Clinical pearls

Supporting successful asthma management in schools: The role of asthma care providers

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Often, as clinicians seeing children and youth with asthma, we focus on the management and treatment of asthma with the home setting in mind, forgetting all of the additional settings that these individuals need to negotiate and navigate. For students with asthma, schools represent a very important setting for managing asthma, which can be either supportive or pose several barriers to successful asthma control. During the school year, students spend most of their waking hours in this setting, away from home and family. It is estimated that students with asthma miss about 2 to 3 more days of school than students without asthma and may be at risk for poor school performance, although the data vary depending on the population studied.[1-3] Asthma symptoms that do not warrant urgent medical attention or missed school can still interfere with the student's ability to participate fully in academic or school-related activities through an inability to get a good night's sleep, to concentrate during class, or to participate in vigorous play or activities.

Over the years, society has placed increasing pressures on schools to prepare our next generation of productive adults capable of competing in a global environment. As a result, there is great emphasis on academics and testing, with health issues at times being a lesser priority. Schools want to provide healthy and supportive environments for all students to thrive and achieve their best, but they cannot do it without the support and commitment of physicians and other health professionals.

For the past decade, the school setting has received increased attention, and multiple programs and resources were developed to create and sustain supportive and asthma-friendly school environments.[4-10] Are these efforts working? Yes, to a point. A consistent theme noted is the vital role that asthma care providers play in preparing, facilitating, and supporting the successful management of asthma at school.

To prepare families for success at school, it is important to understand the school environment, including school policies and procedures. A typical school environment is characterized by school personnel who do not know which students have asthma and who feel ill-prepared to identify and handle worsening asthma, a school nurse who is offsite at another school she is covering, students with asthma sitting out of gym class, and difficulty accessing inhalers.[4,11] Although all schools are subject to district and state policies, each school is often an entity in itself and may have individual policies that differ from other schools in the same district. School principals may not be knowledgeable or aware of their own school district's policies. The school nurse can be a helpful ally, but ultimately it is the school principal who decides policy within the school.

WHAT CAN BE DONE?

Several programs and resources exist in many countries that suggest similar goals for creating asthma-friendly and supportive schools.[4,6,7,9-11] These goals commonly include the following:

1. Identify and track all students with asthma
2. Assure immediate access to medications as prescribed
3. Use an individualized asthma action plan for all students with asthma
4. Encourage full participation in school-related activities, including physical activity
5. Use standard emergency protocols for worsening asthma
6. Educate all school personnel and students
7. Identify and reduce common asthma triggers
8. Ensure communication and collaboration among school personnel, families, and health professionals/medical home, including discussion of asthma related policies in the school

ROLE OF ASTHMA CARE PROVIDERS

Asthma care providers play a vital role in preparing and supporting children and youth with asthma and their families, helping them attain successful asthma control and management at school. Table I serves as a guide and checklist for asthma health care providers to ensure that the children and youth they follow with asthma are prepared to handle the day-to-day management issues at school and to take full advantage of all the opportunities afforded to them at school. The preparedness and achievement of 2 goals, immediate access to inhalers and use of an individualized school-based asthma action plan, merit additional discussion because their success depends on asthma health care providers.

Difficulty accessing inhalers can have several origins. Some schools, perhaps as part of a drug use prevention program or in hopes of minimizing liability claims, do not allow students to carry their reliever inhalers at school.[4,12] Student restrictions on carrying reliever inhalers at school may preclude the immediate use of medication at the onset of symptoms and lead to delays with disastrous outcomes. Potential scenarios include the following: the room in which the medication is stored is too far from the

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TABLE I. Supporting successful asthma management at school: a checklist for asthma care providers

