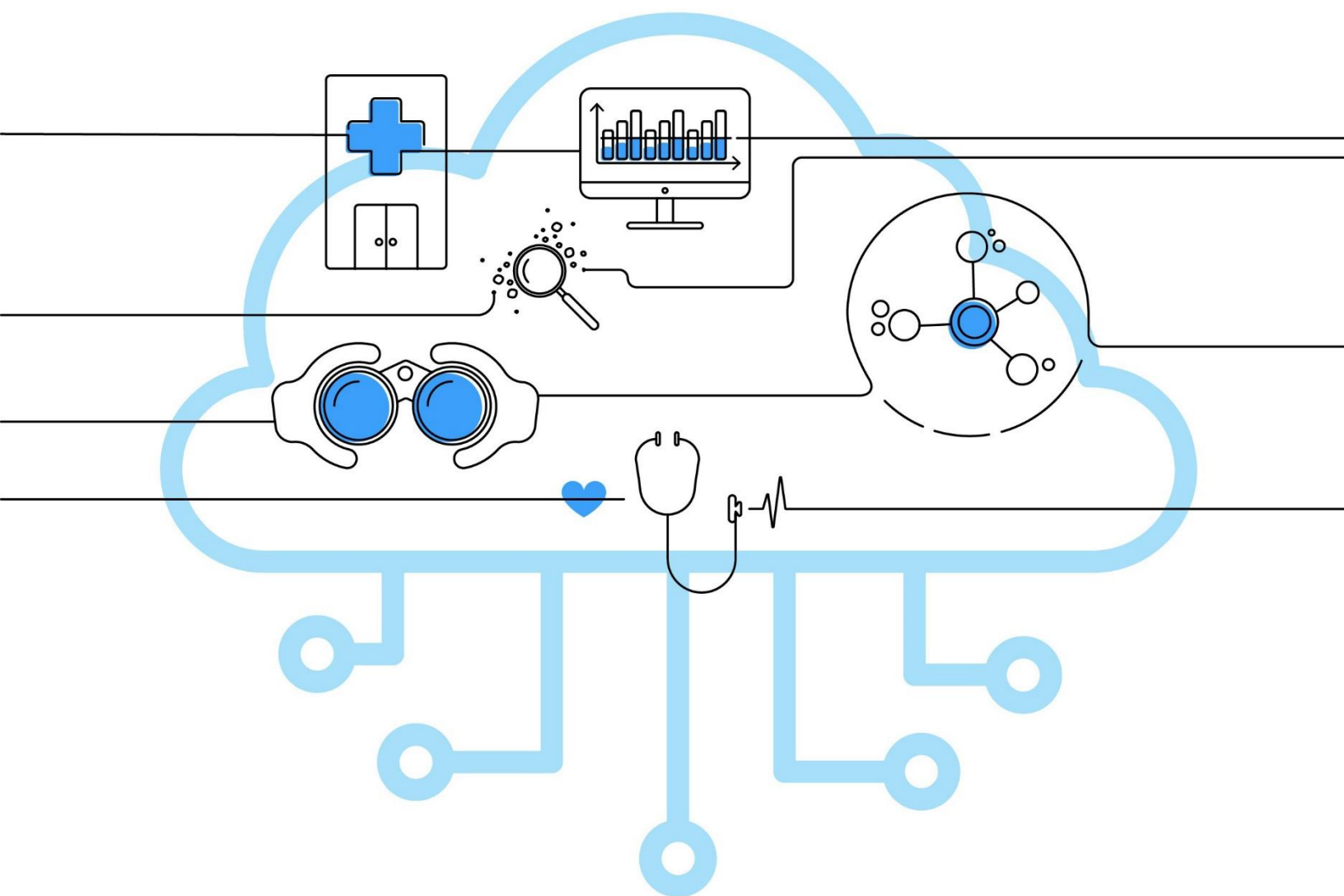


New Site Onboarding

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



This guide describes the tools, processes, and activities for onboarding new sites 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 analyzing 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 their site to the NSSP BioSense Platform. The guide contains useful information for facility managers, administrators, technical staff, vendors, health information exchanges, and individual hospitals or medical facilities that transmit syndromic data as part of CDC’s NSSP. 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 with 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 Site Planning (Chapter 3)—describes how to set up an *initial* data connection, presents options for technical support, describes how to map data correctly to facilities, and introduces the concept of recruitment to improve representativeness.

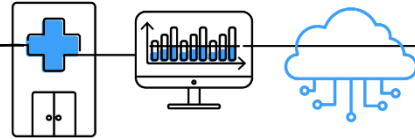
Onboarding (Chapter 4)—explains how to add facilities, introduces NSSP’s four-phase onboarding process (Engage, Connect, Operate, and Validate), expands on Validate Phase by delving into data requirements and compliance, and describes data elements.

Data Integration (Chapter 5)—describes how to build a valid data set for syndromic surveillance and lists required data elements. **Data integration is time-consuming and particularly unforgiving if done wrong, so 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.

New-site Onboarding is the process of making sure a new site, usually a local or state health department, can manage its administrative needs and those of associated facilities in order to connect and transmit syndromic data to the BioSense Platform. NSSP will conduct a “New Site Onboarding Window” about twice a year. During this window of time, NSSP will configure infrastructure to support new sites, orient site staff with onboarding processes and platform tools, and establish the first data connection. The goal is to make sure the designated site administrators gain a solid understanding of NSSP facility onboarding processes and best practices for data validation so that they can guide facility staff.

During the New-site Onboarding four-phase process (Figure 2), the NSSP team assists site administrators as they help an initial local health information exchange, facility, or vendor prepare for transmitting data to the BioSense Platform; review data for adherence validity, timeliness and completeness standards; and approve facilities for live operation. Routine facility onboarding occurs year-round.

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>

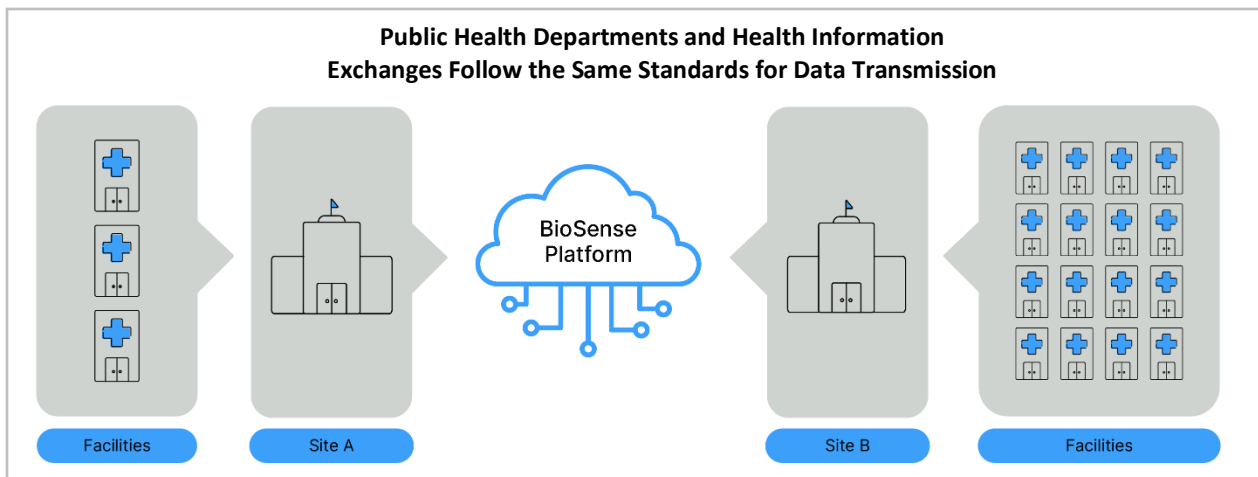


Figure 1. Onboarding Requirements are the Same for All NSSP Participants. Site A has fewer facilities (and data feeds) than Site B. Both sites, however, have identical processes for transmitting data to the BioSense Platform. Both sites follow the same standards for data exchange, meet the same criteria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

