

MANAGEMENT OF STUDENTS WITH ASTHMA

MARYLAND STATE SCHOOL HEALTH SERVICES GUIDELINE

FEBRUARY 2013

Maryland State Department of Education
Student Services and Strategic Planning
Branch
200 West Baltimore Street
Baltimore, Maryland 21201
Phone: 410-767-0311
TTY/TDD: 410-333-6442



Maryland Department of Health
and Mental Hygiene
Office of School Health
201 West Preston Street
Baltimore, Maryland 21201
Phone: 1-877-463-3464
TTY/TTD: 1-800-735-2258



Maryland School Health Services Guideline-Management of Students with Asthma

Foreword

There is a strong relationship between academic achievement and a child's physical, emotional, and mental health. This link is the foundation for providing school health services as an important component of a school program. School health services provide primary prevention aimed at keeping students in schools through appropriate screenings: early identification of children at risk for physical, emotional, and mental health concerns; and case management of students with chronic health concerns.

The Annotated Code of Maryland, Education Article, §7-401 requires the Maryland State Department of Education (MSDE) and the Maryland Department of Health and Mental Hygiene (DHMH) to jointly develop public standards and guidelines for school health programs. The guidelines developed under §7-401 contain recommendations for minimum standards of care and current best practices for the health service topics addressed. The following guideline was developed in accordance with that requirement and is based on the expressed needs of the local school health services programs. It is intended that these guidelines will be used by the local school systems in developing local school health services policies and procedures as a means to assist local school health services programs in providing consistent and safe care to the students of Maryland. Specific laws and regulations that direct school nursing practice or other health services are identified in the guidelines.

To implement these guidelines, local school systems and local health departments should consult with the Maryland State Department of Education and the Department of Health and Mental Hygiene who will:

- Assist and provide technical assistance to local school health programs to support their efforts to plan for students with special health needs;
- Provide training to all appropriate school staff regarding issues related to students with special health needs including, but not limited to, planning, maintaining a safe environment, and medication administration issues; and
- Monitor the implementation of school health services programs including, but not limited to, programs and policies related to students and staff with special health needs.

Maryland School Health Services Guideline-Management of Students with Asthma

Introduction

In 2004, the 108th Congress passed legislation (H.R. 2023) that amended Section 399L of the Public Health Service Act (42 U.S.C. 280g) to allow the Secretary of the Department of Health and Human Services to give preference in asthma-related grants to states that require public elementary and secondary schools to allow students to self administer medication to treat asthma or anaphylaxis if certain stipulations are met. In 2005, the Maryland General Assembly passed legislation (House Bill 143-- *Public Schools - Use of Asthma Drugs and Related Medication*) creating a new statute, §7-421 of the Education Article, Annotated Code of Maryland. This statute requires public school systems to adopt policies authorizing students to possess and self-administer an asthma inhaler or other emergency medication for treatment of asthma or other airway constricting diseases. In 2007, the Maryland General Assembly passed HB 957--*Public Schools –Student Emergency Medical Care – Guidelines* creating another new statute, §7-426 of the Education Article, Annotated Code of Maryland. Under §7-426, the State Department of Education and the Department of Health and Mental Hygiene are required to establish guidelines for providing emergency medical care to students with special health needs, and to delineate the roles and responsibilities for planning and providing services to students with special health needs. Asthma is a common condition that is included in this requirement and the most common chronic condition managed in schools.

Planning is an essential part of the care for students with asthma. Communication, collaboration, coordination, and cooperation between the school, family, student and community health care provider is needed in order for the school nurse to effectively plan for the care of students while they are in school. Development of local school system policy is also an important part of the process of planning and implementing procedures to address student safety. Communication of guidelines, policies and procedures used for planning and implementing individualized health plans is important for fostering collaboration and cooperation with parents/guardians and health care providers.

Students with asthma require a thorough nursing assessment of their health needs to enable them to attend school regularly and to participate fully in the educational program. The school nurse must develop specific plans that consider student specific needs and any reasonable accommodations that may be required in school. These comprehensive guidelines will assist the school nurse in developing an individualized health plan, in conjunction with the family and the primary care provider, for students with asthma.

The management of students with asthma requires five key activities:

- 1) Asthma awareness;
- 2) Planning;
- 3) Allergen/asthma trigger avoidance measures;
- 4) Treatment strategies; and
- 5) Training.

School health services staff, other school staff, parents/guardians, and students all have responsibilities within each of these key areas. Managing asthma in school is a team effort

Maryland School Health Services Guideline-Management of Students with Asthma

among the health care provider, family, student, and school. When students with asthma enter school, the school nurse is the lead team member in assessing their health needs, performing a nursing appraisal and/or assessment, and developing an individualized health plan, if needed, that meets their health needs while they are in school. The school nurse is also responsible for making the appropriate school personnel aware of the special health needs of students with asthma. Additionally, the school nurse may provide health education to students with asthma, and guidance to school staff and school administrators regarding the student's need for accommodations (e.g., transportation, intermittent home teaching, and participation in educational activities). The guidelines that follow address the needs of students with asthma.

Purpose

1. To provide guidelines to school health staff for planning and addressing the needs of students with asthma;
2. To provide guidelines for the management and coordination of care of students with asthma;
3. To provide guidance on asthma trigger exposure reduction through education, training, and environmental assessments and controls; and
4. To define the roles and responsibilities of school health services staff, school administrators, school food service staff, and other school staff, parents/guardians and students in the planning and management of students with asthma.

Definition

Asthma is a controllable chronic lung disease characterized by inflammation of the airways, reversible airway constriction, and excess mucus secretion. Narrowing of the airway results in reduced airflow that may cause symptoms of wheezing, coughing, tightness of the chest, and difficulty breathing. Asthma triggers that may lead to an exacerbation or acute asthma symptoms include allergens, irritants, infections, exercise, strong expressions of feelings/emotions (laughing or crying), stress, and changes in weather or temperature.

Asthma treatment is determined by measures of asthma severity and asthma control as assessed by a health care provider. Each student with asthma should have orders specific to the daily management of asthma (if needed) and management of an asthma exacerbation. Signs and symptoms of an asthma exacerbation are included in Table 1.

Maryland School Health Services Guideline-Management of Students with Asthma

Table 1: SIGNS and SYMPTOMS OF AN ASTHMA EXACERBATION

Organ System	Sign(s)/Symptom(s)
<i>Mouth/Throat</i>	Hacking cough; tightening of throat; hoarseness; blue/gray color of lips; inability to speak or have a conversation
<i>Nose/Eyes/ears</i>	Nasal flaring; hay fever-like symptoms (when exacerbation is triggered by an allergen in an allergic person): runny, itchy nose; redness and/or swelling of eyes; throbbing in ears
<i>Skin</i>	Blue/gray discoloration
<i>GI</i>	Vomiting
<i>Lung</i>	Shortness of breath; wheezing; short, frequent, shallow cough; difficulty breathing; rapid breathing
<i>Heart</i>	Rapid pulse; palpitations; fainting; dizziness; pale, blue, or gray color of lips or nail beds
<i>Mental</i>	Uneasiness; agitation; unconsciousness
<i>Other</i>	Any other symptom specific to an individual's response to an asthma exacerbation

NOTE: Not all signs and symptoms need be present in an asthma exacerbation.

Emergency Management of an Asthma Exacerbation

1. Rapidly assess airway, breathing, and circulation (ABC's) and begin cardiopulmonary resuscitation (CPR) as necessary;
2. Follow emergency plan completed by the student's health care provider. This may include checking peak flow and administration of a metered dose inhaler (MDI), with or without a spacer, or medication by nebulizer. If the health care provider has not provided a plan or medication orders, or if the parent has not provided medication to be used in an emergency, respond to the emergency according to local policy (e.g. standard protocol.)
3. Directions for use of a metered dose inhaler: (Note-These instructions are for use of MDI's typically used for emergency use during an exacerbation and do not necessarily reflect directions for all types and formulations of MDI's in general manufacturer's guidelines for instructions).
 - a. **SHAKE THE INHALER WELL** immediately before each use. Then remove the cap from the mouthpiece. Make sure the canister is fully inserted into the actuator.
 - b. If the inhaler has not been used for more than 2 weeks or is a new canister, prime the inhaler by releasing four "test sprays" into the air, away from your face. **Note: some autohalers (breath activated) should be primed if used for 48 hours or more.** Shake the inhaler between each test spray.

