FAQs: Case Surveillance Modernization

This page provides answers to common questions about implementing enhancements to case surveillance. **CDC will continue updating this page with new information about this ongoing effort.**

If your jurisdiction has questions that are not answered on this page, please contact CDC using this form.

About the Sprint

Q: How was the case surveillance sprint conducted?

A: In mid-July 2022, a team led by the United States Digital Service (USDS), in collaboration with CDC, completed its discovery sprint to help identify opportunities to modernize the flow of case surveillance data. The team provided findings and recommendations to CDC, many of which are challenges previously identified. CDC is implementing these recommendations.

The sprint examined the flow of case reporting and notification for both infectious and non-infectious diseases. The team conducted 65 interviews with 148 individuals representing 8 state and 11 local health departments.

The sprint specifically looked at the lifecycle of the data, starting at the point of care and ending in public health action. Its goal was to deepen understanding of the current technologies, processes, and policies around disease surveillance data. This knowledge will inform what a modernized, sustainable system could look like.

Q: How will the sprint findings be used?

A: The findings from the sprint will be used to determine how to better support state, local, tribal, and territorial (STLT) partners and CDC programs in data collection and notification, with an emphasis on minimizing the burden on state and local health departments.

In addition, the sprint findings will help move toward greater flexibility in how CDC receives data from jurisdictions. Sprint findings also will help to ensure greater bidirectional flow of data so that jurisdictions can both see the data they submitted and access analytic and visualization tools that will help them better understand how their data fit into the national picture.

Finally, the sprint findings will help develop ways to build up the public health informatics and data science workforce capacity at local and state levels, including through technical support, training, and innovative approaches to surveillance and staffing.

Q: What is CDC doing to implement the recommendations?

A: CDC will share recurring operational progress updates through channels such as *Case Surveillance News* and monthly eSHARE training webinars. CDC will also share time-sensitive information about actions for jurisdictions, key milestones, and project decisions using the NNDSS email list via edx@cdc.gov.

Access archived NNDSS eSHARE webinars for monthly updates on case surveillance modernization.

CDC's Approach

Q: Is this work connected to the CDC Data Modernization Initiative (DMI)?

A: Yes. Case surveillance data are a core data source used across the public health ecosystem and are prioritized within DMI.

This work supports DMI's vision of a flexible, efficient, and scalable data pipeline of core data sources for both routine and emergency public health needs. This vision is centered on providing valuable data to the jurisdictions, CDC, and the public while also reducing burden on reporting partners.

Q: How will previous work implementing disease-specific Message Mapping Guides (MMGs) inform how CDC implements the sprint recommendations?

A: CDC will continue using data elements that were defined in collaboration with CDC programs and jurisdictions for disease-specific MMGs to develop standardized data dictionaries. The data dictionaries will provide a larger set of core data elements that have been harmonized across diseases in addition to disease-specific data elements.

CDC also will use disease-specific MMGs to inform efforts to expand the range of available data formats beyond Health level 7 version 2 (HL7 V2), including options for jurisdictions to send additional, disease-specific data gathered from their ongoing case investigations.

Q: What is your strategy for developing the flexible data pipeline?

A: CDC, including the Office of Public Health Data, Surveillance, and Technology (OPHDST) and the Office of the Chief Information Officer (OCIO), and USDS will identify flexible approaches to receive case data from jurisdictions. CDC will lead collaborative efforts across partners to develop these approaches. Approaches include:

- Enable generic core case data elements and other standardized data elements to be submitted through multiple file formats, including HL7 V2, comma-separated values (CSV), and Fast Healthcare Interoperability Resources (FHIR).
- Identify flexible mechanisms to receive additional data elements using existing data pipelines to support emergent and evolving public health goals.

In addition, CDC will ensure that the capabilities developed align with:

- existing healthcare standards,

- electronic case reporting, and
- a modernized CDC-supported surveillance system such as the National Electronic Disease Surveillance System Base System (NBS) .

CDC also will bolster existing customer service-oriented teams to include a primary point of contact for each jurisdiction and CDC program to receive technical assistance and support across all data pipeline-related needs.

