NAPCRG 52nd Annual Meeting — Abstracts of Completed Research 2024.

Submission Id: 6229

Title

Descriptive epidemiology of pathogens associated with acute respiratory infection in a study of K-12 school children

Priority 1 (Research Category)

Acute respiratory infections

Presenters

Jonathan Temte, MD, PhD, MS, Sarah Walters, Ajay Sethi, Caroline Hamer, Cecilia He, Shari Barlow, BA, Amra Uzicanin, MD, MPH, Maureen Goss, MPH, Emily Temte, BA

Abstract

Context: School-based outbreaks often precede increased incidence of acute respiratory infections in the greater community. Objective: We evaluated acute respiratory infections (ARI) among school-aged children in a southcentral Wisconsin school district over 8.5 consecutive years to elucidate commonly detected pathogens, their unique characteristics, and epidemiological patterns. Study Design and Analysis: The ORegon CHild Absenteeism due to Respiratory Disease Study (ORCHARDS) is a longitudinal, laboratory-supported, school-based, ARI surveillance study designed to monitor respiratory virus activity in kindergarten through 12th grade schools. Setting: Oregon School District, Dane County, Wisconsin, USA, between January 2015 and June 2023, and before and after emergence of SARS-CoV-2. Population Studied: Children aged 4—12 years meeting criteria for ARI. Intervention/Instrument: Eligible participants with ARIs provided demographic, epidemiologic, and symptom data, along with a nasal swab or oropharyngeal specimen. Multipathogen testing using reverse-transcription polymerase chain reaction (RT-PCR) was performed on all specimens for 18 respiratory viruses (including SARS-CoV-2 starting September 2019) and two atypical bacterial pathogens. Outcome Measures: Pathogen identification. Results: Between January 5, 2025, and June 9, 2023, 3,498 children participated in ORCHARDS. Pathogens were detected in 2,455 of 3,498 (70%) specimens. Rhinovirus/enteroviruses (36%), influenza viruses A/B (35%), and seasonal coronaviruses (11%) were most commonly identified in positive specimens. Rhinovirus/enteroviruses and parainfluenza viruses occurred early in the academic year, followed by seasonal coronaviruses, RSV, influenza A, influenza B, and human metapneumovirus. Students who reported their possible source of infection most often cited a family member (49.6%) or classmate (34.6%). Seasonal coronaviruses, SARS-CoV-2, influenza B virus, and rhino/enteroviruses were

more common in older students (>10 years of age) and RSV, parainfluenza virus, influenza A virus, human metapneumovirus, and adenoviruses were more common in younger children (<10 years of age). Conclusion: Since its emergence in 2020, SARS-CoV-2 was detected year-round and with a higher median age than other pathogens. Better understanding of the etiology, presentations, and patterns of pediatric acute respiratory infections can help inform medical and public health system responses to future outbreaks.