The New York City Department of Health and Mental Hygiene Developed Methods to Quickly Identify When Laboratories Stop Sending Disease Reports

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CATEGORY: **Laboratory Data Exchange**

The New York City Department of Health and Mental Hygiene (NYC Health Department) receives a large volume of electronic information from laboratories that report test results for more than 90 diseases. These reports are used to track the spread of illnesses. NYC Health Department staff who investigate cases and identify outbreaks depend on timely and uninterrupted reports from labs to appropriately respond to public health threats. Even one missed report can have serious public health consequences.

For example, if a lab fails to report a patient who works in a restaurant tests positive for hepatitis A virus infection, the NYC Health Department cannot make sure the patient does not work while able to transmit the virus to others nor offer vaccines in time to prevent people who ate at the restaurant from getting sick. Although labs are required by law to electronically send disease reports to health departments, their electronic systems can sometimes fail.
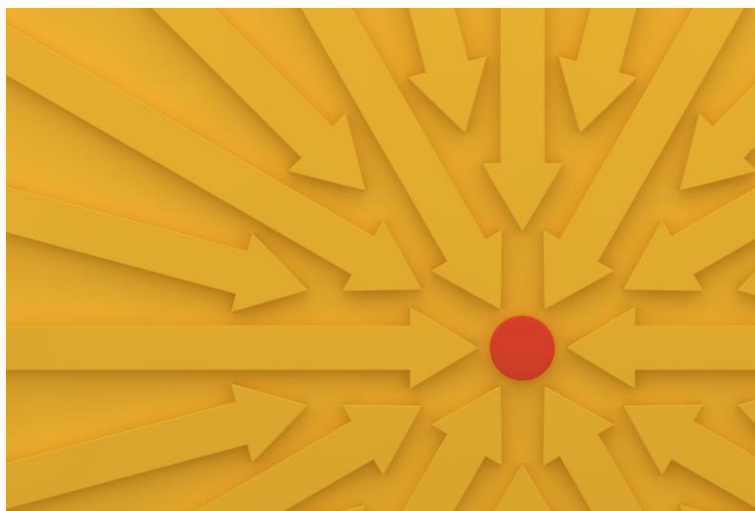

With many test result reports being received daily, it can be challenging for health departments to notice when a lab stops reporting one or more diseases. It can also be hard for health departments to tell if a recent decrease in reports (drop-offs) from a lab reflects an actual reporting error that cannot be explained by declining disease trends, the decrease in reports occurring during a time when a disease is less common, or labs conducting fewer tests on weekends or holidays.

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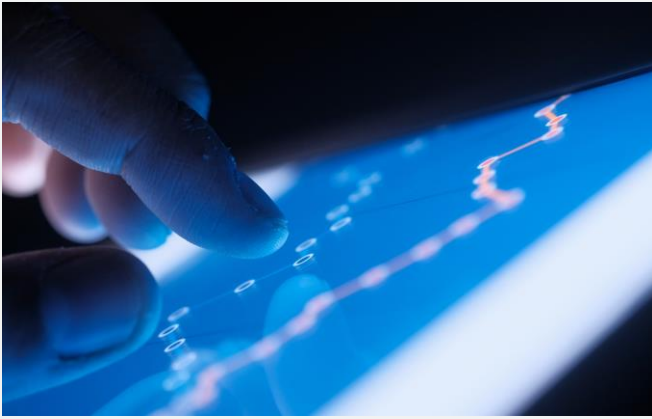
The "What"

NYC Health Department staff developed automated weekly analyses to quickly find lab reporting drop-offs so disease investigations were not slowed by reporting problems. These analyses use a free software program commonly used to identify disease outbreaks. NYC Health Department staff developed an original way to use the scan statistics in this software to search for recent reporting drop-offs at any lab for any disease, while accounting for overall patterns in time, such as times of year when certain diseases are less common. Statistical signals indicating reporting drop-offs are automatically summarized in a weekly report for additional investigation. NYC Health Department staff evaluated this activity by determining the percentage of drop-off signals that occurred from October 2017 to July 2018 were verified as actual drop-offs based on follow-up conversations with the labs that triggered these signals.

The "So What"

63% of the 62 signals that occurred during the evaluation period were confirmed to be actual electronic lab reporting drop-offs, triggered by programming errors, failures to create or send files, and other issues. As a standard practice, NYC Health Department staff now use these analyses to find, investigate and correct new errors. For example, during periods with high COVID-19 testing rates, some labs failed to submit reportable test results for diseases other than COVID-19 or stopped reporting COVID-19 test results because of staff turnover, programming errors or files being sent to development servers instead of production servers. This analysis was the only way to quickly identify and fix these errors.

Uncovering the causes of reporting drop-offs requires close collaboration among epidemiologists, data analysts, information technology specialists and lab workers. The NYC Health Department's enhanced surveillance tool is critical in making sure all labs report all the time so disease detectives can access more complete and timely information to quickly identify outbreaks and prevent illnesses. In 2018, this activity received the Council of State and Territorial Epidemiologists Presidential Priorities Award for exceptional work in advancing the use of informatics to improve health outcomes. For more information, visit cste.org/page/presidential-priorities-award.

The "Now What"

Making sure labs and health care professionals report infections is crucial for a successful disease surveillance system. Labs should anticipate the possibility of reporting errors when adopting new lab tests and maintaining or upgrading information technology systems. Public health authorities receiving a large volume of electronic disease reports from multiple locations should consider setting up analyses to identify unusual decreases in reports sent. Additional analytic technical support for detecting and visualizing reporting drop-offs would benefit state, tribal, local and territorial public health departments and the people they serve.

For more information on this activity, visit
journals.lww.com/jphmp/Fulltext/2020/11000/Detecting_Drop_offs_in_Electronic_
Laboratory.11.aspx.