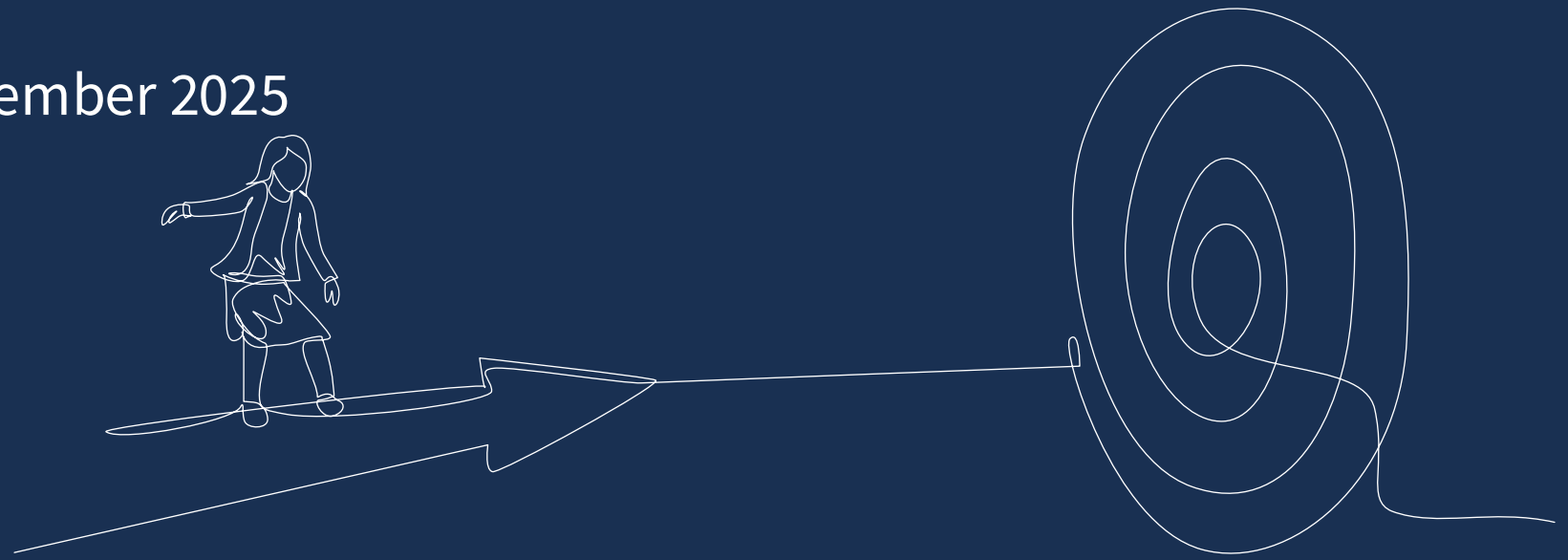
Case Service Design (CSD) Future State Overview

Case Service Design | September 2025



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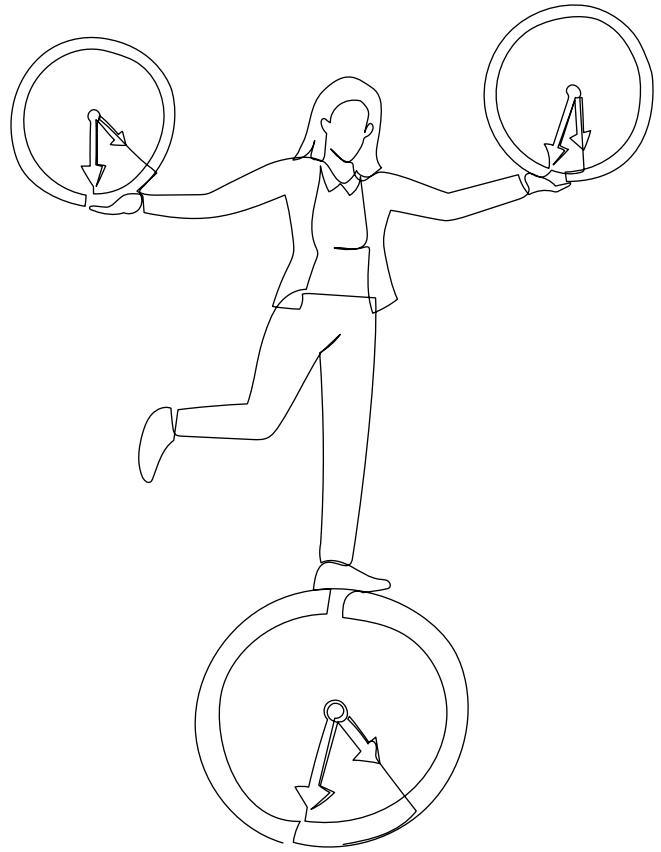


About Case Service Design (CSD)

Case Service Design (CSD), a collaboration across public health to design and implement human-centered solutions for case data exchange among state, tribe, and local (STL) health departments, CDC, healthcare, and associated partners.

A multidisciplinary team of experts in public health, design, product, and technology is taking a holistic view of case data exchange across the entire public health ecosystem. The team is designing human-centered solutions for case data exchange comprehensively, from the point of care to public health action. This work will define the future state for case data exchange and inform the evolution of the Public Health Data Strategy, disease reporting and notification, core data, and the One CDC Data Platform (1CDP).

Note:

- *We collected qualitative data from a diverse sampling of STL and CDC programs. Data presented here reflects those themes and patterns we identified from qualitative interviews with STL and CDC programs.*
- *Initial information collection did not include territories. It is likely they will share many of the same challenges. Our intent is to validate these findings with territories in the future.*

Vision, Big Goals + Design Principles

At the CSD Summit in August 2024, the team convened over 100 public health workers from STLTs, National Partners and CDC. We split the participants up into groups and each were presented with 1-2 current state stories that depicted ‘big rocks’ in end-to-end case data exchange.

- **Vision:** We established a vision that represents the highest need of public health practitioners who do case surveillance. This vision is meant to be motivating, actionable, and aligned to the purpose of our office.
- **Big Goals:** The Big Goals were created by clustering ‘what must be trues’ and establishing stretch goals to focus work around. They are meant to be big enough to be aspirational yet achievable over multiple years. These goals inform the Public Health Data Strategy (PHDS).
- **Design Principles:** Design principles are guidelines that help teams make smart design choices when creating products and experiences. They are informed by public health workforce needs and are meant to be iterated on over time.