Asthma-friendly goal	Health provider's/medical home's role
Identify and track all students with asthma	☐ Encourage parents and students to disclose the student's asthma to school personnel (specifically, identify that the student has asthma on the school registration health form) ☐ For younger students and those participating in sports, parents and students may want to meet with teachers and coaches to explain asthma ☐ Advise parents to contact school nurse
Assure immediate access to medications as prescribed	☐ Discuss with parent and student the need for easy access to a reliever inhaler at school ☐ Assess inhaler technique of the student ☐ Assess ability to self-carry and administer inhaler at school ☐ Review the responsibilities of the student for self-carrying and administration of the reliever inhaler (no sharing with other students, and the need for monitoring and reporting use of reliever) ☐ Complete school forms to allow easy access to reliever inhaler, typically involves completion and signature of a school medication administration form ☐ Ensure that at least 1 inhaler can be left at school, and for students that participate in extracurricular activities, a second one for school may be necessary ☐ Determine whether insurer requires a special process or forms to allow dispensing of multiple reliever inhalers (eg, 1 for home, 1 for school, 1 to carry, 1 for gym bag)
Individualized school-based asthma action plan	☐ Complete an individualized asthma action plan for use by the student and school community for managing asthma at school (the school board may have a required form to complete; templates are available online) ☐ Explore the need for a plan that includes alternate plans for participation in school activities during poor asthma control that allows the student to participate in some way and avoid total exclusion ☐ Write in explicit detail how many doses can be taken over what period given what indications (for instance, if complaining of cough and difficulty breathing, give 2 puffs albuterol via metered-dose inhaler plus spacer; repeat administration if symptoms not improved in 5-10 minutes and call 911; may repeat administration of albuterol every 5-15 minutes until the ambulance arrives) ☐ If uncertain whether or not the school has a standard form, consult the school nurse ☐ Review and assess with the student and parent signs of uncontrolled asthma, indications for using a reliever at school, and steps to take if reliever is ineffective ☐ Role play with student the steps that the student would take if asthma symptoms started
Encourage full participation in school-related activities, including physical activity	☐ Discuss the importance of participating in physical activities (including gym class) and sports ☐ Explain that asthma is not a reason for avoiding physical activity ☐ Review identification and management strategies for exercise induced or aggravated asthma ☐ Role play with the student the process for using a reliever inhaler for pretreatment as well as treatment of symptoms triggered by physical activity ☐ Review with parents and students conditions that have the potential to exaggerate or trigger asthma in response to exercise or physical activity (eg, poor air quality days, uncontrolled asthma, extremes in weather, and so forth) ☐ Ensure that the use of a reliever before exercise is explained in the medication administration form
Identify and reduce common asthma triggers	☐ Determine whether there are any school-based triggers (chalk dust, markers, paints, adhesives) causing worsening asthma, and if so, identify strategies to reduce exposure
Good communication and collaboration among school personnel, families, and health professionals/medical home	☐ Assist with the completion of required school-related forms (typically the school medication administration form and the individualized asthma management form) ☐ Encourage the student and parent to talk to school community ☐ Provide asthma education materials that the student and parent can provide to the school community ☐ Prepare the student to manage asthma successfully at school

student's classroom, playground, or sports field; or the inhaler is locked in the main office or health room, but no one with the key is available. Some students believe it is too disruptive to go to another part of the school building or campus to take their medication before recess or gym class and decide to forgo the vigorous activity. Obviously, this is not an ideal solution.

Many states now have laws that permit students to carry and potentially self-administer their reliever inhalers during school.[13] In the absence of a state or local law or policy permitting public school students to carry inhalers and to self-treat for asthma, 3 federal statutes exist that can require public schools to permit the carrying of asthma medications by students: the Individuals With Disabilities Education Act, Section 504 of the Rehabilitation Act of 1973, and Title II of the Americans with Disabilities Act. A limitation of Title II, Section 202 of Americans With Disabilities Act of 1990, and Section 504 is that they apply to public entities or schools which receive federal funds, and may not apply to private schools. The Individuals With Disabilities Education Act does extend to private schools. Most states, 41 out of 50, have passed laws that protect the rights of students to carry and use prescribed medications at school (Connecticut, Louisiana, and South Dakota have no laws; Wisconsin, Mississippi, Georgia, New York, Rhode Island, and Pennsylvania are pending). Asthma care providers practicing in states that lack this type of supportive legislation are encouraged to support and become active in passing such laws. In addition, it is important to note that the US Department of Education, Office of Safe and Drug-Free Schools, issued guidance clarifying that "a student's prescription drugs, and related equipment, are not illegal drugs and are not prohibited by the Safe and Drug-Free Schools and Communities Act."[13]

TABLE II. Factors to consider when determining the appropriateness of a student self-carrying and self-administering asthma inhalers at school