CDC and USDS also will:

- Develop a plan for how case data flowing into CDC from jurisdictions will undergo quality control measures and make the steps and code available for review by stakeholders.
- Develop a plan for how data will land in an environment that is accessible to CDC programs and jurisdictions and identify the strategy to grant jurisdictions access to data for bidirectional data flow and information sharing.
- Develop innovative tools that can be accessed in a shared environment by jurisdictions and CDC programs and used to generate national or regional data views for all partners to better place reported data into the appropriate context.
- Identify a surveillance team that uses these tools in a central, program-agnostic organizational unit to routinely review the data for quality control measures and for public health purposes such as detecting anomalies and concerning trends.
- Work closely with CDC programs and jurisdictions to share findings and improve communication and collaboration across partners.

CDC Front Door

Q: What is CDC Front Door, and what does it mean for case surveillance?

A: The CDC Front Door will eliminate the need for jurisdictions to send the same data in multiple formats to multiple places at CDC.

To support the vision of DMI, CDC and partners have defined a "reference architecture" (North Star Architecture) for the public health ecosystem. This reference architecture is built upon modular "building blocks," or functionality that will be used across diseases.

Currently, CDC is focused on the data exchange building block that supports the concept of a single "CDC Front Door." In this approach, all data from STLT partners, including case surveillance data, would enter and leave CDC through a single point that can manage standardized data in multiple message formats, such as:

- HL7 V2,
- CSV,
- FHIR, and
- application programing interface (API).

Q: What impact will this solution have on jurisdictions now?

A: At this time, unless jurisdiction staff are involved in piloting efforts, they will continue using the same data transport mechanism currently in use. For example, if you are sending in generic or disease-specific (supplemental) NNDSS case data by using an HL7 message mapping guide (MMG) through the Message Validation, Processing, and Provisioning System (MVPS), please continue to do so. As progress is made, CDC will provide project updates and a timeline for future changes through regular communication channels, such as *Case Surveillance News* and the eSHARE webinar series.

Q: What is the time frame of the pilot project? What is the time frame for when the solution would be available for all jurisdictions and CDC programs?

A: OPHDST and OCIO have been working with CDC's Division of Viral Hepatitis to pilot exchange of core and supplemental case data through enterprise data exchange (DEX). The pilot work will begin soon and span calendar years (CY) 2023 and CY 2024. The pilot results will help determine when the solution becomes available to jurisdictions and CDC programs.

EpiSync Pilot

Q: What is EpiSync?

A: EpiSync is a new approach for public health jurisdictions to transmit information using tables instead of breaking up tables into messages when sharing with CDC, each other, and the public. It works well for case data but is general enough to support other data sets and is secure, scalable, and sustainable. EpiSync was a result from recommendations during the case surveillance discovery sprint that CDC and USDS conducted in fall 2022 to improve the National Notifiable Diseases Surveillance System (NNDSS). EpiSync is a Data Modernization Initiative activity that takes advantage of the infrastructure provided by modern cloud computing services. This approach includes sync protocol, a reference implementation, and a coordinating service.

Q: Why is EpiSync being prioritized for DEX?

A: EpiSync, in use with DEX, aims to address known challenges jurisdictions face in sending data to CDC using HL7. EpiSync is an alternative approach for which jurisdictions can exchange case data with CDC in the CSV format. CSV format is a flexible alternative to HL7 because it has a simple structure with plain text data, is widely supported, and can accommodate many data types. CSV also enables interoperability as it is easily imported, exported, and integrated into data systems and is human readable. CDC will use a data dictionary to map data to standards where feasible.

Q: Why is EpiSync prioritizing CSV over HL7?

A: CDC receives core data through different formats, including HL7 and several legacy formats such as the NEDSS Base System (NBS) master message and the National Electronic Telecommunications System for Surveillance (NETSS). CDC is helping jurisdictions retire legacy formats by offering additional formats for generic version 2 message mapping guide (GenV2) content. GenV2 increases the number of core data elements received across all notifiable diseases from about 25 to 60. However, GenV2 does not include many valuable data elements needed for public health action.

USDS and CDC found that current methods of exchanging disease-specific data using HL7 MMGs:

- are burdensome to jurisdictions with limited technical and personnel resources,
- don't provide CDC programs the data they need,
- don't meet clear analytic needs, and
- will take decades to implement all jurisdictions to existing MMGs.

This is due to:

- limited harmonization of data elements across CDC programs;

- lack of defined data standards across critical public health data concepts;
- technological and personnel challenges with both implementing HL7 messages and retiring legacy systems;
- limited time for prioritizing MMG onboarding, especially for rare diseases; and
- lack of flexibility during public health emergencies and changing data needs.

