ABSTRACT

INTRODUCTION: The clinical laboratory often functions as the gateway of epidemiological data for respiratory virus (RV) infections in order to help support clinical decision making during the RV season. However, viral test organizations may be unable to provide real-time laboratory data to clinicians or infection control personnel. Real-time data support decisions for employee health surrogates, infection prevention and control practices, and surveillance on retrospective data. To improve access to actionable data, we aimed to develop a web-based dashboard to track RV clinical laboratory test results and to support infection control practices and management.

METHODS: Geisinger Medical Laboratories in Pennsylvania, a health system serving approximately 3.3 million residents through 113 hospitals and 370 care sites. To improve early awareness of circulating viruses from 7 days to 8 hours prior to the peak of the respiratory season, a retrospective analysis was performed using pre-admission viral testing to support infection control practices, bed management, and infection prevention.

RESULTS: The clinical laboratory often functions as the gateway of epidemiological data for respiratory virus (RV) infections in order to help support clinical decision making during the RV season. However, viral test organizations may be unable to provide real-time laboratory data to clinicians or infection control personnel. Real-time data support decisions for employee health surrogates, infection prevention and control practices, and surveillance on retrospective data. To improve access to actionable data, we aimed to develop a web-based dashboard to track RV clinical laboratory test results and to support infection control practices and management.

CONCLUSIONS: To our knowledge, this is the first report of real-time RV data analytics in any U.S. health system and data provided useful associations to better prepare for upcoming respiratory seasons. Altosoft provides simple solutions for data visualization and can be applied in a variety of ways to any section of the laboratory as a means to identify targets for quality improvement. This tool helps manage performance benchmarks standards, as well as epidemiological data. Real-time monitoring serves to better define seasonal onset of virus groups in local communities and alerts clinicians to the actual onset of the influenza season, with aims to improve utilization of antiviral therapy. Together with laboratory information technology, computer software programs can be leveraged to track laboratory performance and report epidemiological data in real-time.

DISCUSSION

1. Real-time monitoring can support decisions for several departments:
   - Quality/patient care
   - Antimicrobial stewardship
   - Infection prevention and control
   - Employee health
   - Pharmacy
   - Supply chain
   - Finance
   - Stewardship
   - Quality assurance
   - Insurance (workman’s comp)

2. Impact to care (for future analysis):
   - Receive more timely diagnosis
   - Reduce isolation time
   - Reduce room wait time
   - Reduce antimicrobials utilization

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