Human-Centered Vision *(for Case and beyond)*

Purpose

A common vision and clear strategy for data modernization facilitated by CDC for which all public health and key partners are accountable.

Vision

Public health professionals can spend all their time using data for action and can work at the top of their knowledge.

People

Public health diversifies its workforce by including the expertise needed to continuously maintain and modernize its technology infrastructure.

Process and Tech

Integrated systems enable public health workers to have comprehensive access to the actionable data they need to do their jobs easily.

2-5 Year Big Goals Established at the Summit

*see definitions page

HEALTHCARE SENDS DATA TO PUBLIC HEALTH

Big Goal 1

All necessary healthcare data are received by public health, are ingested into surveillance systems and tools, and ready to use.

STLT SYSTEMS CAN EASILY RECEIVE DATA

Big Goal 2

All STLTs are using a modernized integrated surveillance system (ISS), that meet common, national standards for transmission and interoperability.

STATES SEND DATA TO ONE PLACE

Big Goal 3

All states send de-identified case data to a single place at CDC in accordance with national notification recommendations.

CDC ACCESSES DATA FROM ONE PLACE

Big Goal 4

All CDC programs are accessing the actionable and timely case data they need via one centralized platform.

EVERYONE CAN SEE WHERE THE DATA ARE AND WHAT IS HAPPENING TO IT

Big Goal 5

CDC provides data processing and data use transparency and observability to STLTs and CDC programs in near-real time per STLT approval and appropriate governance.

THERE IS CONTINUOUS COORDINATION AND DISSEMINATION AT ALL LEVELS

Big Goal 6

Across the continuum of case surveillance, all levels of public health have coordinated processes in place to disseminate the actionable data and information to those who need it.

Future State Design Principles

The following principles help us make decision about our products and services that:

- ***Build trust.***
- ***De-risk investments.***
- ***Maximize efficiency.***
- ***Promote collaboration and empathy.***

Provide Clarity and Consistency

- Articulate a clear vision and goals to all customers and teams based on voice of the customer
- Continuously validate and demystify assumptions with partners and teams.

See the Forest not just Trees

- Solve holistically, considering impact across the public health ecosystem.
- Look upstream and downstream before determining the best solution.

Prove Highest Value, Then Scale

- Measure value of solutions through rapid testing and learning. Iterate until value is proven before scaling.
- Follow principles of design that benefit a wider range of users, not just a small subset with high technical capacity

Promote Accessibility

- Make core data discoverable to all CDC programs.*
- Follow the 'get once, use many' principle to minimize multiple requests to STLTs for the same data.*

Protect Privacy

- Ensure that security, privacy, and data usage agreements are followed.*

Transition Seamlessly

- Only sunset or remove tools or processes when an equal or better replacement is in place.
- Avoid adding short term burden to the workforce while building for long term gains.
- Document transition plans and align with customers before making changes to workflow.
- Reuse existing pathways to send data to CDC during 1CDP transition to minimize STLT burden.

Enable Observability

- Build trust with STLT and program partners by providing transparency as data are being ingested and processed.*
- Build trust with STLT partners by providing transparency into how CDC is using data for public health impact.
- Clearly communicate plans, priorities, progress, and any changes in direction to STLTs and CDC programs.

Maximize reusability and modularity

- Follow the simplest and most modular approach available.
- Use or enhance core services whenever possible rather than building custom, siloed solutions.*
- Develop consistent and reusable data governance and expectations for use to speed up the exchange of data.

* See Explanation of Terms on slides 35-38

** from 1CDP Technology Guiding Principles

Future State Overview

- We took the 10 future state stories from the 2024 Case Service Design Summit and boiled them down to high-level “moments that matter”, “jobs to be done”, and “what must be trues” to create a high-level future state for case data exchange.
- This method helps us articulate with precision when and how people do work and what solutions are needed to support that work.
- Though it isn’t possible to capture all the variations and complexities of public health practice for case data exchange, the stories used to create this future state focused on widespread processes and areas where improvements would have big impacts.
- This future state is based on consensus across public health and will serve as a guidepost for transforming case data exchange for years to come.

Anatomy of the future state

Using this basic framework will help us articulate and understand what we need to solve for and how. These are simple constructs that have proven to be very useful in aligning solutions to complex workflows.

***Stages** represent the highest-level work being done in public health.*

2. Case Investigation

***Moments that matter** are the make or break moments in an experience that significantly impact success*

a. Investigator receives information to initiate the investigation

*Jobs **to be done are specific jobs public health workers need to do.** Articulating **"jobs to be done"** helps us determine with precision how to support people's work through the right products and services*

- Investigator reviews queues in Integrated Surveillance System (ISS) to understand what work needs to be done.
- Investigator confidently prioritizes the health event based on information received and initiates investigation.
- Investigator populates ISS with information received from other sources.

*Articulating **"what must be true"** helps us define solutions with precision that support people's jobs to be done.*

- ISS information on the health event and contact information is accurate so investigator can prioritize.
- ISS assigns incoming case reports to the appropriate investigator.
- Reports received outside of electronic case reporting (eCR) /electronic laboratory reporting (ELR) are populated into ISS.

Future State Stages 1, 2, and 3 with Moments that Matter

1. Detection

Ill persons seek health care, specimens are tested, and public health receives case reports.

a) Healthcare is aware of and follows correct protocol as advised by public health.

b) Healthcare reports to public health with the data public health needs.

c) Public health receives timely, usable data to initiate case investigation.

2. Investigation

A case is confirmed, and the case investigator works to identify the source and stop the spread; case investigation occurs in both routine and emergent scenarios.

a) Investigator receives information to initiate the investigation.

b) Investigator reviews information, accesses and reviews EHR, and contacts the person.

c) Investigator updates surveillance system, making data available to others.

d) CDC receives notification with needed anonymized data in near-real time upon jurisdiction entry.