Maryland School Health Services Guideline-Management of Students with Asthma

- c. **BREATHE OUT FULLY THROUGH THE MOUTH**, expelling as much air as possible. Place the mouthpiece into the spacer, if needed. Place the mouthpiece (or the mouthpiece of the spacer) fully into the mouth holding the inhaler in its upright position and closing the lips around it.
 - d. **WHILE BREATHING IN DEEPLY AND SLOWLY THROUGH THE MOUTH, FULLY PRESS THE TOP OF THE METAL CANISTER** with your index finger. Actuate the canister as close to the onset of inhalation as possible
 - e. **HOLD BREATH AS LONG AS POSSIBLE**, up to 10 seconds. Before breathing out, remove the inhaler from your mouth and release your finger from the canister.
 - f. If specified by the student's health care provider, additional puffs may be needed. Wait 1-3 minutes according to manufacturer's instructions, shake the inhaler again, and **repeat steps c through e**.
 - g. **If symptoms do not improve, an additional dose may be administered 15-20 minutes after the first dose in accordance with health care provider orders.**
4. **Call 911** if student shows signs of respiratory distress or if symptoms worsen. Call the student's parent/guardian if response to initial medication administration, or after second dose if ordered. Get vital signs if possible.
 5. Assist student into a comfortable position. Lay the student on their back as long as breathing is not uncomfortable or difficult in that position. **NOTE: *Children who are in respiratory distress may need to sit upright in order to maximize chest expansion.*** Light-headedness or loss of consciousness indicate low blood pressure which necessitate lying the student flat and elevating the legs.
 6. Loosen restrictive clothing. Give nothing by mouth. Reassure and assist to keep student calm;
 7. Stay with the student until 911 personnel arrive and accept care responsibilities; continue to assess ABC's;
 8. Notify parent/guardian or student's emergency contact;
 9. Follow local school system emergency policy regarding 911 calls;
 10. Complete documentation of the incident, including the time of MDI/nebulizer administration, the suspected precipitating cause, and 911 and parent notifications according to any local documentation guidelines;
 11. Send documentation of the event, including vital signs, interventions and student's identifying information to the hospital with EMS personnel according to local policy; and

Maryland School Health Services Guideline-Management of Students with Asthma

12. Maintain a copy of the above documentation for the health record according to local policy.

Health Appraisal and Nursing Assessment

Health Appraisal

The Code of Maryland Regulations (COMAR) 13A.05.05.07(C) (1)-(2) sets forth the process to be used by a designated school health professional to determine if a student has health problems that interfere with learning. COMAR 13A.05.05.06 defines the designated school health professional as “a health care provider, certified nurse practitioner, or registered nurse, or all of these, with experience or special training, or both, in working with children and families in community or school health programs and practices in accordance with the current medical and nursing standards of care.” In most Maryland public school health services programs, the designated health care professional is a nurse practitioner or a registered nurse. The health appraisal conducted by the nurse uses information obtained from, but not limited to:

- Health room visits and observations;
- Student interview;
- Parent/guardian report:
 - Emergency department visits;
 - Hospitalizations;
 - Medications;
 - Status of asthma (stable or change in control);
- Health care provider:
 - Medication orders;
 - Asthma status (severity and control);
 - Asthma action plan (AAP);
- School emergency information card;
- Physical exam form; and
- Information from previous school nurse.

After review of the data collected, based on nursing judgment regarding the level of asthma control and severity (e.g. poorly controlled vs. well controlled), a nursing assessment and an individualized health care plan may be needed. If a nursing assessment is not needed, use a individualized emergency plan, standard asthma action plan or standard respiratory distress emergency protocol. (See Appendix A for appraisal algorithm). The health appraisal of students with identified health problems (in this case, asthma) shall be repeated as frequently as deemed necessary by the designated school health services professional according to COMAR 13A.05.05.07(C)(2). The health appraisal is updated annually unless the condition is resolved as documented by the student’s health care provider, and there is no indication that the student is in need of nursing services during the school day (asthma is inactive). The health appraisal documentation can range from narrative notes to local program appraisal forms.

Maryland School Health Services Guideline-Management of Students with Asthma

NOTE-- For students with newly diagnosed asthma and those new to the school where no records from previous schools are available, this documentation should be from the student's health care provider and not only by parent report. For returning students who have previously provided health care provider documentation of a diagnosis of asthma, updated information may be obtained from the student's parent and further information may be obtained from the health care provider if necessary to complete a nursing assessment.

Nursing Assessment

Registered nurse standards of care in COMAR 10.27.09.02 list the components of the nursing process, which organizes delivery of care. The first step in the process is appraisal. Based on the appraisal, nursing judgment should determine whether an assessment is needed. The school nurse should assess the special health needs of students with asthma using local standard assessment procedures and the procedures outlined in the *Maryland State School Health Services Guidelines: Nursing Appraisal/Assessment of Students with Special Health Needs*, and the recommendations in Appendix A. The school nurse should use the information obtained in the health appraisal to develop a written assessment. The assessment includes subjective and objective data. Relevant information that may affect the student's care and safety should be sought from sources including, but not limited to:

- Student interview (as developmentally appropriate);
- Parent/guardian;
- Health care provider;
- Teaching staff; and
- Classroom observations.

Components of the nursing assessment include:

1) Identifying Information/Contact Information

- Name of parent/guardian, address, phone number, and annually updated (or more frequently as needed) list of emergency contacts;
- Student's date of birth (DOB) and grade;
- Primary care provider's name and phone number; and
- Name and phone number of asthma or allergy specialist (if under the care of one).

2) Student Information

- Birth history;
- Health and developmental history;
- Date of the initial asthma diagnosis, and progress of asthma;
- Family history of asthma;
- History of health emergencies/hospitalizations; and
- Other chronic health conditions.

Maryland School Health Services Guideline-Management of Students with Asthma

3) Current Asthma Status

- Current medication and treatment orders for asthma, including:
 - Asthma medications:
 - Quick relief medications, controller medications, or medications prior to exercise;
 - Delivery devices used (e.g. metered dose inhaler or nebulizer, type of spacer if provided);
 - Note side effects experienced;
 - Written copy of health care provider's trigger avoidance recommendations, if provided; and
 - Peak flow meter readings.
- Emergency plan, including emergency medications and the indication for their use;
- Asthma Action Plan from healthcare provider (see resource list for Maryland Asthma Control Program web site, which contains a sample asthma action plan):
 - Routine medications;
 - Trigger avoidance instructions; and
 - Emergency medications.
- Asthma severity level (see Appendix B for definition of asthma severity levels);
- Level of asthma control (see Appendix C and D for definition of asthma control and stepwise approach for management);
- Frequency/pattern of asthma signs and symptoms demonstrated by the student;
- Number of school days missed in the past year;
- Limitation of activities;
- Precipitating factors/asthma triggers (e.g. environment, food, weather, exercise, air quality, allergens, irritants, infection);
- Profile of typical exacerbation (i.e. description of past exacerbations, severity of past reactions); and
- Management and treatment for exacerbations, and typical response to interventions.

4) Current Status of Other Health Conditions

- Current diagnosed medical conditions other than asthma;
- Current medication and treatment orders for other diagnosed medical conditions; and
- Emergency plan for conditions other than asthma (if needed).

5) Self Care Skills

- Peak Flow Monitoring:
 - Purpose of testing;
 - Level of independence;

Maryland School Health Services Guideline-Management of Students with Asthma

- Frequency;
 - Required at school;
 - Performed in health suite or classroom;
 - Equipment used; and
 - Personal best peak flow measurement.
-
- Student's understanding of asthma and its management;
 - Student's understanding and demonstration of medication administration technique;
 - Level of independence with medication/treatment, including ability to possess and self-administer medication;
 - Asthma education program completed by student;
 - Interactions with peers and teachers in the past related to asthma and asthma management;
 - Interventions to be implemented in case of an asthma exacerbation.

6) Family Considerations

- Family's understanding of the condition;
- Ability of family and student to manage the student's asthma;
- Cultural considerations; and
- Resources needed.

