Interoperable Data Systems

CSTE Stories FROM THE Field

Interoperability is the capacity for information systems to seamlessly access, exchange, integrate, and leverage data. As technological advancement has opened doors to the integration of data from disparate sources, new opportunities exist to build seamless data flow across individual systems. Although historically systems within public health were implemented in isolation without capacity for interoperability, these challenges are being addressed by the ongoing development of data and message standards and technological approaches to facilitate swift and secure exchange of critical public health data among systems, both within and across organizations and geographies.

NATIONAL PICTURE

Prior to the COVID-19 pandemic, nearly 70% of hospitals were using fax or mail to send patient data, as reported in 2019 by the Office of the National Coordinator for Health Information Technology. As one of public health's largest data partners, lack of interoperability with hospitals led to data quality issues and required substantial manual efforts to clean and gather complete data. Interoperability with these external systems was enabled via electronic laboratory reporting and electronic case reporting (eCR), utilizing message standards for efficient electronic data sharing. Public health agencies are confronting similar scenarios, with many internal programs operating standalone systems for single purposes. Many state, local, tribal, and territorial health departments are actively working to enhance interoperability among internal systems, databases, and external data sources to enable the secure and rapid exchange of more complete data. This work aligns with a goal in the Centers for Disease Control and Prevention's (CDC) Public Health Data Strategy to ensure a response-ready public health system.

INTEROPERABLE DATA SYSTEMS IN ACTION

Tennessee's Data Infrastructure to Fight Opioid Epidemic Expanding to Other Surveillance Activities

Tennessee Department of Health developed an infrastructure that integrated multiple, disparate data sources to provide a timely, complete picture of opioid overdoses. This work leveraged existing data and alleviated some of the reporting burden for clinical partners. **Tennessee is working to expand the infrastructure to other surveillance activities with immediate needs and will include integrating hospital discharge, birth, and vital records data to support maternal and child health-related programs.** Other programs can also access the information for their surveillance purposes.

Continued and increased funding will allow the infrastructure to be maintained and further grow the scope to improve timely collection of more complete patient data across the department and promote public health response activities, all while reducing the reporting burden on the healthcare system.

SUBMITTED BY: *Erin Holt Coyne, MPH, Chief Public Health Informatics Officer, Tennessee Department of Health, Office of Informatics and Analytics*

Mobile, Alabama Health Department Innovates to Offer Near Real-time Access to Surveillance Data

The Mobile County Health Department (MCHD) in Alabama previously relied on manual processes and free software for reportable condition data. Through a collaboration with the Alabama Department of Public Health, they innovated to establish near-real-time access to back-end surveillance data and state-of-the-art visualization applications. This work allowed state and local health departments to quickly stand-up automated data sharing at the beginning of the pandemic. Few national or state COVID-19 reports made data available to the public below the county level. The interactive COVID-19 data dashboard had 50,971 views and their vaccine information hub site had 99,221 views. MCHD's reports empowered decision-makers with localized data, guiding resource allocation and response efforts. They expanded data sharing beyond COVID-19, enhancing state-local collaboration. With syndromic data, MCHD now tracks trends in non-reportable conditions like suicide, overdoses, and gun violence. This innovative approach enhances the community's health outcomes by providing timely, actionable data.

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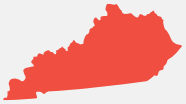
SUBMITTED BY: *Rendi Murphree, MS, PhD, Epidemiologist, Director, Bureau of Disease Surveillance*



Kentucky Uses Immunization Registry Bulk Import to Detect Breakthrough Cases and Vaccine Hesitancy

In response to the COVID-19 vaccine distribution, the Kentucky Department for Public Health (KDPH) integrated their disease surveillance system and immunization registries. Manual querying of vaccination records proved burdensome, leading to the development of an automated process. This automated querying, including bulk import functionality, significantly increased the acquisition of vaccination records, with an initial monthly average change of 4,055.5%. This facilitated faster and more accurate detection of breakthrough COVID-19 cases, aiding evaluation of vaccine effectiveness.
The process also improved reporting to the CDC and supported responses to other outbreaks like monkeypox. KDPH is collaborating with the National Electronic Disease Surveillance System (NEDSS) vendor to enhance the system further, including phase 2 testing for improved data completeness and flexibility in querying vaccination records. This enhancement has potential for wider implementation across NEDSS Base System jurisdictions, offering streamlined processes for disease investigations.

COVID-19 VACCINE RECORD BULK IMPORTS PER MONTH

200 imported via manual query prior to bulk import functionality

8,311 imported via manual and bulk query after bulk import functionality implemented

An average change of 4,055.5%

SUBMITTED BY: *Courtney Marshall, MPH, Informatics Epidemiologist, Kentucky Department for Public Health, Reportable Diseases Section*

↘ Story submissions edited for length and clarity.