3. Outbreak Detection

Cases above expected number and unusual patterns are identified.

a) Automated algorithms created by epidemiologist detect aberrations.

b) Alerts from complementary data sources drive action.

c) Public health prepares for investigation and response.

Future State Stages 4, 5 and 6 with Moments that Matter

4. Outbreak Investigation

Multiple cases are identified and additional investigation begins to identify common exposure; sometimes the exposure source is a transmission chain and sometimes it is a single source.

a) Investigator collects, enters, and shares data.

b) Contact and exposure lists are easily disseminated.

c) New questions are disseminated and quickly incorporated.

5. Outbreak Intervention

Public health mobilizes to stop the spread.

a) As they are collected, data are available for analysis to guide public health action.

b) CDC uses data to deliver national guidance.

c) Health departments use data for targeted intervention.

d) All levels of public health continue to collaborate until outbreak is over.

6. Data Sharing, Analysis and Dissemination

Data are shared across all levels of public health and with health care. Data are analyzed and visualized to inform decision-making and inform the public.

a) Complete and ready-to-use data are available at the right time to all parties.

b) Public health agency controls data being shared in near-real time.

c) At all times, STLTs can see the status of the data they have sent to CDC.

d) CDC and STLT programs analyze and disseminate data that are synced among agencies.

e) Public health maintains and continuously improves technology and processes.

f) Timely, ongoing guidance delivered by public health and healthcare help the public stay informed and take appropriate action.

Detection: Moment 1A

* See Explanation of Terms on slides 35-38

1. Detection 1 of 3

MOMENT 1A

Healthcare* is aware of and follows correct protocol as advised by public health

Jobs to be Done

- Public health provides guidance to healthcare on public health reporting* and disease management* so that providers know how and when to act to control disease.
- Healthcare data systems support providers in following public health protocols.
- When possible, providers inform patients when public health may be reaching out (warm handoff).
- Public health alerts physicians of emerging trends within the community and disseminates coordinated information to the public.

What Must Be True

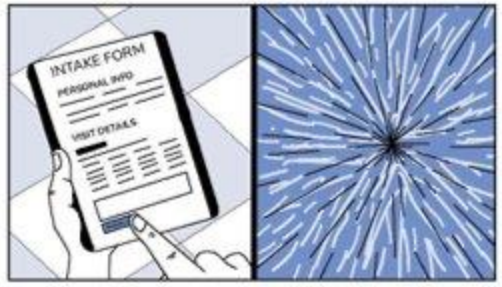
- Public health collaboratively authors consistent public health guidance for clinicians on disease management allowing for local customization.
- Public health guidance is delivered in a format that is compliant with health information technology (IT) interoperability* standards to allow automated ingestion into electronic health records (EHRs), laboratory information systems (LIS) and other systems.
- Providers and public health have open lines of communication and collaboration.
- The Assistance Secretary for Technology Policy and Office of the National Coordinator for Health Information Technology (ASTP/ONC) requires EHRs and LIS to incorporate functionality to deliver reporting and disease management guidance to healthcare practitioners.
- Integrated public health data are used to identify emerging trends and disseminate information to increase index of suspicion and accelerate case detection.
- Providers are motivated to act on public health guidance*.

Detection: Moment 1B

* See Explanation of Terms on slides 35-38

1. Detection 2 of 3

MOMENT 1B



Healthcare reports to public health with the data public health needs

Jobs to be Done

- When criteria for reporting to public health are met, reports are automatically generated from EHRs and LIS and sent to public health.
- For emergent* and urgent* conditions, anonymized data are transmitted simultaneously to CDC.
- In emergent situations, providers report to public health directly (e.g. by phone for urgent situations) and through automated channels that fully ensure delivery of critical data.

What Must Be True

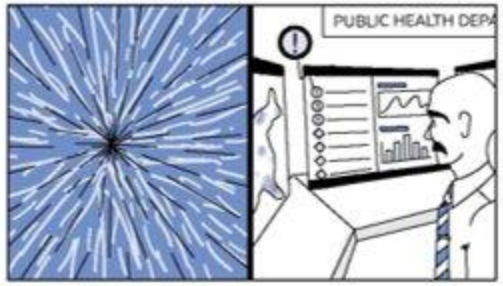
- Public health reporting triggers are widely adopted in EHRs and laboratory systems.
- EHR sends laboratories key information for public health reporting and laboratory reporting to EHR uses appropriate LOINC/SNOMED codes.
- Reports to public health are standardized and contain the necessary data elements* needed to initiate case investigations, including comprehensive demographic information.
- All reporting tools and systems from healthcare to public health exchange data easily using common data and technical standards (ex. EHR, LIMS, ELR, eCR, ISS*).
- Public health leverages standards development organizations to endorse consensus standards for content, format, and exchange; leverages ASTP/ONC and the Centers for Medicare and Medicaid Services (CMS) to incentivize adoption by healthcare; and leverages funding and technical assistance to accelerate public health adoption.
- Intermediaries are fully engaged to support public health data exchange.

Detection: Moment 1C

* See Explanation of Terms on slides 35-38

1. Detection 3 of 3

MOMENT 1C



Public health receives timely*, usable* data to initiate case investigation

Jobs to be Done

- Reports are received by health department and are available via surveillance system queue.
- In emergent and urgent situations, health department's ISS alerts appropriate staff.
- In emergent and urgent situations, STLT / CDC staff receive appropriately timed alerts as tests are ordered.
- Public health provides additional instructions to laboratory or healthcare provider through automated messaging, when applicable.

What Must Be True

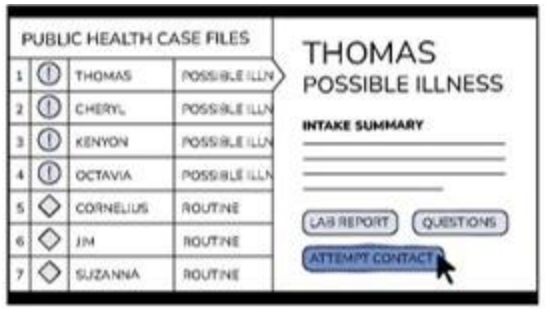
- Triggers are set up, if applicable, to send appropriate alerts to relevant STLT health departments based on severity.
- Triggers are set up, if applicable, to send appropriate alerts to CDC based on severity.
- At a minimum, notifications to CDC include standard core data* and response data* necessary. CDC programs can query for additional data.
- Clear data privacy policies and data sharing agreements exist within public health.
- Public health agrees when and what anonymized data* are needed for sharing and the degree of anonymization needed for specific purposes.
- EHRs and LIS can receive and deliver additional guidance from public health.

