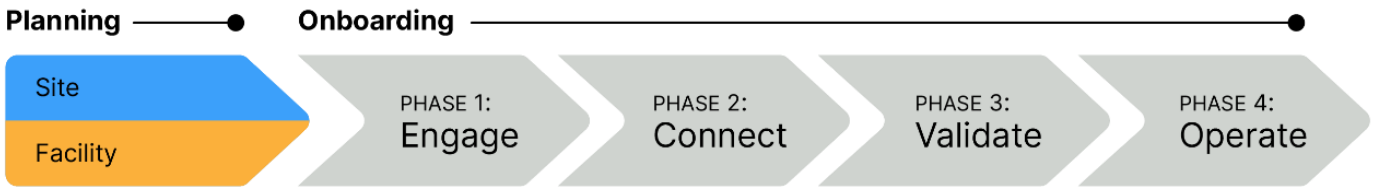
NSSP Job Aid
New Facility Onboarding Series

PLANNING: SITE SUPPORT MODELS

Onboarding is a collaborative process in which the NSSP and site teams work with a facility, health department, electronic health records (EHR) vendor, or health information exchange (HIE) to transmit syndromic data from medical record systems to the NSSP BioSense Platform.

The "PLANNING: SITE SUPPORT MODELS" Job Aid will help site administrators choose a level of support that meets their site needs. Onboarding is not a one-size-fits-all process. Your choice of Site Support Model determines how much technical support the NSSP team will provide when you onboard new facilities.

Select a Site Support Model *before* you start the onboarding process. There are three models from which to choose: full, blended, or self-support. If you're unsure, please contact the NSSP Service Desk (account required).



OVERVIEW OF SITE SUPPORT MODELS

1. Self-support Model

Sites complete the engage, connect, validate, and operate onboarding phases with **minimal** support.

Self-Support Model		
Phase	**Responsibility**	**Characteristics**
Engage	Site	Guides facilities through onboarding processes
Connect	Site/Onboarding	Guides facility with connectivity to the BioSense Platform
Validate	Site	Validates raw and processed data
Operate	Site/Onboarding	Monitors facility activity and timeliness; performs production support and implements improvement initiatives

SELF-SUPPORT

Preferred Model

Priority Registration and Onboarding

Most Control over Target Dates

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2. Blended-support Model

The onboarding team will provide **varying** levels of support across all phases. Priority for registration and onboarding will vary. If support is needed for onboarding, please contact the **NSSP Service Desk**.

Blended-Support Model		
Phase	**Responsibility**	**Characteristics**
Engage	Site/Onboarding	Guides facilities through onboarding processes
Connect	Site/Onboarding	Guides facility connectivity to the BioSense Platform
Validate	Site/Onboarding	Validates raw and processed data (optional); requests onboarding support if needed
Operate	Site/Onboarding	Monitors facility activity and timeliness; performs production support and implements improvement initiatives

3. Full-support Model

The onboarding team will provide **substantial assistance** to the site and associated facilities across all phases of onboarding. The NSSP onboarding team will schedule activities and involve the site administrator at each step, and in every activity. If support is needed for onboarding, please contact the **NSSP Service Desk**.

NSSP's expectation is that site administrators will gain proficiency and eventually move from the full-support to blended or self-support model. Sites that request full support will receive the lowest priority during registration and onboarding and will have the least control over their target onboarding dates.

Full-Support Model		
Phase	**Responsibility**	**Characteristics**
Engage	Onboarding	Guides sites through onboarding activities with facilities
Connect	Onboarding	Guides facility connectivity to the BioSense Platform
Validate	Onboarding	Assesses quality of the facility's raw and processed data and gives feedback to site
Operate	Onboarding	Monitors facility activity and timeliness; recommends improvements to site administrator

QUESTIONS?

- Email the NSSP Service Desk at http://support.syndromicsurveillance.org (account and log-in required).
- Include your question or brief description of assistance needed.

FOR MORE INFORMATION

Visit the NSSP website, Onboarding, at https://www.cdc.gov/nssp/biosense/onboarding.html.

