

# NSSP UPDATE



March 2017

## Welcome to NSSP Update

*NSSP Update* is published monthly by the National Syndromic Surveillance Program (NSSP) and brings you the latest news about the BioSense Platform. To learn more, visit the [NSSP website](#). Link to more resources via the Syndromic Surveillance Community of Practice [Portal](#).

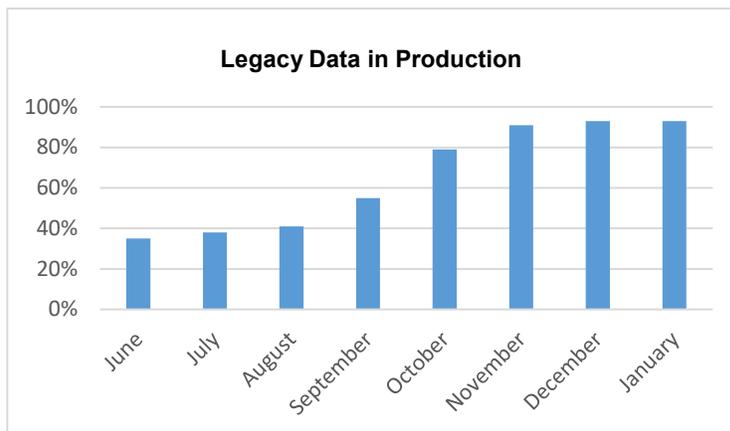
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## NSSP Progress Toward Transitioning Legacy Data

The NSSP Team is moving the final few sites' data from the legacy system to the NSSP BioSense Platform. By mid-February, NSSP had converted legacy data into the production environment for 93% of the 43 remaining sites that had requested legacy migration.



Of the 43 total legacy sites, 28 have data available in production ESSENCE, which is 19 more than last month. An additional 12 are queued to load into ESSENCE. Of the remaining sites, three are under site review in the staging environment.

We appreciate your patience throughout this transition. If you have questions, please contact the [NSSP Service Desk](#).

## Technology Update

In February, the BioSense IT development team worked on improving the stability of RStudio to support data analytic activities. The team continues to work on the much anticipated Access & Management Center (AMC) Master Facility Table tool, which will deploy in phases beginning spring 2018.

Preparations are also underway for an upcoming SAS pilot. We look forward to having members of the community validate new documentation and explore how well SAS performs on the BioSense Platform under different scenarios.

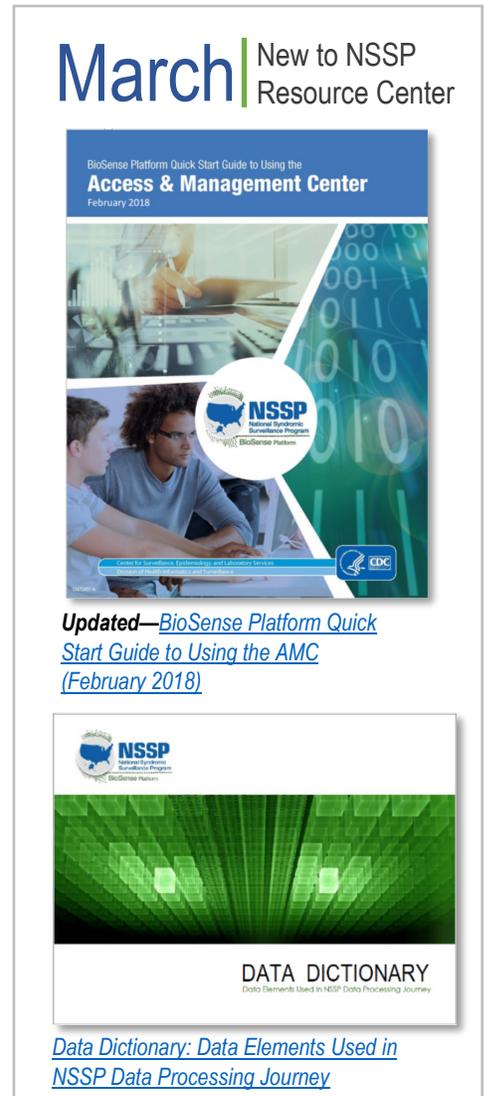
## NSSP Takes Center Stage at ISDS Conference