As a result, CDC is working to offer CSV as an additional option for jurisdictions who are not currently sending the HL7 format. **Jurisdictions currently using HL7 do not have to switch to using CSV.**

Q: Will CDC continue to receive HL7 data from jurisdictions that prefer to use this format?

A: Yes. CDC will continue to use the HL7 format to receive data from jurisdictions that prefer to continue sending HL7. The EpiSync pilot aims to provide additional flexibility to facilitate alternative approaches to case data exchange. CDC recognizes that many jurisdictions have invested significant effort into developing HL7 expertise and onboarding HL7-based MMGs.

Q: What are CDC's plans for disease-specific MMG work?

A: Given the critical importance of case data for national surveillance and response, it is important to identify a path forward that will support both CDC programs and jurisdictions. This path should advance the technologies, streamline processes, and rethink policies needed for faster, data-informed public health action.

Therefore, CDC proposes the following next steps:

1. Continue supporting existing case data flows using HL7-based MMGs until new approaches are available.
2. Improve jurisdiction adoption of GenV2 content to standardize core case data (i.e., demographics, diagnosis date) by offering additional formats.
3. Pilot approaches that improve receipt of disease-specific case data from jurisdictions using EpiSync and DEX.
4. Develop a roadmap that will transition jurisdictions to more flexible, timelier approaches for sending case data to CDC.
5. Engage in or continue participation in data standardization work that will set data element standards to be used across the case surveillance ecosystem.

Plans for GenV2 and HL7

Q: How will CDC support jurisdictions to be able to send case notifications using generic version 2 (GenV2)?

A: In collaboration with MITRE, CDC has undertaken a landscape analysis to:

- understand where gaps in GenV2 onboarding currently exist, and
- help CDC understand what barriers and challenges jurisdictions face.

CDC expects to complete the landscape analysis by the end of 2023. CDC will use the findings to strategize how to expedite onboarding for jurisdictions who have not implemented GenV2.

Q: Does this mean that jurisdictions will use only GenV2 to send their data to CDC?

A: No. CDC is neither requiring nor requesting that jurisdictions send all diseases data through the GenV2 MMG. Disease-specific data are critical to jurisdictions and CDC. These data are an essential part of the National Notifiable Diseases Surveillance System (NNDSS) data flow. Jurisdictions who have onboarded disease-specific MMGs and can send HL7 v2 messages will continue to do so at this time.

In addition, CDC will continue to support legacy messages. This includes National Electronic Telecommunications System for Surveillance messages, National Electronic Disease Surveillance System Base System (NBS) Master Message, and GenV1. The intent is to maintain current data flow for disease-specific data while CDC further develops the "CDC Front Door" data exchange. Jurisdictions sending legacy case notifications that include disease-specific data important to CDC programs should continue to send those messages.

Q: Does this mean that *only* jurisdictions that have already onboarded HL7 messaging can send notifiable data to CDC?

A: No. Jurisdictions should continue to send case notification in their current format until they successfully transition to a new format. CDC plans to expand the range of data formats that jurisdictions can use to send case surveillance data to CDC beyond HL7 V2, such as CSV, FHIR, and other formats, to help ease the burden on jurisdictions.

Pausing disease-specific MMG development and onboarding

Q: What is the intent of the pause on disease-specific MMG development and onboarding?

A: The intent of the pause in Message Mapping Guide (MMG) development and onboarding efforts is to allow partners and CDC to focus on data standardization and create the CDC Front Door.

Q: What will the MMG pause mean for jurisdiction onboarding, and how is CDC making that determination?

A: For onboarding MMGs, CDC's current guidance is:

- Jurisdictions who are mapping or prepping for published MMGs are paused.
- Jurisdictions who have initiated onboarding for published MMGs can continue.
- Jurisdictions who are in the final stages of pre-onboarding for published MMGs—for example, if they have made system changes or created or validated test messages—can choose whether to continue onboarding.

MMGs that will not be paused regardless of the jurisdiction implementation status are:

- GenV2 for the 72 GenV2-only diseases, and
- Tuberculosis/Latent Tuberculosis Infection (TB/LTBI)

Fully supporting the TB/LTBI MMG is important to accomplish the transition from the 2009 Report of Verified Case of Tuberculosis (RVCT) to the 2020 RVCT. Jurisdictions have invested in implementing the new MMG to meet the deadline to use the 2020 RVCT for surveillance year 2023 cases. There is no legacy case notification format that includes the 2020 RVCT content. Any jurisdiction not using the TB/LTBI MMG needs to manually enter TB/LTBI MMG data starting with surveillance year 2023 To reduce burden on jurisdictions, CDC will continue to onboard the TB/LTBI MMG for all jurisdictions.