Student	● Level of asthma knowledge, skills, attitudes, behavior (ability to identify worsening asthma and respond appropriately, understands the role of a reliever inhaler for preventing exercise induced or exacerbated asthma) ● Demonstrates accurate inhaler technique ● History of asthma episodes at school ● Ability to adhere to school rules for self-carrying and administration, such as no sharing of inhaler, report use to parents and school nurse or personnel (if applicable) ● Desire to self-carry and medicate at school ● Asthma control, severity, triggers, and burden ● Previous experience self-carrying and medicating (camps, overnight stays with friends or family, child care)
Parents/guardians	● Desire for child/youth to self-carry and medicate ● Willingness to collaborate with school personnel and health care provider
School	● Availability of health staff to support student (whether a school nurse or aide is on campus and how often) ● School size (how far the student would have to travel to get the inhaler; what the response time would be if someone had to bring the inhaler in an emergency situation) ● Presence and ability to reduce triggers
Health care provider	● Assessment of inhaler technique ● Provision of education and guidance regarding handling asthma-related issues at school ● Completion of school forms indicating student's ability or inability to self-carry and administer; if child needs assistance, provide explicit information for handling asthma and where the inhaler should be stored (nurse/health office, main office, classroom, with teacher)

Laws and policies are important but cannot replace an individualized approach led by the student's asthma care provider. The decision to allow a student to carry and self-administer a reliever inhaler should be discussed among the parents/guardians, the student, the student's physician/health care provider, and school personnel, including the school nurse (if one is available). Factors to consider on a case-by-case basis include the student's abilities, history, interest, responsibility, and maturity. Table II lists factors to consider. Students deemed to have the necessary skill and maturity should be allowed to keep asthma inhalers in their possession[13,14] to reduce the chances of a full-blown asthma episode, the need for emergency medical care, or asthma-related school absences.[12,15] If the inhaler is to be kept in another location, such as the nurse's office or the main office, the access time should be within minutes. In this situation, physicians should advocate storage in secure but unlocked locations.

In some circumstances, a family may need assistance from the student's physician or other health care provider in advocating for the student to gain the right to self-carry an asthma inhaler. By knowing the rights of students with asthma, physicians and other health care providers can help ensure that students have appropriate access to medications at school. Some schools at the beginning of the school year inform parents that asthma inhalers are not to be brought to school. What may not be explicit in these announcements is that processes and requirements exist to allow students to bring medications to school. The process typically involves a physician or other health care provider completing and signing school forms, along with the parent's signature, providing guidance on the student's skill and maturity for self-carrying and administering the asthma inhaler, and guidelines regarding the indications and dosage of the medication. Informed health care providers and parent/guardians may need to bring to the attention of school administrators and other school personnel the legal requirements of schools to students with asthma, and the benefits of self-administration and adequate asthma control, such as fewer school absences, improved participation at school, and improved health. Although schools may not want to supervise daily medications, they can and should when appropriate. Physicians or other asthma health care providers may need to contact the principal personally if there is reluctance to permit self-carrying of inhalers at school. Students are more likely to be able to control their asthma when school personnel, parents/guardians, and health care providers know about disability laws and school policies.

An individualized school-based asthma action plan is necessary to support successful asthma management and to serve as a communication and coordination tool among the student, parents/guardians, health care provider, and school personnel, including the school nurse. A school-based asthma action plan differs from our traditional understanding of an asthma action plan in that it focuses on the school context and typically only involves the use of a reliever inhaler and not long-term controllers. Schools do not have the resources to observe or supervise daily dosing of controllers and do not want to have medications at school that are not required for the student's protection. Medications at school can be viewed as a potential liability. Schools need to have individualized action plans for students completed by physicians or other authorized health care personnel to authorize the school nurse (or a person delegated that authority) to administer, supervise, or monitor the use of prescribed medications for the prevention (such as before gym class or sports) or relief of symptoms; understand how worsening asthma should be handled in terms of the frequency and dosing of the reliever inhaler; and determine the educational programming needed for the student and the school personnel to implement the individualized plan. Often school districts have their own individualized asthma action plan template to be completed and signed by the physician or health care provider and the parent/guardian. If not, there are several templates available online.[6,7,9,10,14,16] It is important to be very clear and explicit about the use of the reliever inhaler at school for the various purposes. The common expression of 1 to 2 albuterol puffs, as needed, for indication and dosing is typically not followed as intended. This is often interpreted and executed as 1 puff now with the option of providing another dose in 4 to 6 hours. In an acute moderate to severe exacerbation, this interpretation could be harmful and delay necessary treatment. Make

