NSSP
National Syndromic Surveillance Program
BioSense Platform

Version 1.5 JUNE 2016

Onboarding Guide

to the BioSense Platform

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

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VERSION HISTORY

Version No.	Author(s)	Revision Date	Reason
1.0	InductiveHealth Onboarding team: Travis Mayo, Corey Cooper, Matthew Dollacker, Stephen Macauley	02/28/2015	Initial version for review by CDC
1.1	Travis Mayo	03/06/2015	Include CDC feedback
1.2	Travis Mayo	03/23/2015	Include site feedback
1.3	Travis Mayo Corey Cooper	05/28/2015	Updates: 4.4 – Required Data Elements 4.5 – Message Timeliness 4.9 – Data Validation 4.10 – Data Compliance Report Appendix B – Onboarding Checklist
1.4	Travis Mayo Corey Cooper Matthew Dollacker Farah Naz Sue Swensen Mike Coletta	01/29/2016	Removed “Pre-Engage” section from Methodology chapter and added new chapter “Planning” Added Process Flow Diagrams
1.5	Travis Mayo Corey Cooper Farah Naz Sue Swensen Mike Coletta	05/10/16	Added Appendix B: Site BOPA Added Appendix C: Facility BOPA Added Appendix D: Site Checklist Added Appendix E: Facility Checklist Combined 2.1.7 and 2.1.8: Develop Facility Recruitment Plan Added 2.1.8: Site Facility Planning Updated 2.1.9: Site Facility Planning Updates Combined 2.1.11 with 2.1.9: Quarterly Facility Readiness Updated 4.5: Required Data Elements (updated table) Updated 4.9: Data Validation Updated 4.10: Data Compliance Report Added 4.11: Download Validation Results Added 4.12: Import Validation Results Added 4.13: Evaluate Validation Results Updated link for NIST Validation tool

CONTENTS

1 OVERVIEW

1.1 Purpose

This document describes the processes, tools, and activities for onboarding new data feeds and sites into the Centers for Disease Control and Prevention's (CDC) National Syndromic Surveillance Program's (NSSP) BioSense Platform.

Onboarding is the process of working with a facility, department of health, vendor for electronic health records, or health information exchange to transmit syndromic surveillance data from internal medical records systems to the NSSP BioSense Platform, assess adherence to the Public Health Information Network (PHIN) syndromic surveillance messaging guidance, and begin a live data feed to the BioSense Platform.

1.2 Audience

The audience for this document includes administrators, managers, and technical representatives for sites, jurisdictions, health information exchanges, and individual hospitals or medical facilities participating in syndromic surveillance.

1.3 Organization

This document is organized as follows:

- **Overview** – documents overview and target audience
- **Planning** – provides information about prerequisites, planning, and expectations
- **Onboarding Methodology** – describes the onboarding phases and process
- **Data Integration** – identifies the core technical specifications and configuration details for integrating a new feed into the BioSense Platform
- **Data Security** – summarizes information security
- **Production Support** – describes how to get support once feeds are in production
- **Frequently Asked Questions** – answers additional questions
- **Appendixes** – provides material to assist with onboarding

1.4 BioSense Platform Overview

The National Syndromic Surveillance Program (NSSP) is CDC's initiative for capturing, sharing, and analyzing syndromic surveillance data. 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 groups facilities under a single *administrative authority* called a **site.** Sites are the agencies (usually local or state health departments) that have the relationship with facilities that provide data. A site may oversee any number of facilities, with all facilities sharing the same site administrator. Examples of **facilities** include hospital emergency departments, outpatient clinics, and ambulatory care centers.

NSSP's BioSense Platform is the core component of this integrated, nationwide system for public health syndromic surveillance. NSSP provides resources and technical assistance to help sites with onboarding syndromic surveillance feeds for health information exchanges (HIEs), health departments, hospital systems, and individual hospital and healthcare facilities.

1.5 Terminology

Acronym	Definition
AC	Ambulatory Care
ADM	Analytic Data Management; team who provide analytic expertise and support for NSSP.
ADT	HL7-based healthcare facility message type specific to an Admit, Discharge, and Transfer activity
ASTHO	Association for State and Territorial Health Officials
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
CWE	Coded With Exception
CMS	Centers for Medicare and Medicaid Services
DAA	Designated Approving Authority
DOH	Department of Health for a site's jurisdiction (i.e., state, county or other)
DUA	Data Use Agreement
ED	Emergency Department
EHR	Electronic Health Record
FIPS	Federal Information Processing Standard
FISMA	Federal Information Security Management Act

HIE	Health Information Exchange
HIS	Health Information System
ICD	International Classification of Diseases
ISDS	International Society for Disease Surveillance
MFT	Master Facility Table
MU	Meaningful Use
NIST	National Institute of Science and Technology
NPI	National Provider Identifier
NSSP	National Syndromic Surveillance Program
OCISCO	Office of the Chief Information Security Office
OIDS	Globally unique ISO (International Organization for Standardization) identifier
PHDSC	Public Health Data Standards Consortium
PHIN	Public Health Information Network
PHINMS	Message transport system used in public health
PII	Personally Identifiable Information
PID	Patient ID
Site	The NSSP model groups facilities (i.e., hospital emergency department, outpatient clinic) that provide data under a single data administrative authority, called a site administrator. These facilities and single-site administrator constitute a site.
SFTP	Secure File Transfer Protocol
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

2 PLANNING

Many activities need to be managed during the planning process for BioSense Platform onboarding. In this section, we separate planning activities into three distinct areas (Site Planning, Facility Planning, and BioSense Platform Readiness Planning) to illustrate ownership and process. These activities should be complete or near completion before a site is considered ready for onboarding.

2.1 Site[1] Planning

A site administrator (non-CDC employee or contractor) is the lead contact and coordinator for site-based activities, decisions, and policies. Site administrators perform activities related to recruiting facilities (e.g., hospitals, urgent care centers), developing processes, and communicating readiness to CDC's NSSP Onboarding Team (hereafter referred to as "onboarding team") so that this team can approve and schedule facilities for onboarding to the BioSense Platform. The following list identifies many of the activities that should be managed by the site administrator.

Activities Managed by Site Administrator	
Site Activity	**Expected Completion or Onboarding Phase**
Complete site-level data use agreement (DUA) with the Association for State and Territorial Health Officials (ASTHO) and consider the CDC DUA	Planning
Complete BioSense Platform Onboarding Process Site Acknowledgment (Site BOPA)	Planning
Define site roles and responsibilities	Planning
Review training and resources	Planning
Determine site onboarding support model	Planning
Plan for data sharing and intra-site access	Planning / Operate
Develop facility recruitment plan	Planning
Prioritize facilities	Planning / Engage
Submit Master Facility Table (Excel spreadsheet template) to BioSense Platform Service Desk	Planning / Continuous
Complete downstream DUA with facilities	Planning / Engage
Submit Quarterly Facility Readiness Updates to BioSense Platform Service Desk	Planning / Continuous

[1] Sites are the agencies (usually local or state health departments) that have the relationship with facilities that provide data. A site has *administrative authority* over these facilities' data feeds.

2.1.1 Data Use Agreement

New sites must submit a data use agreement (DUA) with the Association of State and Territorial Health Officials (ASTHO) to register on the BioSense Platform. The DUA allows the site to share data and conduct public health surveillance activities to identify, respond to, and monitor significant events of public health interest. New sites should consider a CDC DUA that spells out how CDC will use and access site data. To obtain copies of these DUAs, please contact the BioSense Platform Service Desk.

2.1.2 BioSense Platform Onboarding Process Site Acknowledgment

Each new site must submit a BioSense Platform Onboarding Process Site Acknowledge, or "Site BOPA," to the onboarding team. This document simply states that site personnel are familiar with the requirements of the latest *PHIN Messaging Guide for Syndromic Surveillance*, have read the *Onboarding Guide to the BioSense Platform*, and understand the onboarding process. Reference **Appendix B** for a copy of the site BOPA.

2.1.3 Define Site Roles and Responsibilities

To avoid confusion and duplication of effort during onboarding, participants should know their roles and responsibilities. A list of minimum recommended roles and responsibilities for each site follows, and one person may fill multiple roles. A site may identify additional roles for onboarding if it has reason to do so.

***Site onboarding coordinator*:** The site onboarding coordinator is the primary site contact for the onboarding team. The site onboarding coordinator will work with relevant parties to onboard new feeds and facilities, as decided by the site onboarding support model (discussed later).

***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 appointed site. The site administrator must have the authority to represent the site and to ensure that data comply with relevant state and local regulations.

***Site technical engineer*:** For sites that collect data from facilities before submitting these data to the BioSense Platform, the site technical engineer should have a good understanding of the technical specifications for the data and local technical infrastructure (e.g., data manipulation, MIRTH or Rhapsody processing, and HL7 message specifications).

***Epidemiologist*:** Epi-level users 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.

2.1.4 Trainings and Resources

The onboarding team recommends that site administrators review the following websites and materials as they plan to onboard.

1. Public Health Information Network (PHIN) Tools and Resources, PHIN Guides http://www.cdc.gov/phin/resources/PHINguides.html
2. CDC PHIN Message Quality Framework https://phinmqf.cdc.gov
3. National Institute of Science and Technology (NIST) Data Validation Tools http://hl7v2-ss-r2-testing.nist.gov/ss-r2/
4. BioSense Platform Onboarding Website http://www.syndromicsurveillance.org/onboarding

Note: New sites and facilities should always use the latest version of *PHIN Messaging Guide for Syndromic Surveillance*.

2.1.5 Support Models

Three levels of assistance (support models) are available. Each model enables CDC to prioritize onboarding requests and assign the appropriate resources:

- **Self-support**: sites complete the Engage, Connect, Validate, and Operate phases with minimal assistance from the onboarding team;
- **Blended support**: the onboarding team provides variable levels of support across Engage, Connect, and Validate phases; or
- **Full support**: organizations require significant assistance from the onboarding team across all phases of onboarding.

Sites should carefully consider the level of support needed. Sites will have less flexibility in scheduling if they choose full or blended support versus self-support. The full-support model does not absolve sites from responsibilities and requires CDC management approval.

2.1.5.1 Self-Support

This is the preferred support model. These sites receive priority during registration and onboarding. They also have more control over target onboarding dates.

Self-Support		
Phase	**Responsibility**	**Characteristics**
Engage	Site	Guides facilities through onboarding processes.
Connect	Site	Only health information exchange (HIE) or Department of Health (DOH) have connections to BioSense Platform servers. HIE or DOH act as a proxy for data exchange.
Validate	Site	Performs all data validation for raw and processed data.
Operate	Site	Monitors feed activity and timeliness; performs production support and continuous improvement initiatives.

2.1.5.2 Blended Support

Blended-support sites receive varying priority during the registration and onboarding process based on the expected level of support.

Blended Support		
Phase	**Responsibility**	**Characteristics**
Engage	Defined during Planning Phase	Guides facilities through onboarding processes.
Connect	Onboarding Team	Facilities connect directly to BioSense Platform servers.
Validate	Site	Validates raw and processed data.
Operate	Defined during Planning Phase	Monitors feed activity and timeliness; performs production support and continuous improvement initiatives.

2.1.5.3 Full Support

Although the onboarding team schedules activities, the site administrator's involvement is critical at each step, in every activity. The site administrator is also expected to gain proficiency and move from the full-support to blended- or even self-support model.

Sites in this category receive lowest priority during registration and onboarding and have the least control over their target onboarding dates.

Full Support		
Phase	**Responsibility**	**Characteristics**
Engage	Onboarding team	BioSense Platform onboarding coordinator guides sites through onboarding activities with facilities.
Connect	Onboarding team	Facilities connect directly to BioSense Platform servers.
Validate	Onboarding team	BioSense Platform delivers data validation reports to sites for raw and processed data to assist site administrator with data quality reviews.
Operate	Onboarding team	Monitors feed activity and timeliness; performs production support and continuous improvement initiatives.

2.1.6 Data Sharing and Intra-site Access

During the Planning Phase, site administrators should prepare to engage with other sites (to include programs at CDC) around sharing data. This process does not need to be completed until after the site is in the Operate Phase, but planning for this activity should start early in the onboarding process.

2.1.7 Develop Facility Recruitment Plan

New sites should develop a recruitment plan for the facilities they want to approach. This plan must include facilities to be brought onboard the BioSense Platform and include a rough timeline for the desired onboarding date.