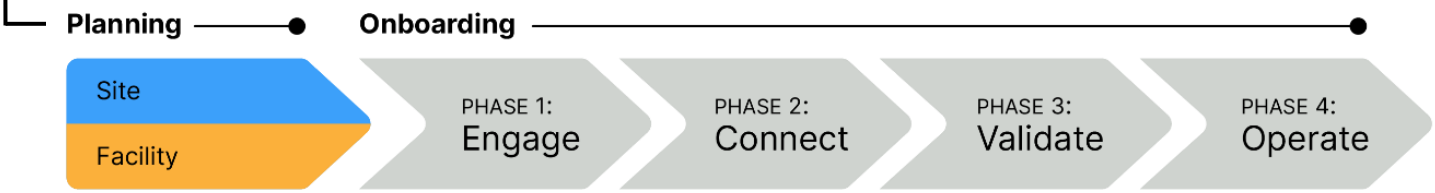
NSSP Job Aid
New Facility Onboarding Series

PLANNING (PRE-ONBOARDING)

The National Syndromic Surveillance Program (NSSP) uses a four-phase onboarding process. Onboarding is a collaborative process in which the NSSP and site teams work with a facility, health department, electronic health records (EHR) vendor, or health information exchange (HIE) to transmit syndromic data from medical record systems to the NSSP BioSense Platform.

The "PLANNING" job aid will take the site administrator step-by-step through the activities that must be completed by the site's team before submitting a Service Desk ticket to start the onboarding process.

Job aids are available for planning and onboarding. Use these job aids with each other and the *New Facility Onboarding Guide for the BioSense Platform*, hereafter referred to as *Onboarding Guide*.



STEPS FOR NEW FACILITY PLANNING (PRE-ONBOARDING)

STEP 1: Review **New Facility Planning: Site Support Models Job Aid** to confirm the level of support needed during the onboarding process.

STEP 2: If applicable, develop a Facility Recruitment Plan to prioritize the facilities you want to onboard. See *Onboarding Guide,* 3.6 Recruitment Plan.

STEP 3: Establish optional service-level agreements if needed: **Downstream Data Use Agreement** and **BioSense Onboarding Process Facility Acknowledgement** (*Onboarding Guide,* Appendix B, Facility BOPA).

STEP 4: Identify your team. NSSP recommends using guidance on definitions from *Onboarding Guide* to fill site roles and responsibilities (see 3.3 Site Roles and Responsibilities):

- Site administrator
- Feed Administrator to establish feed connectivity
- Technical Contact to develop HL7 messages

Some duties may overlap. Duties may also be performed by multiple organizations.

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STEPS TO PLANNING, cont.

STEP 5: Review training and resources:

- *New Facility Onboarding Guide for the BioSense Platform*
  https://www.cdc.gov/nssp/biosense/onboarding-guide/pdf/New-Facility-OG-508.pdf
- NSSP Technical Resource Center
  https://www.cdc.gov/nssp/biosense/publications.html
- NSSP Onboarding Website
  https://www.cdc.gov/nssp/biosense/onboarding.html
- Public Health Information Network (PHIN) Tools and Resources, PHIN Guides
  http://www.cdc.gov/phin/resources/PHINguides.html
- National Institute of Science and Technology (NIST) Data Validation Tools
  https://hl7v2-ss-r2-testing.nist.gov/ss-r2
- *BioSense Platform Quick Start Guide to Using the Master Facility Table*
  https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-MFT.pdf

STEP 6: Create and test the following HL7 message types:

A01—Admit/Visit
A03—Discharge/End Visit
A04—Registration
A08—Update Patient Information

- Message developers should always use the latest version of the *PHIN Messaging Guide for Syndromic Surveillance*, located on the CDC PHIN website:
  http://www.cdc.gov/phin/resources/PHINguides.html.
- Upload message (follow NSSP file-naming conventions).
- To correct errors, use the NIST website tool to test at least two samples of each message type:
  https://hl7v2-ss-r2-testing.nist.gov/ss-r2/.
- Ensure data elements map correctly; if needed, remove personally identifiable information (PII).

STEP 7: Resolve errors, if applicable, and resubmit HL7 messages to site.

STEP 8: If applicable, download the NIST HL7 Validation Report and confirm successful results.

STEP 9: Update the site Master Facility Table (MFT) to include the facility you want to onboard. Set the facility being onboarded to an onboarding status. To add a new facility, see the ***BioSense Platform Quick Start Guide to Using the Master Facility Table***.

QUESTIONS?

- Email the NSSP Service Desk at http://support.syndromicsurveillance.org (account and log-in required).
- Include your question or brief description of assistance needed.

FOR MORE INFORMATION

Visit the NSSP Technical Resource Center, Onboarding, at https://www.cdc.gov/nssp/resources.html.