The NSSP Team thanks everyone who contributed to the 2018 International Society for Disease Surveillance (ISDS) [annual conference](#). Thanks for visiting the NSSP booth and swap meet table and for attending roundtable and other presentations. In addition to networking and learning, the NSSP Team was especially honored to participate in a discussion panel about the community's progress and future plans. Program Manager Michael A. Coletta launched the discussion about the community's progress and future plans by reminding the audience of how far NSSP has come. In those early days, the mood was somber. "Think back to 2014 when the BioSense Modernization Initiative was just getting started," Coletta said. "Neither the data flow nor system worked well for local and state partners or CDC programs."

Coletta described the efforts taken to position NSSP to win. The BioSense Governance Group and community worked painstakingly to define (and refine) the BioSense Platform's technical and operational requirements. "We undertook a pilot to prove that tools like ESSENCE could support syndromic surveillance on a national scale," Coletta said. "After the pilot, critical decisions were made—decisions made *in partnership* with the community—about what the national picture could *and should* look like and how NSSP could help sites administer local details."

In July 2016, a new data flow and new tools, including the Access & Management Center and ESSENCE, went live. Sites transitioned into the new environment throughout 2016. By the year's end, prospective data from all sites flowed into the newly enhanced BioSense Platform. Consequently, when ISDS held its 2018 conference, the NSSP participation numbers had increased considerably. At least 55 sites comprising multiple emergency departments (EDs) in 45 states and the District of Columbia were sending data to NSSP's BioSense Platform—representing more than half the nation's ED visits.

After Coletta's introduction, NSSP Team members Roseanne English (Analytic Data Management Lead) and Max Worlund (IT Project Manager) took the audience on a journey of technical achievements that would culminate with the remaining panelists describing how they use syndromic data. Worlund and English recapped server upgrades, performance enhancements of 2017, and availability of improved data quality reporting. "The data is very timely," English said. But she pointed out that speed and quantity paint only part of the picture. "We'd like to focus on innovation in the future, providing additional data quality and functionality to allow for additional flexibility for slicing and dicing the data," she said. "We want to be able to tailor data to the needs of the users."



After providing sufficient program background, NSSP's partners took center stage. First to speak was panelist Alana Vivolo-Kantor of CDC's Enhanced State Opioid Overdose Surveillance (ESOOS) program. She explained how ESOOS leverages syndromic ED data and uses the BioSense Platform to collaborate with ESOOS funding recipients who are developing opioid overdose definitions. ESOOS data are shared nationwide to inform new intervention strategies for opioid overdose.

Next, Peter Rock of the Kentucky Injury Prevention and Research Center, bona fide agent of the Kentucky Department of Public Health, shared his state's story. Kentucky had rarely used syndromic data before becoming part of the NSSP. Now, Kentucky finds considerable value in using syndromic surveillance to track opioid overdose and plans to start looking at all hazards. Kentucky also has a local users group that is gaining momentum through an improved understanding of the system and data.

The discussion transitioned to Karl Soetebier, Technical Lead at Georgia Department of Public Health, who explained how Georgia, a long-time expert in syndromic surveillance with a robust local system, finds value in using both the Georgia local system and the newly improved national BioSense Platform. Soetebier described how he used NSSP ESSENCE to gain a new perspective on Georgia's response to Hurricane Irma, which led to Georgia enhancing its local system. (Note. Similarly, ESSENCE displays are being updated to reflect some of Georgia's ways of visualizing data.)

By describing how technical advancements have improved syndromic surveillance practice, the panel demonstrated how far we—CDC, NSSP, partners, and community—have come since 2014. The NSSP infrastructure, data quality assurance processes, and national monitoring capability for CDC programs has been built not through a new siloed system, but by collaborating with partner organizations and Community of Practice. Epidemiologists working in new sites, like the one established in Kentucky, can have a state-of-the-art system at their fingertips without procuring or building their own system. Further, these epis gain considerable value from having access to a robust community of practitioners all operating in the same environment. Seasoned syndromic experts, like those in Georgia, benefit likewise and have knowledge, practices, and technologies to share across the community.

