NSSP UPDATE

National Syndromic Surveillance Program

BioSense Platform

June 2018

People

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COMMUNITY OF PRACTICE UPDATES

Trending Topics

The Centers for Medicare & Medicaid Services (CMS) is proposing to revise the rule "Inpatient Prospective Payment Systems (IPPS) for Eligible Hospitals and Critical Access Hospitals," published here.

The International Society for Disease Surveillance (ISDS) is collecting comments from the surveillance community on these standards at https://www.surveymonkey.com/r/85X9PBZ. Please share your questions or concerns by **5:00 PM ET on June 20, 2018,** so that ISDS can compile a comprehensive response for CMS from the surveillance community.

For more information, go to https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html.

Workgroup and Committee Updates

- **Data Quality Committee**—The Committee needs your input. The May *NSSP Update* article "Inside Look at Data Peculiarities" described a processing error identified with the Facility Type fields. To gauge the community's preferences on how to process these fields, the Committee requests that you post your preference by commenting in the Data Quality forum, General Discussion, Facility Visit Type Processing, or by messaging Sophia Crossen or Elyse Kadokura. (You must belong to the Data Quality Committee to view this forum.)

The Committee thanks NSSP team members—CDC Analytic Data Management Lead Roseanne English and ICF Int'l. Inc. Project Manager Max Worlund—for their presentation on the April 2018 SAS Studio Pilot. The Committee also thanks Caleb Wiedeman and Jeffrey Leegon for their presentation on the May quarterly open call. The Committee appreciates everyone who joined, asked questions, and gave feedback on the new CMS Notice of Proposed Rule Making for the Promoting Interoperability Program.

For next month's closed call, the Committee has invited CSPI representatives to discuss Evident products. To participate, you will need to join the Data Quality Committee.

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- **Syndromic Surveillance Public Health Emergency Preparedness, Response, and Recovery (SPHERR) Committee**—The SPHERR Committee aims to help syndromic surveillance and public health preparedness professionals fully integrate syndromic data and information into their preparedness and emergency response. SPHERR provides access to a national peer network for ad hoc support or collaboration during public health events of national interest (e.g., extreme weather events, mass gatherings). SPHERR meets on the first and third Fridays of the month at 2:00–2:45 PM ET and 11:00–11:45 AM ET.

- **Overdose Surveillance Committee**—Topics discussed during the recent call follow:
  - amfAR's Opioid & Health Indicators Database
  - Updates from the Council of State and Territorial Epidemiologists (CSTE) Substance Overdose Subcommittee, including poison indicators in ICD-10 and ICD-9
  - Coagulopathy outbreak linked to synthetic marijuana (real-world experiences, information, and queries)

  The Overdose Surveillance Committee posts opioid news daily and encourages the community to check the posts and share information.

- **Syndrome Definition Committee**—CDC Health Scientist Nimi Idaikkadar (NSSP) collaborated with Amanda Dylina Morse from the **R**apid **H**ealth **I**nformation **N**etw**O**rk (RHINO) Program, Washington State Department of Health, to develop a Chief Complaint (CC) Discharge Diagnosis (DD) category for detecting emergency department visits for sexual violence. The query uses CC terms and ICD-10 diagnoses related to sexual violence and includes terminology related to forensic examinations. Because of regional differences in clinical transcription, the query does not include "SA" or "HSA," which can alternately indicate "suicide attempt" or "sexual assault."

  The query is available in both production and staging environments of NSSP–ESSENCE. Nimi and Amanda will discuss the query during the Syndrome Definition Committee call on June 6. The Committee encourages the community to test the query and give feedback on its validity and utility. Nimi and Amanda thank Ashley D'Inverno (CDC) and Conrad Otterness and Kirstin McFarland (Washington State Department of Health) for their subject expertise.

To learn about other CoP chapters, committees, and workgroups, check out the groups here. Registration is required to log in.

NSSP Community of Practice Call

Please join the monthly NSSP Community of Practice (CoP) Call. This call is powered by community members who are willing to share guidance, resources, and technical assistance.

The next call will be held **June 19, 2018, 3:00–4:30 PM ET.** The topic is Tips and Tricks for Summer Surveillance: Hurricane Preparation and Other Summer Hazards. Click here to register.

To access slides and recordings from previous calls, visit the NSSP Community of Practice Group Page.

Implementation Guide for Syndromic Surveillance

HL7 balloting closed May 7, 2018. ISDS collected and submitted comments on behalf of the community. More than 220 comments were received. ISDS, CDC, and the Message Guide Workgroup will spend the next couple months working with the HL7 Public Health Workgroup to review and integrate comments before the guide is published as a standard for trial use.