NOTE: Tools such as an asthma control test (ACT) may be helpful in doing the nursing assessment. See Resources for on-line access to several ACTs.

The asthma assessment should contain educational considerations including determination of and recommendations regarding special accommodations needed due to:

- Student's class schedule;
- School-sponsored activities;
- Physical education/recess;
- Transportation; and
- Other circumstances.

The final nursing assessment should be placed in the student's health record. The record should also contain:

- Documentation of the nurse's recommendation as to whether health care provider recommended self-carrying of medication is appropriate;
- Current health care provider orders; and
- A current emergency care plan if not included in the individualized health care plan. If a standard emergency protocol is used, this should be stated in the student's record.

Individualized Health Care Plans and Emergency Plans/Protocols

Following completion of a nursing assessment, there will be other factors to consider along with the school nurse judgment to determine if an individualized health care plan (IHP) may need to be developed. However, each student with asthma should have an individualized asthma action plan developed by his/her health care provider as recommended by the National Heart, Lung, and Blood Institute Asthma Management Guidelines. The asthma action plan should include protocols for both routine and emergency administrations of medication. These plans may or may not consider the unique needs of students in the school setting and the school nurse may need to develop a plan that considers the school setting, i.e. an IHP.

School Environment Considerations

The school nurse should work with school administrators and other school staff to assess the school environment in order to identify possible asthma trigger exposures, barriers to emergency treatment, and address any identified barriers, with the goal to reduce or eliminate exposure to asthma triggers. Ongoing assessments and evaluation of environmental risks in the school setting should be performed to reduce environmental exposures to allergens. The Maryland State Department of Education School Facilities Branch has guidelines and technical bulletins on the topic of indoor air quality as resources for school system and schools. Asthma trigger reduction for various areas in the school may include the following:

- **Classrooms:** Work with teachers and school administrators to identify asthma triggers in the classroom such as craft materials with strong smells, classroom teaching materials, cleaning procedures, and policies on outside material brought into the classroom and pets in schools/classrooms.
- **Cafeteria:** Work with food service supervisors/directors and cafeteria managers to identify food ingredients in each menu items that should be avoided, plan for food substitutions if necessary, review sanitation procedures in cafeteria or other food service areas, food handling and distribution, and hand washing practices that may reduce exposure of students to food allergens or additives which may trigger an asthma exacerbation.

NOTE: Inhaled allergens and irritants are the most common triggers for persons with asthma (e.g. pollen, dust, mold, dander, chemicals, and fumes).

While food allergens are not a common precipitant of asthma symptoms, asthma is a risk factor for fatal anaphylactic reactions to food. Therefore, it is important to be aware of food allergy in students with asthma and refer to the school health services guideline entitled *Management of Students at Risk for Anaphylactic Reaction*. In addition, certain processed foods (e.g. potatoes, shrimp, or dried fruit) contain preservatives or other substances that may cause severe asthma exacerbations, particularly in patients who have severe persistent asthma.

Maryland School Health Services Guideline-Management of Students with Asthma

- School-sponsored activities: Work with athletic directors/supervisors, school affiliated parent groups, school administrators, and teachers to identify potential exposure to asthma triggers on field trips, recess, and other school sponsored activities and designate specific school staff to implement emergency plans and procedures.
- School bus: Work with bus drivers, assistants, and attendants to recognize an asthma exacerbation/episode, and to develop and implement bus emergency plans and procedures.

Accommodations

Based on the nursing assessment and health care provider recommendation, accommodations for individual students may be required. Accommodations should be developmentally appropriate and school specific. As the student advances through the school system, his/her needs may change, therefore, accommodations must change accordingly. Accommodations to reduce the risk of trigger exposure may include, but are not limited to:

- Removal/replacement of classroom teaching materials and other classroom items (e.g. air fresheners) that pose an exposure risk;
- Placement of student in an air conditioned building/classroom;
- Limits on outdoor activity when exposure to triggers are likely (e.g. pollen) and/or when air quality is poor (e.g. Ozone action days, pollution levels); and
- Modification of school/classroom policies on food brought in to the school by parents for celebrations or other events.

Some students with asthma may also have food allergies. Their asthma makes them more at risk for food related anaphylactic reactions. These students may require specific meal accommodations. Students who obtain school meals as part of any United States Department of Agriculture (USDA) school meal program (i.e. school breakfast program or school lunch program) are entitled to meal modifications because of their special health need. In order to plan for meal/food accommodations, the following additional information is required for both free and reduced priced meals as well as full price meals. USDA regulations, 7 CFR Part 15b, require substitutions or modifications in school meals for children whose disability restricts their diet. A child with a disability or special health need must be provided food substitutions when a statement signed by a licensed health care provider supports the need. The health care provider statement must identify or provide:

- The child's disability or special health need;
- An explanation of why the disability or health need restricts the child's diet;
- The major life activity affected by the disability or health need;
- The food or foods to be omitted from the child's diet; and
- The food or choice of foods that must be substituted.

If a student with asthma does not have an asthma action plan, and the school nurse cannot obtain one from the health care provider, then the school nurse should develop both an individualized health care plan and emergency plan. **NOTE: The emergency plan may be sufficient to serve**

Maryland School Health Services Guideline-Management of Students with Asthma

as the IHP, if indicated, based on the nursing assessment. Local school health services programs should develop procedures to communicate IHPs and emergency plans to appropriate school staff. The IHP and emergency plan should be developed in conjunction with the student (as appropriate), parent/guardian, and the health care provider(s).

NOTE: Each jurisdiction should develop a process to obtain an asthma action plan from health care providers. While action plans are recommended for each student, those with poorly controlled and/or those with severe asthma should be priority. The IHP developed by the school nurse serves as a plan of care for the school day and unlike an asthma action plan, may not contain all the medication and procedures for asthma management outside of the school setting.

Individualized Health Plan

The IHP provides a written record of a health care provision for a student. The IHP begins with the nursing assessment and lists the nursing diagnoses, student goals, interventions, and outcomes. The objectives of an IHP are to:

- Control asthma symptoms at school to ensure safety in the school environment;
- Control and minimize, to the extent possible, allergen and irritant exposure at school;
- Provide opportunity for optimal school performance;
- Assist the student to grow in self care skills;
- Allow full and normal participation by the student in school and school sponsored activities; and
- Promote the acceptance of the students with asthma.

The school nurse should consider the following information gathered from the assessment when developing individualized health plans for students with asthma:

- Level of asthma severity (see Appendix C for designation of asthma severity);
- Level of asthma control (see Appendix D for elements of asthma control);
- Student's ability to identify need for interventions;
- Specific asthma triggers and student's knowledge of those triggers;
- Medication administration, including self administration (See Appendix D for the stepwise approach to asthma medication management);
- Peak flow monitoring/frequency and personal best/green, yellow and red zones;
- Storage of medication and/or equipment (consider multiple locations);
- Whether the student carries medications/inhalers, spacers, and peak flow meters;
- Emergency care including provisions for a student in distress (i.e. adult escort to the office/health room, contacting the parent/guardian and health care provider, and determination of the appropriate personnel/staff responsible for monitoring the asthma nebulizer treatments);
- Plan to alert and train school staff regarding students with asthma and expected role in trigger avoidance and emergency plan implementation;
- Equipment (e.g. nebulizer use);

Maryland School Health Services Guideline-Management of Students with Asthma

- Emergency equipment (e.g. nebulizer, inhaler, spacer, medications, oxygen);
- Equipment labels and directions to follow in the event of an emergency;
- Identification and reduction or elimination of triggers (e.g. cleaning products, classroom materials, etc.);
- Schedule- PE, lunch, recess, field trips, other school-sponsored activities;
- Method of transportation to and from school;
- If the student wears medical alert identification (e.g. bracelet or necklace);
- Educational needs and accommodations (e.g. alternative arrangements in physical education, sports, and industrial arts classes);
- Knowledge of student's triggers by appropriate school staff, including substitutes, and accompanying staff training;
- Developmental considerations;
- Parental concerns and expectations;
- Student concerns;
- Social interactions;
- Staff training; and
- Coordination with other team members including health care provider, and other school services providers.