The difference between setting up a site and setting up a facility to transmit data to the BioSense Platform is the *preparation*. Site administrators have administrative and technical oversight, serve as the conduit between the NSSP team and site facilities, and look out for the interests of their facilities. Setting up a new site takes effort and time; however, once you and your team have the site in production, the process of bringing on a new facility usually becomes easier and requires less time.

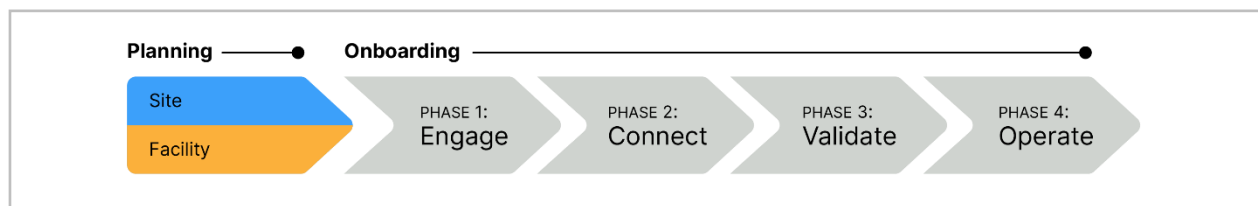


Figure 2. NSSP Planning and Onboarding Phases. Site planning and facility planning have different administrative objectives. However, NSSP's four-phase onboarding process for each is identical.

2.2 How to Participate in New Site Onboarding

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?*).

New sites that want to participate in New Site Onboarding may submit support requests to the NSSP Service Desk. The request will be logged, and an NSSP team member will provide dates for the next New Site Onboarding Window. In addition, sites may request support for new-site onboarding by emailing nssp@cdc.gov.

Once a site enters the Operate 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.

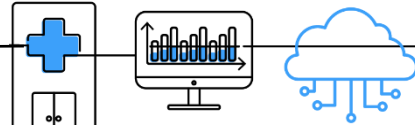
2.3 Onboarding Terminology

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; a protocol to allow remote login and enable network services to operate securely
UC	Urgent Care
VADS	Vocabulary Access and Distribution System

3 NEW SITE PLANNING



3.1 Overview

Onboarding requires commitment. To qualify for onboarding, sites must successfully complete planning prerequisites and be willing to dedicate resources to the *entire* onboarding process.

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 Site: Planning (Pre-onboarding)”

The “New Site: Planning (Pre-onboarding)” 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, the site administrator should be able to:

1. Request participation in the New Site Onboarding Window;
2. Review training and resources;
3. Prepare facilities for onboarding; and
4. Develop HL7 messages.

3.2 Prerequisites

Data Use Agreement

A Data Use Agreement (DUA) between the site and NSSP is **optional**. It outlines the practices used by NSSP to manage and protect the data and how NSSP will share data with CDC on behalf of the site for public health surveillance activities that identify, respond to, and monitor significant events of public health interest. The DUA is discussed during the Site Onboarding webinars and trainings. To obtain a DUA template, please contact the NSSP [Service Desk](#).

Some sites have elected to implement DUAs between the site and individual facilities to define data submission expectations. However, many public health jurisdictions simply rely on the Centers for Medicare and Medicaid Services Promoting Interoperability requirements and the specifications in the *Public Health Information Network (PHIN) Messaging Guide for Syndromic Surveillance* to set expectations

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 show of good-faith. This document states that personnel are familiar with the requirements of the latest *PHIN Messaging Guide for Syndromic Surveillance*, have read the *New Site 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](#)):

- Each administrator of a **new site** must submit a Site BOPA to the NSSP onboarding team.
- As 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 BOPA to the site administrator who, in turn, will submit the Facility BOPAs to the NSSP Service Desk.

30 Days of HL7 Messages for New Sites

New sites are required to develop and test at least 30 days of HL7 messages that comply with the *PHIN Messaging Guide for Syndromic Surveillance* before Webinar 1 is held (see Sample New Site Onboarding Window, below). Submission of these messages provides the site staff an opportunity to learn about and use the BioSense Platform tools. During the onboarding window, NSSP’s onboarding team will help site staff validate the data and provide feedback. See the [PHIN Messaging Guide for Syndromic Surveillance](#) (<http://www.cdc.gov/phin/resources/PHINguides.html>).

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 into the National Institute of Science and Technology (NIST) website tool to correct errors: https://hl7v2-ss-r2-testing.nist.gov/ss-r2/ .
Do not engage the BioSense Platform Service Desk or the site administrator until all HL7 message errors are resolved or you need an extension to resolve the issue.
Download the NIST HL7 Validation Report and submit it to the site administrator along with a copy of the test messages.

3.3 New Site Onboarding Window

During a New Site Onboarding Window, a series of webinars and presentations familiarize site staff with every aspect of onboarding. The NSSP team will provide guidance for establishing the first data connection and for processing facility data. After the site has submitted data, the NSSP team will orient the site administrator and staff with the tools for successfully onboarding new facilities.

NSSP schedules one to two New Site Onboarding Windows per year. Each takes about 8 to 12 weeks to complete. Sites are expected to commit the necessary resources for the *entire* onboarding window.

NSSP invites sites administrators to apply for onboarding by emailing nssp@cdc.gov. An NSSP team member will respond and set up a conference call to discuss the application requirements.

A typical New Site Onboarding Window is shown below (Table 3). Sites that cannot meet the weekly requirements will be withdrawn and asked to participate in the next available window.

Table 3. Sample New Site Onboarding Window	
Week No.	Activities
1	Onboarding Kick-off Presentation Sites begin developing 30 days of HL7 data files before Webinar 1 (scheduled for Week 5 of the onboarding window). See Chapter 6, Data Integration , for minimum required data elements.
2	Sites evaluate capacity to meet requirements and participate in webinars and check-in calls.
3	NSSP hosts check-in call, which includes time for questions and answers (Q&A).
4	Sites finalize HL7 development and internal preparations.
5	Webinar 1: Connectivity, AMC, Service Desk Sites connect and upload 30 days of HL7 data to NSSP.
6	Sites submit draft Master Facility Table (MFT). NSSP hosts check-in call with Q&A.
7	Webinar 2: Data Flow, Data Validation Reports Sites submit final MFT.
8	NSSP and Site Administrator reviews NSSP Data Validation Reports. NSSP hosts check-in call with Q&A.
9	Webinar 3: ESSENCE
10	NSSP hosts check-in call with Q&A.
11	Production Sign Off
12	NSSP works with site administrator to migrate approved facilities into production.