In developing a recruitment plan, sites should consider how the addition of different hospital emergency departments can improve how well the visit data being submitted to the BioSense Platform represents all hospital emergency department *visits in the jurisdiction* in terms of geographic location, characteristics of facilities, and populations served by those facilities. It is not necessary to share the recruitment plan with the onboarding team; however, this information will be vital when filling out the Master Facility Table Excel spreadsheet template and using other associated tools and templates. The onboarding team can provide site administrators with information about the representativeness of the hospital ED visit data in the jurisdiction.

Sites should internally prioritize facilities for their recruitment plan. The onboarding team will consider several factors to determine the priority and scheduling. For example, emergency department (ED) and urgent care (UC) facilities are prioritized higher than ambulatory and inpatient facilities. Here are some of the factors that will be considered:

- Degree of ED representativeness[2]
- Facility type
- Facility volume
- Onboarding support model
- Jurisdiction experience
- 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.

[2] "Representativeness" is NSSP's ability to accurately describe the occurrence of health-related events over time and the distribution of these events in the population by person and place. NSSP strives to obtain near real-time electronic data from U.S. nonfederal hospital ED visits that reflect all 50 states and the District of Columbia.

2.1.8 Site Facility Planning

Site administrators are responsible for planning facility onboarding and submitting updates to the BioSense Platform for their sites. Until a web-based tool can be developed, the onboarding team will use MFT Excel spreadsheet templates for maintaining facility planning information.

- New sites will be given a blank MFT for inputting and maintaining facility information.
- NSSP sites that have not completed the MFT transition process with the NSSP team may continue to use their Facility Template spreadsheets and add a column called "Date Planned" for the new facilities.

The table below illustrates the quarterly MFT submission timelines for 2016 and 2017.

MFT Submission and Planning Dates			
Quarterly Call for MFTs	**Submission Deadline**	**Schedule Published**	**Quarter Begins**
May 15, 2016	June 1, 2016	June 15, 2016	July 1, 2016
August 15, 2016	September 1, 2016	September 15, 2016	October 1, 2016
November 15, 2016	December 1, 2016	December 15, 2016	January 1, 2017
February 15, 2017	March 1, 2017	March 15, 2017	April 1, 2017
May 15, 2017	June 1, 2017	June 15, 2017	July 1, 2017
August 15, 2017	September 1, 2017	September 15, 2017	October 1, 2017
November 15, 2017	December 1, 2017	December 15, 2017	January 1, 2018

Facility planning can be difficult. It requires a mixture of good planning, strategic guesswork, and practice. The onboarding support team understands the challenge and is prepared to work with sites to reschedule onboardings whenever possible if the schedules of other sites are not affected.

Quarterly planning does not imply that subsequent quarterly schedules are left blank until the associated MFT submission deadline is met. NSSP's onboarding team plans throughout each quarter, prioritizing and planning facilities up to 360 days in advance. Sites and facilities that can identify target dates in advance are requested to submit those dates.

The following forecast guidance should assist with planning and ensuring adequate Onboarding Team resources are available to help connect new sites and facilities:

180-day forecast should—

- Include a "best guess" target **month**,
- Use the first day of the month as the target date, and
- Include facility name and type (**required**); other fields are optional.

90-day forecast should—

- Include a "best guess" target **week**,
- Use the first day of the week as the target date unless there is a specific date requirement, and
- Include facility name, type (**required**) and AHA ID (**required if exists**) for ED and UC facilities.

During the last 2 weeks of each quarter, the BioSense Platform Onboarding Team will publish the onboarding dates approved for facilities and sites. The schedule may or may not include specific dates depending on the needs of specific sites and facilities. If the dates will not work for your site or facility, please contact the BioSense Platform Service Desk to discuss alternate dates.

2.1.9 Site Facility Planning Updates

The Master Facility Table (MFT) is a major component of the ESSENCE transition and planning initiatives. Until a web-based MFT administration tool is developed, MFT Excel spreadsheet templates will be used to maintain information for new and existing sites. The processes for uploading and maintenance are described below.

2.1.9.1 Baseline MFT Upload

During the ESSENCE planning and transition process, the NSSP team will work with each site to establish its baseline MFT. **The baseline MFT will be uploaded first** into the new BioSense Platform architecture, requiring careful attention and oversight. This initial upload process is iterative, which allows problems to be fixed quickly.

The initial uploading of the MFT will establish the facility baseline. During this process, sites should not make changes to facilities listed in the MFT once they have been successfully uploaded. The only changes allowed during this phase are changes that are needed to fix upload errors that occur due to invalid data. Once the initial MFT upload is complete, NSSP will approve the site for maintenance. Then the Onboarding Support team will develop and return a maintenance MFT to the site administrator with the added features needed to change facility information. The NSSP team will initiate the initial uploads, whereas MFT *modifications* may be exchanged via email.

2.1.9.2 Maintenance MFT

After the successful transition to a maintenance MFT, sites should only use this MFT template. The maintenance MFT template is a subset of the initial MFT template created during the initial upload. The maintenance MFT allows sites the added features of changing information to existing facilities and adding new facilities. The maintenance MFT is not accepted through email. Maintenance MFTs must be submitted via the BioSense Platform Service Desk. The onboarding team performs MFT maintenance on Mondays and Wednesdays. MFT maintenance is temporarily suspended during the 2 weeks prior to the quarterly facility planning submission deadline.

2.1.9.3 Quarterly Facility Planning

Quarterly facility planning updates are currently done using the MFT. However, the quarterly facility planning updates are processed slightly differently. Quarterly updates are limited to “Planned” facilities. During the quarterly call for updates period, the 2 weeks before the submission deadline, MFT maintenance mode is frozen while onboarding performs the quarterly facility planning updates for all sites. MFT changes with a status other than “Planned” will be ignored during this period. Sites requesting changes should submit separate service desk tickets to have the needed MFTs uploaded after the maintenance mode freeze is concluded.

2.1.10 Downstream Data Usage Agreements

The downstream Data Usage Agreement (DUA) is between the site and the facility. Neither the Association of State and Territorial Health Officials (ASTHO) nor the NSSP requires a downstream DUA; however, most facilities do. Sites that are required to initiate a downstream DUA with local facilities can find an example on the BioSense Platform onboarding website under Resources, in the Onboarding Library: http://www.syndromicsurveillance.org/onboarding.

2.2 Facility Planning

Facilities should submit onboarding requests to the site administrators. When the site administrators have completed the requisite checks, they may submit a BioSense Platform Service Desk ticket to request onboarding. Facilities must complete several actions before submitting a request to the site administrator. These actions follow:

Onboarding Request Requirements	
Facility Activity	**Expected Completion**
Complete Data Use Agreement (DUA) with site.	Planning
Complete BioSense Onboarding Process Facility Acknowledgment (Facility BOPA); submit signed form to site.	Planning
Define facility roles and responsibilities.	Planning
Review training and resources.	Planning
Develop HL7 messages.	Planning
Complete NIST validation testing.	Planning

2.2.1 Data Use Agreement

Facilities may be required to complete a DUA with their site. This DUA may be tailored to site specifications. To obtain a blank downstream DUA template, the facility administrator must contact the site administrator.

2.2.2 Submit Signed Facility BOPA to Site

A facility BOPA must be submitted before a facility begins to develop HL7 messages. To ensure that the process and responsibilities are understood, all parties involved in developing, maintaining, or updating the syndromic surveillance interface must submit signed copies to the site administrator who, in turn, will attach the facility BOPAs to a Service Desk ticket. Reference **Appendix C** for a copy of the facility BOPA.

2.2.3 Roles and Responsibilities

An understanding of the following roles and responsibilities will help facilities meet the BioSense Platform onboarding objectives.

1. **Facility administrator:** responsible for engaging with the site administrator and managing the onboarding process at the facility.
2. **Facility leadership:** responsible for making decisions about project cost and participation in syndromic surveillance.
3. **Facility technical engineer:** responsible for managing the configuration and system connections for an individual facility or data feed (if feed represents multiple facilities).
4. **Electronic health record (EHR) vendor staff/facility data manager:** responsible for assisting with technical setup and support issues, validating data, and providing site administrators with needed input for the Master Facility Table (Excel template).

2.2.4 Trainings and Resources

The onboarding team recommends that facility administrators and technical engineers review the following websites and materials as they make plans to onboard.

1. PHIN Tools and Resources, PHIN Guides
   http://www.cdc.gov/phin/resources/PHINguides.html
2. CDC PHIN Message Quality Framework
   https://phinmqf.cdc.gov
3. National Institute of Science and Technology (NIST)
   Data Validation Tools
   http://hl7v2-ss-r2-testing.nist.gov/ss-r2/
4. BioSense Platform onboarding site
   http://www.syndromicsurveillance.org/onboarding

2.2.5 Develop HL7 Messages

Developers need to prepare HL7 syndromic surveillance messages for the BioSense Platform that include the required elements indicated in the latest *PHIN Messaging Guide for Syndromic Surveillance* (http://www.cdc.gov/phin/resources/PHINguides.html).

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

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

1. Make sure you can create and test all of the following message types:
   a. A01 - Admit/Visit
   b. A03 - Discharge/End Visit
   c. A04 - Registration
   d. A08 - Update Patient Information
2. Testing:
   a. Test at least two samples of each message type NIST website tool to correct errors.
   b. 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.
   c. Download the NIST HL7 Validation Report and submit it to the site administrator along with a copy of the test messages.

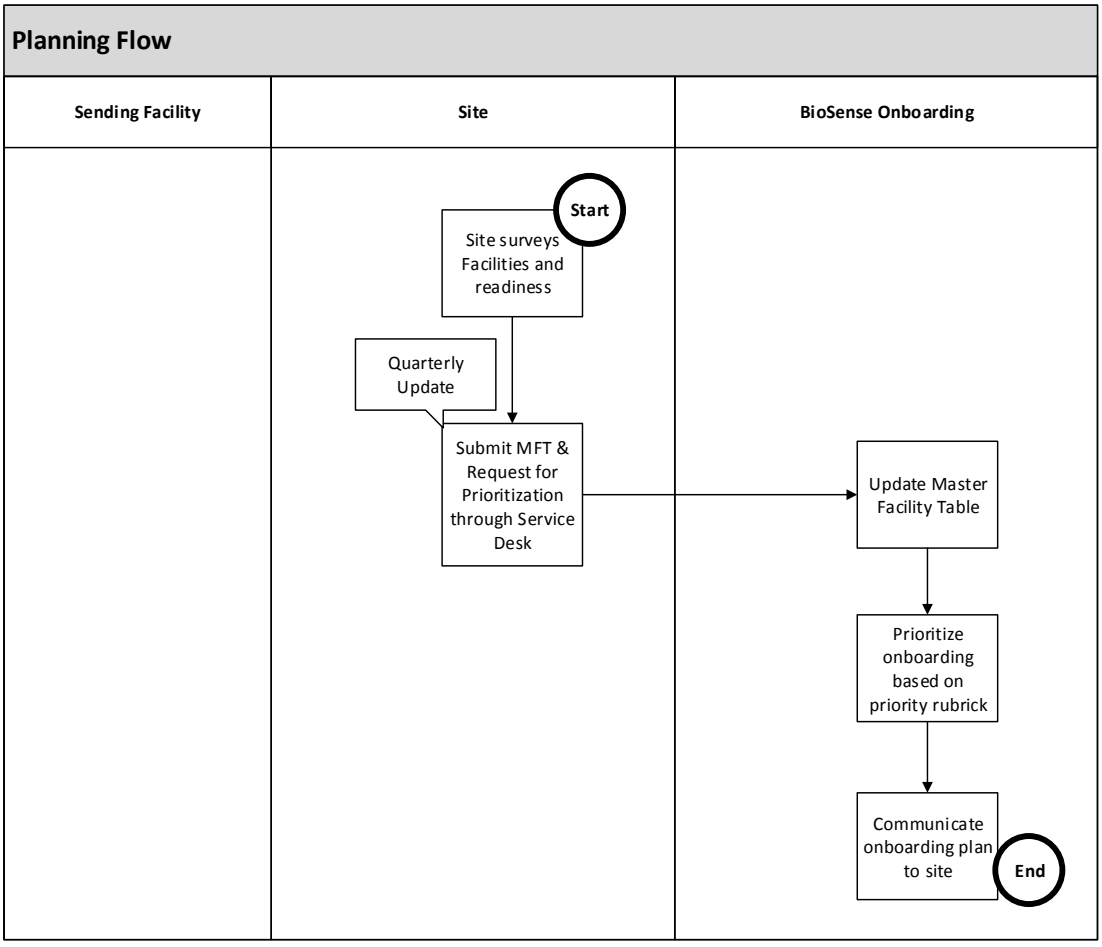
2.2.6 Complete NIST Validation

Before onboarding, HL7 messages must pass the NIST validation tool compliance check (http://hl7v2-ss-r2-testing.nist.gov/ss-r2/). The HL7 developer must submit successful results to the site administrator for at least two messages for each message type: A01, A03, A04, and A08.