After the panel presentation, the logical next question was *"After so much success, what is next?"* Coletta says the answer lies with the Community of Practice. The NSSP has matured considerably in just a few years. Now the community must choose how to use the tools and resources available. Will the Community use these tools to push the practice of surveillance forward? How will data, information, and methods be shared? What will be the next event of public health importance to benefit from what we've built together as a community?

*ISDS conference abstracts are available in the Community of Practice [Knowledge Repository](#). To learn more about NSSP's origin, read "[The Evolution of BioSense: Lessons Learned and Future Directions](#)."*

## **CDC Makes Progress in Reaching Surveillance Strategy Goals**

CDC's goal for federally supported surveillance activities is to get the right information into the right hands at the right time. In 2014 after examining its national surveillance role, CDC launched a new Surveillance Strategy that set aggressive goals<sup>1</sup> to

- Improve availability and timeliness of data;
- Advance the use of electronic health records, mobile technologies, and cloud computing;
- Retire redundant systems and reduce reporting burden on health departments; and
- Maximize performance and effectiveness of agency resources.

Essentially, the strategy focuses on how CDC can drive progress by modernizing surveillance systems and processes. CDC unveiled several initiatives as part of its strategy, including the BioSense Modernization Initiative.

Not all NSSP participants associate “BioSense” with a CDC *initiative*. From a federal agency perspective, such initiatives have foundational importance by serving as the steps the agency can take—and monitor—to achieve public health goals. As BioSense evolved from a software application to a national program, the syndromic surveillance community was establishing a foundation that would lead to even more benefits. CDC’s goals include improved data integration, continued modernization of data platforms for increased productivity, and more advancements in exchanging healthcare data electronically (e.g., improved timeliness, accuracy, and completeness of data; better interoperability between public health and healthcare). The NSSP Team looks forward to continuing its work with the Community of Practice to advance syndromic surveillance and, at the same time, achieve CDC’s Strategic Surveillance goals to protect the public’s health.

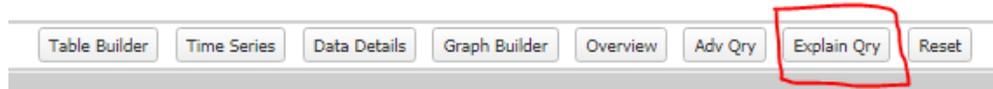
<sup>1</sup> Richards CL, Iademarco MF, Anderson TC. A New Strategy for Public Health Surveillance at CDC: Improving National Surveillance Activities and Outcomes. *Public Health Reports*. 2014;129(6):472–6. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4187298/>.

## QUESTIONS AND TIPS

The NSSP Team explained this new capability during one of the ESSENCE trainings at this year’s ISDS conference. For those who were unable to attend, we hope you find this explanation useful and encourage you to contact the [NSSP Service Desk](#) if you have more questions.

### Q: How do I use the “Explain Query” function in NSSP–ESSENCE?

**A:** When you log into NSSP–ESSENCE and click on “Query Portal,” you will notice a new button called “Explain Qry” (Explain Query) located along the bottom of the query wizard with the other buttons (e.g., “Time Series,” “Table Builder”).



The origin of this button has to do with *system transparency*. Users wanted to know how NSSP–ESSENCE built queries as they made selections in the query wizard. Having a better understanding of how ESSENCE runs queries can help in interpreting the results. To see how this works, go to the query wizard, select your specific query parameters, and then click “Explain Query.”

In the first example shown below, the user selected the chief complaint (CC) and discharge diagnosis (DD) codes = influenza-like illness (ILI) CCDD v1, the Age Group = 18–44, and Hospital HHS Region = Region 1. The system clearly indicates that these are AND relationships.