NSSP Job Aid
New Facility Onboarding Series

PHASE 1: STEPS TO ENGAGE

Engage is the first of four onboarding phases for the National Syndromic Surveillance Program (NSSP). Onboarding is a collaborative process in which the NSSP and site teams work with a facility, health department, electronic health records (EHR) vendor, or health information exchange (HIE) to transmit syndromic data from medical record systems to the NSSP BioSense Platform.

The "STEPS TO ENGAGE" job aid will take the site administrator through the activities that must be completed by the site and feed administrator before connecting to the BioSense Platform. During the engage phase, sites will manage the list of onboarding facilities, placing highest priority on emergency departments and urgent care facilities. Sometimes the site administrator will oversee feed administrator tasks.

Job aids are available for planning and each phase of onboarding: Engage, Connect, Validate, and Operate. Use these job aids with each other and the *New Facility Onboarding Guide for the BioSense Platform*, hereafter referred to as *Onboarding Guide.*

PHASE 1—STEPS TO ENGAGE

SITE ADMINISTRATOR

STEP 1: Identify feed administrator (primary contact) for setting up facility connection.

STEP 2: Engage with facility for onboarding.

STEP 3: Establish service-level agreements with facilities, as needed. Examples include Facility BOPA and DUA. Site and facility BOPAs can be found in the *Onboarding Guide.*

STEP 4: Review deadlines associated with grant, cooperative agreement, or other funding mechanism (if applicable).

FEED ADMINISTRATOR

STEP 1: Work with the site administrator to prepare for facility onboarding.

STEP 2: Establish service-level agreements, as needed.

STEP 3: Submit at least two test messages of each HL7 message type to the NIST validation tool. At a minimum, validate the following message types and confirm successful results. *Continued…*

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STEPS TO ENGAGE, cont.

SITE ADMINISTRATOR

STEP 5: Review **Planning: Site Support Model (Job Aid)** to confirm support level needed during onboarding.

STEP 6: Update the site Master Facility Table (MFT). Set the status of the facility being onboarded to Onboarding. To add a new facility, see the *BioSense Platform Quick Start Guide to Using the Master Facility Table,* NSSP Technical Resource Center.

STEP 7: Work with feed administrator to review NIST HL7 validation results for each facility that will be onboarded.

STEP 8: To prepare for facility connection to the BioSense Platform, ask your feed administrator if HL7 data integration tools such as Rhapsody and Mirth are available. Both have SFTP capabilities and can be configured for data uploads.

Key

BOPA: BioSense Platform Onboarding Process Acknowledgment
DUA: Data Use Agreement
NIST: National Institute of Science and Technology

FEED ADMINISTRATOR

STEP 3: *continued.*

Message types:

- A01—Admit/Visit
- A03—Discharge/End Visit
- A04—Registration
- A08—Update Patient Information

Message formatting details can be found in the PHIN Messaging Guide 2.0.

STEP 4: Submit successful results to site administrator.

STEP 5: Review NIST HL7 validation results with site administrator.

RESOURCES

- *BioSense Platform Quick Start Guide to Using the Master Facility Table* https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-MFT.pdf
- *CDC PHIN Guide for Syndromic Surveillance* http://www.cdc.gov/phin/resources/PHINguides.html
- NIST Data Validation Tools https://hl7v2-ss-r2-testing.nist.gov/ss-r2
- Site Support Model (Job Aid) https://www.cdc.gov/nssp/biosense/onboarding-guide/pdf/New-Facility-SS-Model-508.pdf

QUESTIONS?

- Email the NSSP Service Desk at http://support.syndromicsurveillance.org (account and log-in required).
- Include your question or brief description of

FREQUENTLY ASKED QUESTIONS

Q: How long does it take for a new facility to be approved for production?

A: The speed of onboarding varies depending on facility readiness and issues identified during onboarding. For New-facility Onboarding, once a facility has established data flow to the staging environment, the site administrator may request a review of the data by submitting a ticket to the NSSP Service Desk or by changing the facility's MFT status to Active. If no data quality issues are identified, a facility can be approved within 1 to 2 business days. If data quality issues are identified or NSSP has other priorities, approval for production can take longer. See the *Onboarding Guide* or New Facility "STEPS TO VALIDATE" Job Aid for details on when to request a facility for production review.

Q: What is a Master Facility Table, or "MFT"?