2.3 BioSense Platform Readiness Planning

Once the site and facility have completed most of the local planning activities, the site needs to submit a BioSense Platform Service Desk ticket to be considered for the Engage Phase (see Chapter 3, Onboarding Methodology). The site should attach an updated MFT and BOPA form to the BioSense Platform Service Desk ticket so that the onboarding team can begin the scheduling and communication process.

Prioritization and onboarding approvals and scheduling are conducted by NSSP leadership and the BioSense Platform Onboarding Team and communicated back to the site administrators. Facilities that miss their scheduled onboarding window will be reprioritized and rescheduled.



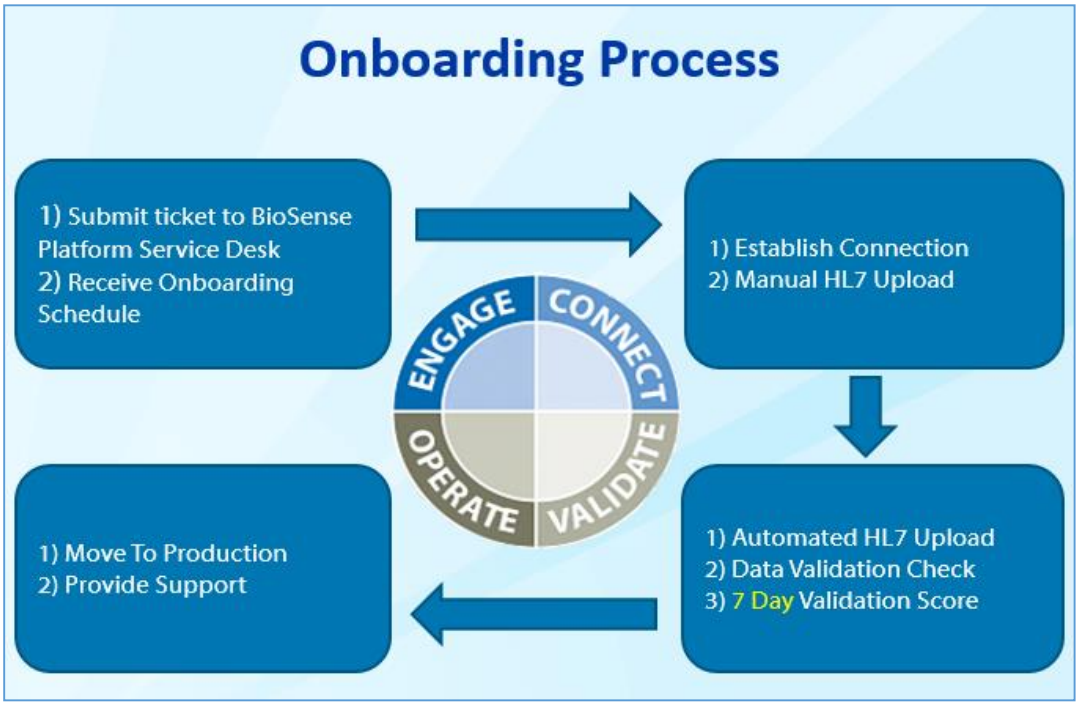
3 ONBOARDING METHODOLOGY

3.1 Overview

Onboarding is the process of working with a facility, 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, assess adherence to the Public Health Information Network (PHIN) by using the *PHIN Syndromic Surveillance Message Guide*, and begin a live data feed to the BioSense Platform.

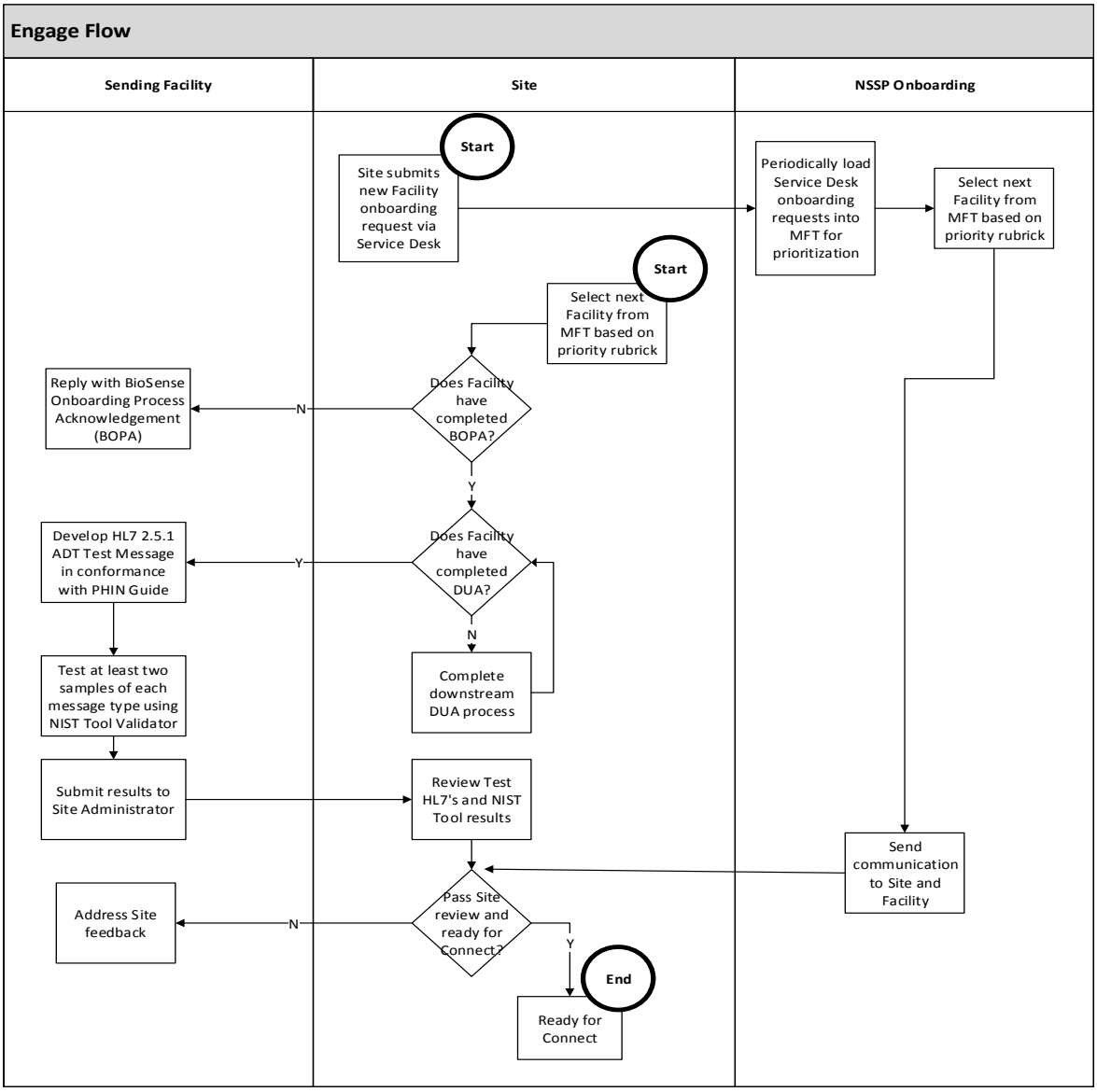
NSSP uses a four-phase approach for onboarding facilities to the BioSense Platform:

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



3.2 Engage Phase

The Engage Phase begins when a site administrator creates a BioSense Platform Service Desk ticket requesting onboarding for a facility. The Engage Phase focuses primarily on registering, prioritizing, and scheduling a facility onboarding.



3.2.1 Roles and Responsibilities

Within the Engage Phase, the following roles and responsibilities have been defined:

Engage Phase: Roles and Responsibilities	
Activity	**Responsibility**
Manage site onboarding priority list	Site administrator Site onboarding coordinator
Manage and submit updated site Master Facility Table Excel template to BioSense Platform Service Desk	Site administrator Site onboarding coordinator
Submit HL7 test messages to NIST validation tool, and submit successful test results to facility administrator and site administrator	Facility administrator Facility technical engineer EHR data manager
Review NIST HL7 validation results	Facility administrator Site administrator Site onboarding coordinator
Engage site and facility for onboarding	Site administrator Site onboarding coordinator Onboarding team (as requested)

3.2.2 Key Decisions and Inputs

Within the Engage Phase, the following key decisions and inputs will be required:

Engage Phase: Roles and Responsibilities	
Activity	**Responsibility**
Create target dates for milestones	Site administrator Site onboarding coordinator
Submit Master Facility Table template with planned facility onboarding dates to BioSense Platform Service Desk	Site administrator Site onboarding coordinator
Review grant-based deadlines (if site is a grantee)	Site administrator Site onboarding coordinator

3.2.3 Tools and Technologies

Within the Engage Phase, the following tools and technologies are employed:

1. BioSense Platform Onboarding Website
   http://www.syndromicsurveillance.org/onboarding
2. CDC *PHIN Messaging Guide for Syndromic Surveillance*
   http://www.cdc.gov/phin/resources/PHINguides.html

3.2.4 Training

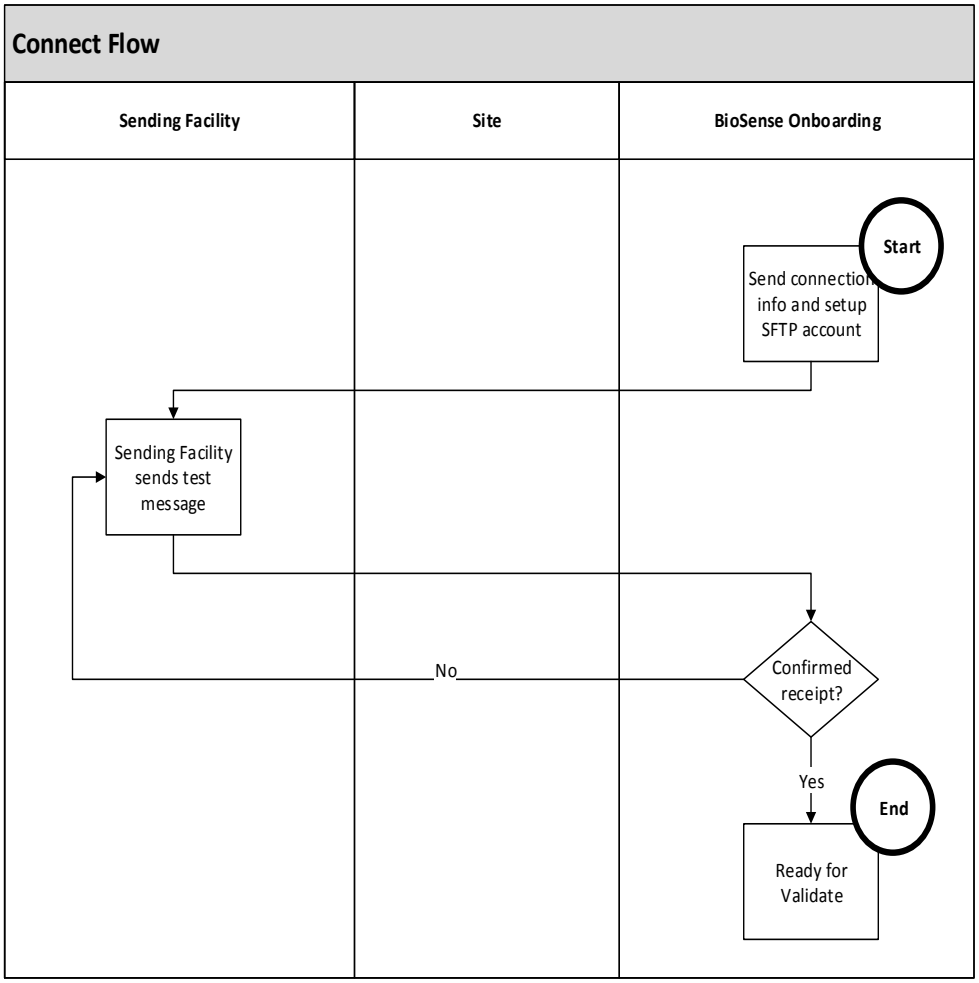
The following training materials are recommended for the Engage Phase:

1. phpMyAdmin – International Society for Disease Surveillance (ISDS) webinar on use of phpMyAdmin for the BioSense front-end Web application
   https://vimeo.com/96210035
2. NIST Data Validation Tools
   http://hl7v2-ss-r2-testing.nist.gov/ss-r2/
3. CDC *PHIN Messaging Guide for Syndromic Surveillance*
   http://www.cdc.gov/phin/resources/PHINguides.html

3.3 Connect Phase

The Connect Phase begins once a new facility receives approval to begin the onboarding process and can focus on achieving the following objectives:

1. Establish data connection with BioSense Platform servers.
2. Manually upload a single valid test message to BioSense Platform servers.