A screenshot of a window titled "Query" with a close button (X) in the top right corner. The window displays three selection boxes connected by "AND" operators. The first box is labeled "CC and DD Category" and contains "ILI CCDD v1". The second box is labeled "Age Group" and contains "18-44". The third box is labeled "Hospital HHS Region" and contains "Region 1". Below the boxes, a text line reads: "The query is all visits with the specified CC and DD category, age group, and hospital HHS region."

The second example below is similar but is a percentage query. This query is particularly useful because the query numerator and denominator are readily apparent. Here, the query result shows the percent of 18- to 44-year-olds who sought treatment in HHS Region 1, categorized into ILI CCDD v1 syndrome.

**As Percent Query: CC and DD Category**

**Numerator**

Age Group: 18-44 AND Hospital HHS Region: Region 1 AND CC and DD Category: ILI CCDD v1

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**Denominator**

Age Group: 18-44 AND Hospital HHS Region: Region 1

The numerator is all visits with the specified age group, hospital HHS region, and CC and DD category.  
 The denominator is all visits with the specified age group, and hospital HHS region.

Since CC and DD category is selected as a percent, CC and DD category is only filtered in the numerator.

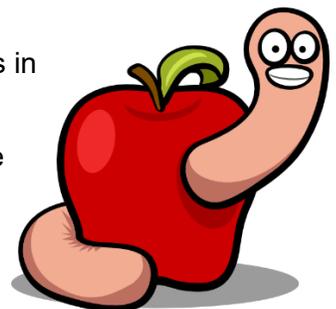
**DATA QUALITY CORNER**

*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.*

**Are there a few bad apples in my bunch?**

Don’t assume the quality of your data has taken a hit if you observe major drops in completeness or see lots of red cells.

As you dive deeper investigating data, you could notice a few “bad apples in the bunch.” For example, your percentage of completeness might have dropped. Fortunately, you have multiple ways to identify why this is happening by referring to the Completeness Report.



**How to:**

1. Go to the Completeness Report.
2. Look under the “All\_Feeds” tab and filter by color “Red” for %Visits or %Recs, by Priority, or by Required fields.
3. Check data to see if a particular feed has a low percentage (%) of completeness.

**Investigation Tip:** If you notice that a feed has a low percentage of completeness, look carefully at the facilities that make up the feed to see if the drop in completeness is associated with a particular facility.

*We thank NSSP’s Analytic Data Management (ADM) Team for this explanation. Members of the ADM Team are available to answer questions and discuss data quality reports. To schedule a one-on-one discussion, please contact the [NSSP Service Desk](#).*

## More Data Enhancements

- **Numerators Added**—**Data Quality (DQ) Completeness reports** now include numerators, as requested! Starting with the January 2018 reports, the number of visits and records are specified in addition to the percentages.
- **Better Performing Links**—Links embedded in the **DQ Validity report** have been modified for smooth transitions from tabs to Summary page.
- **Column Length Increased**—The NSSP BioSense Platform has recently increased the column length for four fields in the NSSP **Processed and Exceptions SQL tables**: Admit\_Reason\_Code, Chief\_Complaint\_Code, Diagnosis\_Code, and Procedure\_Code. Column length has increased from varchar(255) to varchar(8000) to avoid losing data when messages from some feeds are concatenated. In addition, the column length for the Diagnosis\_Type field has increased from varchar(100) to varchar(255). Longer columns should help ensure that data received across repeating segments are accounted for in all of these fields.

*The Data Flow and Data Dictionary documentation on the [NSSP Resource Center](#) will be updated soon to account for these changes.*

### SPOTLIGHT ON SYNDROMIC SURVEILLANCE PRACTICE

*We continue to examine literature that advances the practice of syndromic surveillance. This month's article is about telephone triage of patient influenza symptoms. For years, some have used telephone triage as a syndromic surveillance data source for identifying local outbreaks. Since more people than ever are opting for a "virtual visit" to get health-related information, perhaps the use of syndromic surveillance and telephone triage techniques to obtain larger datasets warrants more exploration.*

#### [Enhanced Influenza Surveillance Using Telephone Triage and Electronic Syndromic Surveillance in the Department of Veterans Affairs, 2011–2015<sup>1</sup>](#)

The beauty of telephone triage is its structure, near "real time" nature, and data-producing ability. Telephone triage systems can guide health professionals through the interactive process of speaking with callers while capturing information about patient symptoms. The structured protocols and sophisticated algorithms can guide health professionals in helping callers make health decisions. These data and algorithms have many characteristics used by syndromic surveillance to identify disease activity.

