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Title

Rapid Antigen Testing in School Health Offices for Surveillance of SARS-CoV-2 and Influenza A

Priority 1 (Research Category)

Acute respiratory infections

Presenters

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Abstract

Context: Evaluation of acute respiratory infections (ARIs) has been disrupted by the SARS-CoV-2 (SC2) pandemic, limiting comprehensive surveillance for respiratory pathogens in clinical settings. Alternatives to using medically attended ARI for public health surveillance are needed. A potential approach involves assessing children and school personnel in school health offices (SHOs) as pandemic-related responses enhanced innovative approaches for SC2 testing in novel settings. Objective: Evaluate the comparability of SC2 and influenza A (FLuA) detection based on rapid antigen testing in SHOs to traditional surveillance systems. Study Design: Prospective evaluation of results from rapid antigen testing for SC2 and FluA in SHOs of a suburban/rural school district compared to large-scale, countywide detection of SC2 and clinic-based surveillance of FluA using cross correlation analyses. Setting: Oregon School District (OSD) in Dane County (DC: southcentral Wisconsin) over two academic years (September 2021—April 2023). Population Studied: School-aged children (4—18 years) and school staff/teachers reporting to SHOs with ARI symptoms. Comparator data included all PCR-based testing for SC2 reported to Public Health Madison & Dane County and PCR-based testing for influenza at five family medicine clinics in DC. Intervention/Instrument: Quidel Sofia SARS/Influenza Fluorescent Immunoassay with wireless transmission of anonymous results to a cloud-based server with availability to the study team. Outcome Measures: Cross correlation and lag estimates for weekly counts of SC2 and FLuA cases comparing school-based and community-based results. Results: The SHOs at the 7 OSD schools performed 1,508 tests with few invalid tests (n=7; 0.46%). Participants had a wide age range [1—71 years] with a median age of 13 years, and included 1,145 (76%) students. SC2: 118 and 119,630 cases were identified in OSD and DC, respectively. The maximum cross correlation (r=0.82) occurred with no time lag. FluA: 61 and 75 cases were identified in OSD and DC, respectively. The maximum cross correlation (r=0.69) occurred with DC lagging OSD by 1 week. Conclusions: Surveillance for significant respiratory pathogens can be based on rapid antigen testing within SHOs, is highly comparable with larger scale surveillance programs, and demonstrates either advanced (FluA) or concurrent detections (SC2). Performance of similar programs are needed in other geographical areas and for other pathogens.