3.3.1 Roles and Responsibilities

Within the Connect Phase, the following roles and responsibilities have been defined:

Connect Phase: Roles and Responsibilities	
Activity	**Responsibility**
Create SSH key pair	Site or facility technical engineer EHR data manager
Create site administrator user account	Onboarding team
Configure processing	Onboarding team
Upload valid production HL7 message	Site or facility technical engineer EHR data manager

3.3.2 Key Decisions and Inputs

Within the Connect Phase, the following key decisions and inputs will be required:

1. Transport mechanisms: Choose between SFTP and PHINMS for data exchange.
2. Filename conventions: Develop filename convention.

Note: The NSSP team does not provide technical support for SFTP or PHINMS. Customers should request support for these tools from their source vendor.

3.3.3 Tools and Technologies

Within the Connect Phase, the following tools and technologies are employed:

1. Putty Key Generator: PuTTYgen is the tool used to create a key-pair used for authentication with BioSense Platform servers. Reference **Appendix A** for instructions on using Putty.
2. SSH File Transfer Protocol: SFTP is the protocol used to transfer files to the BioSense Platform servers. The following tools are suggested for use:
    a. WinSCP – http://winscp.net
    b. FileZilla – https://filezilla-project.org/
3. Filename Convention:
    a. Files uploaded to the BioSense Platform cannot be processed unless the file format is valid:
    b. {State}_{Provider}_{Date}_{Hour}_{FileNumber}.{Suffix}
    Example: GA_MetroClinic_20160101_15_001.hl7

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

File-Naming Convention	
Name Segment	**Description**
2-Letter State	2-letter state abbreviation where the feed originates
Provider Acronym	An abbreviated provider name or acronym
8-Digit Date	A date in form YYYYMMDD
2-Digit Hour	A 2-digit military hour (00-23)

File-Naming Convention	
Name Segment	**Description**
File Number	Unique number/counter used when more than one file is sent per hour to ensure each file has a unique filename
File-Type Suffix	hl7 – used for HL7 formatted content

4. Filename Restrictions:
    a. No white-space characters are permitted in the filename (e.g., space, tab, vertical tab, new-lines, form-feeds).
    b. HL7 messages must be batched into one file and transmitted hourly.
    c. Empty files are prohibited and should not be transmitted.
5. Submit Public Key and a Valid Test Message to the BioSense Platform:
    a. Log into http://support.syndromicsurveillance.org.
    b. Locate your current onboarding registration ticket by clicking on "My Requests."
    c. Attach the following items to the current ticket:
        i. Your Public Key
        ii. A Valid Test Message with the correct filename convention

3.3.4 Training

The following training materials are recommended for the Connect Phase:

phpMyAdmin – ISDS webinar on use of phpMyAdmin for BioSense front-end Web application https://vimeo.com/96210035

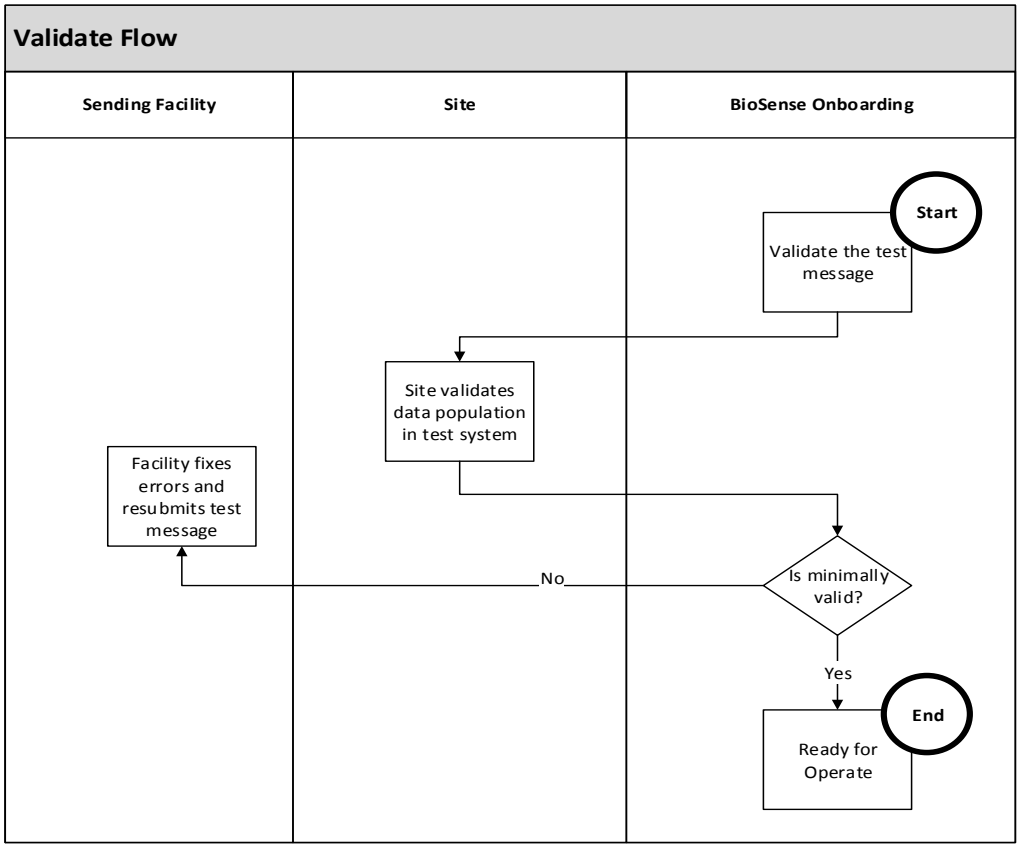
3.4 Validate Phase

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

Objectives:

1. Ensure timeliness of message delivery meets meaningful use requirements and is consistently maintained.
2. Identify and resolve data issues to achieve required message quality.
3. Strive to improve data quality in all areas beyond minimum requirements.

Note: Data must be timely for syndromic surveillance. Therefore, data must be submitted at least within 24 hours of the date and time of the patient's initial encounter. 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.



3.4.1 Roles and Responsibilities

Within the Validate Phase, the following roles and responsibilities have been defined:

Validate Phase: Roles and Responsibilities	
Activity	**Responsibility**
Request data validation through BioSense Platform Service Desk	Site administrator Site onboarding coordinator
Create data validation results for site administrator	Site administrator Site onboarding coordinator
Assess facility data compliance results to meet NSSP-required minimums	Onboarding team
Assess facility data compliance results to meet site-specified minimums (see Note)	Site administrator Site onboarding coordinator
Fix HL7 issues and resubmit data as required	Facility technical engineer EHR data manager
Ensure data does not have personally identifiable information (PII) and data elements are mapped correctly	Site administrator Site onboarding coordinator Facility technical engineer EHR data manager

Note: A site may have additional data compliance or quality standards yet choose to accept the *minimum* data compliance guidelines administered by the NSSP. A site's level of involvement during the Validate Phase will vary by whatever onboarding support model was specified during site planning.

3.4.2 Key Decisions and Inputs

All messages must pass data validation. Data validation ensures required fields contain data that fulfill the requirements set forth by the PHIN Messaging Guide for Syndromic Surveillance. PHIN guidelines require 100% compliance for all required data elements for all patient classes.

3.4.3 Tools and Technologies

Within the Validate Phase, the following tools and technologies may be employed:

1. CDC SQL Validation Scripts
   http://www.syndromicsurveillance.org/onboarding
2. CDC PHIN Vocabulary Access and Distribution System (VADS)
   https://phinvads.cdc.gov/vads/SearchVocab.action
3. HL7 Messaging Standard Version 2.5.1 (HL7 Manual)
   http://www.HL7.org
4. National Institute for Standards and Technology (NIST) HL7 V2.5.1 Syndromic Surveillance Validation Tool – Meaningful Use 2014 Edition
   http://hl7v2-ss-r2-testing.nist.gov/ss-r2/

3.4.4 Training

The following training materials are recommended for this phase:

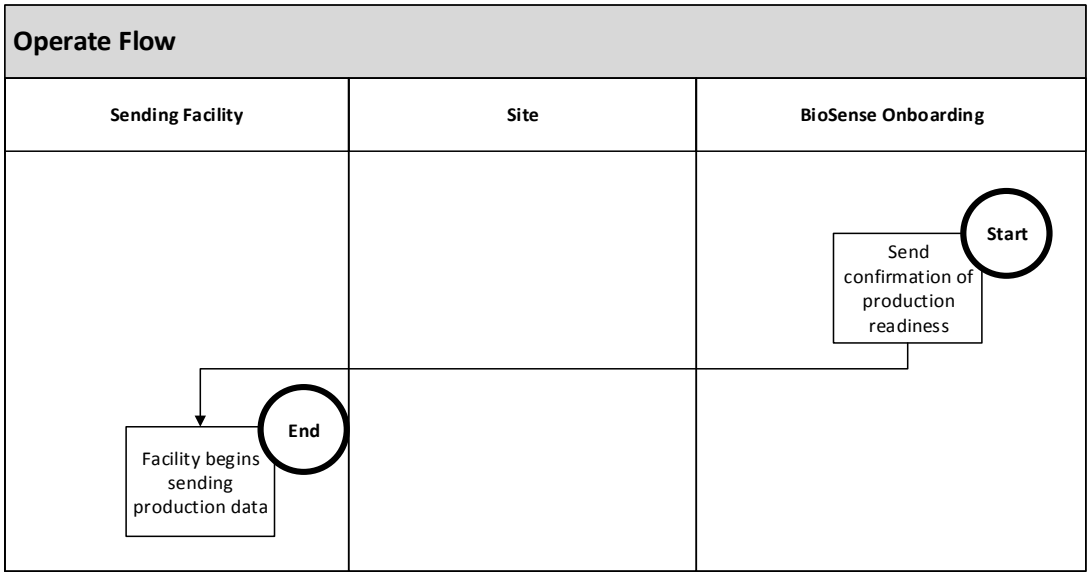
ISDS Webinar on the use of HL7 for the BioSense front-end Web application: https://vimeo.com/58577283

3.5 Operate Phase

The Operate Phase begins once a feed or facility has been approved to send live data into production.

Objectives:

1. Perform maintenance to support data feed.
2. Assist site with data quality improvements, if needed.
3. Monitor data feeds for timeliness and consistency.



3.5.1 Roles and Responsibilities

Within the Operate Phase, the following roles and responsibilities have been defined based on the type of onboarding.

Operate Phase: Roles and Responsibilities	
Activity	**Responsibility**
Monitor facility connections	Facility administrator Facility technical engineer EHR Data Manager
Provide support for connection issues	Facility technical engineer EHR Data Manager
Review data timeliness and quality	Site administrator Site onboarding coordinator
Respond to data quality investigations and data quality improvement requests	Facility administrator Facility leadership Site or Facility technical engineer EHR Data Manager

3.5.2 Key Decisions and Inputs

Within the Operate Phase, the following key decisions and inputs are required:

1. Sites will perform a process review to identify strengths and weaknesses of the completed onboarding process;
2. Sites will improve data quality by setting annual quality targets; and
3. Sites administrators may establish clear service level agreements with facilities.

