The Use of Rapid Diagnostic Assays to Supplement Syndromic Surveillance: Preliminary Results of a Pilot Project in New York City

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Objective

This paper describes preliminary results and implementation lessons learned from a rapid diagnostic (RD) testing pilot project. The project's purpose is to prospectively collect diagnostic data on common causes of community-wide illness in order to supplement syndromic surveillance in New York City.

Background

Syndromic surveillance systems can detect increases in respiratory and gastrointestinal (GI) illness, but diagnosis of etiologic agents can be delayed due to difficult, time-consuming identification and low rates of testing for viral pathogens. RD assays may aid in early identification and characterization of large outbreaks by allowing decision makers to "rule in" or "rule out" potential etiologic agents.

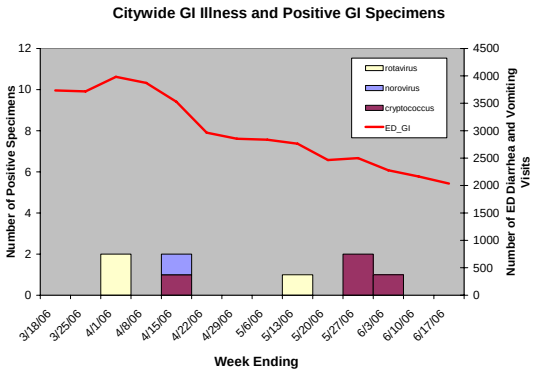
Methods

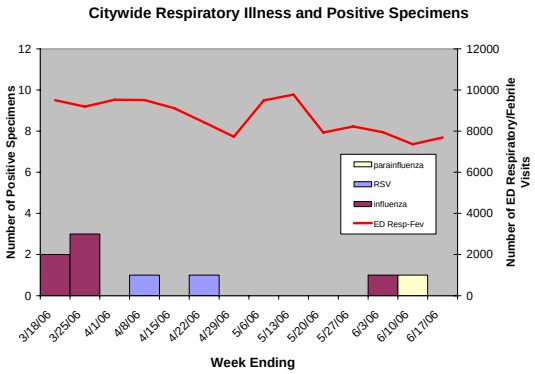
DOHMH partnered with the Diagnostic Laboratory at Bellevue Hospital Center in NYC to create a pilot project for prospective, rapid specimen collection, testing, and electronic reporting starting March 15, 2006. Emergency Department (ED) clinicians were informed about the clinical and epidemiologic goals of the project through presentations, posters, and hand cards. Computerized order entry screens were modified to include respiratory and GI panels. Using RD assays, the Laboratory tests all respiratory and GI specimens collected during routine clinical practice in the ED for *influenza*, *parainfluenza*, *adenovirus*, and *respiratory syncytial virus* (in respiratory specimens), and *norovirus*, *rotavirus*, and *cryptosporidiosis* (in GI specimens). Results of the rapid tests are made available to clinicians for use in decision-making and are sent to DOHMH using the Public Health Information Network Messaging System (PHIN-MS). DOHMH analyzes data for temporal disease patterns and reports clusters to the clinical site and public health authorities.

Results

Between 3/15/06 and 5/31/06, 909 specimens were screened through the RD Project. Of the specimens tested, 47% represent community-acquired infections (no hospital stay or hospital stay < 24 hours).

During that time period, 511 respiratory specimens were tested for *influenza*, *parainfluenza*, *adenovirus*, and *respiratory syncytial virus* and nearly 14% were positive. The predominant viruses were *influenza* (n=21 specimens) and *respiratory syncytial virus* (n=17). Additionally, there were a large number of specimens positive for *parainfluenza* (n=14). In the same time period, 398 GI specimens were tested for *norovirus*, *rotavirus*, and *cryptosporidiosis* and 2% were positive.





Conclusions

The goal of this pilot project is to supplement traditional, environmental, and syndromic surveillance systems in NYC with RD testing. Thus far, our results and experiences indicate that implementation of rapid multiplex laboratory testing and electronic reporting is feasible, but specimen collection through the emergency department in NYC has been difficult. The pace of clinical care within the ED, the lack of dedicated clinical staff, and the perceived lack of benefit of the testing to clinical care resulted in a lower than expected volume of specimens collected. In order to expand the number of specimens received, we are seeking to extend the project to include hospital outpatient facilities and primary care sites with electronic medical records, where specimen collection might be prompted through decision supports and targeted medical alerts.