Investigation: Moment 2A

* See Explanation of Terms on slides 35-38

2. Investigation 1 of 4

MOMENT 2A



Investigator receives information to initiate the investigation

Jobs to be Done

- Investigator reviews queues in Integrated Surveillance System (ISS) to understand what work needs to be done.
- Investigator confidently prioritizes the health event based on information received and initiates investigation.
- Investigator populates ISS with information received from other sources.

What Must Be True

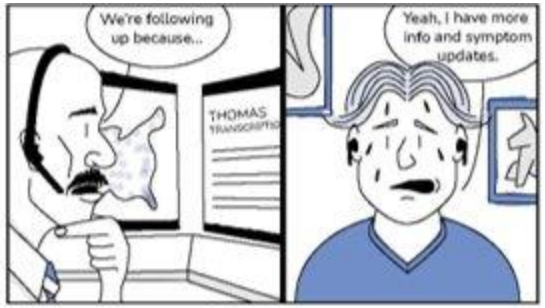
- ISS information on the health event and contact information is accurate so investigator can prioritize.
- ISS assigns incoming case reports to the appropriate investigator.
- Reports received outside of eCR/ELR are populated into ISS.

Investigation: Moment 2B

* See Explanation of Terms on slides 35-38

2. Investigation 2 of 4

MOMENT 2B



As needed, investigator reviews information and contacts the person

Jobs to be Done

- Investigator queries jurisdiction's integrated data repository for additional data on patient or situation.
- Investigator queries health exchange* for additional context around the disease event, including patient hospitalization status.
- The investigator uses ISS functionality to text the person to schedule a time for an interview and sends a link to questions so that the patient is ready for the interview.
- While interviewing the individual, the investigator validates information, provides guidance, and collects risk and exposure information.

What Must Be True

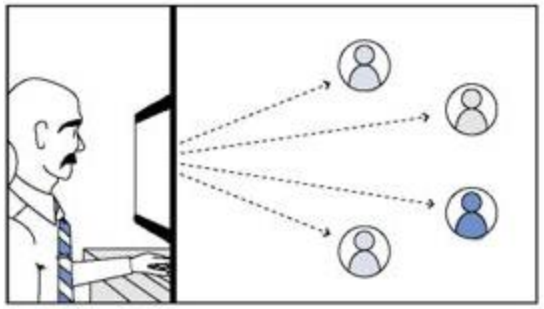
- State has centralized integrated data repository that contains multiple data sources such as laboratory results, case reports, immunizations, wastewater testing, etc. and is accessible by jurisdiction data systems and tools.
- Health department has access to EHR data directly or through health information exchange (HIE)/qualified health information network (QHIN) participation or other mechanism.
- As needed, immunization data are populated into ISS from the integrated data repository.
- Where possible, functionality for patient outreach via text is available to the ISS.

Investigation: Moment 2C

* See Explanation of Terms on slides 35-38

2. Investigation 3 of 4

MOMENT 2C



Investigator updates surveillance system, making data available to others

Jobs to be Done

- The investigator enters case-related data in ISS.
- For emergent and urgent conditions, anonymized data are automatically transmitted to CDC.
- Relevant parties including epidemiologists at neighboring jurisdictions, the state, and CDC access the data to monitor disease activity.
- Healthcare receives notifications of disease status.

What Must Be True

- Piping new data sources into the jurisdiction's integrated data repository is easy to manage.
- Data entered in ISS are stored in the integrated repository.
- Data collection and analysis tools meet basic interoperability standards for easy ISS integration.
- Data from jurisdiction's integrated data repository are accessible to other public health entities, including CDC, based on provisions in data sharing agreements, so that the data are synchronized for everyone.
- Bi-directional exchanges with healthcare allow public health to provide useful information to the clinician through the EHR.

Investigation: Moment 2D

* See Explanation of Terms on slides 35-38

2. Investigation 4 of 4

MOMENT 2D

CDC receives notification with needed anonymized data in near-real time upon jurisdiction entry

Jobs to be Done

- CDC program practitioner sees notification and prioritizes based on severity.
- CDC program practitioner can easily compare data from other states.

What Must Be True

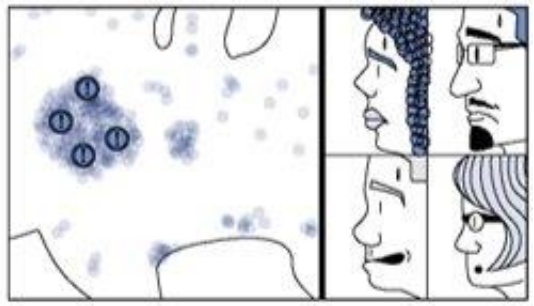
- Integrated data repositories exist at the state level and make relevant information available to all local jurisdictions and CDC (anonymized data to CDC).
- 1CDP platform receives, ingests, and processes data from jurisdictions and makes it available to CDC programs.

Outbreak Detection: Moment 3A

* See Explanation of Terms on slides 35-38

3. Outbreak Detection 1 of 3

MOMENT 3A



Public health is alerted to potential outbreak

Jobs to be Done

- Automated algorithms analyze case data and alert public health staff to potential local, regional, or national outbreaks.
- CDC receives signals from analysis of anonymized electronic initial case reports (eICRs) and laboratory data transmitted to CDC concurrent with reporting to STLTs.
- Epidemiologists at the state and CDC can easily review multi-state data available through 1CDP and recognize potential multi-state outbreak.
- Public health alerts physicians of emergent threats to the community and disseminates coordinated information to the public.

What Must Be True

- STLTs have robust functionality in ISS or separate interoperable tools to provide outbreak management and to preserve privacy of data shared with CDC and others.
- Data are available in 1CDP and are available to ORR and programs for monitoring, event detection, and situational awareness.
- Automated algorithms detect and alert on potential outbreaks.
- STLT systems conduct data quality and content checks.
- 1CDP conducts data quality and content checks and provides feedback to STLTs in a low-burden way.

