The New York City Department of Health and Mental Hygiene Implements Citywide Immunization Registry and Surveillance System Integration

CSTE Stories FROM THE Field

CONTRIBUTOR: *New York City Department of Health and Mental Hygiene*

CATEGORY: **Interoperable Data Systems**

During the COVID-19 pandemic, there was an urgent need to assess the vaccination status of COVID-19 patients to better understand vaccine effectiveness and factors associated with vaccine breakthrough. At the NYC Health Department, immunization and infectious disease surveillance data are managed in separate systems.

The "What"

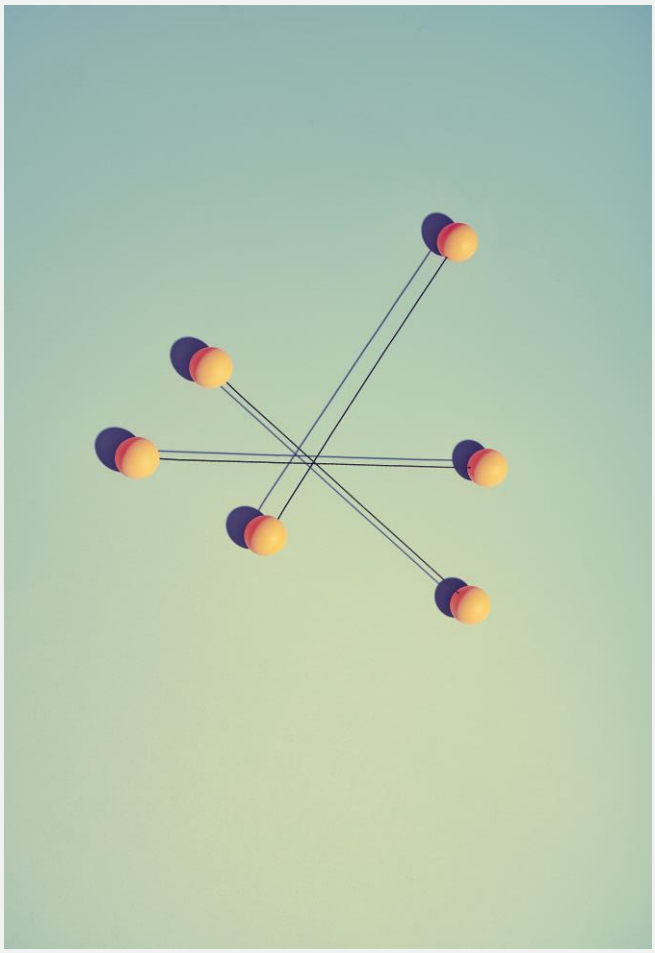
Immunization records for children and adults who live in NYC are stored in the Citywide Immunization Registry (CIR), and the NYC Health Department maintains multiple program-specific Maven-based surveillance systems used for reportable disease case investigation and management.

These systems were partially integrated prior to the COVID-19 pandemic; an external look-up service in Maven via the electronic disease reporting infrastructure (EDRI) is used to search for the patient in the CIR, which returns matching records with a probability indicating the likeliness of each match. The investigator reviews and selects the matching record to import it into Maven, via EDRI. This process is manual, cumbersome, and requires staff time and resources.

During the COVID-19 pandemic, it was not feasible to use this manual process for the >2.3 million cases reported after the vaccine was first administered on December 14, 2020. Surveillance program and CIR staff developed a workaround to conduct batch matches and import large matched record files into Maven, which required significant staff resources to develop and monitor processes to export, match and route files.

The NYC Health Department sought to automate the manual look-up and import process so Maven records meeting criteria for a CIR look-up would be automatically matched with CIR and matched results would get imported directly into the Maven event. They used ELC CARES funding to support a project manager, business analyst and Java developer and to pay the Maven vendor, Conduent, for changes needed to the Maven product. They piloted this project with the Bureau of Immunization (BOI) Maven as they routinely investigate vaccine preventable diseases. In order to automate the matching process, the Department upgraded the existing application

program interface (API) call to the CIR that is made via EDRI from SOAP to REST and developed the CIR REST API. They enhanced existing systems to automate the API calls and connectivity to the CIR REST API. They created an automated process to pull demographics and additional immunization information, including COVID-19 data fields, into the Maven surveillance systems. They also enhanced the current state of systems, including Maven, to improve data capture, data integration and data processing.



The "So What"

The manual look-up and import of CIR records into Maven was successfully automated for BOI Maven. API calls are automatically going out to the CIR and matched records are being imported without staff resources. This has significantly reduced the amount of effort required by BOI staff, who conduct thousands of case and contact investigations of vaccine preventable diseases per year, many of which require repeated queries of the CIR database. Additionally, this enhancement has significantly reduced the effort required to quickly obtain and assess immunization records for cases and contacts during outbreak investigations and provide up-to-date data summaries.

The "Now What"

While the automated match and import has only been implemented for BOI, NYC Health Department is planning to implement it for the Bureau of Communicable Disease (BCD) next; BCD investigates multiple vaccine preventable diseases, including COVID-19. The automatic import of vaccination records will remove the need for the workaround to conduct batch matches, and staff will no longer need to monitor and maintain that process.

BCD will also be able to utilize the automatic match to assess vaccination status quickly and seamlessly for other vaccine preventable diseases, including hepatitis A and influenza. Additionally, this success will have a significant impact on future outbreaks and pandemics; the urgent need to develop the batch match and import process required a significant amount of staff time to develop the workaround process. In the future, NYC Health Department will be able to quickly leverage the automatic match and import process to have immunization data readily available in their surveillance systems.

Funding source: This work was supported in part by the Centers for Disease Control and Prevention (CDC) cooperative agreement #NU38OT000297. Its contents are solely the responsibility of the authors and do not necessarily reflect the views of the CDC.