Development Schedule	
Time Frame	**Activity**
2015	Version 2.0 **Final RELEASE***
2016	Erratum and Clarification Documents Released for Version 2.0
2017 Summer	Version 2.2 Working Draft Released for Community Comment and Consensus
2017 Winter	Version 2.3 to be Released for Review and Community Comment
2018 March	Version .09
2018 Spring	HL7 Balloting; Guide Balloted is *Implementation Guide for Syndromic Surveillance Release 1.0 Standard for Trial Use (STU) HL7 Version 2.5.1***
2018 Fall	Anticipated Completion of HL7 Balloting and Release of *HL7 2.5.1 Implementation Guide for Syndromic Surveillance for Trial Use Version 1*

* Version 2.0 is currently being used; subsequent versions are working drafts only.
** Added April 2, 2018.

CDC FUNDING RECIPIENTS AND PARTNERSHIP UPDATES

Themes Emerge from Roundtable Discussions

The recently held Third Annual Recipient Meeting in Atlanta, Georgia, included four roundtable sessions with broad appeal: Syndrome Definitions; Practice; Information Sharing and Reporting; and Data and Onboarding. Historically, these roundtable sessions have been productive and informed NSSP priorities.

A few high-level, crosscutting themes emerged:

1. **Community involvement.** The user community is key to creating new syndromes, validating utility, and documenting the process to promote use. The community will also be integral in developing a template that can be used whenever a new syndrome is created. This template will be shared with others to make them aware of the components (e.g., words, characters) of the syndrome definitions.

2. **Trust and relationship building.** This theme emerges consistently in various contexts and, oftentimes, in the recipients' Annual Progress Reports. Relationships with nontraditional partners (e.g., information officers, infection prevention specialists) have led to broad use of syndromic data. Community members can support one another by sharing accurate, near real-time data and providing context so that others understand what these data represent. Transparency in data and information sharing builds trust. By promoting collaborative projects and the use of syndromic data by other groups, we improve visibility and understanding of the nuances and science behind the use of syndromic data, not to mention its potential.

3. **Strategies to overcome vendor challenges.** Vendor-related issues—especially around data transmission characteristics—are an ongoing challenge for health departments. Strong vendor–client relationships offer mutual benefit. By being strategic and, for example, using the revised message implementation guide and NSSP materials (data quality reports, vendor standardization reports), funding recipients and others who transmit messages to the BioSense Platform will have data-driven information to achieve change.

Overall, the roundtable discussions prompted recipients to exchange ideas and discuss common issues. This input will help continue the dialogue about how to strengthen syndromic surveillance through technology and community engagement.

Health scientists in CDC's Division of Health Informatics and Surveillance, Program Evaluation Team, recorded, transcribed, and coded information from the sessions into a summary report of key themes. If you have questions, please contact Cassandra Davis at vts4@cdc.gov.

UPCOMING EVENTS

June 6	Data Validation Support Call: 3:00–4:00 PM ET
June 10–14	2018 CSTE Annual Conference, "Let the Sun Shine: Using Data to Weather the Storms"; West Palm Beach, Florida
June 19	Scheduled vendor patches in staging environment: 6:00–10:00 AM ET
June 19	NSSP Community of Practice Call: 3:00–4:30 PM ET. Topic: Tips and Tricks for Summer Surveillance: Hurricane Preparation and Other Summer Hazards. Click here to register.
June 21	Scheduled vendor patches in production environment: 6:00–10:00 AM ET
June 25–July 7	Server upgrades
August 20–23	Public Health Informatics (PHI) Conference; Connecting Systems & People to Improve Population Health

Note. To access Community of Practice resources, sign in to your healthsurveillance.org account. To create an account, click here.

LAST MONTH'S TECHNICAL ASSISTANCE

May 2	Data Validation Support Call
May 8	Update to Access & Management Center
May 15	Scheduled vendor patches in staging environment
May 17	Scheduled vendor patches in production environment

Practice

Q: How can I use the new ESSENCE feature "MyFilter"?

A: It is time-consuming to click through the ESSENCE interface and select query filters. Now, instead of reselecting filters each time you perform a routine set of queries, you can save time by using "MyFilter."