Outbreak Detection: Moment 3B

* See Explanation of Terms on slides 35-38

3. Outbreak Detection 2 of 3

MOMENT 3B

Alerts from complementary data sources drive action

Jobs to be Done

- Automated analyses on data in the integrated repository combine data from multiple sources (e.g., case, genomic, syndromic, wastewater, staffing) to provide additional insights about distribution, impact, potential risks, and available resources.
- Dashboard visualizations present findings clearly so that public health officials understand the situation immediately and can make quick, well-informed decisions.
- Local, state, and federal public health share information and plans collaboratively.

What Must Be True

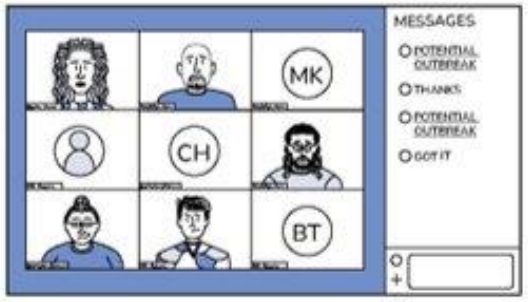
- Health departments have integrated repositories that facilitate analysis across data sources.
- Adherence to data content and format standards and to established expectations for data use and release removes barriers to data integration.
- Effort has been invested in understanding how data sources complement one another and in developing informative analytics and intuitive data displays.

Outbreak Detection: Moment 3C

* See Explanation of Terms on slides 35-38

3. Outbreak Detection 3 of 3

MOMENT 3C



Public health prepares for investigation and response

Jobs to be Done

- The epidemiology team at the STLT consults with agency leadership, who have also seen the alerts.
- The epidemiology team at the STLT begins to coordinate resources across the agency and with the local and tribal health departments to initiate the outbreak investigation and response.
- The CDC epidemiologist confers with CDC leadership.
- Program resources at CDC are mobilized for the CDC role in coordinating the multi-state investigation.
- CDC epidemiologist escalates according to the graduated response framework and initiates national coordination with state, local, tribal, and territorial public health.

What Must Be True

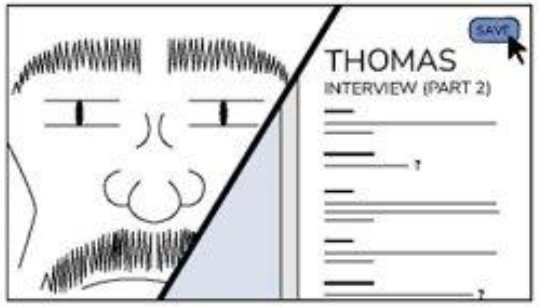
- Program-appropriate interfaces present public health staff with the information they need to do their work efficiently and effectively.
- Open communication and collaboration are ongoing between public health agencies at local, state, tribal, territorial, and CDC levels.
- CDC has capacity to support response based on needs of STLT.

Outbreak Investigation: Moment 4A

* See Explanation of Terms on slides 35-38

4. Outbreak Investigation 1 of 3

MOMENT 4A



Investigator collects and shares data

Jobs to be Done

- Jurisdictions, including tribal public health agencies, have real-time access to case, contact, and supplemental information on the outbreak which are accessible through their data systems based on pre-existing data sharing and access agreements.
- CDC and jurisdiction epidemiologists confer to confirm and define the outbreak.

What Must Be True

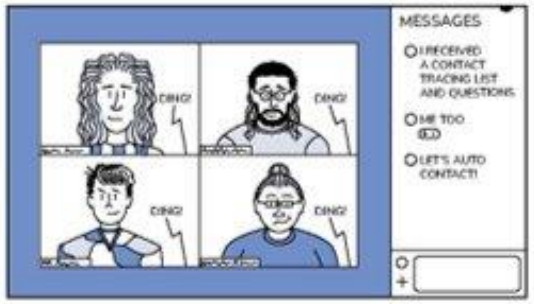
- Automated algorithms analyze case data and alert public health staff to potential local, regional, or national outbreaks.
- CDC receives signals from analysis of anonymized electronic initial case reports (eICRs) and laboratory data transmitted to CDC concurrent with reporting to STLTs.
- Epidemiologists at the state and CDC can easily review multi-state data available through 1CDP and recognize potential multi-state outbreak.
- Public health alerts physicians of emergent threats to the community and disseminates coordinated information to the public.

Outbreak Investigation: Moment 4B

* See Explanation of Terms on slides 35-38

4. Outbreak Investigation 2 of 3

MOMENT 4B



Contact and exposure lists are easily disseminated

Jobs to be Done

- CDC and health departments obtain lists of named contacts and potentially exposed individuals (e.g., from airplane manifests, shopper cards, appointment lists).
- They load the lists to their integrated data repositories, which automatically share information with the relevant health departments (de-identifying the data where appropriate).
- Jurisdiction ISS or outbreak management systems use the lists to assign follow-up activities to staff based on pre-defined operations protocols.

What Must Be True

- Additional information (e.g., contact lists) can be easily disseminated and automatically updated in the ISS.
- Predefined processes in the jurisdiction systems automate and coordinate work assignments.
- ISS and outbreak management systems have front-facing functionality to help with case management activities.

Outbreak Investigation: Moment 4C

* See Explanation of Terms on slides 35-38

4. Outbreak Investigation 3 of 3

MOMENT 4C

New questions are disseminated and quickly incorporated

Jobs to be Done

- CDC disseminates new interview questions to test emerging hypotheses and disseminates them to jurisdictions electronically.
- Jurisdiction ISS integrate the questions so that they are included in any new interviews.
- The ISS send automated texts to previously interviewed cases and contacts asking the new questions.