Emergency Care Plan (EP)

All students with asthma should have an emergency care plan. For some students, a standard protocol may be medically appropriate and sufficient to serve as an EP. Others will require an individualized emergency plan to be developed by the school nurse. This should be determined based on health care provider orders and the nursing assessment. The emergency care plan should communicate how and where emergency asthma medications should be securely placed and immediately accessible to all designated school personnel, and the emergency protocol to be followed in the event of an asthma exacerbation. The plan should include, but is not limited to:

- Health care provider's orders and nursing interventions;
- The health care provider's emergency orders/ specific emergency interventions needed;
- School system procedures and protocols;
- Emergency contact information that is updated as changes occur or documentation of where this information can be easily accessed;
- What should be done if a nurse is not available;

NOTE: The Maryland Nurse Practice Act (Annotated Code of Maryland, Health Occupations Article, Title 8 and COMAR 10.27.11) allows certain nursing functions to be delegated. The decision as to whether the student's health care needs may be delegated is based on the delegation criteria outlined in the Maryland Nurse Practice Act and the professional judgment of the school nurse. Persons who routinely perform delegated nursing tasks must be certified as a nursing assistant and/or medication technician.

- What the parent should provide (e.g. medications, medication order forms, medical alert bracelet/necklace);

Maryland School Health Services Guideline-Management of Students with Asthma

****Each jurisdiction should have written procedures that address what to do in the event that the student's parent has not provided orders for an inhaler and/or a rescue inhaler.***

- Signs and symptoms for which emergency care may be needed. This may vary from student to student;
- When to call 911; and
- How will asthma medications be stored to allow immediate availability to students and staff for students who are not able to possess and/or self-administer.

A copy of the emergency care plan should be shared in writing with the appropriate school staff (including bus drivers) and original placed in the student's health record. The school nurse should send a copy of the final plans to the parent/guardian and the health care provider for their records. School staff that has direct contact with the student should have immediate access to the emergency care plan at all times in a manner determined by the school nurse and the school staff. Health information should be shared in compliance with the Family Educational Rights and Privacy Act (20 U.S.C. § 1232g; 34 CFR Part 99) to protect the privacy of the student.

Communication

The school nurse should share the emergency plan with the parent/guardian and appropriate school management team/staff (including bus drivers), and place a copy in the student's health record. School staff who have direct contact with the student should have immediate access to the emergency care plan at all times in a manner determined by the school nurse and the school staff in order to allow immediate access while also protecting the student's confidentiality.

The school nurse should communicate to the school food service manager on site the necessary cafeteria accommodations needed by students with asthma and food allergies that place them at risk for anaphylaxis. The school nurse should determine needs in collaboration with the parent/guardian and health care provider.

It is important that parents and health care providers are aware of the school health services guidelines used to guide the development and implementation of care plans. Local school health programs should develop policies and procedures for making the guidelines available to parents and health care providers and on how to communicate the content of individualized health care plans to parents.

Self-Carry/Self-Administration of Medications

Students with asthma who are developmentally capable and have received appropriate and adequate instruction should be encouraged to possess and self-administer their asthma rescue inhalers. This requires the health care provider to complete a medication order form for the school and indicate that the student may possess and self-administer the medication. As stated in §7-421 of the Education Article, Annotated Code of Maryland, "The school nurse shall assess the student's ability to demonstrate the skill level necessary to ensure proper and effective use of

Maryland School Health Services Guideline-Management of Students with Asthma

the medication in school,” and “a student may be subject to disciplinary action if the student does not use the medication in a safe and proper manner.” The student’s ability to demonstrate proper and effective use of the inhaler includes the student’s safe use of the medication.

The school nurse should assess each student’s:

- Ability to communicate to school staff when a trigger exposure has occurred;
- Ability to use correct technique to self-administer a metered dose inhaler;
- Ability to recognize when to use the metered dose inhaler; and
- Ability to perform this task in a safe and responsible manner.

The school nurse should review annually with the student the correct procedures for storing and administering the asthma inhaler and discuss with their parent/guardian the need for a back up inhaler to be stored in the health room. The school nurse should inform the parent/guardian and the student’s health care provider if the student is not able to self-carry. The school nurse should assist the student to develop the necessary skills to become capable of self-management and self-carrying. Follow-up assessment by the school nurse should be done periodically for students who self-carry and those who do not.

For each student who self-carries and self-administers his or her asthma rescue inhaler, the school nurse should develop in conjunction with the student, a plan for communicating each instance of the rescue inhaler self-administration. The school nurse should develop a process for monitoring and tracking self-administration of asthma rescue inhalers for each student.

Case Management and Care Coordination

Some students with a diagnosis of asthma may need a designated school case manager to coordinate his/her care. The school nurse is often the case manager for students with asthma, however, another student services staff member, Individualized Education Program (IEP) member, or Section 504 Plan team member may be designated as the educational case manager. The school nurse serves as the liaison between the health care team, school staff, administration, pupil services staff, parents/guardians, food service managers, and the student regardless of who is the designated case manager. The school nurse can also refer the student and/or family for counseling, support groups, and access to medical care.

Effective case management requires coordination between all persons involved in the care of the student. Each person or team member has a specific set of responsibilities for the care of the student:

Parent Responsibilities

Parents are an integral part of the process of planning, care, and coordination of care for all students with asthma. It is important that school nurses and parents work collaboratively to provide for the health and safety of students with asthma. School nurses should involve the student’s parent/guardian to the fullest extent possible. In addition, Annotated Code of Maryland, Education Article Section 7-426 requires guidelines for providing emergency medical care to

Maryland School Health Services Guideline-Management of Students with Asthma

students with special health needs to describe certain parent/guardian responsibilities. The parent/guardian responsibilities include the following:

- Provide the school with emergency contact information that is accurate and updated as needed;
- Provide the school with complete and accurate medical information related to the student's asthma. This information includes but is not limited to:
 - Up-to-date and accurate history of asthma exacerbations and hospitalizations;
 - A written list of asthma triggers and respiratory or other allergens (e.g. foods, pollen); and
 - Written health care provider documentation of the student's asthma and allergies.
- Work with the school nurse to develop the plan of care for the student with asthma to the best of their ability;
- Annually supply and maintain at least one non-expired health care provider ordered medications (e.g. metered dose inhaler or nebulizer medications) , along with the appropriately completed written medication order in accordance with Education Article section 7-426 (b) (2) (ii);
- Work with the school nurse and health care provider to obtain additional metered dose inhalers based on need (e.g. work with health care/pharmacy insurer, identify and work to overcome barriers to obtaining medications);
- For students who self-carry, monitor the proper storage (i.e. away from light and high temperatures) and routinely check the expiration dates of metered dose inhalers;
- Provide the recommended and preferred medical identification bracelet/necklace indicating asthma and/or allergic conditions in accordance with Education Article Section 7-426 (b) (2) (ii); and
- Grant necessary permissions/consent to the school nurse to gather all needed information as part of the nursing assessment.

NOTE: Each jurisdiction should have a procedure or protocol that addresses what to do in the event that the parent has not provided a rescue inhaler.

Student Responsibilities

Coordinating and managing the care of students with asthma requires the school nurse to communicate to the student their role in the planning process. Student participation in planning

Maryland School Health Services Guideline-Management of Students with Asthma

must be developmentally appropriate. Student responsibilities must also be developmentally appropriate and may include, but are not limited to:

- Avoiding known allergens and asthma triggers;
- Informing school staff immediately in the event of symptoms after an exposure;
- Informing the school nurse or designated school health services personnel when the rescue inhaler is used according to the plan developed with the school nurse;
- Acting responsibly when possessing and self-administering medications, specifically, students must not misuse medication; and
- Participating in care planning.

School Responsibilities

Education Article Section 7-426, Annotated Code of Maryland, specifies certain school responsibilities for the care of students with asthma. School principals, or their designated administrator, should work closely with school nurses in planning for these students. The school principal/designated administrator, and school nurse should collaborate in gathering, maintaining, and reviewing school-wide information required to meet the needs of these students. School nurses should provide aggregate data to the school principal/designated administrator regarding the number of students with asthma and their needed accommodations.

The school principal or their designated administrator must be aware of students with asthma, and work with the school nurse to support the effective implementation of health care plans for these students. Implementation of the health care plans includes supporting reasonable accommodations that are based on the school nurse's assessment, healthcare provider orders, and the unique needs of each individual student.