This article describes the U.S. Department of Veterans Affairs (VA) system that integrated telephone triage, inpatient data, and syndromic surveillance to track influenza-like illness (ILI) trends. The VA's healthcare system has about 9 million enrollees served by more than 1,200 sites. Nearly 46% are 65 years of age or older, and about 9% are female. The VA's telephone triage service collects demographic data, chief complaints, and coded medical descriptions.

The authors analyzed four seasons of data from VA sites including, for example, influenza testing, telephone triage calls, antiviral prescriptions, and ICD9-coded data for influenza. The article describes

the authors' extensive analysis and comparison of these data with CDC's influenza hospital data and other external sources.

The study results show that the VA's telephone triage is a promising data source that can reflect the severity of ILI. Although each data source in this study was capable of identifying when peak activity occurred, telephone triage was the *only source to provide early season alerts*, especially during mild presentation of illness. The caveat, however, is that distinguishing influenza from other respiratory viruses can be challenging, especially in the absence of a physical exam or lab tests. Still, there is considerable predictive value in having a large, integrated dataset from multiple sources by patient, date, and geography.

<sup>1</sup> Lucero-Obusan C, Winston CA, Schirmer PL, Oda G, Holodniy M. Enhanced Influenza Surveillance Using Telephone Triage and Electronic Syndromic Surveillance in the Department of Veterans Affairs, 2011–2015. *Public Health Reports* [Internet]. 2017 July/August [cited 2018 Jan 31];132(1 Suppl):16S–22S. Available from: <http://journals.sagepub.com/doi/pdf/10.1177/0033354917709779>

## UPCOMING EVENTS

- |                    |   |
|--------------------|---|
| <b>March 7</b>     | Data Validation Support Call  |
| <b>March 20</b>    | Scheduled vendor patches in staging environment: 6:00–10:00 AM ET   |
| <b>March 20</b>    | NSSP Community of Practice Call: 3:00–4:30 PM ET. Topics: Research Committee activities and introduction of Syndromic Surveillance Public Health Emergency Preparedness, Response, and Recovery Committee (SPHERR). Click <a href="#">here</a> to register. |
| <b>March 22</b>    | Scheduled vendor patches in production environment: 6:00–10:00 AM ET  |
| <b>April 17–20</b> | Preparedness Summit; Atlanta, Georgia   |

*Note. To access the Surveillance Community of Practice group resources, you must be signed in to your [healthsurveillance.org](http://healthsurveillance.org) account. To create an account, click [here](#).*

## LAST MONTH'S TECHNICAL ASSISTANCE

- |                    |  |
|--------------------|--|
| <b>February 7</b>  | Data Validation Support Call: 3:00–4:00 PM ET      |
| <b>February 20</b> | Scheduled vendor patches in staging environment    |
| <b>February 22</b> | Scheduled vendor patches in production environment |