What Must Be True

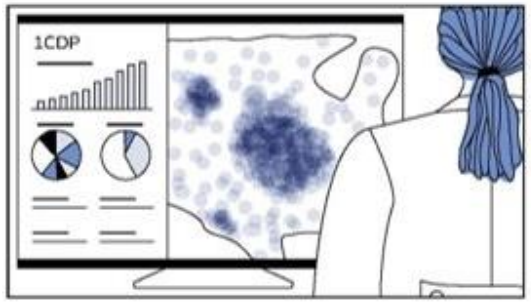
- When additional data elements and / or new interview questions are needed, CDC programs, jurisdictions, and the Council of State and Territorial Epidemiologists (CSTE) collaborate to develop them.
- Additional information (e.g., new requested data elements) can be easily disseminated by 1CDP and automatically updated in the jurisdiction ISS.
- Predefined processes in the jurisdiction systems automate and coordinate work assignments.

Outbreak Intervention: Moment 5A

* See Explanation of Terms on slides 35-38

5. Outbreak Intervention 1 of 4

MOMENT 5A



As they are collected, data are available for analysis to guide public health action

Jobs to be Done

- Public health practitioners supporting interventions (e.g., testing sites, immunization clinics, vaccine supply) access the data they need from integrated data repositories to support prevention and control efforts.
- Health departments analyze supplemental data sources on community demographics, at-risk segments of the community, social determinants of health, and environmental factors.
- Additional data elements, such as laboratory and immunization data, are made available to CDC programs in one place through 1CDP.
- CDC efficiently links cases to guide multi-state response with more accurate data.

What Must Be True

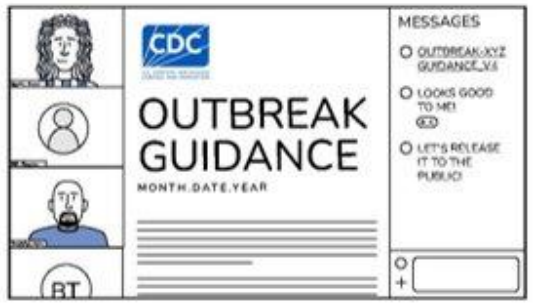
- Consensus-based data standards are broadly adopted and effectively implemented to enable data exchange and integration.
- All parties can access synchronized analysis-ready data from 1CDP.
- CDC can link cases quickly through 1CDP to guide multi-state response with more accurate data.
- Linked data, like laboratory results and immunization records on a case, are accessible via STLT and 1CDP data repositories.

Outbreak Intervention: Moment 5B

* See Explanation of Terms on slides 35-38

5. Outbreak Intervention 2 of 4

MOMENT 5B



CDC uses data to deliver national guidance

Jobs to be Done

- CDC aggregates national case data for monitoring and to inform guidelines provided to STLTs.
- CDC and all public health agencies access shared dashboards available through 1CDP for situational awareness and to monitor the status of the outbreak response.
- CDC subject matter experts provide communication guidance to STLTs.
- STLTs and CDC provide consistent guidance and information on outbreak response to the public and the media.

What Must Be True

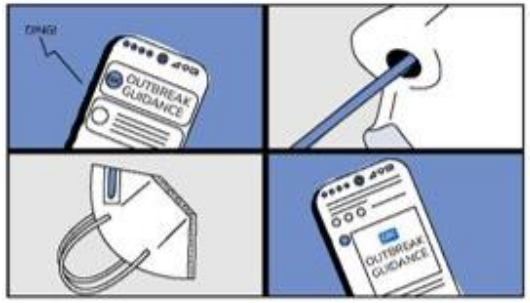
- Shared data repositories and dashboards on 1CDP ensure that all of public health has access to shared situational awareness.
- Data sharing agreements are in place to allow access to and govern use of the data.

Outbreak Intervention: Moment 5C

* See Explanation of Terms on slides 35-38

5. Outbreak Intervention 3 of 4

MOMENT 5C



Health departments use data for targeted intervention

Jobs to be Done

- Clinical decision support and guidance are disseminated to healthcare providers via EHR or directly (ex. guidance on high index of suspicion, testing, treatment, isolation, and care for contacts)
- Health departments use targeted notices to alert those who may have been exposed on how to evaluate their status and when to contact their health care provider or public health.
- Health departments present up-to-date data and guidance through their web pages, media releases, and social media communications to keep the public informed and to provide tools to help them find resources like vaccination clinics.
- Health departments prevent and treat at the individual and community level.

What Must Be True

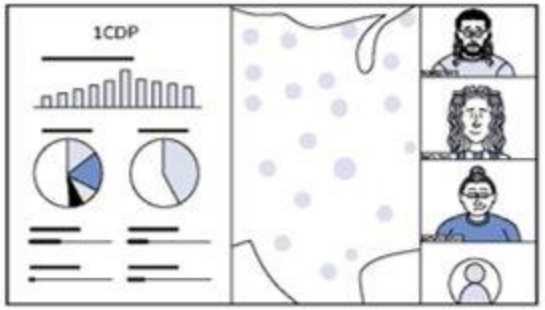
- Public health can author and disseminate clinical decision support to EHRs to raise index of suspicion and provide public health guidance for testing, treatment, isolation, and care for contacts.
- Collaboration and synchronized data allow public health to communicate consistent, coordinated messages.

Outbreak Intervention: Moment 5D

* See Explanation of Terms on slides 35-38

5. Outbreak Intervention 4 of 4

MOMENT 5D



All levels of public health continue to collaborate until the outbreak is over

Jobs to be Done

- Healthcare, STLTs, and CDC coordinate to ensure communities have access to appropriate interventions including treatment, vaccinations, hospital capacity.
- After-action reviews and reports are created and shared to inform and improve future outbreak response.

What Must Be True

- Collaboration and synchronized data allow healthcare and public health to communicate consistent, coordinated messages.

Data Sharing, Analysis & Dissemination: Moment 6A

* See Explanation of Terms on slides 35-38

6. Data Sharing, Analysis and Dissemination 1 of 6

Moments

a. Ready-to-use data* are available at the right time to all parties*

Jobs to be Done

- Data populated into ISS are cleaned, validated, transformed and appropriately routed within the jurisdiction.
- Multi-directional data exchange occurs automatically based on jurisdiction-authored rules and data sharing agreements.
- Case data are integrated with other data in data repositories to generate insights and situational awareness.
- 1CDP:
  - Receives data and automatically performs additional cleaning, transformation, linkage, and validation and makes analytic-ready data* available to CDC programs.
  - Provides CDC Epidemiologists with additional data elements requested from multiple jurisdictions in one place.
  - Acts as a repository for additional data sources that provide context or situational awareness.
  - Supports queries by CDC Epidemiologists for additional data elements shared by jurisdictions.
  - Provides STLTs with access to shared data, dashboards, and tools.