The school principal/designated school administrator supports the school nurse's training, education and awareness activities, which includes, but are not limited to:

- Providing training for appropriate staff on the use of asthma inhalers;
- Planning for implementation of emergency plans on field trips and other school sponsored events;
- Providing outreach and education for parents, other caregivers, and the general school community;
- Providing school wide education and outreach conducted by the school nurse;
- Providing training of school volunteers as needed;
- Working collaboratively with the school nurse to make asthma inhalers as accessible as possible to avoid treatment delay; and
- Supporting the school nurse concerning the adherence of the parent/guardian responsibilities.

Maryland School Health Services Guideline-Management of Students with Asthma

School Staff Responsibilities

Other school team members may contribute to the management of students with asthma in ways that include but are not limited to:

Bus Drivers/other transportation staff	Respond to an emergency as instructed and trained; communicate problems or concerns with the transportation office, school nurse and school principal, or their designated administrator
Coaches/ advisors for School sponsored activities	Respond to an emergency during athletic or other activities as instructed and trained; communicate problems or concerns to the school nurse and school principal, or their designated administrator
Food Services Staff:	Make meal substitutions or modifications in school meals according to USDA requirements, assist with dietary accommodations as necessary; share food ingredient lists with school nurse
School Counselor	Assist with disability awareness, support groups/counseling
Pupil Personnel Worker/School Social Worker	Assist with transportation issues, home teaching and attendance issues
School Psychologist	Assist with any needed behavioral strategies
Teachers/paraeducator/personal assistants	Respond to an emergency as instructed and trained, communicate problems or concerns with school nurse and school principal, or their designated administrator

Outreach, Education and Asthma Awareness

School-wide asthma awareness and asthma trigger avoidance education is recommended in addition to specific staff training as stated below. School nurses should provide the parent/guardian of students with asthma information regarding resources (see resource list at the end of this guideline for a list of parent/guardian resources).

The school nurse should provide or arrange for all appropriate school staff to receive training on asthma. The school nurse should apprise all appropriate school staff who have responsibility for the student during the school day of the student's asthma and the specific interventions as needed. The school nurse may share student-specific information when necessary to protect the health of the student with asthma. Training may include, but is not limited to:

- Definition of asthma;

Maryland School Health Services Guideline-Management of Students with Asthma

- Classroom accommodations;
- Cafeteria accommodations;
- Transportation accommodations;
- Accommodations for school-sponsored activities;
- Asthma trigger avoidance and allergen exposure risk reduction;
- Symptoms to report to the school nurse (i.e. signs and symptoms of asthma exacerbation);
- Confidentiality protections;
- Review of the contents of and implementation of the individual emergency plan/protocol;
- Maintenance of emergency plans/protocols with information provided to staffing substitutes, e.g., classroom, school health, transportation, and food services staff;
- Inclusion of emergency plans in substitute plan for classroom, school health, transportation, and food services staff;
- Medication information related to storage, access, locations, and administration technique; and
- Education for school visitors or volunteers with student contact, as needed per local policy.

The school nurse should document the provision and the receipt of training for each staff member who attended.

Education Planning

A nursing assessment is a recommended part of the process for determining reasonable accommodations for students with asthma (e.g. change in school placement, concurrent or intermittent home teaching, or adaptations to physical education class). For more specific information regarding education planning, please refer to Maryland School Health Services Guideline: *Role of the School Nurse in Implementing 504 and Individualized Education Programs*.

School-Sponsored Activities

If a school-sponsored activity is planned, the assigned personnel should give sufficient notice to the school nurse so that preparation can be made and a plan can be developed for ensuring the safety of students with asthma. Prior to the school-sponsored activity, the school nurse should ensure the teacher/staff member in charge has copies of the emergency care plan for the student.

The school nurse should determine whether asthma medication needs to be administered during a school-sponsored activity/trip, when to administer the medication, and who should administer the medication in accordance with the student's individualized care plan. A designated person should administer asthma medication to students during school-sponsored trips/activities when necessary or as ordered. The school nurse may adjust the timing of scheduled medication doses if medically appropriate to accommodate the student's needs during the scheduled activity. Asthma medications must be administered in compliance with the State guidelines outlined in *Medication Administration in Schools*.

Maryland School Health Services Guideline-Management of Students with Asthma

The school nurse should work in collaboration with the school principal, or their designated administrator, and the student's parent/guardian and health care provider to develop the plan for medication administration during field trips/school sponsored activities.

Monitoring/Evaluation

The school nurse should evaluate and monitor asthma management. The school nurse should assess the student's response to and the effectiveness of the emergency plan and IHP to meet the student's health and educational needs on an ongoing basis and make appropriate adjustments. The school nurse evaluation should include the following:

- Assessment and documentation of student's response to the management plan;
- Effectiveness of the plan;
- Orders reviewed with family and health care provider at least annually and as necessary;
- Documentation of medications and treatments given;
- Documentation of number of health room visits and days missed from school due to asthma;
- Communications with the health care provider, family, and school staff; and
- Need for ongoing staff training.

The nurse's final IHP and EP should be placed in the student's health record and a copy should be shared with the parents/guardian and health care provider.

Maryland School Health Services Guideline-Management of Students with Asthma

GLOSSARY

ABC's: The acronym for “Airway, Breathing, and Circulation” used in the assessment of an ill individual by a health care provider or first responder.

Accommodations: Changes or adjustments in a work or school site, program, or job that makes it possible for an otherwise qualified employee or student with a disability to perform the duties or tasks required, as required under 7 CFR pt. 15B and 29 CFR pt. 1630.

Allergen: A substance that causes an allergic reaction. For persons with asthma due to allergies, an allergen can cause an asthma exacerbation.

Allergen/asthma trigger avoidance: Actions or activities documented in an individualized health care plan that specifically addresses the interventions needed to reduce the risk that an allergic person will come in contact with an allergen that puts them at risk for anaphylaxis or other allergic symptoms.

Asthma Action Plan: An individualized plan initiated by a health care provider, which includes routine and emergency medication and protocols.

Asthma Control: the degree to which the manifestations of asthma (symptoms, functional impairments, and risks of untoward events) are minimized and the goals of therapy are met.

Asthma Severity: the intrinsic intensity of the disease process. Severity is measured most easily and directly in a patient not receiving long-term-control therapy.

Asthma Trigger: A substance that may cause an asthma exacerbation.

Bronchodilator: Medication that relaxes smooth muscles around the bronchioles and allows them to open more completely.

CPR: The acronym for “Cardiopulmonary Resuscitation”. CPR is done in response to an airway, breathing, or circulatory emergency in an attempt to maintain oxygenation to the brain and vital organs until normal body functions are restored or rescue personnel arrives.

Delegation: The act of assigning certain nursing tasks (in accordance with the Maryland Nurse Practice Act) to a certified nursing assistant (CNA), a certified medication assistant, or an unlicensed individual by a registered nurse or licensed practical nurse.

Emergency Plan: a document that specifies the actions needed to manage a student’s specific, medical condition in the event of a medical emergency. For some students, a standardized asthma emergency protocol may suffice for an emergency care plan.

Health Appraisal: The process by which a designated school health services professional identifies health problems that may interfere with learning. These may include health

Maryland School Health Services Guideline-Management of Students with Asthma

observations, interviews, and conferences with parents/guardians, students, educators,, and other health professionals.

Individualized Health Plan: A type of nursing care plan that is developed by the school nurse utilizing the data from a nursing appraisal/assessment that is specific for a student with a chronic health condition and is designed to meet the student’s unique health care needs. The individualized health plan should include an emergency care plan when needed. In some cases it may be appropriate for the individualized health plan to only contain care to be provided in an emergency.

Metered Dose Inhaler: A hand-held device that delivers a specified dosage of medication as a spray or a powder to be inhaled.

Nebulizer: A pressurized by air device that converts a liquid medication into a fine mist that can be inhaled.

Nurse Practice Act: A statute enacted by the legislature of any state or by the appropriate officers of the district. The act delineates the legal scope of the practice of nursing within the geographical boundaries of the jurisdiction. In Maryland, the Nurse Practice Act is codified under the Annotated Code of Maryland, Health Occupations Article, Title 8.