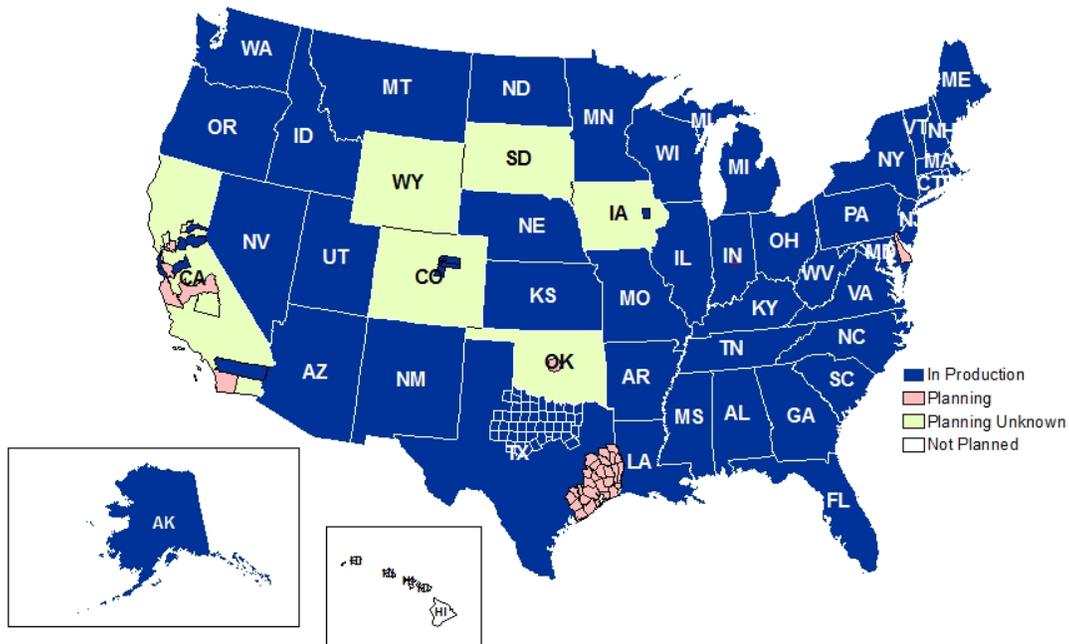
## NSSP PARTICIPATION

**The NSSP is refining its definition of participation.** Since 2016, the community and NSSP Team have worked to improve what's at the core of the BioSense Platform—its data quality and data flow. As a result, the NSSP has a much improved data flow that accounts for variations in feeds and attempts to ensure data are as complete as possible. Also, thanks largely to the community, the Master Facility Table (MFT) is robust and accurately reflects the facility types used for identifying

emergency facilities, registered facilities that send syndromic surveillance data to the BioSense Platform, and facilities with which NSSP has established relationships.

Taken together, the NSSP can now account for facilities, data feeds, and state participation in ways that were difficult to imagine two years ago. NSSP is using this information to explore alternate approaches for estimating data representativeness and to establish new baselines for measuring and reporting program participation.

Until these new baselines for participation are established, 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, which means that about 60% of all ED visits in the country are being represented (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.**



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](#).

## CDC FUNDING RECIPIENTS AND PARTNERSHIP UPDATES

*The NSSP's third annual meeting of funding recipients was held February 27 through March 1, 2018. Highlights from the meeting will be in the April issue of NSSP Update.*

### DUAs No Longer a Program Requirement

On February 15, 2018, NSSP held a conference call with sites to address concerns and answer questions about recent operational changes. This call was a follow-up to Program Manager Michael A. Coletta's email of July 1, 2018, stating that sites are no longer required to sign a Data Use Agreement (DUA) with the Association of State and Territorial Health Officials (ASTHO) as a precondition to sending data to the BioSense Platform.



The current ASTHO cooperative agreement, which ends June 30, 2018, funds ASTHO to host NSSP's secure, AWS cloud-based infrastructure. A new contract vendor will be identified through a competitive process posted on FedBizOpps.gov (<https://www.fbo.gov/>) in April. The change in procurement process negates the need for an ASTHO DUA.

**So how does this affect your site?** The current DUA with CDC will remain in effect through June 30, 2018. The CDC DUA template has been revised to reflect the operational change in cloud steward. Sites that choose to continue their DUA with CDC should sign the new DUA (available from the NSSP project officers). For convenience, NSSP can provide a version with changes tracked to highlight differences between the new CDC DUA and the previous CDC DUA so that review can be coordinated with a site's legal team.

Your site can choose whether to sign a DUA with CDC. Further, CDC does not require downstream DUAs (DUAs between health departments and facilities). Although such DUAs are good to have, DUAs with CDC or data providers will remain optional at each site's discretion. If your site chooses to use a DUA, we suggest that the language be generic so the document remains evergreen.