3.4 Site Roles and Responsibilities

To avoid confusion and duplication of effort during onboarding, participants 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 4), although one person may fill multiple roles. As needed, site staff may identify additional responsibilities for onboarding. (For more insight into people’s roles and interactions, see Section 3.6, [Master Facility Table](#).)

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 4. 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.

3.5 Support Models

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 5). Sites that select self support get priority during registration and onboarding. This model provides the most control over target onboarding dates.

Table 5. 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

Blended-Support Model

Sites that request blended support (Table 6) receive varying priority during onboarding based on the expected level of NSSP support.

Table 6. 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; requests onboarding support if needed
Operate	Site/Onboarding	Monitors facility activity and timeliness; supports production and continuous improvement initiatives

Full-Support Model

If a site selects the full-support model (Table 7), the NSSP onboarding team will schedule activities. The site administrator should be involved 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 7. Full Support Model		
Phase	Responsibility	Characteristics
Engage	Onboarding	Guides sites through onboarding activities with facilities
Connect	Onboarding	Guides facility in connecting to the BioSense Platform
Validate	Onboarding	Reviews raw and processed data; provides feedback to the site on data quality for facilities
Operate	Onboarding	Monitors facility activity and timeliness; informs site administrator of improvements that could be made

3.6 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 details on MFT use and functionality.

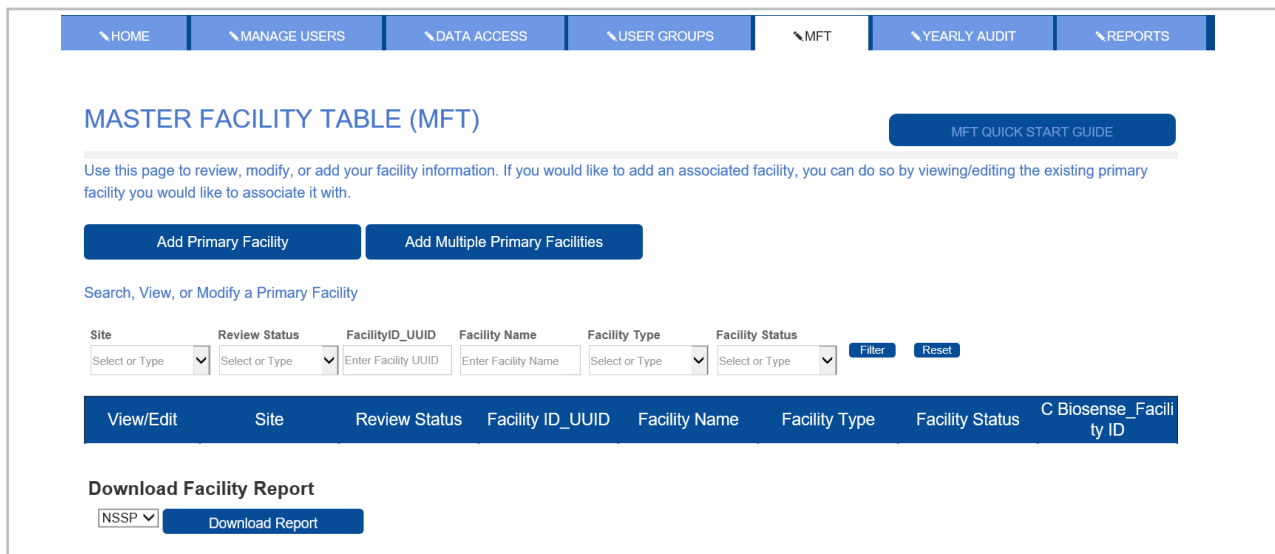


Figure 3. Master Facility Table (MFT) Tab

3.7 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. Although the recruitment plan will not necessarily be used during New-site Onboarding, it's a good practice to have a long-term plan for progressively adding facilities that broaden coverage.

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?

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 emergency departments 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.

3.8 Data Sharing and Intra-site Access

Site administrators should try to anticipate what data they might be asked to share with other sites. They should also examine the circumstances in which data provided by other sites might prove 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 refer to the [NSSP Service Desk](#) for assistance.

QUICK TIPS

The NSSP onboarding team encourages site administrators to initially onboard only three to five facilities as they gain proficiency in using tools and applying new processes. A minimum of one facility is required for onboarding.

Immediately after the Site Onboarding Window, site administrators may onboard additional facilities at their own pace.

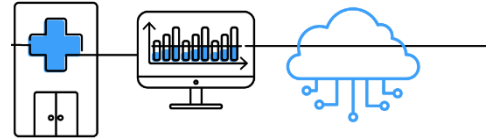
QUICK TIPS



The BioSense Platform accepts facility messages in the following order:

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

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](#)

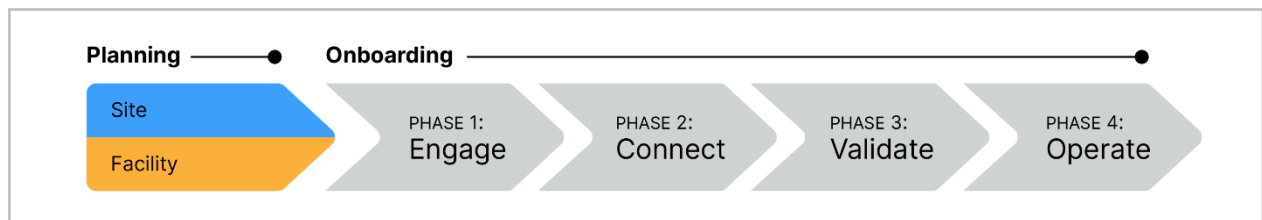


Figure 4. NSSP Planning and Onboarding Phases

4.2 Engage

The Engage Phase (Figure 5) begins when a site administrator first contacts the facility and NSSP to onboard a facility and kick off the New-site Onboarding Window.

► Use with Job Aid “New Site: Engage”

The “New Site: 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 NSSP to confirm upcoming onboarding windows;
2. Establish service-level agreements if applicable;
3. Assess whether test message results indicate onboarding readiness;
4. Attend a kick-off meeting to discuss onboarding activities and schedule; and
5. Work with participating facilities to access and update the site Master Facility Table (MFT).