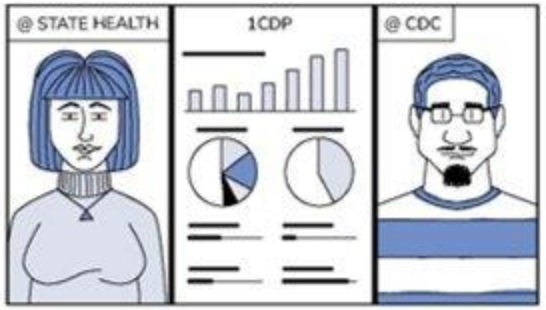
What Must Be True

- Surveillance systems meet interoperability and transmission standards*.
- Data coming to CDC, including data from intermediaries, are anonymized.
- 1CDP provides a platform for bi-directional case data exchange between STLTs and CDC and provides a single-partner workspace* accessible to CDC and STLTs for collaboration.
- 1CDP automatically cleans, validates, and transforms the data and makes it available to CDC users.
- 1CDP is staffed to address general data transmission, structure, and content issues, while programs address disease-specific content.
- Multiple data sources are available across CDC centers, Institutes, and offices via 1CDP.
- 1CDP can link cases among data sources and link cases to outbreaks based on exposures and risks.
- Standard analytic products* within 1CDP provide a common operating picture for STLTs and CDC.
- Jurisdictions have access to appropriate data*, dashboards, and tools through 1CDP.
- All parties trust that their data will be protected and used in accordance with data-sharing agreements.
- Data-sharing agreements and exchange protocols* define what data will be accessible, what will be exchanged, and how it will flow.

Data Sharing, Analysis & Dissemination: Moment 6B* See Explanation of Terms on slides 35-38

6. Data Sharing, Analysis and Dissemination 2 of 6

MOMENT 6B



States share data with CDC in accordance with the Core DUA*

Jobs to be Done

- States and CDC align on data sharing.
- States control the content and timeliness of data transmitted to CDC.

What Must Be True

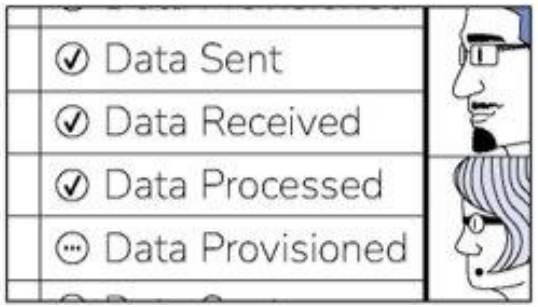
- Jurisdictions and CDC author shared expectations and data-sharing agreements to determine when data are shared with CDC through automated transmissions.
- ISS have low-burden features that allow STLTs to control which elements may be shared.
- Jurisdiction data systems flag the status of data (e.g., provisional, final, ready for publication) before transmitting or sharing.
- ISS have built in flexibility to incorporate additional data elements quickly.

Data Sharing, Analysis & Dissemination: Moment 6C

* See Explanation of Terms on slides 35-38

6. Data Sharing, Analysis and Dissemination 3 of 6

MOMENT 6C



At all times, STLTs and programs can see the status of the data they have sent to CDC

Jobs to be Done

- States and CDC program of into 1CDP viewer to see where their data are and what is happening to the data.
- STLTs and CDC programs log into 1CDP viewer to check status of data transmissions to CDC.

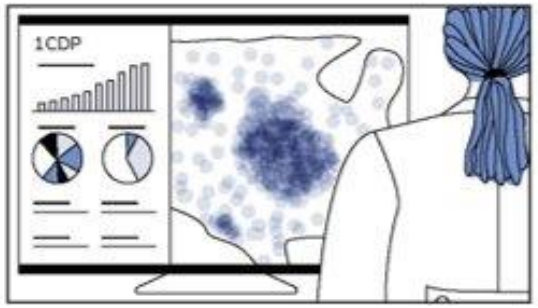
What Must Be True

- Data governance is in place to ensure data received from STLTs are used according to data agreement.
- CDC provides observability* and transparency* of data being transmitted from STLTs through a common viewer.

Data Sharing, Analysis & Dissemination: Moment 6D* See Explanation of Terms on slides 35-38

6. Data Sharing, Analysis and Dissemination 4 of 6

MOMENT 6D



CDC and STLT programs analyze and disseminate data that are synced with each other

Jobs to be Done

- Local, state, tribal, and territorial health departments and CDC analyze and disseminate data via dashboards, reports, and other visualizations to support public health intervention.
- Data across all levels of public health are coordinated due to consistency in pipelines and to automation of data integrity* and data validation checks as close s possible to the source of raw data*.
- Findings from integrated analyses guide public health action and provide community with broad awareness of health threats and prevention strategies.
- Data-driven communications are stood up quickly to provide immediate and actionable information and consistent messaging to the public
- Public health speaks with one voice and impacted public health agencies are aware before information is released.

What Must Be True

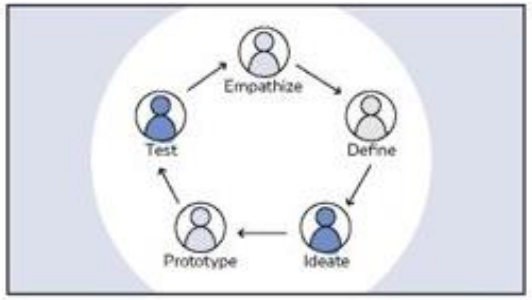
- Data originate from the same sources of truth.
- Data checks are in place at each stage of transmission and meet common standards.
- Data suppression criteria* to preserve privacy are well established and tools exist to allow them to be applied quickly and accurately.
- Public health (CDC and STLTs) coordinates on messaging. There are clear understandings of who will release what types of information (e.g., sub-state level data) to reinforce relationships between public health agencies and the communities they serve.