3.5.3 Tools and Technologies

Within the Operate Phase, the following tools and technologies are employed:

1. phpMyAdmin – Each participating site has a secure locker in which its line-level data may be viewed and analyzed.
2. BioSense 2.0 – Epidemiologists will use this tool to perform syndromic surveillance, analysis, and basic visualization of those analyses using a Web-based front-end tool.

   Note: Sites administrators will use the admin console in BioSense 2.0 to manage data-sharing privileges.

   Note: The BioSense 2.0 front-end Web application is scheduled to be replaced by the Early Notification of Community-based Epidemics (ESSENCE) in 2016.
3. RStudio – Epidemiologist should use this tool to perform visual data analytics.

3.5.4 Training

The following training materials are recommended for the Operate Phase:

RStudio https://vimeo.com/82123421

4 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.

4.1 Syndromic 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 including all required data elements.

4.2 Excluded Data Elements Containing PII

While not emphasized well in the *PHIN Messaging Guide for Syndromic Surveillance*, personally identifiable information (PII) should **NOT** be sent to the BioSense Platform. The following table lists the data elements to **exclude** from HL7 messages to the BioSense Platform.

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	Mothers 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	SSN, Driver's License #, Mother's ID
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

4.3 Facility Management

The onboarding team gives each site an MFT (Excel spreadsheet template). This table lists facilities authorized to send data to the BioSense Platform. Facility information will be linked and, when appropriate, mapped from the MFT to each record on the BioSense Platform.

4.4 Facility Mapping Considerations

Facility mapping is critical for accurate analysis in the BioSense Platform. Follow the guidelines below to make sure data are ready to validate.

1. Specify the Sending Facility ID in MSH-4.2.
2. Specify the Treating/Event Facility in EVN-7.2.
3. Make sure the Master Facility Table (Excel spreadsheet template) contains every facility included in HL7 messages for the site. These facilities will be checked during Data Validation. Missing facilities will not be correctly processed.

4.5 Required Data Elements

The BioSense Platform must receive all **"R"** and **"RE"** data elements defined for syndromic surveillance in the *PHIN Messaging Guide for Syndromic Surveillance*. The following table summarizes the *PHIN Messaging Guide for Syndromic Surveillance*, Section 4.2, Syndromic Surveillance Data Elements of Interest.

Syndromic Surveillance Data Elements of Interest			
Stage_1 Column Name	**Stage_1 Processing**	**BioSense Platform Usage**	**HL7 Segment**
Row_Number	BioSense Platform system generated unique row ID.	N/A	N/A
Create_Date_Time	BioSense Platform system generated row create date.	N/A	N/A
Update_Date_Time	BioSense Platform system generated row update date.	N/A	N/A
Earliest_Date_Time	BioSense Platform uses the earliest date among: - OBX-14 - Date/Time of Observation - PV1-45 - Discharge Date/Time - PV1-44 - Admit Date/Time - PR1-5 - Procedure Date/Time - PID-29 - Patient Death Date and Time - EVN-2 - Recorded Date/Time - MSH-7 Message Date/Time	R	Multiple
Feed_Name	BioSense Platform system generated SFTP feed name.	N/A	N/A

Syndromic Surveillance Data Elements of Interest			
Stage_1 Column Name	**Stage_1 Processing**	**BioSense Platform Usage**	**HL7 Segment**
Channel_Name	BioSense Platform system generated MIRTH channel name.	N/A	N/A
PV1_44_1_Admit_Date_Time	Direct input from HL7 message.	R	PV1.44.1
DG1_5_1_Diagnosis_Date_Time	Direct input from HL7 message.	O	DG1.5.1
OBX_5_1_Onset_Date_Time	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '11368-8' and returns the OBX-5 value.	O	OBX.5.1
MSH_7_1_Message_Date_Time	Direct input from HL7 message.	R	MSH.7.1
PV1_45_1_Discharge_Date_Time	Direct input from HL7 message.	R	PV1.45.1
PID_29_1_Patient_Death_Date_Time	Direct input from HL7 message.	O	PID.29.1
PID_30_1_Patient_Death_Indicator	Direct input from HL7 message. (Deprecated)	X	PID.30.1
DG1_3_1_Diagnosis_Code	Direct input from HL7 message.	R	DG1.3.1
PV1_36_Discharge_Disposition	BioSense Platform uses both PV1-36.1 and PV1-36.2 and concatenates them with ':' as a separator.	R	PV1.36.1
DG1_6_1_Diagnosis_Type	Direct input from HL7 message.	RE	DG1.6.1
DG1_3_2_Diagnosis_Text	Direct input from HL7 message.	R	DG1.3.2
MSH_4_Sending_Facility	BioSense Platform will try to return MSH-4.2. If MSH-4.2 is null, it will return MSH-4.1,	R	Multiple
OBX_5_1_Hospital_Discharge_Instructions	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '8653-8' and returns the OBX-5 value. (Deprecated)	X	OBX.5.1
MSH_10_1_Message_Control_ID	Direct input from HL7 message.	R	MSH.10.1
MSH_9_2_Trigger_Event	Direct input from HL7 message.	R	MSH.9.2
MSH_9_1_Message_Code	Direct input from HL7 message.	R	MSH.9.1
OBX_5_1_Body_Temperature	BioSense Platform treats this as a repeating segment. It returns all OBX-5 values that have the OBX-3 value of '8310-5' or '11289-6' and concatenates them with ':' as a separator.	O	OBX.5.1
OBX_6_2_Body_Temperature_Units	BioSense Platform treats this as a repeating segment. It returns all OBX-6.2 values that have the OBX-3 value of '8310-5' or '11289-6' and concatenates them with ':' as a separator.	O	OBX.6.2
OBX_5_1_Initial_Pulse	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '59408-5' and returns the OBX-5 value.	O	OBX.5.1
OBX_6_2_Initial_Pulse_Units	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '59408-5' and then returns the OBX-6.2 value.	O	OBX.6.2

Syndromic Surveillance Data Elements of Interest			
Stage_1 Column Name	**Stage_1 Processing**	**BioSense Platform Usage**	**HL7 Segment**
OBX_5_1_Chief_Complaint	BioSense Platform treats this as a repeating segment. It returns OBX-5.1, OBX-5.8, and OBX-5.9 values that have the OBX-3 value of '11292-0' or '8661-1' and concatenates them with ':SEP:' as a separator.	R	Multiple
PV2_3_1_Admit_Reason_ID	Direct input from HL7 message.	RE	PV2.3.1
PV2_3_2_Admit_Reason_Text	BioSense Platform searches PV2 segments in listed order and returns the first non-null value.	RE	PV2.3.2
PV2_3_5_Admit_Reason_Alt_Text	Direct input from HL7 message.	RE	PV2.3.5
OBX_5_1_Diagnosis_Impression	BioSense Platform treats this as a repeating segment. BioSense Platform returns OBX-5.1 and OBX-5.2 values that have the OBX-3 value of '44833-2' or '11300-1' and concatenates them with ':SEP:' as a separator.	O	Multiple
OBX_5_1_Triage_Notes	BioSense Platform treats this as a repeating segment. It finds the OBX-3 segment with the ID '54094-8' and returns the OBX-5 value, then concatenates multiple values with ':SEP:' as a separator.	O	OBX.5.1
OBX_5_2_Blood_Pressure	BioSense Platform treats this as a repeating segment. It returns OBX-5.1, OBX-5.2, OBX-5.3, and OBX-5.4 values that have the OBX-3 value of '35094-2' and concatenates them with ':' as a separator.	O	Multiple
OBX_6_2_Blood_Pressure_Units	Direct input from HL7 message.	O	OBX.6.2
PID_22_Patient_Ethnic_Group	BioSense Platform treats this as a repeating segment. It returns PID-22.1 and PID-22.2 values and concatenates them with ':' as a separator.	RE	Multiple
PID_10_Patient_Race	BioSense Platform treats this as a repeating segment. It returns PID-10.1 and PID-10.2 values and concatenates them with ':' as a separator.	RE	Multiple
PID_8_1_Patient_Gender	Direct input from HL7 message.	RE	PID.8.1
OBX_5_1_Patient_Age_Reported	BioSense Platform treats this as a repeating segment. It returns OBX-5.1 and OBX-5.2 values that have the OBX-3 value of '21612-7' and concatenates them with ':' as a separator.	RE	OBX.5.1
OBX_6_2_Patient_Age_Reported_Units	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '21612-7' and returns the OBX-5 value.	RE	OBX.6.2
PID_7_1_Date_Time_of_Birth	Direct input from HL7 message.	O	PID.7.1
PID_11_5_Patient_Zip	Direct input from HL7 message.	RE	PID.11.5
PID_11_6_Patient_Country	Direct input from HL7 message.	RE	PID.11.6

Syndromic Surveillance Data Elements of Interest			
Stage_1 Column Name	**Stage_1 Processing**	**BioSense Platform Usage**	**HL7 Segment**
PID_11_4_Patient_State	Direct input from HL7 message.	RE	PID.11.4
PID_First_Patient_ID	BioSense Platform returns the first non-null value: - PID-2.1 - PID-3.1 - PID-4.1 - PID-18.1 - PV1-19.1	R	Multiple
PV1_2_1_Patient_Class	Direct input from HL7 message.	R	PV1.2.1
PR1_3_1_Procedure_Code_ID	Direct input from HL7 message.	O	PR1.3.1
PR1_3_2_Procedure_Code_Text	Direct input from HL7 message.	O	PR1.3.2
PV1_19_1_Patient_Visit_ID	Direct input from HL7 message.	R	PV1.19.1
PID_3_1_Patient_ID_Internal	Direct input from HL7 message.	R	PID.3.1
Source_Filename	BioSense Platform pulls this directly from the original source file.	N/A	N/A
Data_Overflow	BioSense Platform system generated value.	N/A	N/A
DG1_15_1_Diagnosis_Priority	Direct input from HL7 message. (Deprecated)	X	DG1.15
DG1_3_5_Diagnosis_Alt_Text	Direct input from HL7 message. (Deprecated)	X	DG1.3.5
EVN_1_1_Event_Type_Code	Direct input from HL7 message.	RE	EVN.1.1
EVN_2_1_Recorded_Date_Time	Direct input from HL7 message.	R	EVN.2.1
EVN_7_2_Event_Facility	Direct input from HL7 message.	R	EVN.7.2
MSH_11_1_Processing_ID	Direct input from HL7 message.	R	MSH.11.1
MSH_12_1_Version_ID	Direct input from HL7 message.	R	MSH.12.1
MSH_21_1_Message_Profile_ID	Direct input from HL7 message.	R	MSH.21.1
MSH_3_1_Sending_Application	Direct input from HL7 message.	O	MSH.3.1
MSH_5_1_Receiving_Application	Direct input from HL7 message.	O	MSH.5.1
MSH_6_1_Receiving_Facility	Direct input from HL7 message.	O	MSH.6.1
MSH_9_3_Message_Structure	Direct input from HL7 message.	R	MSH.9.3
OBX_14_1_Observation_Date_Time	Direct input from HL7 message.	O	OBX.14.1
OBX_5_1_Acuity_Assessment	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '11283-9' and then returns the OBX-5 value.	O	OBX.5.1
OBX_5_1_Initial_Evaluation_Note	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '34120-6' and then returns the OBX-5 value. (Deprecated)	X	OBX.5.1
OBX_5_1_Medication_History	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '10160-0' and then returns the OBX-5 value.	O	OBX.5.1