Nursing Assessment: The act of gathering and identifying data that assists the nurse, the client, and the client’s family to identify the client’s health concerns and needs. (Nurse Practice Act, Annotated Code of Maryland, Health Occupations Article, Title 8, COMAR Title 10, Subtitle 27.)

Peak Flow Meter: A device which measures flow rate of air breathed out during forced expiration.

School Health Services Coordinator: The designated person in each Maryland jurisdiction who is responsible for implementing State and local health policies in the public schools; ensuring that public schools adhere to local health services guidelines; and communicating State and local health policies to the parent/guardian of public school students. (Education Article §7-401, Annotated Code of Maryland).

School Nurse: A registered nurse currently licensed by the Maryland Board of Nursing who works in a school setting.

Self-Administration: The application or consumption of medication by an individual in a manner directed by the health practitioner without additional assistance or direction (Education Article §7-421, Annotated Code of Maryland).

Self-Carry: The possession of a medication on an individual’s person to allow quick access to and administration of the medication and to allow self-administration when specified.

Spacer: A plastic device to assist with effective inhalation of the bronchodilator administered

Maryland School Health Services Guideline-Management of Students with Asthma

via metered dose inhaler.

RESOURCES

American Academy of Allergy, Asthma, & Immunology: <http://www.aaaai.org/>

American College of Asthma, Allergy & Immunology: <http://allergy.mcg.edu/home.html>
The American College of Asthma, Allergy & Immunology is an information and news service for patients and parents of patients.

Asthma & Allergy Foundation of America: <http://www.aafa.org>

The Asthma and Allergy Foundation of America is a patient organization dedicated to improving the quality of life for people with asthma and allergies through education, advocacy, and research. This site contains resources and continuing education programs for health care professionals.

American Academy of Allergy, Asthma, & Immunology: <http://www.aaaai.org>

This site contains a health care professional resource center and the Pediatric Asthma Clinical Guidelines.

American Association of Asthma Educators: <http://www.asthmaeducators.org>.

The primary purpose of the Association of Asthma Educators is to promote asthma education as an integral component of a comprehensive asthma program, to raise the competence of health care professionals who educate individuals and families affected by asthma, and to raise the standard of care and quality of asthma education delivered to those with asthma. To that end, the Association recognizes that asthma education should reflect the recommendations contained in the national guidelines and meet the needs of the target population. The express purpose of asthma education is to improve health outcomes for individuals and families affected by asthma.

American College of Asthma, Allergy & Immunology: <http://allergy.mcg.edu/home.html>

The American College of Asthma, Allergy & Immunology is an information and news service for patients and families of persons with asthma.

American Lung Association: <http://www.lungusa.org>

The American Lung Association (ALA) is the oldest voluntary health organization in the United States. ALA fights all forms of lung disease with special emphasis on asthma, tobacco control, and environmental health. The site contains asthma education programs for children, advocacy, communications, and multicultural programs as well as data and statistics.

Asthma Control Test: Available at the following websites:

<http://www.asthma.com/resources/asthma-control-test.html>

<http://www.mayoclinic.com/health/asthma-control-test/AS00031>

<http://www.permanente.net/homepage/kaiser/pdf/56688.pdf>

Asthma & Allergy Foundation of America: <http://www.aafa.org>

Maryland School Health Services Guideline-Management of Students with Asthma

The Asthma and Allergy Foundation of America is a patient organization dedicated to improving the quality of life for people with asthma and allergies through education, advocacy, and research. This site contains resources and continuing education programs for health care professionals.

Centers for Disease Control and Prevention:

<http://www.cdc.gov/HealthyYouth/asthma/index.htm>.

Healthy Youth: Asthma in Schools provides information from the National Center for Chronic Disease Prevention and Health Promotion including fact sheets, data and statistics, science-based strategies, and links to other resources.

Children's Hospital National Medical Center (CHNMC) training for School Nurses:

<http://www03.activate.net/vspan/cnma/001211/index.asp> CHNMC provides an online tutorial for on asthma for nurses.

Environment Protection Agency's Indoor Air Quality Tools for Schools Program

http://www.epa.gov/iaq/schools/pdfs/kit/district_wide_factsheet.pdf

Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007, National Asthma Education and Prevention Program

<http://www.nhlbi.nih.gov/guidelines/asthma/>

Maryland Asthma Control Program: <http://fha.maryland.gov/mch/asthma.cfm>.

The Maryland Asthma Control Program seeks to prevent asthma and maximize the health and well-being of children, adolescents, and adults living with asthma.

National Asthma Education and Prevention Program (NAEPP) Asthma Coalition Exchange: <http://www.nhlbisupport.com/asthma/coalitioncorner/index.htm>

The National Asthma Education and Prevention Program is administered and coordinated by the National Heart, Lung, and Blood Institute and works with intermediaries including major medical associations, voluntary health organizations, and community programs to educate patients, health professionals, and the public. The ultimate goal of the NAEPP is to enhance the quality of life for patients with asthma and decrease asthma-related morbidity and mortality.

National Heart, Lung, & Blood Institute (NHLBI): <http://www.nhlbi.nih.gov/>

A division of the National Institutes of Health. The National Heart, Lung, and Blood Institute provide leadership for a national program in diseases of the heart, blood vessels, lung, blood, and blood disorders.

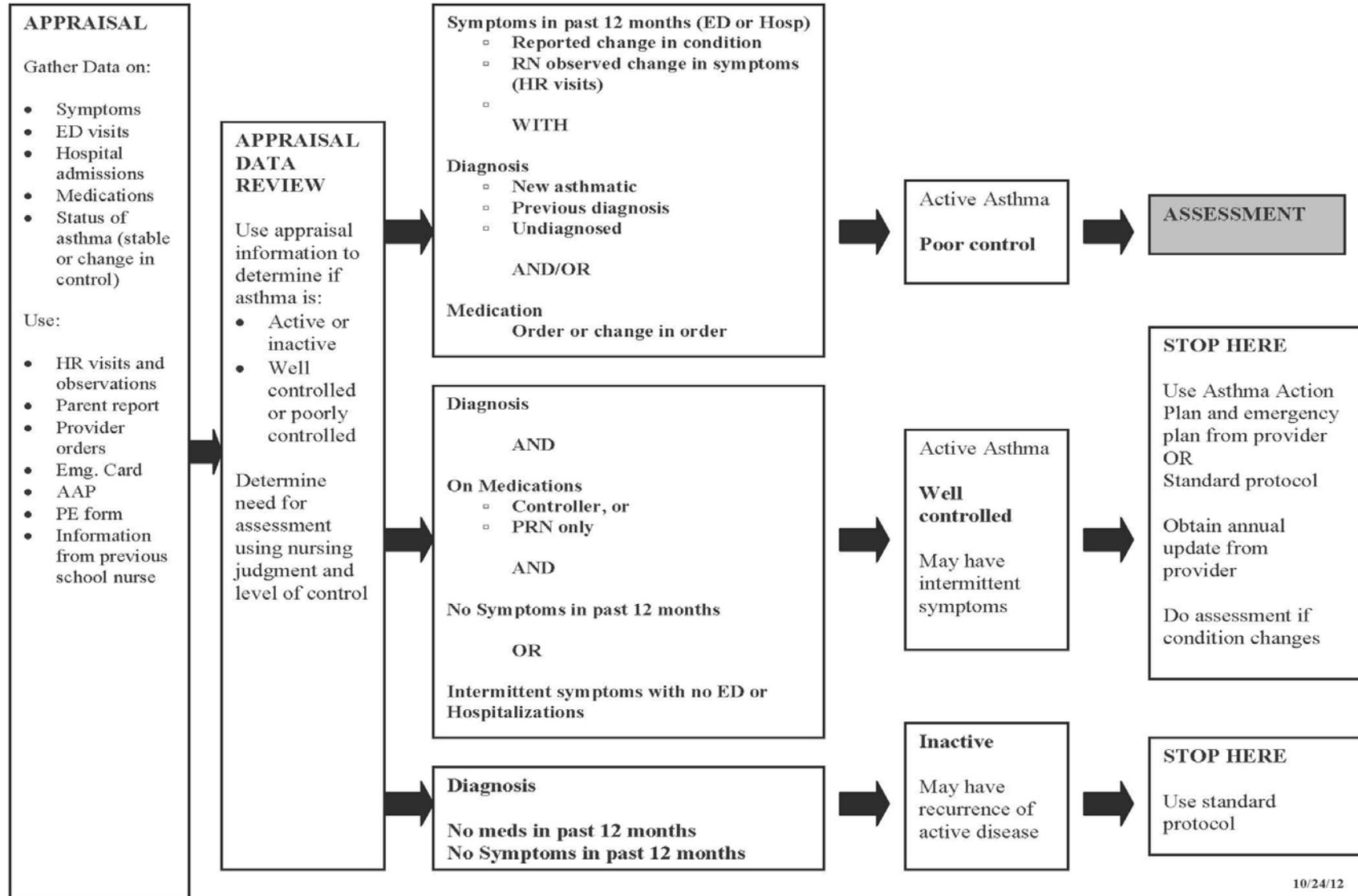
Winning with Asthma: Coaches Clipboard Program: <http://winningwithasthma.org>.