For example, select MyFilter if you often use the same set of ZIP codes or HHS regions (termed "counties" in ESSENCE), select the same large group of facilities from your site, or use other query parameters routinely. With MyFilter, you create a set of filters *once,* save the set as "MyFilter" with a descriptive label, and then select the filter you need for a particular query. Whatever parameters you saved in the filter will *always* be applied to the query. If you usually select multiple filters when running queries, MyFilter is a true time-saver.

DATA QUALITY CORNER

Data—the foundation for making sound public health decisions—must be managed from collection through analysis and reporting. NSSP can work with sites to assess and improve data quality. Each month, NSSP provides site-specific reports on three essential and integrated measures of data quality: completeness, timeliness, and validity. Reports can be accessed in each site's secure shared folder and are available toward the end of the month. The Data Quality Corner can help you use these reports to bolster and maintain the integrity of your site's data quality.

Coming to an SFTP near you in June. . . Vendor-level Data Quality Reports!

Great news! By collaborating with the community to standardize vendor information, NSSP can now provide data quality (DQ) metrics by vendor. You will be able to filter and view data by vendor, feed, facility type, and other columns. Stay tuned.

Another Benefit of the Data Dictionary

Last month in *NSSP Update*, we described several v32 improvements to the Data Dictionary. This month, we are highlighting v32 improvements to the ESSENCE tab.

The ESSENCE tab was initially designed to provide information about ingestion progress. Therefore, the foundation of the ESSENCE tab included information on NSSP ARCHIVE Processed columns, including whether data were being ingested into ESSENCE—and if so, how? Over time, we added information about other calculations ESSENCE performs (e.g., Patient Class processing, new "Has Been" fields). Now, v32 includes all ESSENCE fields—even fields NSSP does *not* use—to make sure you have a complete layout of the ESSENCE detailed data structure.

June | New to NSSP Resource Center

Your monthly Data Quality reports will soon include vendor information to help you and your vendor make informed decisions.

Updates to the Data Dictionary (v32) include improvements to the ESSENCE tab.

That said, the ESSENCE *dispositioncategory* field is dynamically populated based on the ESSENCE *dischargedisposition* field (which, in turn, is populated by using the NSSP Processed table discharge_disposition field). NSSP applies business rules for "ESSENCE discharge disposition mapping," thereby mapping *dischargedisposition* to a standard ESSENCE value stored in *dispositioncategory*. Mapping is done on the fly, and *dispositioncategory* is not kept as a permanent field in the underlying data and, thus, was not included in v32. A few users have asked that we include this dynamic field as well. Therefore, the *dispositioncategory* field will be added to the next update of the Data Dictionary. (*Note.* ESSENCE discharge disposition mapping for v32 of the Data Dictionary can be found under the DischargeDisposition Mapping tab.)

We hope you find this explanation helpful. As always, please contact the Analytic Data Management (ADM) team site inspectors if you have questions or concerns.

SPOTLIGHT ON SYNDROMIC SURVEILLANCE PRACTICE

This evaluation compares a traditional heat-related query with a novel query that uses an exclusion criteria to eliminate unrelated patient visits. Both queries were applied to data from Maricopa County, Arizona, to identify the query with highest predictive ability for indentifying heat-related illness in near real time. At the time of this evaluation, exclusion criteria were not part of predefined queries on the larger syndromic systems in use. This spotlight demonstrates how good ideas get visibility and, eventually, get integrated into practice.

Evaluation of a Novel Syndromic Surveillance Query for Heat-related Illness Using Hospital Data from Maricopa County, Arizona, 2015[1]

The desert climate of Arizona's Maricopa County produces an average of 110 days of temperatures exceeding 100°F.[1] Extreme heat can lead to illnesses, make some existing health conditions worse, or cause life-threatening heat exhaustion and stroke. When one's body cannot cool itself properly, the brain and other vital organs can be damaged. Some factors increase the risk of heat-related illness, including obesity, dehydration, alcohol use, and sunburn.[2]

Typically, heat-related illness is *not* a reportable condition. Retrospective discharge data provide a reliable data source for heat-related illness, but these data take months to a year before made available for analysis.[1] A better approach is to monitor temperature-related illness in real time so that public health departments know the current effect on people in the community and can respond with timely public health messages and interventions.

In 2014, a Council of State and Territorial Epidemiologists (CSTE) Heat Syndrome Workgroup was convened to develop a query for heat-related illness. They developed a novel query that combined diagnosis codes and chief complaint text with an exclusion criteria.