Syndromic Surveillance Data Elements of Interest			
Stage_1 Column Name	**Stage_1 Processing**	**BioSense Platform Usage**	**HL7 Segment**
OBX_5_1_Patient_Age_Calculated	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '29553-5' Then returns the OBX-5 value.	RE	OBX.5.1
OBX_5_1_Pregnancy_Status	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '11449-6' and then returns the OBX-5 value.	O	OBX.5.1
OBX_5_1_Problem_or_Finding	BioSense Platform treats this as a repeating segment. BioSense Platform returns OBX-5.1 values that have the OBX-3 value of '18624-7' and concatenates them using a ':' as a separator.	O	OBX.5.1
OBX_6_2_Patient_Age_Calculated_Units	Direct input from HL7 message. BioSense Platform finds the OBX-3 segment with the ID '29553-5' and then returns the OBX-6 value.	RE	OBX.6.2
PID_11_3_Patient_City	Direct input from HL7 message.	RE	PID.11.3
PID_18_1_Patient_Account_ID	Direct input from HL7 message.	O	PID.18.1
PID_2_1_Patient_ID_External	Direct input from HL7 message.	O	PID.2.1
PID_4_1_Alternate_Patient_ID	Direct input from HL7 message.	O	PID.4.1
PID_First_Patient_County	BioSense Platform will advance through the following segments until it returns the first non-null value: PID-12.1 PID-11.9	R	Multiple
PR1_3_3_Procedure_Code_NS	Direct input from HL7 message.	O	PR1.3.3
PR1_5_1_Procedure_Date_Time	Direct input from HL7 message.	O	PR1.5
PV1_10_1_Hospital_Service	Direct input from HL7 message.	O	PV1.10
PV1_14_1_Admit_Source	Direct input from HL7 message.	O	PV1.14
PV1_15_1_Ambulatory_Status	Direct input from HL7 message.	O	PV1.15
PV1_18_1_Patient_Type	Direct input from HL7 message.	O	PV1.18
PV1_19_4_Assigning_Authority	Direct input from HL7 message.	R	PV1.19.4
PV1_19_6_Assigning_Facility	Direct input from HL7 message.	O	PV1.19.6
PV1_39_1_Servicing_Facility	Direct input from HL7 message. (Deprecated)	X	PV1.39.1
PV1_4_1_Admission_Type	Direct input from HL7 message.	O	PV1.4
PV1_50_1_Alternate_Visit_ID	Direct input from HL7 message. (Deprecated)	X	PV1.50
Facility_Name (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A
Facility_Street (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A
Facility_Street (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A
Facility_City (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A
Facility_Zip (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A
Facility_County (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A

Syndromic Surveillance Data Elements of Interest			
Stage_1 Column Name	**Stage_1 Processing**	**BioSense Platform Usage**	**HL7 Segment**
Facility_State (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A
Facility_Country (MFT table)	BioSense Platform mapped value using MFT.	RE	N/A
Facility_Visit_Type (MFT table)	BioSense Platform mapped value using MFT.	R	N/A
Travel History	Available in new BioSense Platform only.	O	OBX.5.1
Previous Hospital Unit	Available in new BioSense Platform only.	O	PV1.6.1
Hospital Unit	Available in new BioSense Platform only.	RE	OBX.5
Unique Physician Identifier	Available in new BioSense Platform only.	O	PV1.7.1
Height	Available in new BioSense Platform only.	O	OBX.5
Weight	Available in new BioSense Platform only.	O	OBX.5
BMI	Available in new BioSense Platform only.	O	OBX.5
Smoking Status	Available in new BioSense Platform only.	O	OBX.5
Insurance Coverage	Available in new BioSense Platform only.	O	IN1.15

4.6 Message Timeliness

One of the characteristics of syndromic surveillance data is its timeliness. Therefore, data must be submitted at least within 24 hours of the date and time of the patient's initial encounter. Subsequent updates to a patient's record must also be submitted within 24 hours of the information (transaction) being added to the patient record. NSSP's BioSense Platform team recommends that senders batch and submit syndromic data hourly. Batched files must be transmitted at least once every 6 hours.

The following table lists the recommended message characteristics.

Message Size and Frequency Recommendations		
Message Parameter	**Recommendation**	**Notes**
Message frequency	Hourly	▪ Hourly is recommended ▪ Other frequencies are accepted ▪ Batched files must be sent at least every 6 hours
Message size	> 0 bytes	▪ Cannot be empty
Message batching	Required	▪ Message must be batched ▪ Individual messages are not acceptable ▪ Message batching scripts are available upon request

4.7 Facility Types

The BioSense Platform can receive syndromic surveillance data for all facility types. Still, site administrators may want to exercise caution when deciding whether to receive all message types in their jurisdiction. The BioSense Platform has limited availability to support non-ED onboarding. Also, when considering ambulatory care, caution should be taken to consider the impact that the new data trends might have on existing analysis processes. It is wise to start with a limited number of large practices and get experience with the different characteristics and volume of the data.

The BioSense Platform accepts the following message types (in priority order):

1. Emergency Data (ED)
2. Urgent Care (UC)
3. Inpatient (I)
4. Ambulatory Care (AC)
    a. Requires onboarding team's approval
    b. Requires site administrator's approval

4.8 Message Triggers

Valid message triggers follow:

1. ADT^A04 - Emergency Department Registration
2. ADT^A03 - Discharge/End Visit
3. ADT^A01 - Inpatient Admission
4. ADT^A08 - Updates to previously sent A01 and A04 messages

4.9 Data Validation

Data Validation is a series of activities that include checking data compliance, checking data quality, and completing other onboarding verification activities.

The onboarding team offers training and support for data validation. They can help site administrators perform data validation tests to onboard new facilities. Site administrators and epidemiologists should work together with facilities to implement processes for testing and evaluating data quality.

The onboarding team recommends joining the ISDS Data Quality Work Group for more information and advice on evaluating data quality: http://www.syndromic.org/cop/nssp/nssp-workgroups.

4.10 Data Compliance Report

To successfully onboard to the BioSense Platform, every facility must pass minimum BioSense Platform data compliance tests and satisfy requirements for the site to which the facility or vendor is submitting data. Each facility and vendor feed must be approved by both the NSSP BioSense Platform onboarding team and the site administrator.

The BioSense Platform provides each site administrator access to daily compliance measurements through SQL views. Site administrators can download and import results into the data compliance report template available for download on the BioSense Platform Onboarding Website.

Example: Compliance Results

HL7 Segment	BioSense Platform Usage	Facility_Name	Medical Center A	Medical Center B
		FacilityID_UUID	1000	1001
		Feed_Name	Training_Feed_1	Training_Feed_2
		Report_Date_Time	3/17/16 8:00 AM	3/17/16 8:00 AM
		Begin_Date	3/16/2016	3/16/2016
		End_Date	3/17/2016	3/17/2016
		NumVisits	513	57
Multiple	R	MSH_4_Sending_Facility	100%	100%
EVN.7.2	R	EVN_7_2_Event_Facility	100%	100%
MSH.7.1	R	MSH_7_1_Message_Date_Time	100%	100%
EVN.2.1	R	EVN_2_1_Recorded_Date_Time	100%	100%
OBX.14.1	O	OBX_14_1_Observation_Date_Time	0%	0%
PID.3.1	R	PID_3_1_Patient_ID_Internal	100%	100%
PID.2.1	O	PID_2_1_Patient_ID_External	0%	0%
PID.4.1	O	PID_4_1_Alternate_Patient_ID	0%	0%
PID.18.1	O	PID_18_1_Patient_Account_ID	0%	0%
Multiple	R	PID_First_Patient_ID	100%	100%
PV1.19.1	R	PV1_19_1_Patient_Visit_ID	100%	100%
PV1.50	X	PV1_50_1_Alternate_Visit_ID	0%	0%
PID.8.1	RE	PID_8_1_Patient_Gender	100%	100%
Multiple	RE	PID_10_Patient_Race	100%	100%
Multiple	RE	PID_22_Patient_Ethnic_Group	100%	98%
OBX.5.1	RE	OBX_5_1_Patient_Age_Reported	0%	100%

Example: Approval Status

NSSP National Syndromic Surveillance Program BioSense Platform

Facility Management and Approval Status

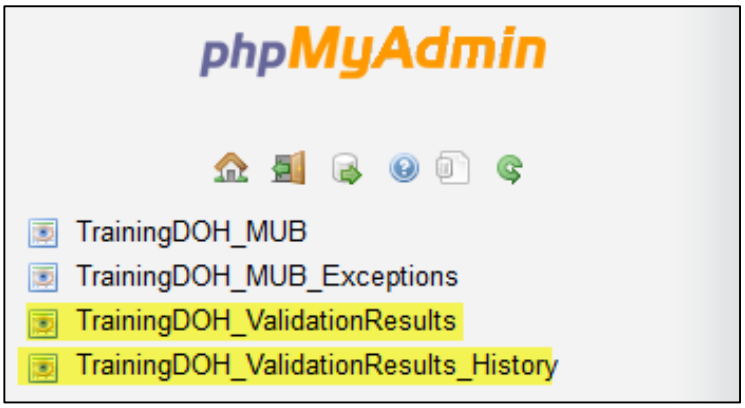
Facility_Name	FacilityID_UUID	Facility_Type	Approval Type	Latest Report Date	Site Approval Date	NSSP Approval Date	Approval Expiration Date
Medical Center A	1000			3/17/2016			
Medical Center B	1001			3/17/2016			

4.11 Download Validation Results

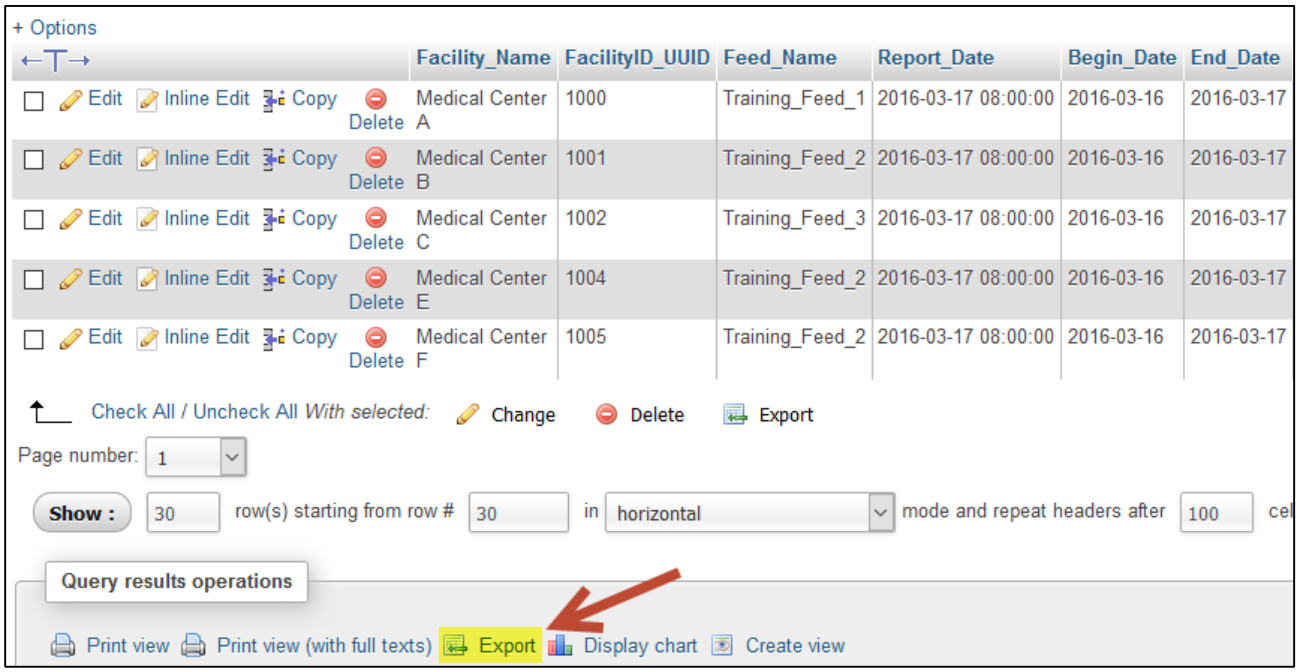
The following guidance can be used by site administrators to download data validation results. These results are accessible only by site administrators and their proxies.

1. Log into phpMyAdmin and select the server Datatrans2.biosen.se.
2. Click on the ValidationResults table view provided for your site.

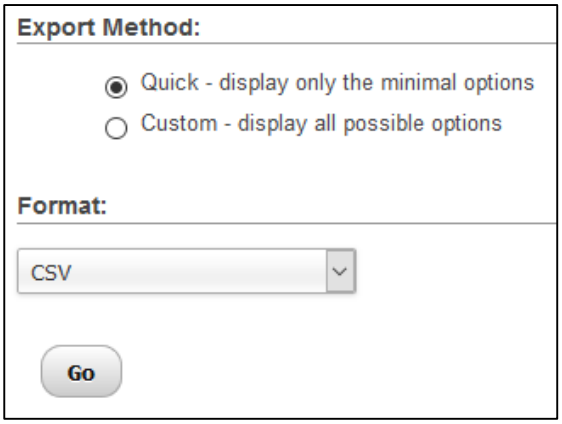
   Note: Historic statistics, found in the ValidationResults_History table view, allow you to compare current with past results.