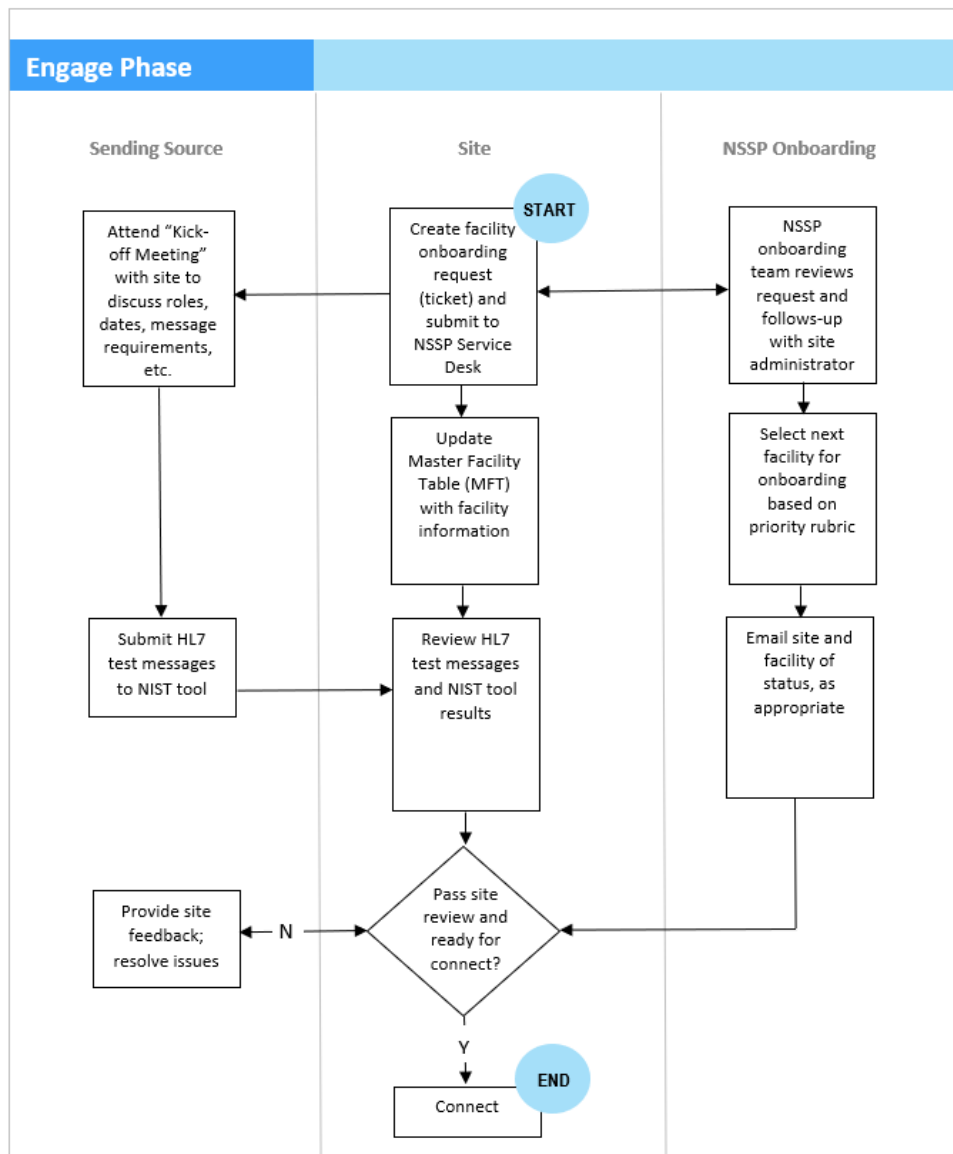


Figure 5. Engage Phase

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 Site: Connect”

The “New Site: Connect” job aid provides a step-by-step explanation of 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 to set up feed connection;
- Establish a successful connection with BioSense Platform servers; and
- Upload a “hello world” test message to BioSense Platform servers.

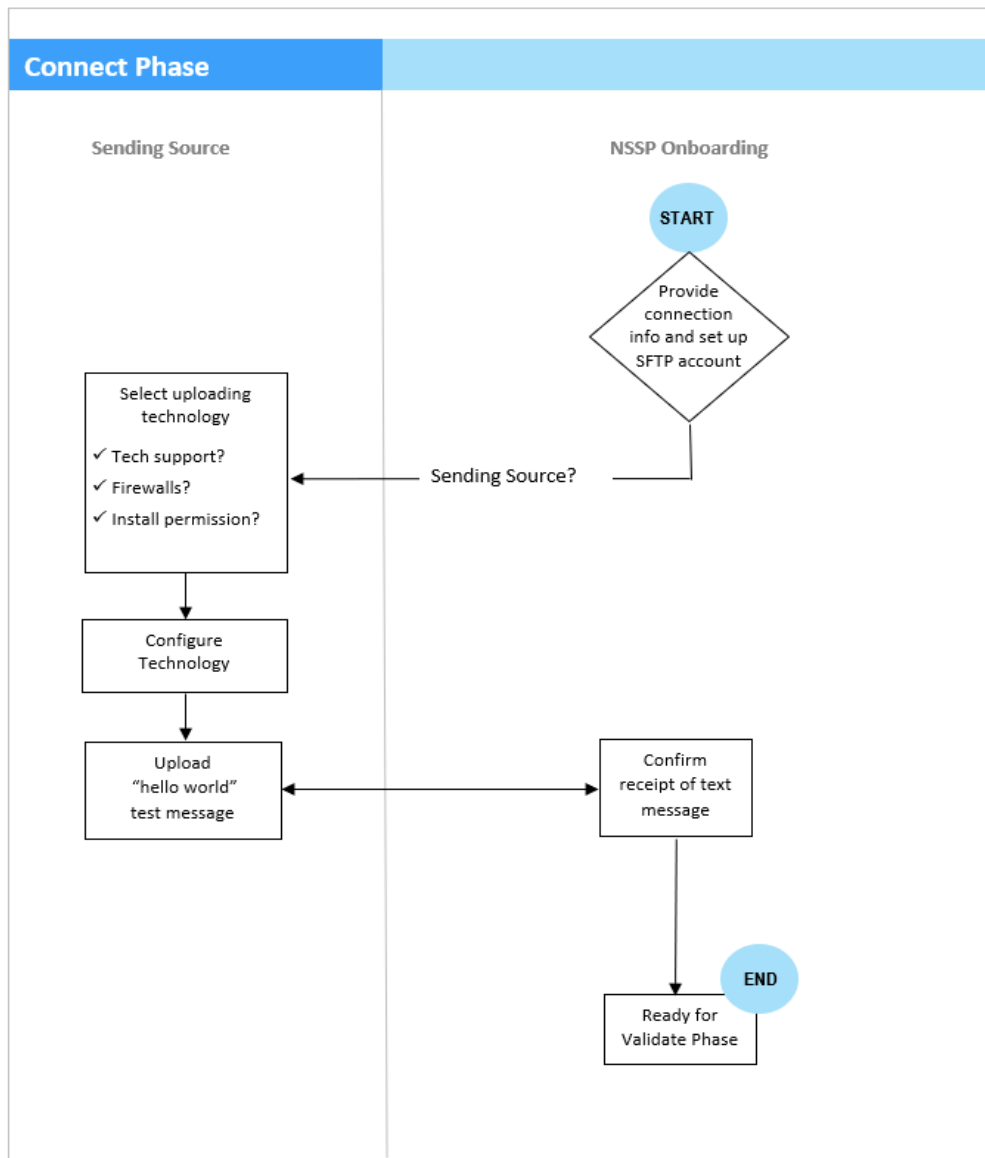


Figure 6. Connect Phase

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 Site: Validate”

The “New Site: 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.