The program was developed through a collaborative effort between the Minnesota Department of Health Asthma Program and the Utah Department of Health Asthma Program. The website was created for coaches to have the opportunity to learn about asthma, how it affects an athlete's ability to compete, and how the coach can help athletes manage their symptoms while playing their very best.

APPENDIX A: ASTHMA APPRAISAL AND ASSESSMENT ALGORITHM

Maryland School Health Services Guideline-Management of Students with Asthma

Asthma Appraisal and Assessment Algorithm



**APPENDIX B: CLASSIFYING ASTHMA SEVERITY AND
INITIATING TREATMENT IN CHILDREN AND YOUTHS**

Maryland School Health Services Guideline-Management of Students with Asthma

CHILDREN 0–4 YEARS OF AGE

Components of Severity		Classification of Asthma Severity (0–4 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	0	1–2x/month	3–4x/month	>1x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year	≥2 exacerbations in 6 months requiring oral systemic corticosteroids, or ≥4 wheezing episodes/1 year lasting >1 day AND risk factors for persistent asthma		
		<p style="text-align: center;">← Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time. →</p> <p style="text-align: center;">Exacerbations of any severity may occur in patients in any severity category.</p>			
Recommended Step for Initiating Therapy		Step 1	Step 2	Step 3 and consider short course of oral systemic corticosteroids	
In 2–6 weeks, depending on severity, evaluate level of asthma control that is achieved. If no clear benefit is observed in 4–6 weeks, consider adjusting therapy or alternative diagnoses.					

Key: EIB, exercise-induced bronchospasm

□ Level of severity is determined by both impairment and risk. Assess impairment domain by caregiver’s recall of previous 2–4 weeks. Assign severity to the most severe category in which any feature occurs.

□ At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. For treatment purposes, patients who had ≥2 exacerbations requiring oral corticosteroids in the past 6 months, or ≥4 wheezing episodes in the past year, and who have risk factors for persistent asthma may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

Maryland School Health Services Guideline-Management of Students with Asthma

CHILDREN 5–11 YEARS OF AGE

Components of Severity		Classification of Asthma Severity (5–11 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3–4x/month	>1x/week but not nightly	Often 7x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> • Normal FEV₁ between exacerbations • FEV₁ >80% predicted • FEV₁/FVC >85% 	<ul style="list-style-type: none"> • FEV₁ = >80% predicted • FEV₁/FVC >80% 	<ul style="list-style-type: none"> • FEV₁ = 60–80% predicted • FEV₁/FVC = 75–80% 	<ul style="list-style-type: none"> • FEV₁ <60% predicted • FEV₁/FVC <75%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year (see note)	≥2/year (see note)		
		Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category.			
		Relative annual risk of exacerbations may be related to FEV ₁ .			
Recommended Step for Initiating Therapy		Step 1	Step 2	Step 3, medium-dose ICS option	Step 3, medium-dose ICS option, or step 4
In 2–6 weeks, evaluate level of asthma control that is achieved, and adjust therapy accordingly.					

Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; ICS, inhaled corticosteroids

- Level of severity is determined by both impairment and risk. Assess impairment domain by patient's/caregiver's recall of the previous 2–4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

Maryland School Health Services Guideline-Management of Students with Asthma

YOUTHS ≥ 12 YEARS OF AGE AND ADULTS

Components of Severity		Classification of Asthma Severity (Youths ≥12 years of age and adults)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3–4x/month	>1x/week but not nightly	Often 7x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not >1x/day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none"> Normal FEV₁ between exacerbations FEV₁ >80% predicted FEV₁/FVC normal 	<ul style="list-style-type: none"> FEV₁ ≥80% predicted FEV₁/FVC normal 	<ul style="list-style-type: none"> FEV₁ >60% but <80% predicted FEV₁/FVC reduced 5% 	<ul style="list-style-type: none"> FEV₁ <60% predicted FEV₁/FVC reduced >5%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year (see note)	≥2/year (see note) 		
		← Consider severity and interval since last exacerbation. Frequency and severity may fluctuate over time for patients in any severity category. →			
		Relative annual risk of exacerbations may be related to FEV ₁			

□ Level of severity is determined by assessment of both impairment and risk. Assess impairment domain by patient’s/caregiver’s recall of previous 2–4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs.

□ At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

**APPENDIX C: ASSESSING ASTHMA CONTROL AND
ADJUSTING THERAPY IN CHILDREN AND YOUTHS**

Maryland School Health Services Guideline-Management of Students with Asthma

CHILDREN 0 – 4 YEARS OF AGE

Components of Control		Classification of Asthma Control (0–4 years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime awakenings	≤1x/month	>1x/month	>1x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year	2–3/year	>3/year
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action for Treatment		<ul style="list-style-type: none"> Maintain current treatment. Regular followup every 1–6 months. Consider step down if well controlled for at least 3 months. 	<ul style="list-style-type: none"> Step up (1 step) and Reevaluate in 2–6 weeks. If no clear benefit in 4–6 weeks, consider alternative diagnoses or adjusting therapy. For side effects, consider alternative treatment options. 	<ul style="list-style-type: none"> Consider short course of oral systemic corticosteroids, Step up (1–2 steps), and Reevaluate in 2 weeks. If no clear benefit in 4–6 weeks, consider alternative diagnoses or adjusting therapy. For side effects, consider alternative treatment options.

Key: EIB, exercise-induced bronchospasm

Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

Maryland School Health Services Guideline-Management of Students with Asthma

CHILDREN 5–11 YEARS OF AGE

Components of Control		Classification of Asthma Control (5–11 years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week but not more than once on each day	>2 days/week or multiple times on ≤2 days/week	Throughout the day
	Nighttime awakenings	≤1x/month	≥2x/month	≥2x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
	Lung function • FEV ₁ or peak flow • FEV ₁ /FVC	>80% predicted/ personal best >80%	60–80% predicted/ personal best 75–80%	<60% predicted/ personal best <75%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year	≥2/year (see note)	
		Consider severity and interval since last exacerbation		
	Reduction in lung growth	Evaluation requires long-term followup.		
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action for Treatment		<ul style="list-style-type: none"> Maintain current step. Regular followup every 1–6 months. Consider step down if well controlled for at least 3 months. 	<ul style="list-style-type: none"> Step up at least 1 step and Reevaluate in 2–6 weeks. For side effects: consider alternative treatment options. 	<ul style="list-style-type: none"> Consider short course of oral systemic corticosteroids, Step up 1–2 steps, and Reevaluate in 2 weeks. For side effects, consider alternative treatment options.

Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity

Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

Maryland School Health Services Guideline-Management of Students with Asthma

YOUTHS ≥ 12 YEARS OF AGE AND ADULTS

Components of Control		Classification of Asthma Control (Youths ≥12 years of age and adults)		
		Well-Controlled	Not Well-Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime awakening	≤2x/month	1–3x/week	≥4x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week	Several times per day
	FEV ₁ or peak flow	>80% predicted/ personal best	60–80% predicted/ personal best	<60% predicted/ personal best
	Validated Questionnaires			
	ATAQ ACQ ACT	0 ≤0.75* ≥20	1–2 ≥1.5 16–19	3–4 N/A ≤15
Risk	Exacerbations	0–1/year	≥2/year (see note)	
		Consider severity and interval since last exacerbation		
	Progressive loss of lung function	Evaluation requires long-term followup care		
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		

*ACQ values of 0.76–1.4 are indeterminate regarding well-controlled asthma.

Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second. See figure 3–8 for full name and source of ATAQ, ACQ, ACT.

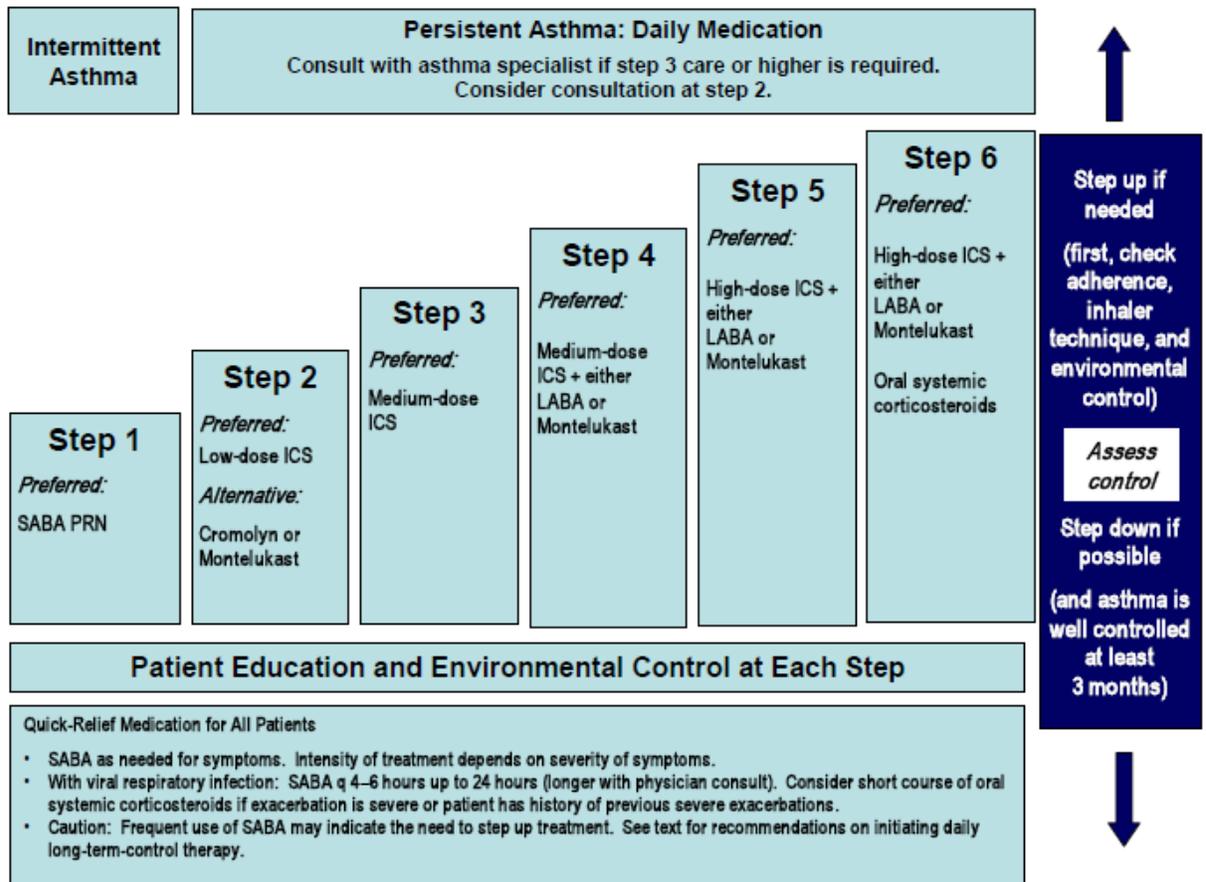
Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

**APPENDIX D: STEPWISE APPROACH FOR MANAGING ASTHMA
IN CHILDREN**

GENERAL STEPWISE APPROACH

Lowest level of treatment required to maintain control	Classification of Asthma Severity			
	Intermittent	Persistent		
		Mild	Moderate	Severe
	Step 1	Step 2	Step 3 or 4	Step 5 or 6

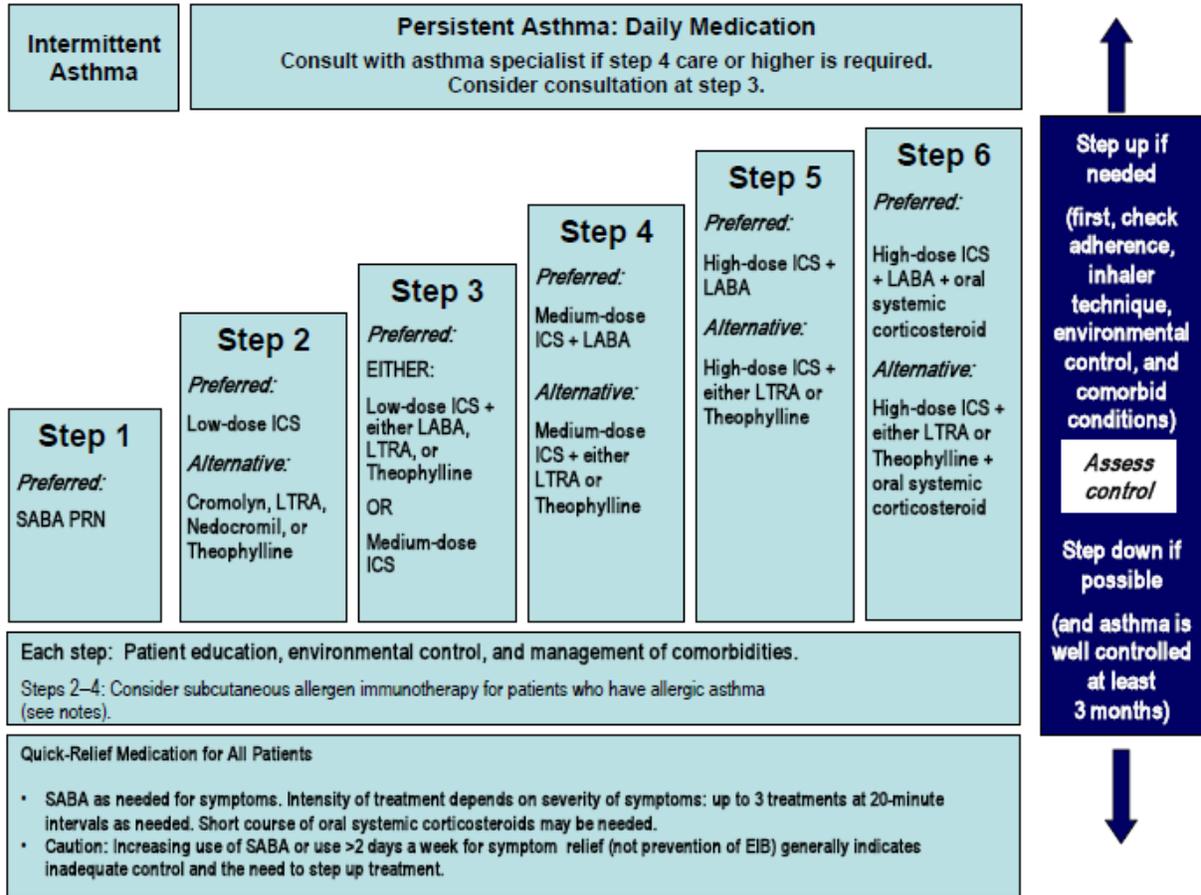
CHILDREN 0–4 YEARS OF AGE



Key: Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy. ICS, inhaled corticosteroid; LABA, inhaled long-acting beta2-agonist; SABA, inhaled short acting beta2-agonist

Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007

CHILDREN 5–11 YEARS OF AGE



Key: Alphabetical order is used when more than one treatment option is listed within either preferred or alternative therapy. ICS, inhaled corticosteroid; LABA, inhaled long-acting beta2-agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta2-agonist

Source: National Heart, Lung, and Blood Institute National Asthma Education and Prevention Program Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma Full Report 2007