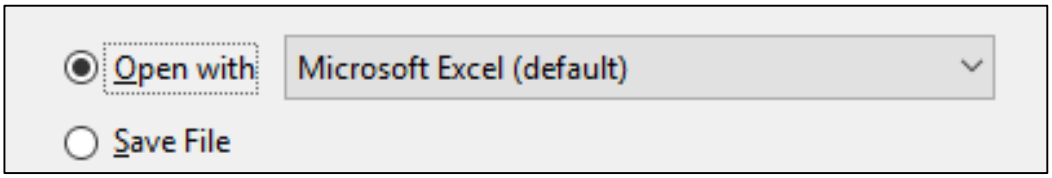
3. Export the results to your local computer.



4. Choose CSV data format.



5. Choose to open the file with Microsoft Excel or save the file locally.



4.12 Import Validation Results

After downloading validation data, site administrators can copy the desired facility results into the data compliance report template for further evaluation.

1. Select and copy the results from the CSV file.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Medical Center A	1000	Training_Feed_1	3/17/2016 8:00	3/16/2016	3/17/2016	513	513	513	513	513	0	513
2	Medical Center B	1001	Training_Feed_2	3/17/2016 8:00	3/16/2016	3/17/2016	57	57	57	57	57	0	57
3	Medical Center C	1002	Training_Feed_3	3/17/2016 8:00	3/16/2016	3/17/2016	1246	1246	1246	1246	1246	0	1246
4	Medical Center E	1004	Training_Feed_2	3/17/2016 8:00	3/16/2016	3/17/2016	118	118	118	118	118	0	118
5	Medical Center F	1005	Training_Feed_2	3/17/2016 8:00	3/16/2016	3/17/2016	232	232	232	232	232	0	232

2. Open the compliance template and paste the results on the **table_data** tab.

	A	B	C	D	E	F	G	H
1	Facility_Name	FacilityID_UUID	Feed_Name	Report_Date_Time	Begin_Date	End_Date	NumVisits	MSH_4_Sending_Facility
2	Medical Center A	1000	Training_Feed_1	3/17/2016 8:00	3/16/2016	3/17/2016	513	513
3	Medical Center B	1001	Training_Feed_2	3/17/2016 8:00	3/16/2016	3/17/2016	57	57

4.13 Evaluate Validation Results

After importing validation data, site administrators should use the compliance report results to evaluate each facility's compliance levels. The data compliance report template has detailed instructions and information to assist site administrators with downloading and analyzing the results.

Tab Name	*Tab Description*
Cover	Usage Summary and Table of Contents.
Version History	Record of changes made to this template.
Data Download Instructions	Guidance for downloading results and populating this template.
Data Analysis Instructions	Guidance for reading and interpreting data validation results.
Approval Status	History of data validations and approvals for facilities.
Table_Data	Download validation results from MySQL (phpMyAdmin) and paste into this tab.
Percentages	Auto-generated calculations in percentage format. **Do not change this tab.**
Visit_Counts	Auto-generated data built from data on the *Table_Data* tab. **Do not change this tab.**
Stage1	Stage 1 data mapping details.
MUB	Meaningful Use Base (MUB) data mapping details. **Note:** The MUB tab is not used in current data validation and is only provided to assist sites with converting existing data validation and quality scripts to use Stage_1. This tab will not be updated or maintained in future revisions of this template.
Message Guide Table 4.2	A copy of table 4-2 from the *PHIN Messaging Guide for Syndromic Surveillance* v.2.0 is provided for convenience when validating data. The official table is located in the *PHIN Messaging Guide for Syndromic Surveillance:* http://www.cdc.gov/nssp/documents/guides/syndrsurvmessagguide2_messagingguide_phn.pdf#page=97&zoom=auto,33,550

5 DATA SECURITY: CDC'S Authorization to Operate

This section provides information on data security for the BioSense Platform, including details on CDC's Authorization to Operate (ATO) and overall approach for ensuring data security of the BioSense Platform.

All CDC IT systems must obtain a signed Authorization to Operate (ATO) before connecting to the BioSense Platform. The ATO represents 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. An IT system must comply with the following regulations specified in the C&A process:

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

For IT systems required to complete a full C&A, the designated approving authority (DAA) is typically a senior management official, division level or above, within a center, institute, or office. There are two different ATO forms: the Non-reportable System/Application ATO and the Reportable System/Application ATO.

The certifying authority (CA) must sign within the C&A process pending on level of the Federal Information Processing Standard Publication (FIPS PUB) 199, Standards for Security Categorization of Federal Information and Information Systems. CAs are typically the application sponsor, business steward, system owner, chief information security officer, or designated approving authority.

FIPS PUB 199 is an important component of a suite of standards and guidelines that the National Institute for Standards and Technology (NIST) is developing to improve the security of federal information systems, including those systems that are part of the nation's critical infrastructure. FIPS PUB 199 enables agencies to meet the requirements of the Federal Information Security Management ACT (FISMA) and improves the security of federal information systems.

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 contains high vulnerabilities. The CA must collaborate with OCISO to lower system vulnerabilities to an acceptable level before an ATO will be granted. The project officer must submit a self-signed 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: http://www2.cdc.gov/cdcup/library/process_guides/default.htm.

6 PRODUCTION SUPPORT: BioSense Platform Service Desk

Sites may submit support requests to the BioSense Platform Service Desk when transitioning from one phase of the onboarding cycle to the next, as well as when questions arise or support is needed.

The BioSense Platform Service Desk provides a central repository for all support requests, including management of facilities, technical problems related to message transmission, and ad hoc requests such as accessing the BioSense Platform.

Once a site enters the Operate Phase, a primary point of contact should register for access to the BioSense Platform Service Desk. To register, go to http://support.syndromicsurveillance.org.

Once registered, sites will be able to submit support requests, monitor progress on open requests, and review closed requests. Additional training on using the BioSense Platform Service Desk is available at https://vimeo.com/118708825.

7 FREQUENTLY ASKED QUESTIONS

This section provides answers to questions commonly asked during BioSense Platform onboarding. While not exhaustive, these Frequently Asked Questions (FAQs) are a starting point for sites before submitting a support request. The FAQs are categorized by topic:

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

7.1 PHIN Messaging Guide for Syndromic Surveillance

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

The purpose of the International Society for Disease Surveillance (ISDS) 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." 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 in accordance with the ISDS document.

Should a data type section be added to the *PHIN Messaging Guide for Syndromic Surveillance: Emergency Department, Urgent Care, Inpatient, and Ambulatory Care Settings*?

The guide includes a section that shows what data types 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 emergency department, urgent care, inpatient and ambulatory care data sources. As eligible health professionals and hospitals adopt, implement, and upgrade their electronic health records (EHR) systems through the Centers for Medicare and Medicaid Services (CMS) EHR incentive programs (Meaningful Use programs), public health agencies have the opportunity to routinely receive health data from settings other than emergency departments and urgent care centers. 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 the limited number of large practices and get experience with the different characteristics and volume of data.

Is ADT the correct message type for *PHIN Messaging Guide for Syndromic Surveillance,* or is Observation Result/Patient Referral Message (ORU/REF) being considered?

The business processes defined by the ISDS workgroup are based on point-to-point data exchange of Admit Discharge Transfer (ADT) messages between healthcare facilities and public health departments. Therefore, ADT is the correct message type based on the use case for addressing the core data elements. Applicability of candidate HL7 messages in other data exchange scenarios has yet to be determined and may vary by public health site and data exchange partner.

The decision to use ADT message constructs instead of the ORU message construct was reviewed and approved by ISDS, the Public Health Data Standards Consortium (PHDSC), and other CDC partners. 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 Systems (HIS) transmit ADT messages as part of normal operation and configuration, these HIS generally lack the ability to *transmit* observation-related data through ORU messages. HIS typically *receive* such messages.

Should important but optional measures such as laboratory orders and results be added to the *PHIN Messaging Guide for Syndromic Surveillance*?

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, system 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 by accessing 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 issue new versions of this guide as necessary to modify the syndromic surveillance business standards and data requirements. CDC will collaborate with the International Society for Disease Surveillance (ISDS) and the community 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.

7.2 Differences in 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. And when necessary, sites may add data elements, modify data element usage, or constrain message elements to support specific 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*. System users should check with their local site administrator to determine if receiving the medical record number in this field is necessary.

Note: The Patient ID (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 in (OBX-5) can contain zero (0), whereas the Age Unit field (OBX-6) can be populated with the value of "Unknown." However, 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 and it is locally allowable, then reporting the DOB is acceptable.

7.3 Content Guidance and HL7 Specifications for Key Data Elements

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 the "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 check with their local site administrator for their version of an adopted coding system.

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

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 Compliant are not always the same. Chief Complaint is expected to be the patient's own words in free text and provides a level of granularity beyond that of Admit Reason. Admit Reason is a short description of the provider's reason for admitting the patient. Though Admit Reason can include free text in PV2-3.2, it often uses ICD-9 (International Classification of Diseases) codes or SNOMED (Systematized Nomenclature of Medicine) codes, whereas Chief Complaint, located in an OBX, often uses free text. For this reason, whenever possible, capturing both is preferred.

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

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

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

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

PID-11, Patient Address, expects to receive only the patient primary (current) address information. However, note that we do not want the full patient address—only the patient zip, 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 it is desirable to be precise by sending all available data. However, sending only the date is allowed.

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

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

For further information, please see *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. However, you should send the patient ID and other low-level information that does not identify the patient.

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 "MSH4, Sending Facility" as the sending facility and "EVN-7, Event Facility," where the patient was treated.

Note: Changes to the BioSense Platform processing that will add the functionality required to analyze data by the Event Facility ID (EVN-7) are expected to take effect in 2016.

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 International Society for Disease Surveillance (ISDS) 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 item 1 in Minimum Data Elements table 4.2.1 for further information or to the Centers for Medicare and Medicaid Services NPI information at http://www.cms.gov/NationalProvIdentStand/.

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

The International Society for Disease Surveillance (ISDS) recommends consistency across meaningful use public health reporting by using the CDC value set *Race Category*. This is the same value set used in the *HL7 Version 2.5.1: Implementation Guide for Immunization Messaging* and *HL7 Version 2.5.1 Implementation Guide: Electronic Laboratory Reporting to Public Health.*

7.4 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* specifies what the acknowledgment messages should contain, but the sender and receiver must decide whether to acknowledge a specific data exchange.

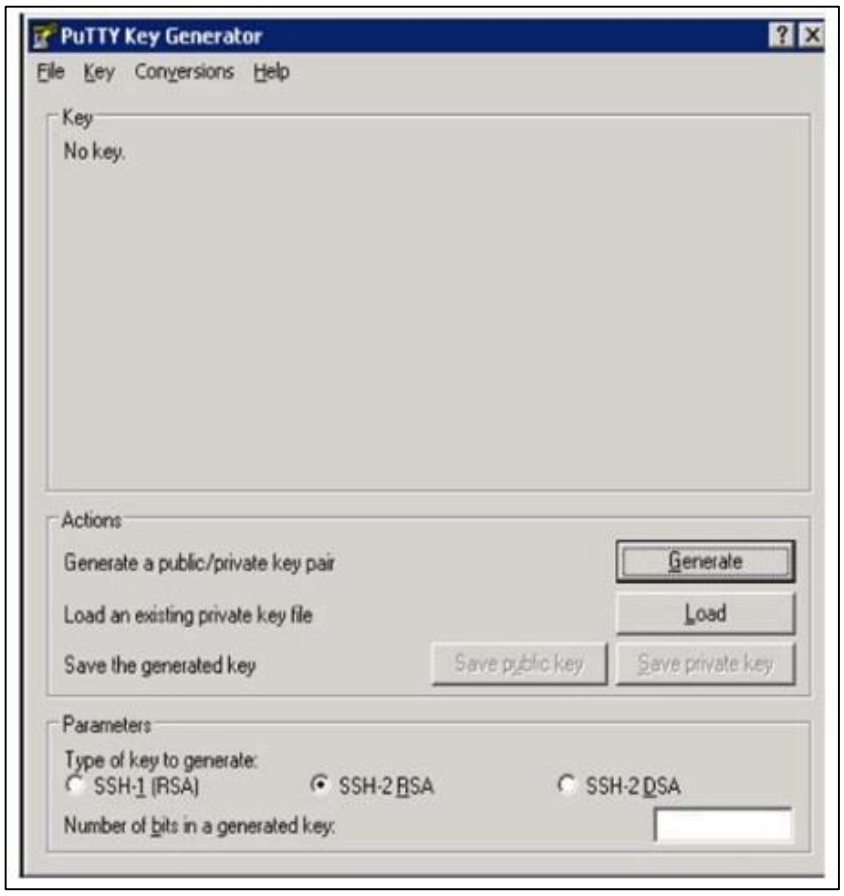
How often should I send syndromic surveillance messages?