A: An MFT contains all information (metadata) needed by the BioSense Platform to process data from a facility. Each MFT is site-specific. The MFT fields make sure data map correctly from facility to BioSense Platform and that data are easily identifiable when queried.

NSSP Job Aid
New Facility Onboarding Series

PHASE 2: STEPS TO CONNECT

Connect is the second of four onboarding phases for the National Syndromic Surveillance Program (NSSP). Onboarding is a collaborative process in which the NSSP and site teams work with a facility, health department, electronic health records (EHR) vendor, or health information exchange (HIE) to transmit syndromic data from medical record systems to the NSSP BioSense Platform.

The "CONNECT" job aid will guide the site administrator through activities once the facility has connected to the production environment and is ready for routine operation. Sometimes the site administrator will oversee feed administrator tasks.

Job aids are available for planning and each phase of onboarding: Engage, Connect, Validate, and Operate. These job aids are intended to be used with each other and the *New Facility Onboarding Guide for the BioSense Platform* to onboard facilities.

PHASE 2—STEPS TO CONNECT

SITE ADMINISTRATOR

STEP 1: Confirm desired upload technology if new feed connection needs to be established. These are acceptable methods to connect to NSSP:

- SFTP (preferred)
- PHINMS (only for public health agencies and facilities with PHINMS installations that currently send data to and receive data from CDC or other PHINMS partner)

When choosing between SFTP and PHINMS, consider the following:

- Is local support available?
- Is permission required to install SFTP or PHINMS?
- Will firewall rules be affected?
- SFTP: Outbound port 22
- PHINMS: Outbound port 443

If you are setting up a connection through an HIE or another non-standard method, the connection method could be different. Please work with your onboarding team for assistance.

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STEPS TO CONNECT, cont.

SITE ADMINISTRATOR

STEP 2: Work with feed administrator to set up the connection. For help, contact the **NSSP Service Desk**. Select one of the following methods:

- Set up facility connection to existing site SFTP feed using SSH key pair for feed authentication.
- Request PHINMS authentication via **NSSP Service Desk**.
- Request new-feed setup and SSH key pair for feed authentication via **NSSP Service Desk**.

STEP 3: Configure your SFTP or PHINMS feed.

- Commonly used third-party SFTP tools include:
  - WinSCP—http://winscp.net
  - FileZilla—https://filezilla-project.org/
  - Rhapsody and Mirth—Many HL7 data integration tools have SFTP capabilities and can be configured for SFTP uploads.

  Work with the NSSP onboarding team to set up feed account and establish connectivity to the staging environment.

- PHINMS
  - https://www.cdc.gov/phin/tools/phinms/index.html
  - To obtain current PHINMS software, email phintech@cdc.gov or call 1-800-532-9929.

  Work with the NSSP onboarding team to configure feed connection.

STEP 4: Through your established feed, connect to the onboarding environment.

Upload Path	/<site_name>/<feed_name>/incoming/
Server Name	stage-collect.syndromicsurveillance.org
IP Address	96.127.42.102
SFTP Port	**22**

STEP 5: If you are connecting through a new feed for the first time, once connected to onboarding environment, test connectivity by uploading a "hello world" test message to upload directory of your feed and confirm receipt.

RESOURCES

- Public Health Information Network (PHIN) Messaging System (overview, installation, FAQs) https://www.cdc.gov/phin/tools/phinms/index.html
- CDC *PHIN Guide for Syndromic Surveillance* http://www.cdc.gov/phin/resources/PHINguides.html
- Simplified description of WinSCP automated data uploads https://winscp.net/eng/docs/guide_automation

QUESTIONS?

- Email the NSSP Service Desk at http://support.syndromicsurveillance.org (account and log-in required).
- Include your question or brief description of assistance needed.

FOR MORE INFORMATION

Visit the NSSP Technical Resource Center, Onboarding, at https://www.cdc.gov/nssp/biosense/onboarding.html.