CDC has provided specific guidance to each jurisdiction on MMG onboarding during the pause. If you have questions about CDC's guidance on MMG onboarding for your jurisdiction, please contact edx@cdc.gov with the subject line *"MMG Pause."*

Q: When will the pause of NNDSS message mapping guides (MMGs) be lifted?

A: CDC expects to end the pause in a phased approach on a case-by-case basis for both onboarding current NNDSS MMGs and developing new MMGs. These decisions will be driven by questions such as:

- Have data elements in an MMG been standardized and harmonized across the public health ecosystem?
- Will data elements in an MMG meet current needs of both CDC programs and jurisdictions?
- Will the data elements in an MMG place a burden on jurisdictions to collect or submit this information to CDC?
- Will available data formats allow jurisdictions to send data to CDC with minimal burden on available technology and personnel resources?

CDC understands that these are complex questions that will take time to answer. CDC does not expect all possible issues to be resolved before unpausing an MMG. However, it is critical that jurisdictions, programs, and other partners reach a shared understanding and mutual agreement on the answers to these questions before unpausing.

CDC recognizes that the pause on new MMG development and onboarding has led to concerns. CDC acknowledges and applauds the many jurisdictions who have invested significant effort into developing HL7 expertise and onboarding HL7-based MMGs. **CDC will continue to receive HL7 data from jurisdictions who prefer to use this format.** CDC is also working to offer CSV as an alternative format to HL7 to meet the needs of all jurisdictions regardless of their available resources.

CDC will work closely with jurisdictions, CDC programs, and partners such the Council of State and Territorial Epidemiologists (CSTE) to discuss options and establish mutually acceptable timelines.

Q: How can jurisdictions use people who were hired for MMG implementation work while MMG development and onboarding are on pause?

A: The best approach for reassigning staff will differ by jurisdiction and the expertise of the individuals in surveillance, vocabulary, data exchange, or system design. CDC encourages you to consider the following activities for staff hired for MMG implementation:

- Support implementation of TB/LTBI MMG, GenV2 MMG, and jurisdiction-specific exceptions to the pause on MMG onboarding
- Work with CDC and CSTE to standardize and harmonize data elements
- Support changes to the case surveillance system that would enable the jurisdiction to submit core data elements to NNDSS during an emergency response
- Support efforts to modernize the jurisdiction's case surveillance system
- Engage in jurisdiction efforts to automate case surveillance data exchange and interoperability. This includes electronic case reporting, electronic laboratory reporting, inter-jurisdiction exchange of case reports, interoperability with an immunization information system and death registries, master person index, and data exchange through a third-party platform.
- Plan and implement changes to the surveillance system

Q: How should jurisdictions use the content in disease-specific MMGs to guide decisions about data elements and value sets when building out disease-specific data in their surveillance systems?

A: Use the current disease-specific MMGs like a data dictionary. They present the data elements and associated value sets that CDC programs request for national surveillance. The MMGs can be used to inform decisions about the data elements in your surveillance system.

Jurisdictions and CDC programs should expect some changes to disease-specific data elements as public health works to standardize elements across the case surveillance ecosystem and to harmonize data elements across diseases. This process will take time as jurisdictions, CDC programs, and other partners collaborate on the decision making.

CDC and CSTE invite state, tribal, local, territory, and CDC programs to engage in the standardization of case-surveillance content by joining the CSTE Data Standardization Workgroup. CSTE holds meetings of the Data Standardization Workgroup the last Friday of each month at 1:00 PM EDT. Contact Becky Lampkins at blampkins@cste.org to learn more.

Q: Will the data elements CDC requests in case notifications change as part of this modernization process?

A: CDC anticipates there will be changes to the data elements requested in case notifications to CDC. This includes both the core or generic data sent for all diseases and the disease-specific data. Although the standardization process is underway, the implementation timeline has not been defined.

Jurisdictions and CDC programs are encouraged to participate in collaborative data standardization efforts that are underway to refine what is expected.

Q: How are you making decisions about whether and when to pause work on disease-specific MMGs currently in progress?

A: CDC will identify disease-specific MMGs currently in development by CDC programs and work with those programs to outline their objectives and a plan for data collection.

