Data Management

PHL Data for Surveillance

The data generated through PHL reporting are published each week through CDC's FluView. Therefore, timely and accurate reporting of laboratory surveillance data using electronic data systems is of the utmost importance. For PHLs, the main method of electronic reporting is through PHLIP. PHLIP is an effort to achieve interoperability between different types of systems in order to exchange information in a useful and meaningful way. PHLIP utilizes an HL7 messaging standard to facilitate data exchange, allowing for harmonization of laboratory test results using standard vocabularies and terminology, including LOINC and SNOMED. PHLs can find information regarding implementation of HL7 messaging for CDC Flu rRT-PCR Dx Panels, including applicable LOINC test codes and SNOMED result codes at www.cdc.gov/flu/professionals/diagnosis/rtpcr-test-kits.htm. Additional information about LOINC, SNOMED and HL7 can be found at:.

- LOINC – www.loinc.org,
- SNOMED – www.ihtsdo.org,
- HL7 – www.hl7.org.

The use of electronic data systems that provide data in real time and comply with national standards is a requirement to achieve right size virologic surveillance. The real time data elements (as found in the HL7 PHLIP message guide) available at each PHL may vary; some PHLs receive considerably more epidemiologic and specimen collection information than other PHLs. The minimum the PHLs should provide is:

- Specimen identifier and unique patient identifier,
- State where specimen was collected,
- Date of birth of patient and/or age plus unit (years, weeks, months, days),
- Specimen collection date,
- Specimen received date,
- Performed test method,
- Test result.

The PHLs that already have PHLIP capability should consider reporting additional information. The additional information to include, if available, is as follows:

- Current influenza vaccination status,
- Antiviral treatment,
- Patient location at time of testing (inpatient, outpatient, long-term care facility),

- Travel information,
- Patient death information,
- Additional geographic information (e.g.,county, city, zip),
- Whether specimen was related to an outbreak,
- Whether specimen was sent to CDC and if so, ID included with CDC specimen,
- Date of illness onset.

APHL's Informatics Program has a Technical Assistance Team available to assist PHLs with PHLIP implementation. The Technical Assistance Team provides tools and human resources to assist PHLs, public health agencies, and other data exchange partners in understanding, navigating and accomplishing the task of sending electronic data using simple, effective, standards-based methods. For more information about the Technical Assistant Team, visit the APHL Informatics website and refer to frequently asked questions about technical assistance teams.

Non-PHL Data for Surveillance

As resources for PHL testing decrease, the value of alternate data sources becomes increasingly important. State or local public health departments and laboratories are encouraged to explore options to collect and incorporate influenza testing data from non-PHL sources. The supplemental data can help increase the confidence in the surveillance data within the state. This data could include rapid influenza diagnostic testing (RIDT) data and/or data from clinical and commercial laboratories within a jurisdiction. A number of other sources of virologic surveillance data may be available to augment both state and national surveillance. Data from these sites may be transmitted electronically as specimen level records or in aggregate by a simpler method. Regardless of whether specimen level or aggregate data is received, necessary data elements include:

- Date or week of specimen collection, receipt or test
- Total number of tests performed and influenza positives by:
  - Type,
  - Subtype (if available),
  - Age group.

Potential Alternate sources of local, state and national virologic surveillance data include:

- Clinical sites including RIDT sites and clinical laboratories. A number of epidemiologists and influenza coordinators have initiated laboratory test reporting from selected facilities in their states. These data back are used by the influenza coordinators to monitor influenza activity. Providing the supplemental surveillance data to clinicians is a useful resource to guide patient management decisions.

- Commercial laboratories. A significant number of non-hospital laboratory testing is performed by a small number of commercial laboratories (e.g., Quest Diagnostics, LabCorp, ARUP Laboratories, and Mayo Medical Laboratories). Surveillance programs could obtain data from these laboratories on specimens tested from within their jurisdiction.
- Electronic Laboratory Reporting (ELR) for Meaningful Use. As part of the Affordable Care Act and related activities, inpatient and outpatient healthcare facilities have been provided monetary incentives to implement electronic health records. Along with these incentives, facilities are required to report notifiable diseases, syndromic surveillance, and vaccine registry data using automated electronic messaging standards (e.g., HL7, LOINC, SNOMED). For states that have required reporting of influenza laboratory results, health departments may be able to use these electronic messages to augment virologic surveillance.

Alternate data sources for CDC to supplement national surveillance data:

- Commercial laboratories. A significant number of non-hospital laboratory tests are performed by a small number of commercial laboratories (e.g., Quest Diagnostics, LabCorp, ARUP Laboratories, and Mayo Medical Laboratories). These laboratories provide a significant amount of influenza testing for hospitals, and physician offices around the country.
- Federally Qualified Health Centers (FQHCs). As of 2010, over 1,100 of these clinics operate under the supervision of the Health Resources and Services Administration (HRSA) to provide care to the medically underserved.[28] With the Affordable Care Act (ACA), the numbers and patient volumes are anticipated to increase.
- Department of Veterans' Affairs (VA). There are 1,766 VA facilities[29], although influenza laboratory testing is only available at a subset of these.
- Department of Defense (DoD). Data available from DoD includes virologic data collected among military personnel around the globe and laboratory test information from military and non-military facilities that care for military dependents, notably through TriCare Insurance.
- Centers for Medicare and Medicaid Services (CMS). Since 2009, data on influenza testing has been made available on a more real-time basis utilizing the CMS reimbursement exchange data repository.
- Vendors of Electronic Health Records (EHR) and Laboratory Information Management Systems (LIMS). Vendors and large users of EHRs and LIMS may be a source of influenza testing information. Examples of these include GE Healthcare, Cerner, Sunquest, HCA, and others.
- Diagnostic Device Manufacturers. An increasing trend in diagnostic testing is the use of mobile communications from test devices to cloud-based web services to allow ease of access of information to patients, doctors, and insurers. This capability also allows automated messaging of de-identified results from influenza test devices to a cloud where public health entities can access the information for monitoring influenza in their jurisdictions.

Considerations for Data Management

1. Are you currently utilizing PHLIP to report influenza virologic surveillance to CDC? If not, have you contacted APHL or CDC to start the process?
2. If currently utilizing PHLIP, what data elements are being sent? Have you explored incorporating additional information fields listed above?
3. Have you identified the potential sources of bias in your virologic surveillance data? What changes could be made in your system to reduce the impact of bias?
4. Does your influenza surveillance system incorporate virologic data from healthcare providers utilizing RIDTs? If yes, how is this data collected from rapid test sites? Do you collect both the number positive and the total number tested (denominator data)? Is the data collected currently reflected within your jurisdictional surveillance data?
5. Does your influenza surveillance system incorporate virologic data from clinical/commericial laboratories? If yes, how is this data collected from the laboratories? Are the number positive and the total number tested collected (denominator data)?
6. How stable and reliable is the data received? How often is data from alternate sources received (e.g., clinical, commercial, physician office laboratories)?
7. If no alternate data is collected and incorporated into your surveillance data, would it be possible to collect the data in the future?
8. What are the challenges to collecting alternate data?
9. What is the plan for incorporating new data sources into your influenza surveillance data?
10. What resources are required to collect non-public health laboratory testing data?