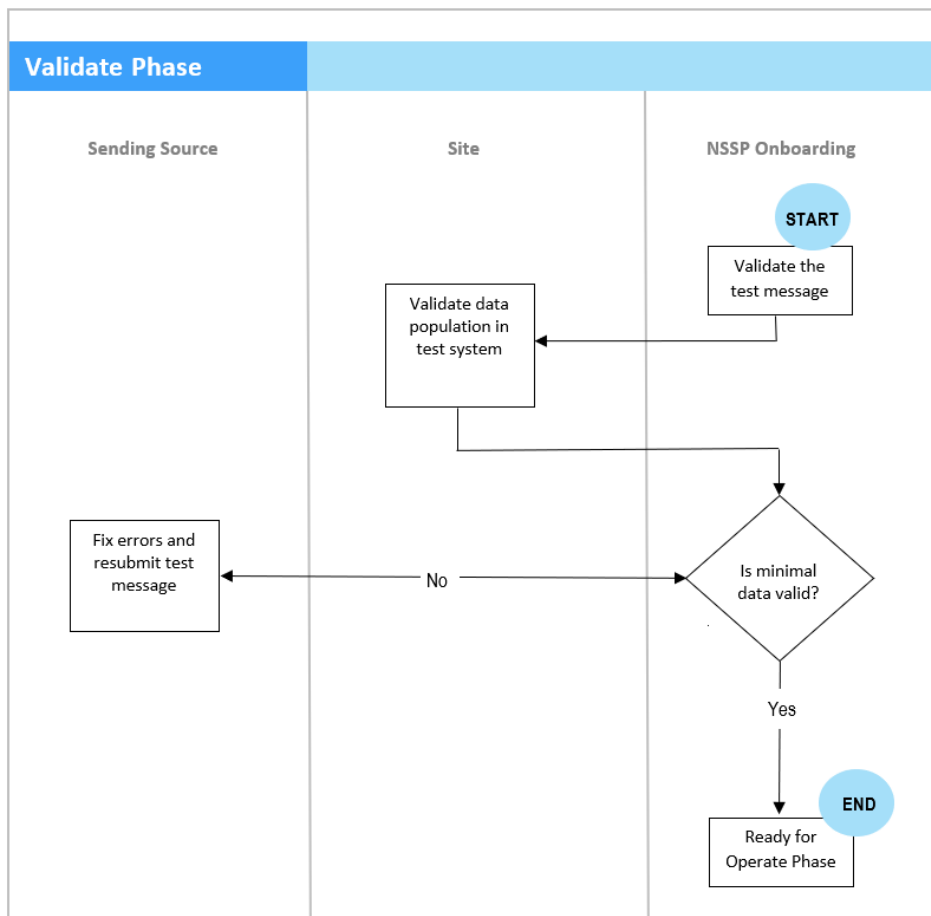


Figure 7. Validate Phase

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 8).

File Name Convention

{Site_Name}_{Provider}_{Date}_{Time}_{FileName}.{Suffix}

Example: GA_MetroClinic_20190101_1500_001.hl7

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

Table 8. 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)
FileName	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 Restrictions

- 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 a 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 into 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, preferably during the New Site Onboarding kick-off meeting. 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 this 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.

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.

QUICK TIPS

NSSP Data Completeness Reports can 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, not as a replacement for proper testing with the NIST tools.

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 ONCs minimum certification requirements. Instead, NSSP allows a site to bring the facility onboard once it meets this *minimum* set of requirements (Table 9) 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 9. 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 10). 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.



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 10. 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

Jurisdictional Data Quality [Dashboard v2](#) ([linked here](#)) application to access Data Quality on Demand to create custom reports.

As data are processed in the onboarding environment, site administrators may use the Jurisdictional Data Quality Dashboard v2 application to access Data Quality on Demand Reports to create custom reports. Site administrators should configure these reports 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. If needed, users should reach out to their site liaisons or the Nssp onboarding team for additional assistance.

QUICK TIPS

Each morning, Nssp provides site administrators and designees with a **Daily Summary**. It gives a snapshot of processing metrics and flags concerns that could affect data quality.

QUICK TIPS

Refer to the [Nssp Data Dictionary](#) for processing and mapping details.

1

How to Use the NSSP Data Dictionary

NSSP provides a Data Dictionary to help site administrator work with their team to resolve data mapping issues (see [NSSP Technical Resource Center](#)). For example, if the Chief Complaint Text is Failing, but the C_Chief_Complaint is Passing:

Go to the [NSSP Technical Resource Center](#) and locate the **Data Dictionary**.

1. Open the Data Dictionary Excel document, and select the **ArchiveProcessed** tab (Figure 8).



Figure 8. Data Dictionary Archive Processed Tab

2. Locate Chief_Complaint in the spreadsheet (Figure 9). Note the following:

PHIN Guide							Ingestion Process - HL7 Archive		
Element Name	Description	Core Element?	HL7 Segment(s)	Requirements	Cardinal	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..1]	CWE		Chief_Complaint_Code	OBX-5.1, OBX-5.4 segments where: * OBX-3 Observation Identifier is 8661-1 and/or 11232-0 * OBX-2 = "CWE" or "CW"
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..1]	TX		Chief_Complaint_Text	OBX-5 segments where: * OBX-3 Observation Identifier is 8661-1 and/or 11232-0 * 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-5.3, OBX-5.2, OBX-5.5)
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..1]	CWE		Chief_Complaint_Segment	Entire OBX segment where: * OBX-3 Observation Identifier is 8661-1 and/or 11232-0
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..1]	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;...
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	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://phin.vads.cdc.gov/vads/ViewValueSet.action?aid=2_16_840_1.114222.4.11.303	C_Chief_Complaint	Hierarchically defined (select first non-null): * Chief_Complaint_Text * Admit_Reason_Description
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 9. Data Dictionary Locate Chief Complaint

- **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 comply with the *PHIN Messaging Guide* and ONC Certification, the BioSense Platform requires the facility to map chief complaints accurately to OBX segment by correct code and description.

QUICK TIPS

You can filter columns by Element Name or HL7 Archive Processed Name.

4.5 Operate

The Operate Phase (Figure 10) 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 Site: Operate”

The “New Site: 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; and
3. As needed, collaborate to improve data quality.