CDC and partners will use data elements and established standards to inform different approaches for receiving those data. These approaches will extend beyond the core data elements in GenV2, including:

- developing additional blocks of standardized data elements that capture the most relevant information for case surveillance needs,
- more flexible solutions to receive related data that jurisdictions already have available, and
- targeted, flexible approaches to gather additional risk factor-related data from a selected sampling scheme for cases or by using other data sources

Q: What disease-specific MMG development is being paused?

A: At this time, development of new disease-specific MMGs is paused. In addition, most disease-specific MMGs in draft or with current development efforts will be paused; there may be a few exceptions, and CDC is working to provide those details soon.

Q: How will you pause disease-specific MMG onboarding?

A: CDC will identify disease-specific MMGs in the middle of the onboarding process and the CDC programs and jurisdictions involved to develop an appropriate strategy that considers closeness to completion and outbreak surveillance needs, among other factors.

CDC will work with programs to understand how this strategy affects their needs and capabilities and develop action plans that include a clear definition of purpose, aims, and objectives of the data collection.

Q: If disease-specific MMG onboarding is paused, how will this affect jurisdictions' ability to comply with the Epidemiology and Laboratory Capacity Health Information Systems (ELC HIS) Cooperative Agreement (CoAg) and, if applicable, the Emerging Infections Program (EIP)?

A: Due to recent adjustments in CDC surveillance efforts related to the adoption of MMGs, jurisdictions do not need to complete the ELC HIS MMG performance measure as you originally described in your application. CDC will provide further guidance on where efforts should focus for the remainder of the CoAg period.

For EIP, discussion will continue around methods for transmitting data to CDC.

Q: How will jurisdictions that use NBS meet the requirement to report tuberculosis using the TB/LTBI MMG by 2023?

A: CDC will support any jurisdiction, including those that use NBS, that wants to onboard the TB/LTBI MMG no matter where they are in the MMG implementation process.

Q: Do these pauses mean that you are asking CDC programs to stop their surveillance?

A: No. Existing surveillance efforts with finalized MMGs and onboarded jurisdictions, as well as other existing mechanisms for receiving case notification data, will continue while CDC pauses MMG development and onboarding of disease-specific MMGs.

This pause aims to ease the burden on jurisdictions posed by implementing current guides, as well as free up CDC resources to work on harmonizing data standards and create streamlined, resource-appropriate, and effective enhanced surveillance methods to support jurisdictions and CDC programs.

During the pause, CDC will work together with jurisdictions to do the following:

- Define data elements based on disease-specific MMGs, which will inform a future enterprise-standardized data dictionary.
- Identify opportunities to harmonize data elements across diseases.
- Use previous work on disease-specific MMGs to inform CDC's efforts to expand the range of available data formats beyond HL7.

Q: If there are disease-specific HL7 MMGs that have been developed and implemented in many jurisdictions, will CDC programs continue to receive that data?

A: Yes. CDC will continue to receive data from jurisdictions that have already onboarded and are sending HL7 messages for disease-specific MMGS. The pause is on development of new disease-specific MMGS and on onboarding new jurisdictions to HL7.

However, some MMG onboarding efforts can continue during the pause, based on current guidance for onboarding during the pause.

OPHDST will continue to lead work to standardize the disease-specific data beyond GenV2 needed for most programmatic activities. OPHDST, guided by the North Star Architecture, will implement agile, flexible solutions incorporating common data standards for disease-specific case data.

This includes standardized data dictionaries that define supplemental sets of data elements and more flexibility at CDC to receive disease-specific data from jurisdictions, not just HL7 as currently required by the MMG approach.

Q: What is the plan and timeline for developing new, modern, agile methods for reporting disease-specific data? Will programs simply ask for those data through different ways in the interim?

A: Programs have been asked not to start any new data exchange work with jurisdictions as CDC needs to ensure that data exchange methods align with DMI efforts such as the North Star Architecture.

CDC recognizes that disease-specific data are vitally important to jurisdictions and CDC programs and are an important part of the NNDSS data flow. Disease-specific MMG content will still be used for supplemental data to CDC through a wider range of formats and to inform standardized data dictionaries that define supplemental sets of data elements that can be used across diseases.

CDC plans to expand the range of data formats that jurisdictions can use to send case surveillance data to CDC beyond HL7 V2, such as CSV, FHIR, and other formats, to help ease the burden on jurisdictions. New technology strategies are expected to reduce the need for mapping data elements to a message, further reducing the jurisdiction burden.

Last Reviewed: June 28, 2023
Source: Office of Public Health Data, Surveillance, and Technology