The authors evaluated the novel query with one already in use. They applied both the novel query and in-use "heat, excessive" query to data being transmitted to NSSP. Then the authors examined the probable cause of illness and positive predictive value of each query. They concluded that the positive predictive value of the workgroup's novel query was higher than that of the system query—particularly during Arizona's hottest time of year (May 1 to September 30).[1] The novel query performed well and could be adapted to the needs of other public health departments. Further, the novel query's exclusion criteria helped eliminate false-positive records. The authors suggest that when queries are standardized, data can be shared more easily and situational awareness improved.

Ultimately, the workgroup's efforts and this evaluation led to the query being integrated into ESSENCE. As of mid-May 2018, ESSENCE experts at the Johns Hopkins University–Applied Physics Laboratory were in the midst of updating the query to include more feedback. Work such as this drives practice, which is another reason why collaborative opportunities presented through NSSP Community of Practice workgroups, committees, and forums add value throughout the community.

[1] White JR, Berisha V, Lane K, Ménager H, Gettel A, Braun CR. Evaluation of a Novel Syndromic Surveillance Query for Heat-Related Illness Using Hospital Data from Maricopa County, Arizona, 2015. *Public Health Reports* [Internet]. 2017 July/August [cited 2018 May 14];132(1 Suppl):31S–39S. Available from: http://journals.sagepub.com/doi/full/10.1177/0033354917706517

[2] CDC. Natural Disasters and Severe Weather: About Extreme Heat [online]. 2017. [cited 2018 May 15]. Available from https://www.cdc.gov/disasters/extremeheat/heat_guide.html

The NSSP Community of Practice encourages its members to share best practices and queries. The Community of Practice Knowledge Repository contains queries for both heat- and cold-related temperatures. The repository includes CSTE's query for heat-related illness and describes its development in an accompanying guidance document.

Collaborating with NSSP to Create an All-traffic Injury CC and DD Category

The Washington State Department of Health (WADOH) is funded by the Washington Traffic Safety Commission to collect emergency department data and use it to supplement what is known about traffic-related injuries in Washington State. As part of this effort, WADOH staff set out to identify any visit to a Washington State emergency department for a traffic-related injury captured in NSSP–ESSENCE. The goal of identifying each visit was to monitor trends in traffic-related injury visits and describe traffic-related injuries. After assessing potential fields to use in the query, WADOH selected Chief Complaint History, SubSyndrome Free Text, Admit Reason Code, Admit Reason Combo, and Discharge Diagnosis History. Robust text fields, specifically Triage Notes and Clinical Impression, were not included due to limitations of basic key word searches to take context into consideration.

Search terms included the ESSENCE-programmed subsyndrome "MotorVehicle," supplemented with free-text terms, to better capture pedestrian-involved incidents, and all 449 traffic-related International Classification of Diseases, Tenth Revision, Clinical Modification codes (ICD-10-CM). WADOH ruled out terms including seat belt, driver, passenger, airbag AND deploy, rear AND ended, collision, and MVC that did not appear to greatly increase sensitivity and, occasionally, diminished specificity.

Once WADOH settled on a sufficiently sensitive and specific traffic-related injury syndrome query, they used it to build long-term trend and short-term event dashboards. These dashboards include time series graphs such as visit counts, percentages, various visit and demographic groupings, overlays of weather factors, and facility and patient-location maps. While building the dashboards and exploring data patterns, WADOH ran the query regularly throughout the business day.

Staff from NSSP and the Johns Hopkins University–Applied Physics Laboratory observed that whenever WADOH's traffic-injury dashboard was loaded and run up to 14 times, the query strained ESSENCE. Because this complex free-text query was being run repeatedly, over extended timeframes, and was expected to be used long-term, NSSP staff suggested the query be converted into a Chief Complaint (CC) and Discharge Diagnosis (DD) category.

Creating a CC and DD category was simple. The search terms and fields being queried were shared with NSSP. NSSP staff reviewed the query and ran it against the Chief Complaint Query Validation data source to ensure it was compatible with data submitted by other NSSP participants. After NSSP modified the query slightly, the WADOH staff verified that the resulting query definition worked as desired with Washington State data. Within a few days, WADOH staff had converted the query into CC and DD category "All Traffic Related v1," at which point existing data were processed into the CC and DD category and made available for use.

Since the creation of the CC and DD category, WADOH traffic injury dashboards have been converted to use "All Traffic Related v1." WADOH staff are extremely happy with this outcome because the traffic-related query and dashboards load much faster. They were able to quickly prepare for a presentation on traffic-related injury trends without encountering performance issues with NSSP–ESSENCE when doing analyses using "All Traffic Related v1."