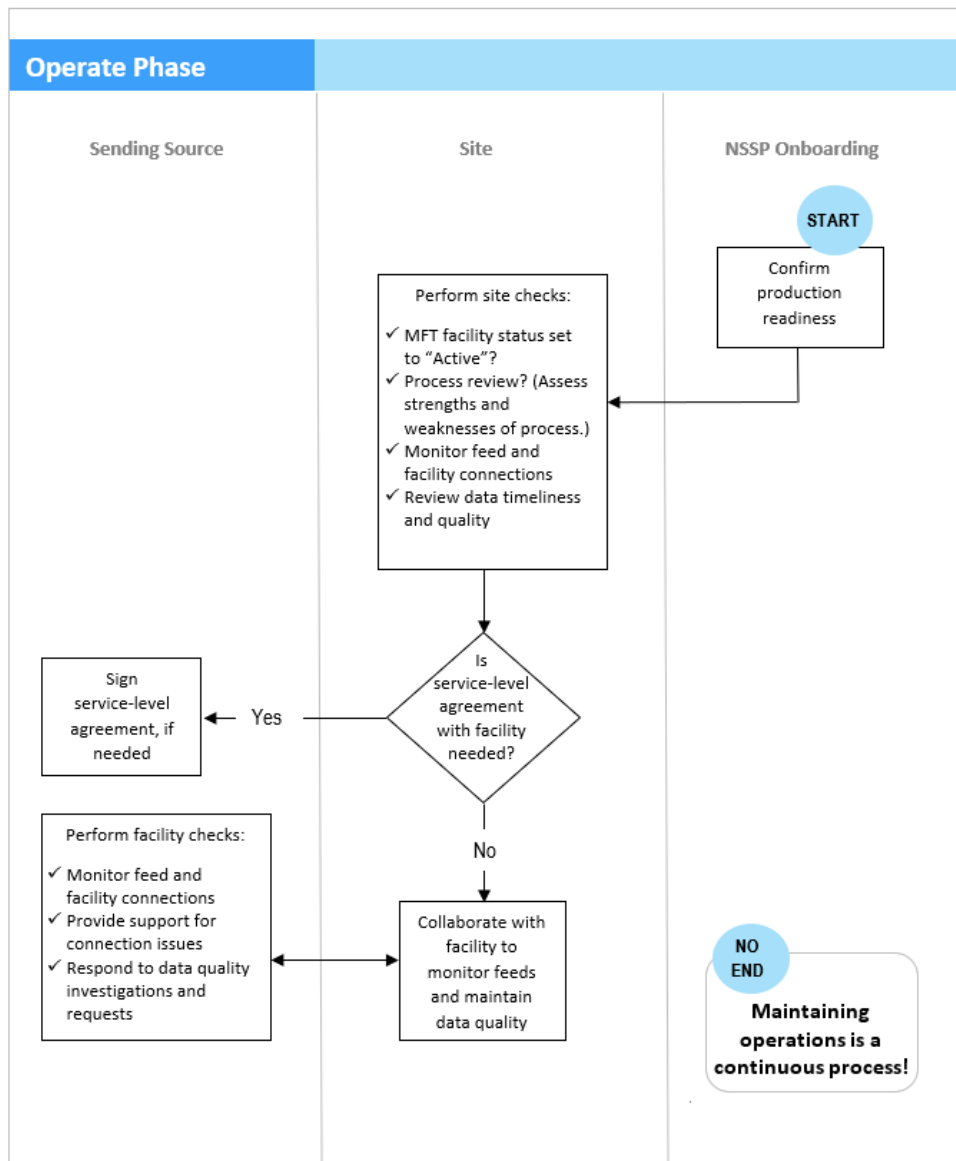
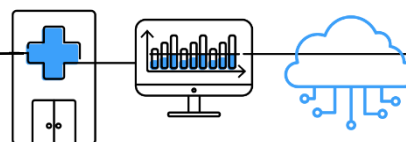


Figure 10. Operate Phase

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](#), please avoid—or *reduce to the full extent possible*—sending personally identifiable information (PII) to the BioSense Platform. Table 11 lists the data elements to **exclude** from HL7 messages that will be sent to the BioSense Platform.

Table 11. 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” indicates a field that is required but may remain empty when the initial message is generated.

The required data elements are shown below (Table 12):

Table 12. 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 12. 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 12. 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 12. 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 message PID-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–	PV1-19.4	Visit_ID_Assigning_Authority	Direct input from HL7 message PV1-19.4	R	R

Table 12. 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
	Assigning Authority					
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

Table 12. 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
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
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	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

Table 12. 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
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
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

Table 12. 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
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
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 13).

Message Parameter	Recommendation	Notes
Message frequency	15–60 minutes	<ul style="list-style-type: none">▪ 15–60 minutes is recommended▪ Other frequencies are accepted▪ Batched files must be sent at least every 6 hours
Message size	> 0 bytes	<ul style="list-style-type: none">▪ Cannot be empty
Message batching	Required	<ul style="list-style-type: none">▪ 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:

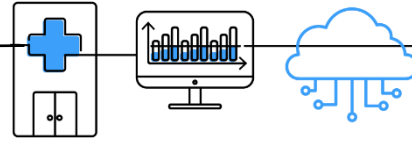
1. Emergency Department (ED)
2. Urgent Care (UC)
3. Inpatient (I)
4. Ambulatory Care (AC) (requires NSSP and site approval)

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 between 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 ambulatory care, extreme caution should be taken. It is wise to start with a limited number of 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, these 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, BioSense Platform users 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. The guide can be found 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*. BioSense Platform users should check with their local site administrator to determine if receiving the medical record number in this field is necessary.

Note: The Patient Identification (PID) sent to the receiver *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 obtained. 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. Or, if that is not possible or 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. For New Site Onboarding, you would conform with the New Site Onboarding timeline and deadlines; however, information for onboarding new facilities once your site is operational is stated below.

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 updated 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—but being precise by sending *all available data* is desirable. However, 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 (\geq) 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/NationalProviderStand/>.

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

The *PHIN Messaging Guide for Syndromic Surveillance* recommends consistency across promoting interoperability and 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 not 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 frequent batch data transmission, is preferred. If batch transmission mode is used, 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 for 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 *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 process and will continuously route to the exceptions table until the issue is resolved. (Tip: This is a good reason to check Data Quality reports for staging exceptions data or the Data Quality Dashboard and RStudio for production exceptions data.)

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

Several facilities sending data under a single FacilityID may be added to the MFT as associated facilities of a primary facility. 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 a unique FacilityID. 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 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 the facilities separately, enter the facilities into the MFT as *primary facilities* so that each is assigned 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*.

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 in the future. If you want to view each facility separately, add each to the MFT as a *primary facility* so that it is assigned a unique FacilityID. If you prefer to always 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 org. Please consult the *BioSense Platform [Quick Start Guide to Using the Master Facility Table \(MFT\)](#)* for more information on *primary facilities* and *associated facilities*.

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 have a lot of facilities that I want to add to the MFT all 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.” Please select this option and follow the screen 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.

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:

- Facility Status changed 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'm 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. 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 <i>PHIN Messaging Guide for Syndromic Surveillance</i> , located at http://www.cdc.gov/phinf/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 *contingent* (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 <i>PHIN Messaging Guide for Syndromic Surveillance</i> , 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 members of this facility team.
	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): <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-platform-quick-start-guide-for-amc.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>
<https://www.cdc.gov/nssp/php/onboarding-toolkits/data-quality.html>
- 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-508.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>

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/nsspccop>
- **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://www.cste.org/page/NSSP>.

Training

- ESSENCE Online Training (works only in Internet Explorer)
<https://www.surveillancerepository.org/essence-online-training-course>
- ESSENCE Training and Webinars
[https://www.surveillancerepository.org/search/webinars?f\[0\]=field_primary_topic_areas%3A11](https://www.surveillancerepository.org/search/webinars?f[0]=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
ESSENCE Free-Text Negation
- RStudio Training Webinars
https://www.surveillancerepository.org/search/webinars?f%5b0%5d=field_primary_topic_areas%3A1463

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.

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/>.

What is FIPS PUB 199?

The Federal Information Security Management 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.

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 14) 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 14. 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 at least 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 15) 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 15. 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 16) are mostly optional (“O”)—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 16. 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

Table 16. Priority 3 Data Elements			
Processed Column	Priority	Required	HL7
Race_Description	3	O	PID-10.2
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 Site Onboarding Series

1. New Site: [Planning \(Pre-Onboarding\)](#)
2. New Site: [Engage](#)
3. New Site: [Connect](#)
4. New Site: [Validate](#)
5. New Site: [Operate](#)

NSSP Job Aid New Site Onboarding Series



NEW SITE PLANNING (PRE-ONBOARDING)

Onboarding is a collaborative process in which the National Syndromic Surveillance Program (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 “NEW SITE PLANNING” job aid will guide the site administrator through the activities that must be completed before submitting a Service Desk ticket to start the onboarding process. This job aid will prove useful for a new site scheduled for or being considered for onboarding.

