

Chapter 5

Chronic Health Conditions

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Chronic Health Conditions

In 1975, Congress passed legislation mandating that all children, including those with special healthcare needs, be educated with their peers. Case management for medically fragile and special needs children involves coordination of multiple health and education services. The school nurse functions as a case manager by interpreting health information to school personnel, providing direct services, advocating for needed accommodations, and educating staff. Students with chronic health conditions can experience difficulties with learning related to medications or treatments, frequent or prolonged absences, or effects of the condition itself. The school nurse can also help to promote a psychologically supportive learning atmosphere and help students with chronic health conditions develop strategies to attain personal success in school.

Sometimes the nurse may be the one to notice that a student is exhibiting some early symptoms of illness. If the nurse observes a student coming to the clinic with the same complaint several times or a new complaint that seems more serious, he/she should alert the parent to the problem. Ensure that the family has a primary care provider (PCP) or other referral information if they need it. The nurse should always be able to provide this information for families and work with the school social worker if possible to help the family obtain the needed care. Refer to this Chapter for information on general management of specific chronic health conditions, but always get individual instructions and guidance from the child's family and healthcare provider.

Information is also included in this chapter on the Individuals with Disabilities Education Act (I.D.E.A.), Individualized Education Plans (IEPs) and Section 504 plans that may involve the school nurse. Samples of an Individualized Health Plan (IHP) form and 504 plan are included as well. The school nurse's commitment to maintaining confidentiality and obtaining parent permission before sharing health information is very important.

The school nurse's position as an advocate for these children in the educational setting also will depend on good communication with parents, teachers and staff. Remember that the school-age siblings of these students probably have feelings and issues with which they may be dealing when one child in the family is sick and requiring extra attention. School nurses can also model for staff and students their commitment that the illnesses are part of these children, but do not define them. Teasing should not be tolerated, and the natural compassion of other students can be brought out by honest, open communication.

A web resource for Georgia Resources for Children with Special Needs can be found at:

pediatrics.emory.edu/divisions/neonatology/dpc/georgia.html

A web resource for Children with Special Healthcare Needs: Provider Manual can be found at:

dph.georgia.gov/children-and-youth-special-healthcare-needs-cyshn

Asthma

Condition

Asthma is a chronic lung disease in which an individual's airways are inflamed (irritated) and overactive. This condition is sometimes known as reactive airway disease. During an episode, the lining of the airway swells, which causes mucus production, then the muscles which surround the airway contract. As a result, the airway is partially blocked, and asthmatic symptoms such as wheezing, chest tightness, coughing and shortness of breath begin.

It is estimated that over 10 percent of school-age children in Georgia have asthma. Asthma is the most common chronic disease of childhood and the leading cause of school absence from chronic illness. Exercise-induced asthma (EIA) occurs when physical activity causes bronchoconstriction, which can lead to wheezing, coughing, chest tightness or shortness of breath during and after exercise. Most children with asthma will also have EIA, and some children can have EIA without having chronic asthma.

Asthma education in schools can help to improve self-management skills and lead to decreased absenteeism. The school nurse plays a key role in monitoring and assessing asthma control in the student. Indicators of poor asthma control in the student need to be identified and communicated to the parent, including advising medical follow-up. In addition, the school nurse should be alert to children who have signs and symptoms of asthma but have not been diagnosed; nurses should educate and encourage families to seek medical attention.

Guidelines for the care and management of asthma were released in August 2007 by the National Heart Lung and Blood Institute (NHLBI) nhlbi.nih.gov/health-topics/guidelines-for-diagnosis-management-of-asthma. These guidelines emphasize the importance of asthma control and introduce recommendations for managing asthma in three age groups (0-4 years of age, 5-11 years of age and youths >12 years of age). The classification of asthma severity is determined at the time of diagnosis with the goals of asthma therapy aimed at reducing impairment caused by symptoms and risk of future exacerbations from poor control. The classifications of asthma severity based on symptoms without any medication are as follows:

- **Intermittent asthma** – Daytime symptoms less than or equal to two times a week; brief exacerbations requiring the use of quick relief medication less than or equal to two times a week; nighttime symptoms less than or equal to two times a month; no interference of normal activity.
- **Mild persistent asthma** – Symptoms greater than twice a week, but not daily; nighttime symptoms three to four times a month; need for quick relief medication more than two times a week but not daily; minor limitation of normal activity.
- **Moderate persistent asthma** – Daily symptoms; daily use of quick relief medicine; exacerbations affect activity; exacerbations occur twice a week and may last days; nighttime symptoms greater than once a week.
- **Severe persistent asthma** – Continual symptoms; frequent exacerbations; frequent nighttime symptoms; limited physical activity.

