Can a school-based hand hygiene program reduce asthma exacerbations among elementary school children?

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Abstract

BACKGROUND: Viral upper respiratory tract infections have been implicated as a major cause of asthma exacerbations among school-aged children. Regular hand washing is the most effective method to prevent the spread of viral respiratory tract infections, but effective hand-washing practices are difficult to establish in schools.

OBJECTIVES: This randomized controlled trial evaluated whether a standardized regimen of hand washing plus alcohol-based hand sanitizer could reduce asthma exacerbations more than schools' usual hand hygiene practices.

METHODS: This was a 2-year, community-based, randomized controlled crossover trial. Schools were randomized to usual care and then intervention (sequence 1) or intervention and then usual care (sequence 2). Intervention schools were provided with alcohol-based hand sanitizer, hand soap, and hand hygiene education. The primary outcome was the proportion of students experiencing an asthma exacerbation each month. Generalized estimating equations were used to model the difference in the marginal rate of exacerbations between sequences while controlling for individual demographic factors and the correlation within each student and between students within each school.

RESULTS: Five hundred twenty-seven students
with asthma were enrolled among 31 schools. The hand hygiene intervention did not reduce the number of asthma exacerbations compared with the schools' usual hand hygiene practices ($P = .132$). There was a strong temporal trend because both sequences experienced fewer exacerbations during year 2 compared with year 1 ($P < .001$).

**CONCLUSIONS:** Although the intervention was not found to be effective, the results were confounded by the H1N1 influenza pandemic that resulted in substantially increased hand hygiene behaviors and resources in usual-care schools. Therefore these results should be viewed cautiously.