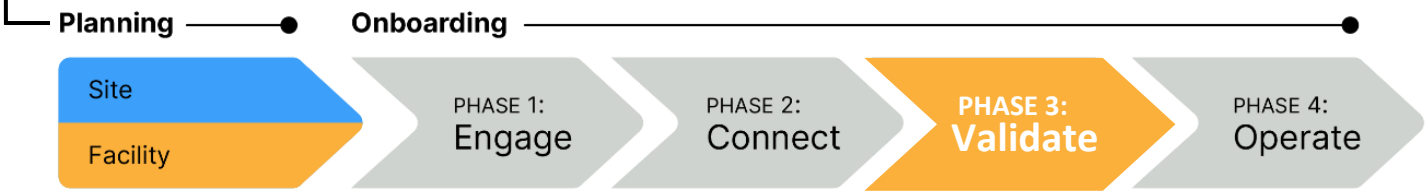
NSSP Job Aid
New Facility Onboarding Series

PHASE 3: STEPS TO VALIDATE

Validate is the third of four National Syndromic Surveillance Program (NSSP) onboarding phases. Onboarding is a collaborative process in which the NSSP and site teams work with a facility, health department, electronic health records (EHR) vendor, or health information exchange (HIE) to transmit syndromic data from medical record systems to the NSSP BioSense Platform.

The "VALIDATE" job aid will guide the site administrator through the steps that must be completed by the site team and feed administrator *before* connecting to the BioSense Platform production environment. (Sometimes the site administrator will oversee feed administrator tasks.) Confirm that the facility feed has successfully connected to the NSSP onboarding environment before starting the Validate phase.

Job aids are available for planning and each phase of onboarding: Engage, Connect, Validate, and Operate. Use these job aids with each other and the *New Facility Onboarding Guide for the BioSense Platform*, hereafter called *Onboarding Guide.*



PHASE 3—STEPS TO VALIDATE

SITE	FACILITY

STEP 1: Verify that file format and naming conventions are valid (see ***Onboarding Guide,* Section 4.4 "File Format and Naming Conventions")**. Each feed must submit a valid test message to the BioSense Platform. *Files uploaded to the BioSense Platform cannot be processed unless the file format and naming convention are valid.*

- Log in to your feed's account in Onboarding environment using WinSCP or FileZilla.
- Upload a valid message with the correct file name convention and batch and message structure.

STEP 2: For each feed, set up a schedule for batch transmissions:

- Transmit in 15- to 60-minute increments (preferred); or
- Transmit at least once every 24 hours.

STEP 3: Confirm that data being sent contain no more than the *minimum* allowable personally identifiable information (PII) and that data elements are mapped correctly.

STEP 4: Submit live data for validation.

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STEPS TO VALIDATE, cont.

SITE ADMINISTRATOR

STEP 5: Assess whether facility data meet **NSSP**-required minimums for validity and completeness.

- **Priority 1** data elements: 80% threshold
- **Priority 2** data elements: Within 12 months of completing onboarding to production

Until the SAS Staging Data-Quality-on-Demand Tool is released, please contact the NSSP Onboarding Team to obtain data quality reports.

STEP 6: Assess whether facility data meet **site**-specified minimums.

STEP 7: As needed, work with facility to resolve HL7 issues and resubmit corrected data.

STEP 8: To get help with data validation, submit a ticket to the **NSSP Service Desk**. *If no assistance is needed during the data validation process, go to STEP 9.*

STEP 9: **To activate a facility** when data meet NSSP- and site-required minimums, update Facility Status to "Active" in Master Facility Table (MFT). This prepares facility to receive data in the production environment.

NSSP onboarding team will run a final validation on data and either (1) approve the activation request or (2) decline the activation request and return rejected information to site for review.

STEP 10: Once facility is approved for activation in MFT, work with feed administrator and onboarding team to configure feed so it points to production environment. Proceed with live data flow.

FEED ADMINISTRATOR

STEP 5: Request data validation through the site administrator.

STEP 6: Correct reported HL7 issues. Resubmit corrected data for validation.

STEP 7: Once NSSP approves facility for production, work with site administrator to configure feed to point to production environment. Proceed with live data flow.

QUESTIONS?

- Email the NSSP Service Desk at http://support.syndromicsurveillance.org (account and log-in required).
- Include your question or brief description of assistance needed.

FOR MORE INFORMATION

Visit the NSSP Technical Resource Center, Onboarding, at https://www.cdc.gov/nssp/resources.html.