The presence of one clinical feature of severity is sufficient to place a student in that category and initiate treatment accordingly. The ultimate goal of treatment is to enable the student to live free of limitations. Ongoing monitoring is essential to this end as asthma is a highly variable disease.

Causes

The cause of asthma is a sensitive and over-reactive airway. The airway of an individual with asthma can be triggered by a variety of factors. The airway can be triggered by allergens such as molds, dust mites, pollen or weeds; irritants like smoke, air pollution or strong odors; or other factors such as exercise, weather changes or cold air.

Management at School

Controlling asthma requires a comprehensive approach, including consistent and appropriate medical treatment, comprehensive patient and family education, patient and family compliance, and environmental risk factor evaluation and reduction. Asthma attacks may be frightening, but they are treatable. Early recognition of symptoms and prompt treatment can shorten the course of an asthma episode and prevent hospitalization. A written asthma action plan is a necessary tool that includes instruction for daily management, as well as recognizing and handling worsening asthma with appropriate dosages of medication.

Early warning signs may include one or more of the following:

- Coughing
- Runny or stuffy nose
- Mild wheezing
- Itchy, watery eyes
- Itchy or sore throat
- Lethargy or fatigue
- Irritability or headache
- Waking at night with symptoms (per report)
- Activity intolerance
- Complaint of chest tightness or stomach ache (for younger kids)

These early warning signs are indicative of the child's "yellow zone" in their asthma action plan and may indicate that an asthma episode is imminent and treatment with a quick relief medication is necessary. It is important to note that all asthma flare-ups are not accompanied by wheezing on auscultation. Assess for any of the symptoms of an asthma exacerbation and treat accordingly.

More severe symptoms that require prompt action are:

- Persistent coughing or wheezing
- Rapid breathing rate
- Extreme shortness of breath
- Increased work of breathing
- Chest tightness or pressure
- Change in behavior (anxiety)
- Difficulty speaking without stopping to breathe
- Skin around chest and neck pulled in with breathing (retractions)
- Pale/blue color of skin, lips or nail beds

These symptoms are indicative of a child's "red zone" from the asthma action plan and necessitate immediate treatment with a quick relief inhaler. **Emergency help (9-1-1 call) may be necessary if these symptoms are noted and/or there is no improvement in symptoms 15-20 minutes after treatment.**

Georgia SB 472, passed in 2002, states that schools may stock albuterol for use in identified respiratory distress. School personnel may administer albuterol to a student or staff member with respiratory distress regardless of prescription. Any school personnel who acts in good faith is immune from civil liability.

Georgia SB 472, passed in 2002, provides for self-administration of prescribed asthma medications by minor children in school settings. Supportive school policies are necessary to assure that students with asthma have access to their quick relief medication.

Asthma cannot be cured, but it can be controlled. Signs that may indicate that asthma is poorly controlled include:

- Persistent cough
- Coughing, wheezing, chest tightness, shortness of breath after physical activity
- Low level of stamina during physical activity
- Reluctance to participate in school activities or physical activity
- Excessive (more than one day/month) absences from school due to asthma
- Frequent visits to the clinic for respiratory symptoms
- Frequent use of quick relief medication for symptom relief (more than two times/week or more than two nights/month)

Treatment

Effective treatment of asthma will allow a student to participate in school activities. Avoiding known asthma triggers and treating symptoms early are the keys to control. Medications that are used in the treatment of asthma are categorized into two general classes according to their mechanism of action—quick relief and long-term control medicines.

Quick relief medications work rapidly to relax the tight muscles around the airways, increasing airflow into the lungs and reducing asthma symptoms. Usually these medications are the ones used at school.

Examples include:

- Albuterol (also called Proventil[®], Ventolin[®], ProAir RespiClick[®]) available as a metered dose inhaler (MDI), dry powder inhaler (DPI), or solution for the nebulizer
- Xopenex[®] (available in MDI or nebulizer solution)

There may be circumstances when an asthmatic child needs his/her quick relief inhaler and may not be experiencing acute symptoms. This can happen if pre-treating before exercise or play, or if experiencing symptoms of an early exacerbation and he/she needs to take a short-acting beta agonist (quick relief medication) every four hours as part of their yellow zone regimen.