All Traffic Related v1

Chief Complaint History

Also Apply To: SubSyndrome Free Text, Admit Reason Code, Admit Reason Combo, Discharge Diagnosis History

Terms

^;MotorVehicle;^,OR,(,(,^PED^,or,^BIKE^,or,^BICYCLE^,or,^SKATE^,or,^SKATING^,),AND,(,^VERSUS^,OR,^VS[.]^,OR,(,^V[.]^,ANDNOT,^[A-Z]V^,),),),OR,^motor vehicle crash^,OR,^motorcycle crash^,OR,^[;/]V0[2349].[19][0129]^,or,^[;/]V0[2349][19][0129]^,or,^[;/]V09.2[019]^,or,^[;/]V092[019]^,or,^[;/]V1[234].[3459]^,or,^[;/]V1[234][3459]^,or,^[;/]V19.[4-6][09]^,or,^[;/]V19[4-6][09]^,or,^[;/]V2[0-8].[3459]^,or,^[;/]V2[0-8][3459]^,or,^[;/]V29.[456][09]^,or,^[;/]V29[456][09]^,or,^[;/]V29.8[18]^,or,^[;/]V298[18]^,or,^[;/]V29.9^,or,^[;/]V3[0-7].[45679]^,or,^[;/]V3[0-7][45679]^,or,^[;/]V39.8[19]^,or,^[;/]V398[19]^,or,^[;/]V4[01245678].[45679]^,or,^[;/]V4[01245678][45679]^,or,^[;/]V43.[45679][1-4]^,or,^[;/]V43[45679][1-4]^,or,^[;/]V[3-7]9.[456][09]^,or,^[;/]V[3-7]9[456][09]^,or,^[;/]V[3-7]9.9^,or,^[;/]V[3-7]99^,or,^[;/]V[4-7]9.8[18]^,or,^[;/]V[4-7]98[18]^,or,^[;/]V[5-7][0-8].[45679]^,or,^[;/]V[5-7][0-8][45679]^,or,^[;/]V8[345].[0-3]^,or,^[;/]V8[345][0-3]^,or,^[;/]V86.[0-3][1234569]^,or,^[;/]V86[0-3][1234569]^,or,^[;/]V80.[345][12]^,or,^[;/]V80[345][12]^,or,^[;/]V8[12].1^,or,^[;/]V8[12]1^,or,^[;/]V87.[0-9]^,or,^[;/]V87[0-9]^,or,^[;/]V89.2^,or,^[;/]V892^,or,^[;/]Y32^,or,^[;/]Y0[23].0^,or,^Y0[23]0^,or,^[;/]Y03.8^,or,^[;/]Y038^,or,^[;/]X82.[028]^,or,^[;/]X82[028]^,or,^[;/]X81.0^,or,^[;/]X810^,or,^[;/]X82.1^,or,^[;/]X821^

We thank the Washington State Department of Health for sharing this query with the community. Queries are posted in the NSSP Community of Practice [Knowledge Repository](#).

Program

NSSP Progress Toward Transitioning Legacy Data

The NSSP team is moving the final few sites' data from the legacy system to the NSSP BioSense Platform. NSSP has converted legacy data into the production environment for 95% of the 43 sites that requested legacy migration.

Legacy Data in Production
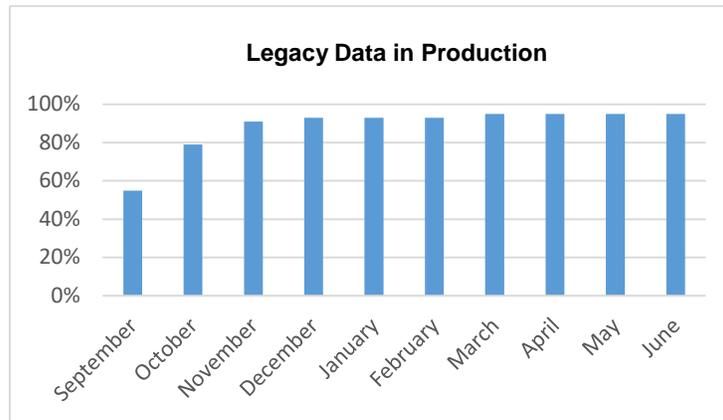
Of the 43 total legacy sites, 41 have data available in production ESSENCE. Of the remaining sites, two are under site review in the staging environment.

Thank you for your continued patience throughout the legacy transition. If you have questions, please contact the NSSP Service Desk.