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

Planning

Onboarding



STEPS FOR NEW SITE PLANNING (PRE-ONBOARDING)

SITE ADMINISTRATOR

STEP 1: Request new site onboarding participation at nssp@cdc.gov. Wait for a reply from the NSSP onboarding team. NSSP will:

- Assess request for prioritization,
- Send out official New Site Onboarding Invitation to interested sites,
- Propose an onboarding window with scheduled milestones, and
- Schedule kick-off call to initiate the onboarding window.

STEP 2: Identify your team (*Onboarding Guide*, Section 3.4, Site Roles and Responsibilities):

- Onboarding coordinator
- Site administrator(s)
- Feed administrator to establish feed connectivity
- Technical contact to develop HL7 messages
- Epidemiologist

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



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STEPS TO PLANNING, cont.

STEP 3: Review training and resources:

- *Onboarding Guide* (**INSERT LINK**)
- NSSP Technical Resource Center
<https://www.cdc.gov/nssp/biosense/publications.html>
- Public Health Information Network (PHIN) Tools and Resources, PHIN Guides
<http://www.cdc.gov/phn/resources/PHINguides.html>
- National Institute of Science and Technology (NIST) Data Validation Tools
<https://hl7v2-ss-r2-testing.nist.gov/ss-r2>

STEP 4: Check with your organization to find out if HL7 data integration tools (e.g., Rhapsody and Mirth) are available. Both have SFTP capabilities and can be configured for data uploads.

STEP 5: Develop 30+ days of HL7 files (*Onboarding Guide*, 3.2 Prerequisites) and confirm HL7 messages meet *PHIN Messaging Guide for Syndromic Surveillance* and NIST standards.

STEP 6: Identify and engage with high-priority facilities to onboard.

STEP 7: Establish service-level agreements as needed and submit to NSSP Service Desk:

- Data Use Agreement (DUA) with NSSP (contact Service Desk for template); **Optional**
- BioSense Onboarding Process Site Acknowledgement (*Onboarding Guide*, Appendix A, Site BOPA)
- Downstream DUA (*Onboarding Guide*, 3.2 Prerequisites); **Optional**
- Facility BOPA (*Onboarding Guide*, Appendix B)

STEP 8: Plan for data sharing and intra-site access (*Onboarding Guide*, 3.8 Data Sharing and Intra-Site Access).

- What adjacent or other sites are your site facilities likely to share data with (intra-site access)?
- What data will be shared? Who, specifically, will share data?
- Data sharing through Chief Complaint Query Validation tool (CCQV).

RESOURCES

- NIST Data Validation Tools
<https://hl7v2-ss-r2-testing.nist.gov/ss-r2>
- *BioSense Platform User Manual for the Access & Management Center (AMC)*
<https://www.cdc.gov/nssp/biosense/docs/BioSense-AMC-User-Manual.pdf>
- *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>

FREQUENTLY ASKED QUESTION

Q: How long does the new site onboarding process take?

A: A new site onboarding window typically lasts 10 to 12 weeks depending on how many sites participate. Length of site preparation before each new site onboarding window will vary.

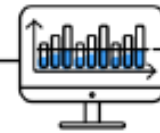
QUESTIONS?

- 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 Site Onboarding Series

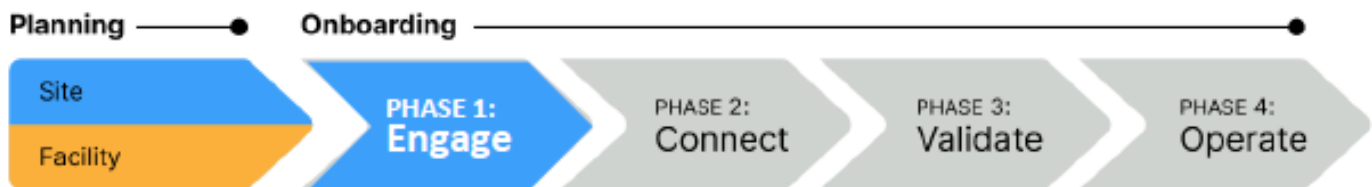


PHASE 1: STEPS TO ENGAGE

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 guide the site administrator and feed administrator through activities that must be completed 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 the feed administrator’s tasks.

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



PHASE 1—NEW SITE STEPS TO ENGAGE

SITE ADMINISTRATOR

- STEP 1: Confirm upcoming onboarding windows. Email nssp@cdc.gov, or create an NSSP Service Desk ticket requesting to onboard a site. NSSP will notify you of upcoming new site onboarding windows.
- STEP 2: Identify feed administrator (primary contact) for setting up facility connection.
- STEP 3: Engage with facilities you want to onboard during the new site onboarding window, prioritizing emergency department (ED) facilities.
- STEP 4: Review deadlines associated with grant, cooperative agreement, or other funding mechanism (if applicable).

FEED ADMINISTRATOR

- STEP 1: Coordinate with the site administrator to prepare facility for onboarding and develop HL7 messages per syndromic surveillance messaging guidelines [New Site OG pg X].
- STEP 2: Set up service-level agreements, as needed.



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STEPS TO ENGAGE, cont.

SITE ADMINISTRATOR

- STEP 5: Review NIST HL7 validation results with feed administrators for each facility that will be onboarded [[New Site OB pg X](#)].
- STEP 6: Attend New-site Onboarding Kickoff Webinar. Afterwards, NSSP will provide the new-site onboarding schedule containing deadlines and requirements.
- STEP 7: Establish service-level agreements with facilities as needed. [NSSP service-level agreements may be found in Appendix of the New Site Onboarding Guide.](#) Examples include:
- Facility BOPA
 - CDC DUA
- STEP 8: Request an Access & Management Center (AMC) account by emailing the NSSP Service Desk <http://support.syndromicsurveillance.org>.
- STEP 9: Update the site Master Facility Table (MFT) to include facilities you want to onboard. Set facility status to Onboarding. To add a new facility, see the *BioSense Platform Quick Start Guide to Using the Master Facility Table*.

Key

BOPA:	BioSense Platform Onboarding Process Acknowledgment
DUA:	Data Use Agreement
ONC:	Office of the National Coordinator for Health Information Technology
NIST:	National Institute of Science and Technology
PHIN:	Public Health Information Network

RESOURCES

- NIST Data Validation Tools
<https://hl7v2-ss-r2-testing.nist.gov/ss-r2>
- *BioSense Platform User Manual for the Access & Management Center (AMC)*
<https://www.cdc.gov/nssp/technical-pubs-and-standards.html#Onboarding>
- *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>

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>.

FEED ADMINISTRATOR

STEP 3: As an ONC requirement, submit at least two test messages of each HL7 message type to the NIST validation tool. Validate the following message types and confirm successful results:

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

For message formatting details, see PHIN Messaging Guide 2.0.

STEP 4: Submit successful results to site administrator.