Data Sharing, Analysis & Dissemination: Moment 6E

* See Explanation of Terms on slides 35-38

6. Data Sharing, Analysis and Dissemination 5 of 6

MOMENT 6E



Public health maintains and continuously improves technology and processes.

Jobs to be Done

- Public health technologists, in collaboration with other public health staff, continuously improve data systems, alerts, triggers and ensure quality assurance.
- Health departments conduct after-action reviews when the event is over to understand newly identified needs and pain points and plan system improvements.

What Must Be True

- Public health can sustain continuous improvement of technology.
- Centralized data stewards for quality assurance for the transmission of all case data exist between healthcare, STLTs and CDC.
- AI and modeling are used with data in ISS and shared repositories to proactively identify communities at highest risk for public health threats to target prevention.

Data Sharing, Analysis & Dissemination: Moment6F

* See Explanation of Terms on slides 35-38

6. Data Sharing, Analysis and Dissemination 6 of 6

MOMENT 6F

Timely, ongoing guidance delivered by public health and healthcare help the public stay informed and take appropriate action.

Jobs to be Done

- Local, state, tribal, and territorial health departments; CDC; and healthcare speak with one voice to disseminate information to the public about how disease is spread, how they can protect themselves, what to watch for, and what to do if they think they are ill.
- Coordinated guidance is provided to healthcare so that they can diagnose, care for, and provide accurate recommendations to their patients.
- Science-based information is translated into clear, easy to understand, actionable messages.
- Information is disseminated through multiple channels so that it is easy for people to access and use.

What Must Be True

- All levels of public health coordinate to deliver consistent messages.
- Processes are in place to translate sound science into intuitive messages.
- Public health uses multiple communications channels at the national, state, and local levels to get important messages out to the community.
- Healthcare and the public trust public health to provide sound guidance.

Explanations of Terms 1 of 4

- **1CDP viewer** – An interface provided by 1CDP that provides role-based access to view data held by CDC.
- **Actionable Data** – Information that is timely, relevant, and accurate enough to allow public health agencies to prioritize, plan, and execute activities to improve the health of the community.
- **All parties** – in this context, it is all individuals and organizations expected and authorized to use the data. This is likely to include STLT staff and CDC program and response staff, and there might be roles for other federal agencies, healthcare providers, or others.
- **Analytic-ready data** – Data that has been cleaned, transformed, and linked and is in a format that is optimized for analysis (rather than for transactions or for storage). For some users, the data may need to be aggregated or have other data suppression applied for confidentiality.
- **Appropriate data** – Data authorized for access by data sharing agreements and user role. It may be limited based on a variety of factors such as disease condition, jurisdiction, data elements, intended use, or level of data aggregation/suppression.
- **Case data** – Information on the case of a disease or condition that includes clinical information from health care, relevant laboratory finings, and information gathered through the public health case investigation on risk factors, potential exposures, control measures initiated, and other information not available from the clinical record.
- **Core DUA** – A data use agreement between CDC and public health jurisdictions intended to simplify and streamline data sharing. It includes
  - Common provisions that outline CDC responsibilities and procedures that apply across data sets.
  - Data-specific addenda that address data source-specific and jurisdiction-specific requirements.
- **Data exchange protocols** – Processes and agreements for when and how data will be exchanged between parties.
- **Data Governance –** The policies and processes an organization uses to manage and secure their data
- **Data integrity checks** – Automated checks to ensure that data processing does not introduce errors into the data.
- **Data suppression criteria** – Statistical strategies to minimize the risk that the data could be used to, or appear to, provide information on any individual.
- **De-Identification** – Removal of data elements that could identify an individual before information is released. HIPAA provides rigorous de-identification standards while NNDSS allows inclusion of some epidemiologically important data elements that would not be permitted under the HIPAA standard

Explanations of Terms 2 of 4

- **Disease management** – Actions recommended by public health to mitigate against the spread of disease or of severe illness in the affected infected.
- **Emergent conditions** – Disease conditions that are rapidly emerging as health concerns for human populations in the US.
- **Health exchange** – A Health Information Exchange (HIE). By presenting access to multiple facilities' EHRs, it can provide an efficient interface for public health staff to query EHRs for additional data on a case. Often there is a single HIE for the state, but there may be multiple within a state and not all health care facilities currently participate in an HIE.
- **Healthcare** – Organizations, facilities, and clinicians that provide direct health care to patients
- **Interoperability** – The ability of software systems to work together and exchange information to achieve a purpose. The includes the ability to communicate through compatible formats and protocols and the ability to exchange information and interpret it accurately.
- **Interoperability standards (Health IT)** – The content and exchange standards that allow fluid data exchange and semantic interoperability for healthcare data.
- **Interoperability and transmission standards** – Standards that define data content, format, and how it is to be sent. Adherence to these standards will allow public health to fluidly exchange data that can be understood and interpreted by the user. Current standards need to be expanded, updated, and refined to achieve this.
- **Necessary data elements needed to initiate case investigations** – A basic set of data elements needed by the public health agency to initiate a case investigation. They include disease condition, contact information, basic demographics, basic diagnostic and symptom information.
- **Observability of data** – The ability of jurisdictions that submit data to CDC to see where it is in processing and how it is being used and interpreted by CDC.
- **Public health guidance** – Recommendations issued by public health agencies for treatment, isolation, prophylaxis, and other measures to manage conditions of public health concern.
- **Public health reporting** – Legally required submission of data by healthcare (and other designated reporters) to public health agencies on individuals diagnosed with or suspected of having specified conditions.

Explanations of Terms 3 of 4

- **Raw data** – Data as provided by the source.
- **Ready to use data** – Data that has been cleaned, transformed, and linked and is in a format that is optimized for analysis (rather than for transactions or for storage). For some users, the data may need to be aggregated or have other data suppression applied for confidentiality.
- **Single-partner workspace** – One workspace that is available to all relevant users.
- **Standard analytic products** – A specified set of data analysis tools that are centrally managed and supported and are available to all users.
- **Transparency of data** – The ability of jurisdictions that submit data to CDC to see any transformations or changes made in processing and how data are being used and interpreted by CDC.
- **Urgent conditions** – Disease conditions that have a serious health impact and potential for spread that require rapid action to control their spread.
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Explanations of Terms 4 of 4

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