Technology Update

Server Upgrades—Servers will be upgraded beginning mid-June through July 7, 2018. Expect some minor outages and delays to data ingestion and processing. If needed, NSSP's onboarding team will be available to troubleshoot connection issues. More information will be provided later this month.

MFT Acceptability Testing—We continue to work on the AMC Master Facility Table (MFT). We are aiming for a version that can be tested for compliance with CDC business requirements while performing essential onboarding tasks. The MFT is one of several modules that site administrators will be able to use via a tab on the Access & Management Center home page. NSSP plans to deliver the first release of the MFT module by late summer. This automated version of the MFT will streamline the onboarding process by letting site administrators enter new facilities themselves, update facility information, and change facility status to reflect production readiness.

SAS Performance Testing—In May, community members helped NSSP by performing another round of SAS tests. On the basis of test results and feedback, we plan to release SAS sometime after upgrading the servers in mid-July. The upgrade should improve system performance for all BioSense Platform tools, including SAS.

New ESSENCE Features

Experts from the Johns Hopkins University–Applied Science Laboratory recently updated ESSENCE. A few improvements follow:

- **MyFilter:** "MyFilter" lets you create a set of filters *once,* save the set as "MyFilter" with a descriptive label, and then apply whatever parameters you've saved to future queries.

- **New free-text queryable field:** The discharge diagnosis combo field is now available as a free text queryable field. Once populated, you can immediately take advantage of this capability.

- **myESSENCE:** The configure functionality (i.e., gear symbol) in each of the myESSENCE widgets now includes a feature called "Edit Parameters." When you select Edit Parameters, a query wizard box will open. From here, you can update any myESSENCE widget, and the update will be permanent.

NSSP PARTICIPATION

The NSSP is refining its definition of participation. Meanwhile, current estimates show that NSSP receives data from more than 4,000 facilities. Of these, about 2,567 are emergency departments (EDs) that actively submit data, representing about 60% of all ED visits in the country (based on American Hospital Association data). At least 55 sites in 45 states, including the District of Columbia, participate in NSSP. Although NSSP is pleased with participation to date, sites with data in production do not always translate into sites with broad ED coverage.
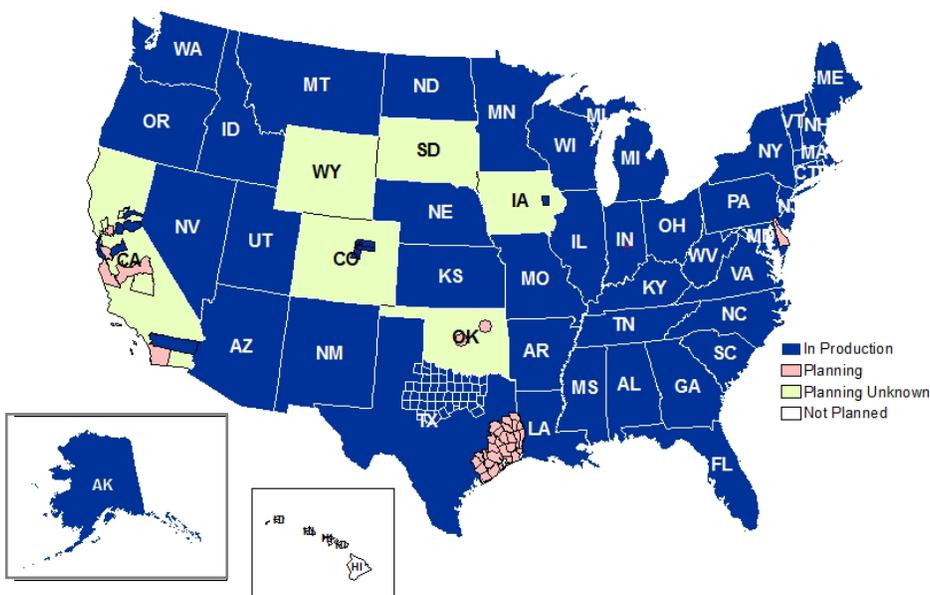
~656 MILLION

Legacy records successfully migrated to the BioSense Platform as of May 2018

3-5 MILLION

Daily volume of records ingested into the BioSense Platform as of May 2018

Definitions: NSSP consolidates facilities that provide data under a single data administrative authority called a ***site administrator***. These facilities and single-site administrator constitute a ***site***.

ONBOARDING UPDATES

Data Validation Support

Conference calls are held the first Wednesday of each month, 3:00–4:00 PM ET, to assist with data validation compliance. For more information, contact the NSSP Service Desk.