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

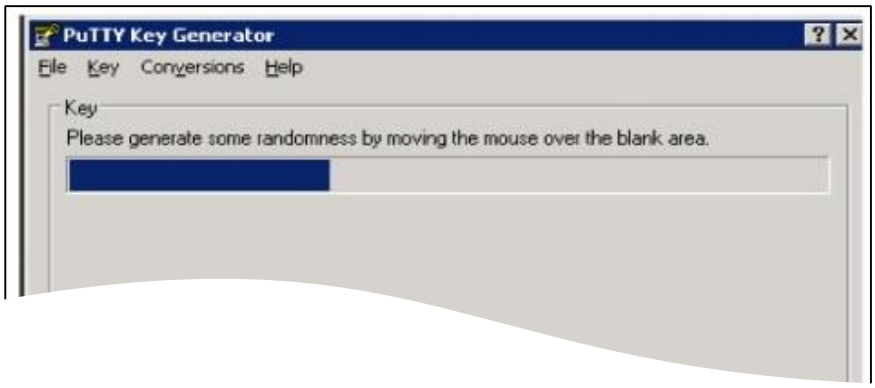
APPENDIX A. INSTRUCTIONS FOR CREATING SSH KEY PAIR

1. Download PuTTYgen
   http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

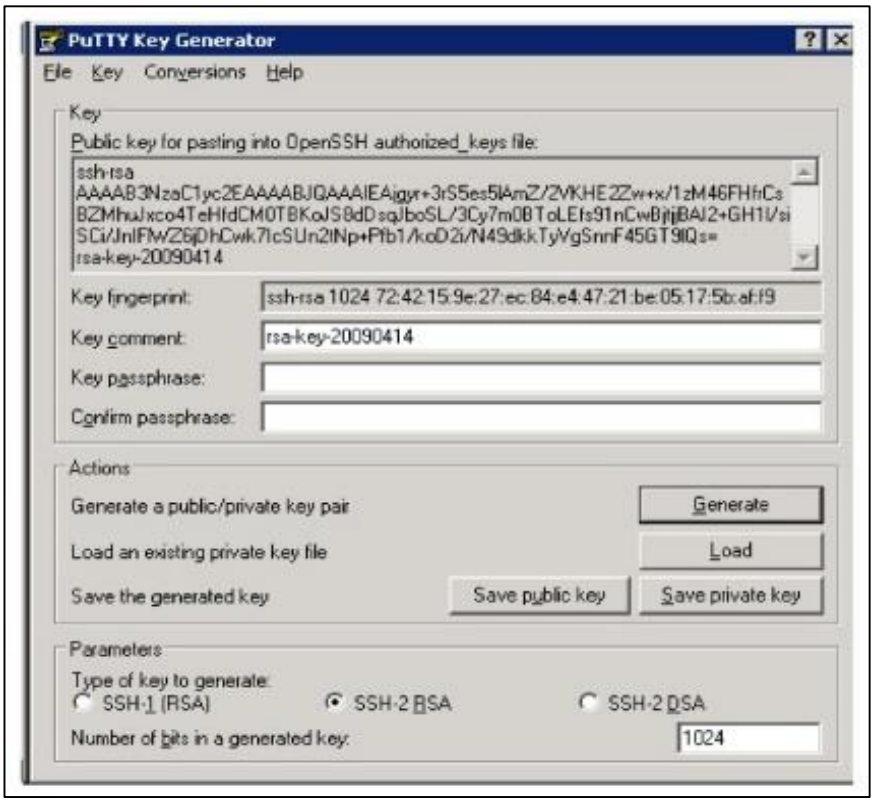
2. Run PuTTYgen.exe
   a. Type of key to generate: **SSH-2 RSA**
   b. Number of bits in a generated key: **2048**



3. Click on **Generate** and move your mouse randomly over the box as instructed.



4. Create a password of your choice.
    a. Enter **Key passphrase**
    b. Enter **Confirm passphrase**



5. Click on **Save public key**
6. Click on **Save private key**

Keep your private key secret—do not share with anyone, at any time.

APPENDIX B. 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.
- A site administrator maintains the following authority over facilities within its jurisdiction:
  - 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 c*ontingent* (temporary) approval to send data to production if it does not meet the minimum requirements.
- At the discretion of the site administrator, expiration of *contingent* approval may result in disconnection from the BioSense Platform.

Acknowledgment of Receipt of Latest Documentation

Initials	Acknowledgment Description
	I have reviewed the **latest** copy of the *PHIN Messaging Guide for Syndromic Surveillance,* located at http://www.cdc.gov/phin/resources/PHINguides.html.
	I have reviewed the **latest** version of the *Onboarding Guide to the BioSense Platform* and supporting documents, located at http://www.syndromicsurveillance.org/onboarding.

Name: _____

Position/Title: _____

Date Signed: _____

APPENDIX C. FACILITY BOPA

BioSense Platform Onboarding Process
Facility Acknowledgment

Facility Technical Engineer Lead Name: _____

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

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

Acknowledgment of Receipt of Latest Documentation

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

Name: _____

Position/Title: _____

Date Signed: _____

APPENDIX D. SITE CHECKLISTS

Sites should follow a standard procedure to use NSSP's BioSense Platform and to onboard facilities to the BioSense Platform. These checklists will help you identify, learn about, and track required site activities.

The **New Site Onboarding Checklist** lists activities needed to onboard the site and prepare the site to onboard facilities.

New Site Onboarding Checklist		
Action Item	**Responsible Party**	**Additional Resources**
Complete site-level data use agreement (DUA) with the Association for State and Territorial Health Officials (ASTHO) and consider the CDC DUA	Site administrator	BioSense Platform Service Desk
Complete BioSense Onboarding Process Acknowledgment (BOPA)	Site administrator Site onboarding coordinator	
Define site roles and responsibilities	Site administrator Site onboarding coordinator	
Review training and resources	Site administrator Site onboarding coordinator	
Determine site onboarding support model	Site administrator Site onboarding coordinator	
Plan for data sharing and site-to-site access	Site administrator	
Develop facility recruitment plan	Site administrator Site onboarding coordinator	
Prioritize facilities	Site administrator Site onboarding coordinator	
Submit Master Facility Table (Excel spreadsheet template) to BioSense Platform Service Desk	Site administrator Site onboarding coordinator	BioSense Platform Service Desk
Submit Quarterly Facility Readiness Updates to BioSense Platform Service Desk	Site administrator Site onboarding coordinator	BioSense Platform Service Desk

The **Site Onboarding Checklist for Facilities** should be used for each new facility onboarding to the BioSense Platform.

Site Onboarding Checklist for Facilities		
Action Item	**Responsible Party**	**Additional Resources**
Manage site onboarding priority list	Site administrator Site onboarding coordinator	
Manage and submit updated site Master Facility Table Excel template to BioSense Platform Service Desk	Site administrator Site onboarding coordinator	
Complete downstream DUA with facilities	Site administrator Site onboarding coordinator	
Review facility's NIST HL7 validation results	Site administrator Site onboarding coordinator	NIST Compliance Tool
Engage site and facility for onboarding	Site administrator Site onboarding coordinator	
Create target dates for milestones	Site administrator Site onboarding coordinator	
Submit Master Facility Table template with planned facility onboarding dates to BioSense Platform Service Desk	Site administrator Site onboarding coordinator	BioSense Platform Service Desk
Review grant-based deadlines (if site is a grantee)	Site administrator Site onboarding coordinator	
Create SSH key pair	Site or facility technical engineer EHR data manager	
Create site administrator user account	Site administrator Site onboarding coordinator Onboarding team	
Upload valid production HL7 message	Site or facility technical engineer EHR data manager	
Configure HL7 Processing	Onboarding team	
Choose between SFTP and PHINMS for data exchange	Site administrator Site onboarding coordinator Site or facility technical engineer EHR data manager	

Develop filename convention	Site or facility technical engineer EHR data manager	
Request data validation through BioSense Platform Service Desk	Site administrator Site onboarding coordinator	
Create data validation results for site administrator	Onboarding team	
Assess facility data compliance results to meet NSSP-required minimums	Onboarding team	
Assess facility data compliance results to meet site-specified minimums (see Note)	Site administrator Site onboarding coordinator	
Ensure data does not have personally identifiable information (PII) and data elements are mapped correctly	Site administrator Site onboarding coordinator Facility technical engineer EHR data manager	
Monitor facility connections	Site or facility technical engineer EHR data manager	
Provide support for connection issues	Site or facility technical engineer EHR data manager	
Review data timeliness and quality	Site administrator	
Respond to data quality investigations and data quality improvement requests	Facility administrator Facility leadership Facility technical engineer	

Note: A site may have additional data compliance or quality standards than administered by the NSSP yet choose to accept NSSP's minimum data compliance guidelines. A site's level of involvement during the Validate phase will vary depending on the selection of onboarding support model.

APPENDIX E. FACILITY ONBOARDING CHECKLIST

Specific activities must be completed before a facility can onboard to the BioSense Platform. Facilities may use the following checklist to track the completion of action items. Because some sites might have additional requirements, it's a good idea to always check with their site administrators to make sure you have a clear understanding of what is required.

Facility Onboarding Checklist		
Action Item	**Responsible Party**	**Additional Resources**
Complete Data Use Agreement (DUA) with site	Facility leadership Facility administrator	Request DUA from site administrator
Complete BioSense Onboarding Process Acknowledgment (BOPA); submit signed form to site	Facility administrator Facility technical engineer EHR data manager	
Define facility roles and responsibilities	Facility administrator Facility leadership Facility technical engineer EHR data manager	
Review training and resources	Facility administrator	
Develop HL7 messages	Facility technical engineer EHR data manager	
Complete NIST validation testing	Facility technical engineer EHR data manager	NIST Compliance Tool
Manage or submit updated site Master Facility Table Excel template to BioSense Platform Service Desk	Site administrator Site onboarding coordinator	
Submit HL7 test messages to NIST validation tool, and submit successful test results to site administrator	Facility administrator Facility technical engineer EHR data manager	NIST Compliance Tool
Review NIST HL7 validation results	Facility administrator Site administrator Site onboarding coordinator	NIST Compliance Tool
Engage site and facility for onboarding	Onboarding team	
Create target dates for milestones	Site administrator Site onboarding coordinator	

Submit Master Facility Table template with planned facility onboarding dates to BioSense Platform Service Desk	Site administrator Site onboarding coordinator	
Create SSH key pair	Site or facility technical engineer EHR data manager	
Create site administrator user account	Onboarding team	
Configure processing	Onboarding team	
Upload valid production HL7 message	Site or facility technical engineer EHR data manager	
Choose between SFTP and PHINMS for data exchange	Site administrator Site onboarding coordinator Site or facility technical engineer EHR data manager	
Develop filename convention using NSSP guidelines	Site or facility technical engineer EHR data manager	
Request data validation through BioSense Platform Service Desk	Site administrator Site onboarding coordinator	BioSense Platform Service Desk
Download data validation results for site administrator	Site administrator Site onboarding coordinator	
Assess facility data compliance results to meet NSSP-required minimums	Onboarding team	
Assess facility data compliance results to meet site-specified minimums (see Note)	Site administrator Site onboarding coordinator	
Fix HL7 issues and resubmit data as required	Facility technical engineer EHR data manager	
Ensure data does not have personally identifiable information (PII) and data elements are mapped correctly	Site administrator Site onboarding coordinator Site or Facility technical engineer EHR data manager	
Monitor facility connections	Facility administrator Site or Facility technical engineer EHR data manager	

Provide support for connection issues	Site or Facility technical engineer EHR data manager	
Review data timeliness and quality	Site or Facility technical engineer EHR data manager	
Respond to data quality investigations and data quality improvement requests	Facility administrator Facility leadership Facility technical engineer EHR data manager	

Note: A site may have more data compliance or quality standards than administered by the NSSP yet choose to accept NSSP's minimum data compliance guidelines. A site's level of involvement during the Validate Phase will vary depending on the selection of onboarding support model.