### Colorado Newsletter Highlights Seasonal Health Issues

Colorado's North Central Regions (CO–NCR) is using its recently launched [SyS newsletter](#) to share findings across local health departments and to demonstrate the value of SyS against injuries and disease.

In the January issue, CO–NCR reported seasonal increases in influenza-like illness that began as early as August. CO–NCR also reported on patterns and increase in gastrointestinal (GI) syndromes that coincided with reported GI outbreaks. Here, the goal is that early notification about GI trends will encourage proper infection control measures. Further, CO–NCR wants health departments attuned to emerging trends (for example, an increase in carbon monoxide poisoning) to encourage investigation of the cause and prompt discussion on prevention and mitigation. Findings are accompanied by prevention tips and links to health resources.

## Trending Topics

Looking for more information about influenza surveillance? View the recording of the [February NSSP CoP Call](#) to see what others are doing around influenza. You can also see what others are saying on our [Influenza-Like Illness Forum](#). Come join our conversations!

## Workgroup and Committee Updates

The [Syndromic Surveillance and Public Health Emergency Preparedness, Response, and Recovery \(SPHERR\) Committee](#) is a newly created committee that helps public health professionals fully integrate syndromic surveillance data and information into preparedness and emergency response. SPHERR provides access to a national peer network for ad hoc support or collaborations during incidents and events of national interest (e.g., extreme weather events, mass gatherings).

*If you want to learn more or join the SPHERR Committee, please visit the [SPHERR Committee page](#). To learn about other CoP chapters, committees, and workgroups, check out the groups [here](#). Registration is required to log in.*

## Messaging Guide

The Message Guide Workgroup is finalizing changes to the *HL7 2.5.1 Implementation Guide for Syndromic Surveillance* in preparation for submission to HL7 for the May 2018 ballot. **Balloting begins April 6, 2018. If you want to submit a comment but are not an HL7 member, ISDS will collect community comments.**

*If you are interested in joining, please visit the [Messaging Guide Workgroup page](#) to access the working documents and call-in information.*



### Help Build the Syndrome Definition Library

The Syndromic Surveillance Community of Practice is beta testing its Syndrome Definition Library. Look for syndromes by keyword. Filter search results by platform or author name.

To name a few topics, the library includes Heat-related Illness, Homeless Population, Zika, West Nile and Saint Louis Encephalitis, Chikungunya and Dengue, (various) Mass Gatherings, Opioid Diagnosis Codes, Fireworks Injuries, Agriculture-related Injuries, Hazardous Materials, and Rabies Exposure.

## Development Schedule

Time Frame	Activity
2015	Version 2.0 <b>Final RELEASE*</b>
2016	Erratum and Clarification Documents Released for Version 2.0
2017 Summer	Version 2.2 <b>Working Draft</b> Released for Community Comment and Consensus
2017 Winter	Version 2.3 to be Released for Review and Community Comment
2018 March	Version .09 (renamed for HL7 balloting) <a href="#">Implementation Guide for Syndromic Surveillance v.09**</a>
2018 May	HL7 Balloting Begins
2018 Fall	HL7 Balloting (anticipated) Completed and <i>HL7 2.5.1 Implementation Guide for Syndromic Surveillance for Trial Use v1**</i> Released

\*Updated February 20, 2018. Version 2.0 is currently being used; subsequent versions are working drafts only.

\*\* Title updated February 20, 2018.

## NSSP Community of Practice Call

Please join the monthly NSSP Community of Practice (CoP) Call (previously titled the Surveillance CoP Call). This call engages stakeholders and sparks collaborative efforts to share guidance, resources, and technical assistance.

The next call (**March 20, 2018, 3:00–4:30 PM ET**) will provide an update on the activities of the Research Committee and introduce the new Syndromic Surveillance Public Health Emergency Preparedness, Response, and Recovery (SPHERR) Committee. Click [here](#) to register.

*Please remember to register for each call individually. To access slides and recordings from previous calls, please visit the [NSSP Community of Practice Group Page](#). You must be sign in to your [healthsurveillance.org](#) account. To create an account on [healthsurveillance.org](#), click [here](#).*