RESOURCES

- Priority Data Elements List: New Facility Onboarding Guide: Appendix E https://www.cdc.gov/nssp/biosense/onboarding-guide/pdf/New-Facility-OG-508.pdf
- ONC Health IT Certification for Syndromic Surveillance https://www.healthit.gov/policy-researchers-implementers/2015-edition-test-method
- NSSP BioSense Platform documentation: http://www.cdc.gov/nssp/biosense/onboarding.html
- CDC PHIN Vocabulary Access and Distribution System (VADS) https://phinvads.cdc.gov/vads/SearchVocab.action
- HL7 Messaging Standard Version 2.5.2 (HL7 Manual): http://www.HL7.org
- National Institute for Standards and Technology (NIST) HL7 V2.5.1 Syndromic Surveillance Validation Tools—Meaningful Use 2015 Edition: https://hl7v2-ss-r2-testing.nist.gov/ss-r2

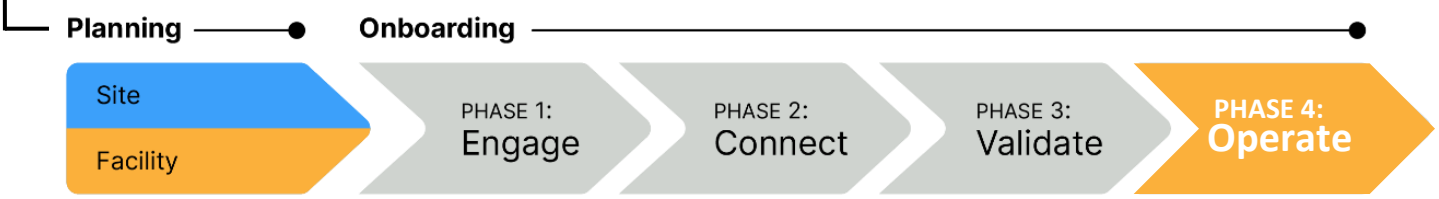
NSSP Job Aid
New Facility Onboarding Series

PHASE 4: STEPS TO OPERATE

Operate is the last onboarding phase for the National Syndromic Surveillance Program (NSSP). Onboarding is a collaborative process in which the NSSP and site teams work with a facility, health department, electronic health records (EHR) vendor, or health information exchange (HIE) to transmit syndromic data from medical record systems to the NSSP BioSense Platform.

The "OPERATE" job aid will take the site administrator through the activities that NSSP participants will do once the facility is connected to the production environment and is ready for routine operation. Sometimes the site administrator will oversee feed administrator tasks.

Job aids are available for planning and each phase of onboarding: Engage, Connect, Validate, and Operate. Use these job aids with each other and the *New Facility Onboarding Guide for the BioSense Platform*.



PHASE 4—STEPS TO OPERATE

SITE ADMINISTRATOR

STEP 1: Monitor feed, facility connections, and data quality by using NSSP tools such as:
- Data Quality Dashboard
- Data Quality on Demand
- ESSENCE
- RStudio
- SAS Studio

STEP 2: Monitor feed and facility alerts submitted by NSSP.

STEP 3: Review monthly reports on data timeliness, validity, and completeness. Set annual targets for improving data quality.

FEED ADMINISTRATOR

STEP 1: Monitor feed and facility connections.

STEP 2: Provide ongoing support for connection issues.

STEP 3: Respond to data quality investigations and data quality improvement.

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STEPS TO OPERATE, cont.

SITE ADMINISTRATOR

STEP 4: Engage with onboarding team and site administrator, as needed, regarding onboarding and data quality efforts.

STEP 5: Respond to NSSP investigations and requests to improve data quality.

RESOURCES

- *BioSense Platform User Manual for the Access & Management Center.* Use the Access and Management Center (AMC) to manage user access, data access, facilities, and connection to BioSense Platform tools. https://www.cdc.gov/nssp/biosense/docs/BioSense-AMC-User-Manual.pdf
- *BioSense Platform Quick Start Guide to Using RStudio Pro*. Use RStudio to perform heavy data query analysis and visual data analytics. https://www.cdc.gov/nssp/biosense/docs/biosense-platform-quick-start-guide-for-rstudio-pro.pdf
- *BioSense Platform Quick Start Guide to Using SAS Studio.* Use SAS to perform heavy data query analysis and data analytics. https://www.cdc.gov/nssp/biosense/docs/BioSense-User-Manual-SAS-Studio.pdf
- *BioSense Platform Quick Start Guide to Using ESSENCE.* https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-ESSENCE.pdf

QUESTIONS?

- Email the NSSP Service Desk at http://support.syndromicsurveillance.org (account and log-in required).
- Include your question or brief description of assistance needed.

FOR MORE INFORMATION

Visit the NSSP Technical Resource Center, Onboarding, at https://www.cdc.gov/nssp/resources.html.