Children play a critical role in the transmission of influenza within communities, yet studies describing and examining the effectiveness of different systems to monitor influenza within schools are limited. This article evaluates a local surveillance initiative in Anne Arundel County, Maryland. By paying equal attention to accuracy, acceptability, and scalability, the authors provide useful information for other jurisdictions that are considering school-based surveillance.

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INFLUENZA AND SCHOOL-BASED INFLUENZA-LIKE ILLNESS SURVEILLANCE: A PILOT INITIATIVE IN MARYLAND

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On June 11, 2009, the World Health Organization (WHO) declared a pandemic in response to the 2009 influenza A (H1N1) virus. Enormous pressure was placed on public health infrastructure worldwide to minimize the adverse potential of the pandemic, with particular emphasis on surveillance measures, including that of schoolchildren aged 5–18 years.^{1,2} Further, recognition of the disproportionate amount of illness and hospitalization among younger people caused by the 2009 H1N1 virus intensified the relevance of influenza surveillance in the school-age population.^{3,4}

School-based influenza surveillance is based on the premise that monitoring the school-age population provides enhanced early detection of influenza epidemics.^{5–7} Epidemiologic evidence suggests that influenza illness occurs first among school-age children and that, once infected, this population efficiently transmits the virus among family members and then to the general community.^{8–13} Previous studies have validated the use of school-based influenza surveillance as a marker of general community influenza-like illness (ILI).^{6,7,9,13,14}

Numerous examples of existing school-based influenza surveillance systems^{15–22} can be identified from an Internet search of both international and U.S. health departments, but wide heterogeneity and absence of established data parameters limit applicability and

standardized implementation. Varying methods of school-based influenza surveillance include detection based on total absenteeism, disease-specific absenteeism, school health room visits, and/or a combination of these. Of the listed methods, only total absenteeism has been demonstrated as a validated indicator of possible influenza activity/epidemic.^{7,18,20} A wide range of school absenteeism (8%–47%)^{7,9,10,23} is reported during influenza epidemics, but an absenteeism rate of 10% is traditionally used (and accepted) as a valid indicator.^{24–27} Additional surveillance information is often used, including determination of absenteeism based on illness type and, more specifically, ILI. However, no set guideline exists for interpretation of these data.

The Anne Arundel County Department of Health (AACoDOH) in Maryland developed a School-Based ILI Surveillance System (SILISS) to identify 2009 influenza illness trends in the schools through monitoring absenteeism rates and the number of school health room visits due to ILI symptoms. We evaluated the ease of administering the surveillance system and determined its accuracy as a tool for detecting community influenza activity.

METHODS

Definitions

The following definition for ILI—fever >100°F and cough and/or sore throat—was used based on accepted Centers for Disease Control and Prevention (CDC) and WHO 2009 H1N1 case definitions.^{28,29} No diagnostic tests were performed.

SILISS

SILISS was implemented at the start of the Anne Arundel County school year in August 2009. School nurses from the county's 80 public elementary schools (children aged 5–12 years) were mandated to collect