certain that the recommendation is explicit; for instance, use albuterol 2 puffs metered-dose inhaler plus spacer; if symptoms are not relieved, within 5 to 10 minutes, repeat; this cycle may be repeated 4 times until emergency help has arrived. Also, be certain to explain if pretreatment before exercise is needed. Other areas that may need to be explained depending on the needs of the individual student are avoidance of triggers (allergens and irritants), ability to exercise in extreme weather conditions (hot, cold, windy, humid) and whether activity is to be modified on poor air quality days.

In summary, asthma care providers play a crucial role for students becoming successful managers of their asthma at school and to be full and active participants in all school-related activities. Schools can pose challenges for students with asthma, but through partnerships among schools, students with asthma, their parents/guardians, and asthma care providers, these challenges can be overcome if all parties understand and fulfill their roles.

REFERENCES

1. Merkel SL, Wheeler LS, Gerald LB, Taggart VS. Introduction: learning from each other about managing asthma in schools. J Sch Health 2006;76:202-3.
2. Bonilla S, Kehl S, Kwong KY, Morphew T, Kachru R, Jones CA. School absenteeism in children with asthma in a Los Angeles inner city school. J Pediatr 2005;147:802-6.
3. Taras H, Potts-Datema W. Childhood asthma and student performance at school. J Sch Health 2005;75:296-312.
4. Cicutto LC, Conti E, Evans H, Lewis R, Murphy S, Rautiainen KC, et al. Creating asthma friendly schools: a public health approach. J Sch Health 2006;76:255-8.
5. Cicutto LC, Murphy S, Coutts D, Lang G, O'Rourke J, Chapman C, et al. Breaking the access barrier: evaluating an asthma center's efforts to provide an education program to children with asthma in elementary schools. Chest 2005;128:1928-35.
6. Ontario Ministry of Health and Long Term Care's Public Health School Asthma Project. Creating asthma friendly schools resource kit. Available at: http://www.asthmainschools.com. 2009. Accessed April 1, 2009.
7. American Lung Association. Asthma-friendly schools initiative toolkit. 2007. Available at: http://www.lungusa2.org/afsi/afsi2007_full.pdf. Accessed March 30, 2009.
8. Wheeler LS, Merkle SL, Gerald LB, Taggart VS. (EDS). Managing asthma in schools: what have we learned? J Sch Health 2006;76:201-348.
9. Center for Disease Control. Health topics: asthma. National Center for Chronic Disease Prevention and Health Promotion. 2008. Available at: http://www.cdc.gov/HealthyYouth/asthma/. Accessed March 30, 2009.
10. Asthma Foundations Australia. Asthma friendly schools. Australian Government, Department of Health and Ageing. 2009. Available at: http://asthmafriendlyschools.org.au/home/index.php. Accessed March 30, 2009.
11. Forbis S, Rammel J, Huffman B, Taylor R. Barriers to care of inner-city children with asthma: school nurse perspective. J Sch Health 2006;76:205-7.
12. Yeatts K, Maier W, Shy C. Asthma inhaler use and barriers in a population based sample of African American and white adolescents. Ann Allergy Asthma Immunol 2000;84:94-100.
13. Jones SE, Wheeler L. Asthma inhalers in schools: rights of students with asthma to a free appropriate education. Am J Public Health 2004;94:1102-8.
14. National Heart, Lung and Blood Institute. National Asthma Education Prevention Program Expert Panel 3: guidelines for the diagnosis and management of asthma: full report. 2007. Available at: http://www.nhlbi.nih.gov/guidelines/asthma/. p. 340. Accessed April 27, 2009.
15. Lurie N, Bauer EJ, Brady C. Asthma outcomes at an inner-city school-based health center. J Sch Health 2001;71:9-16.
16. National Heart, Lung, and Blood Institute. National Institutes of Health. Information for health professionals: lung disease information: asthma materials for schools. 2008. Available at: http://www.nhlbi.nih.gov/health/prof/lung/#asthma. Accessed April 27, 2009.