

Health Service Applications

School-Based Approaches to Identifying Students with Asthma

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Asthma, a common chronic illness among children and youth, affects one school-aged child in 11, or two to three students in a class of 30.¹ Asthma accounts for 14 million lost school days each year.² Students with asthma miss instruction while in the health room and may not be fully alert due to lack of sleep from nighttime asthma symptoms.³ Schools often lose funding for student absences.

Schools are responsible for ensuring the health of all students while at school. Students with asthma may experience serious or life-threatening episodes at school, so schools need to know the students who have the illness and what staff can do to prevent asthma episodes or to provide quick intervention. How can schools determine who has asthma?

School health coordinators, school nurses, and school medical consultants often face this question: "Doctor Jones spoke with the principal and strongly urged us to provide asthma screening for all our students, but should we do this when our resources are limited? What should we do?"

IDENTIFICATION APPROACHES

Case identification and individual case detection offer appropriate approaches for schools to determine which students have asthma. In contrast, the scientific literature indicates population-based screening and population-based case detection in schools as not recommended.^{4,6}

- **Case identification** uses existing information, usually from standard school forms, to identify students with diagnosed asthma.
- **Individual case detection** occurs when students not diagnosed with asthma present to health rooms with symptoms of the illness.
- **Population-based screening** uses tests, examinations, or other procedures applied rapidly to populations to identify *apparently well* persons who

probably have asthma.⁷

- **Population-based case detection** uses surveys, tests, examinations, or other procedures to rapidly identify students with symptoms who may have asthma but not be diagnosed.

Case Identification

CDC's *Strategies for Addressing Asthma Within a Coordinated School Health Program* recommends case identification.⁸ Most schools have systems in place for case identification, and thus do not require substantial additional resources to implement this approach, which includes reviewing health histories, reports of physical examinations, and annual emergency cards to develop confidential lists of students with health concerns such as asthma.

Schools should focus initially on students with significant asthma morbidity as demonstrated by frequent absences, school health office visits for acute care, emergency department visits, or hospitalization. Parent surveys and referral letters recommending additional care sent to parents of students with previously diagnosed asthma can identify students with uncontrolled asthma and lead to increased medical care and changes in medications.⁴

Schools should examine their current case identification system. Are they already identifying students with asthma, especially those with significant morbidity? If not, can the system be improved? Some schools added a check-off box, "Does your child have asthma?," to the health history or annual emergency card. Incentive programs may improve low return rates. Some schools need to designate a person (usually the school nurse) to review forms and compile information.

Schools can assess their process for targeting students with significant morbidity by answering these questions: Are school nurses notified when students are excessively absent, and do staff possess the skills and time to manage those with asthma or other chronic illnesses? Are health room visits for symptoms of acute asthma tabulated? Are students with frequent symptoms noted for more intensive case management?

Individual Case Detection

Individual case detection for asthma constitutes a basic school health service for any symptomatic student. For example, when school nurses document repeated episodes of undiagnosed wheezing in a health appraisal,

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they detect a possible illness. The nurse refers the family to the student's primary care provider for an evaluation. The nurse also makes referrals to promote enrollment in health insurance programs, help a student without a primary care provider to find one, or obtain additional medical care for uncontrolled asthma symptoms.

Population-Based Asthma Screening

Population-based asthma screening does not currently meet American Academy of Pediatrics (AAP) criteria for an effective school screening program (Figure 1).⁹ The most important limitation involves lack of evidence that early treatment of currently asymptomatic people who later could develop asthma improves their health. In addition, experts do not agree on an appropriate screening test. Screening with spirometry proves feasible for some schools, but a review of school-based spirometry screening by Abramson and colleagues⁵ concluded that few children are identified for further evaluation, and many seem to have no asthma-related symptoms. Without further study, they could not recommend spirometry for school-based asthma screening.⁵

Boss et al⁶ reviewed the utility of asthma screening programs by using World Health Organization (WHO) criteria for population-based screening programs, which

are similar to AAP criteria for school-based screening programs. Boss et al concluded that, given the incomplete understanding about the natural history of asthma and lack of a test to identify asymptomatic persons who will develop the disease, true screening for asthma is not currently possible.⁶

Population-Based Case Detection

The current literature does not support conducting population-based case detection programs for asthma in schools. Several studies documented that surveys to detect asthma cases are feasible, but no study confirmed that identifying these students ultimately improved their health.¹⁰⁻¹³ One study found that parent surveys did not increase new diagnoses of asthma.¹⁴

An appropriate research activity could involve examining effectiveness of population-based case detection in settings for students with easy access to comprehensive health services. School-based health centers may provide appropriate sites for population-based case detection if equipped to conduct complete evaluations (including spirometry), provide appropriate medicines, and assure follow-up care, and if all students with known asthma are already under control.¹⁵ At this time, however, effectiveness for prevention and cost-effectiveness of such case detection remains unknown.

School-Based Surveillance

Surveillance involves the ongoing, systematic collection, analysis, and interpretation of health data essential for planning, implementing, and evaluating public health practice. Questions used for asthma surveillance may be similar to those used for case detection programs, but health departments typically use asthma surveillance systems to count – not identify – children with the disease. This important activity may not be necessary in every community or school. Communities and schools need to carefully assess costs and benefits of local asthma surveillance.

POLICY DEVELOPMENT

Schools can work with other community stakeholders to focus on the greatest benefits for the school community. Traditional public health principles apply to deciding about school programs to identify asthma. What are the goals and objectives of the asthma program? What are the existing resources? What are the gaps in the program? How can the goals and objectives be met with existing or proposed resources?

A school health team or district school health advisory council can best assist a school or district in determining the most appropriate school asthma program. The local health department, asthma coalition, and asthma advocacy organizations should participate if they are not already members of the team. Staff and students from local hospitals and schools of public health, medicine, nursing, or respiratory therapy also may help school asthma programs. The team can determine what asthma management activities are available in the community. CDC's *Strategies for Addressing Asthma Within a Coordinated School Health Program*⁸ describes a range of appropriate activities for schools. Roles for

Figure 1
Criteria for a School Screening Program¹

Program Aspects	Criteria
Disease	High prevalence or high incidence
Treatment	Available and able to prevent prevent or reduce morbidity
Screening Test	High sensitivity and specificity
Screener	Well-trained and experienced
Target Population	Highest prevalence or most beneficial
Referral and Treatment	Definitive evaluation and appropriate treatment following all positive screens
Cost/Benefit Ratio	Cost less than the benefit of early intervention
Site	Appropriate for school
Program Maintenance	Improved quality and assessment of efficiency and effectiveness

1 Committee on School Health, American Academy of Pediatrics. *School Health: Policy and Practice*. 6th ed. Elk Grove Village, Ill: American Academy of Pediatrics; 2004:38-39.

specific staff members are described in the National Asthma Education and Prevention Program's (NAEPP) *Managing Asthma: A Guide for Schools*.¹⁶

RECOMMENDATIONS

Staff responsibilities at a school vary depending on the roles of school health team members at that school. The recommendations should benefit most schools.

1. Focus on **case identification** using existing records and forms, particularly for students whose asthma is not well controlled. Improve systems for collecting health information. Avoid *population-based screening* or **population-based case detection** programs.
2. Provide **individual case detection** and refer students to primary care providers or asthma care specialists for out-of-control symptoms or when other students present with symptoms suggesting asthma.
3. Help students with asthma receive good-quality medical care. Collaborate with community partners to ensure care and case management to reduce morbidity.
4. Consider participating in well-designed research projects if invited.
5. Look for new research findings.

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