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

FREQUENTLY ASKED QUESTIONS

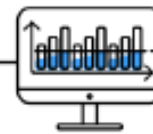
Q: How long does new site onboarding take?

A: The speed of onboarding varies depending on site readiness and whether issues were identified during the onboarding process. For new site onboarding, the NSSP onboarding team aims for 6 to 8 weeks to onboard a facility after the data flow is established in the staging environment. The entire process can take 10 to 12 weeks.

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

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

NSSP Job Aid New Site Onboarding Series

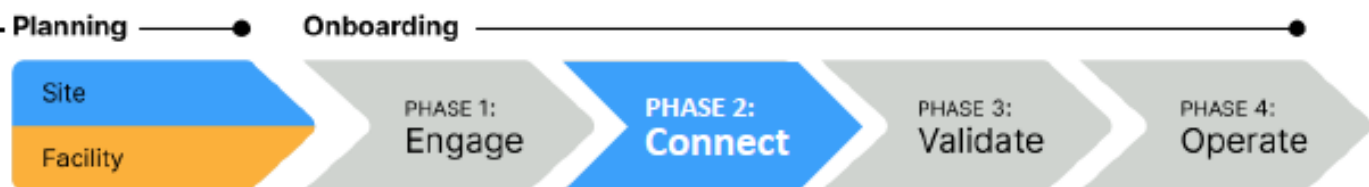


PHASE 2: STEPS TO CONNECT

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 “STEPS TO CONNECT” job aid will guide the site administrator through activities that must be completed before data can be validated. Use this job aid to configure facility feeds for the first time. Make sure local support is available to establish feed connection.

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



PHASE 2: NEW SITE STEPS TO CONNECT SITE ADMINISTRATOR

STEP 1: Check with your organization to find out if HL7 data integration tools (e.g., Rhapsody and Mirth) are available. Both have SFTP capabilities and can be configured for data uploads.

STEP 2: Confirm desired upload technology. These are acceptable connection methods 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

Connection method can vary if working with an HIE or other nonstandard method. Please contact the NSSP onboarding team for assistance.



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STEPS TO CONNECT, cont.

STEP 3: Request feed setup and connection. For assistance, contact the NSSP Service Desk. Request one of the following:

- New-feed setup and SSH key pair for feed authentication, OR
- New-feed setup via PHINMS authentication.

STEP 4: Configure 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 NSSP onboarding team to set up feed account and connect to staging environment.

- PHINMS
 - <https://www.cdc.gov/phin/tools/phinms/index.html>
 - To obtain the latest release of the PHINMS software, please email phintech@cdc.gov or call 1-800-532-9929.

Work with NSSP onboarding team to configure feed connection.

STEP 5: 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 6: Once connected to onboarding environment, test connectivity by uploading a “hello world” test message to upload directory of your feed. 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
- Alternative file access tool: <https://filezilla-project.org/>

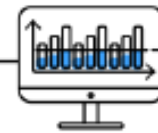
QUESTIONS?

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- 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 Site Onboarding Series



PHASE 3: STEPS TO VALIDATE

Validate is the third 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 VALIDATE” job aid will guide the site administrator and feed administrator through activities that must be completed before connecting to the BioSense Platform *production* environment. Before proceeding with the Validate phase, make sure your facility successfully submitted a “Hello World” test message to confirm feed connectivity (see “STEPS TO CONNECT” job aid). Sometimes the site administrator will oversee the feed administrator’s tasks.

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



PHASE 3—STEPS TO VALIDATE SITE AND 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 file format and naming convention are valid.*
- Log in to your feed’s account in Staging using WinSCP or FileZilla.
 - Upload a valid message with the correct file name convention and correct 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:** Review data. Make sure data being sent contain the MINIMUM required personally identifiable information (PII) and that data elements are mapped correctly.
- STEP 4:** Submit data for validation.



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STEPS TO VALIDATE, cont.

SITE ADMINISTRATOR

- STEP 5: Do facility data meet NSSP-required minimums for validity and complete?
- Priority 1 data elements for NSSP onboarding to production should meet 80% threshold.
 - Priority 2 data elements should meet threshold 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: Do facility data meet site-specified minimums?

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

STEP 8: **Site Sign-Off:** For help with data validation and production sign-off, contact the NSSP Service Desk.

- Final sign-off from onboarding team is required before proceeding with facility activation.
- The onboarding team will validate data and provide results to the site administrator.

STEP 9: **Facility Activation:** Once data meet NSSP- and site-required minimums for onboarding:

- Update Facility Status to “Active” in the Master Facility Table (MFT). This prepares the facility to receive data in the production environment.
- Check request status. The onboarding team will run a final validation on data and either (1) approve activation request or (2) decline activation request and return rejected info to site for review.

STEP 10: Once the facility is approved for activation in MFT, work with the feed administrator and onboarding team 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

FEED ADMINISTRATOR

STEP 5: Request data validation through the site onboarding coordinator.

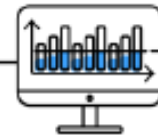
STEP 6: Correct reported HL7 issues, if applicable. Resubmit corrected data for validation.

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

RESOURCES

- Priority Data Elements List: *Onboarding Guide*, Appendix E
<Insert Link to New Site Onboarding Guide>
- ONC Health IT Certification for Syndromic Surveillance
<https://www.healthit.gov/policy-researchers-implementers/2015-edition-test-method>
- NSSP BioSense Platform onboarding 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 Tool: <https://hl7v2-ss-r2-testing.nist.gov/ss-r2>

NSSP Job Aid New Site Onboarding Series



PHASE 4: STEPS TO OPERATE

Operate is the fourth and final 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 “STEPS TO OPERATE” job aid will take the site administrator through the activities that NSSP participants conduct when a facility is in production. Once your facility has completed activation and is connected to the production environment, your facility is ready for routine operation. Sometimes the site administrator will oversee the feed administrator’s tasks.

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



PHASE 4—STEPS TO OPERATE

SITE ADMINISTRATOR

STEP 1: Monitor feed, facility connections, and data quality by using NSSP tools such as:

- Adminer
- Data Quality Dashboard
- Data Quality on Demand
- ESSENCE
- RStudio
- SAS Studio

STEP 2: Monitor NSSP feed and facility alerts.

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

FACILITY

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 requests.



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STEPS TO OPERATE, cont.

SITE ADMINISTRATOR

- STEP 4: Engage with Nssp onboarding team and site administrator as needed to bring new facilities onboard and improve data quality.
- STEP 5: Respond to Nssp investigations and requests to improve data quality.
- STEP 6: Perform a process review to identify strengths and weaknesses of the completed onboarding process. Report feedback to the onboarding team via **Nssp Service Desk**.

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-Platform-Quick-Start-Guide-for-SAS-Studio.pdf>
 - *BioSense Platform Quick Start Guide to Using Adminer*. Use Adminer to perform light data queries. <https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-Adminer.pdf>
- BioSense Platform Quick Start Guide to Using ESSENCE*. <https://www.cdc.gov/nssp/biosense/docs/BioSense-Platform-Quick-Start-Guide-for-ESSENCE.pdf>

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- Include your question or brief description of assistance needed.

FOR MORE INFORMATION

Visit the Nssp website, Onboarding, at www.cdc.gov/nssp/biosense/onboarding.