Long-term control medications are given on a regular basis, even in the absence of symptoms, to reduce inflammation of the airways. These may be ordered once or twice a day to prevent symptoms, either year-round or seasonally. It is important for the school nurse to know about controller medicines the child takes at home, even though these usually are not needed during school hours. This information will help the nurse educate the student and family on the important role that controller medications play in the student's asthma control. Examples include:

- Inhaled corticosteroid (Asmanex[®], Flovent[®], Pulmicort[®], Qvar[®], Alvesco[®], and Arnuity[®])
- Leukotriene modifier (Singulair[®], Accolate[®])
- Inhaled non-steroid (Spiriva[®])
- Combination drugs: inhaled corticosteroid and long-acting bronchodilator (AirDuo[®], Breo[®], Advair[®], Symbicort[®] and Dulera)

Asthma Equipment

- Asthma medications are delivered by metered dose inhalers (MDI), dry powdered inhalers (DPI) or nebulizer treatments. The nebulizer or compressor is used to aerosolize liquid medication for breathing treatments.
- Children who use metered dose inhalers (MDIs) should use a "spacer" or holding chamber (example: Aerochamber[®], InspireEase[®]) which assists them to use the inhaler correctly. Medications that are supplied in a discus, dry powder inhaler (DPI) or breath-actuated inhaler form do not require a reservoir device.

Inhaler Procedure with Spacer

Spacers or holding chambers are necessary since they increase medication delivery when using a MDI. The holding chambers are available with either a mouthpiece or a mask. Generally, younger children (under age 4) will need to use a mask. Determining when to move to the spacer with a mouthpiece is based on when the child can use that spacer correctly, not their age. The child's healthcare provider determines the medication dosage as well as how often to give. Dosages will vary with each child and should be stated clearly on the medication label as well as in the Asthma Action Plan.

The spacer is a hollow tube, which traps the medicine. It can hold the medicine so that the child can take more than one deep breath from it (six breaths may be required if used with a mask for younger or special needs students). If using a spacer with a mask, the mask should fit tightly against the child's face. If using a spacer with a mouthpiece, it is best if the child takes a slow deep breath and holds his breath for up to 10 seconds to allow the medicine to reach all the parts of his lungs. When more than one puff is prescribed, it is best to wait one full minute between puffs to allow maximum absorption of medication. Coughing after medication administration with a bronchodilator is normal.

Inhaler Procedures Without Spacer

Although using a MDI without a spacer is not recommended, there may be circumstances when an aerochamber is not available. In that case, it is important to use proper technique. A school nurse should recommend a spacer for children who take MDI medication in order for them to receive proper benefit from their medication. Closed mouth technique is the proper method when using an inhaler without a spacer.

Aerosol Therapy by Nebulizer

The student may use an air compressor with a nebulizer medication cup to receive his breathing treatment. The air compressor provides the air for the treatment. The nebulizer is the part that holds the medicine. When the air from the compressor goes through the tubing and meets the medicine inside the nebulizer, it forms the mist. The child inhales the mist until it is gone (which usually takes about 10 minutes). Prescribed medicine is usually pre-measured (unit-dosed) and placed into the medication cup. The medicine from the nebulizer is inhaled through a mask or a mouthpiece using slow tidal breathing. A tight-fitting face mask is necessary for those unable to use a mouthpiece. This medication delivery system is less dependent on a child's coordination or cooperation. The disadvantages to its use are its decreased portability and need for a power source, increase in time needed for a treatment, and potential for bacterial infections if not cleaned properly.

Using a Peak Flow Meter

The peak flow meter is a small device that measures how well air moves out of the lungs. Peak flow monitoring can be a useful tool in the long-term management of asthma. However, early symptom recognition is a better indicator of uncontrolled asthma or an asthma flare-up. Also, the peak flow maneuver may be difficult for the child to perform during an acute exacerbation. It should not be used as a substitute for clinical assessment of symptoms during an acute asthma attack. The peak flow meter can detect narrowing of the airways hours, sometimes even days, before the onset of any asthma symptoms. The peak flow measurement is dependent upon user technique and effort, and all results need to be compared with the individual's personal best. This information may be incorporated into the child's asthma action plan.

How to Clean Asthma Devices

HFA inhalers need to be kept clean. After use, excess medication can accumulate around the exit hole where the medication comes out. When dried medication accumulates around the exit hole of the actuator, less medication can be delivered to the airways. It is also may be important to prime the inhaler if it is not used on a regular basis. It is important to follow the manufacturer's instructions, but generally, the actuator needs to be washed on a weekly basis.

In addition, regular care needs to be given to the devices used in the administration of asthma medications. It is recommended that the device be cleaned and stored according to manufacturer's instructions. Most devices can be cleaned by soaking for 15 minutes in warm water with mild dishwashing detergent. Never wipe the inside of a spacer as it can damage the lining and inhibit medication delivery. The device is then rinsed with clean water and allowed to air dry.

The parts that need to be washed regularly are: spacers, nebulizer medication cups, masks and mouthpieces. Never wash the nebulizer tubing as it never dries completely.

To disinfect, soak parts for 20 minutes in a solution of one part white vinegar to three parts water. Rinse with clean water and allow to air dry. The disinfection process should be done every third day if used frequently.

Spacers should never be stored in a plastic bag as this can increase static electricity in the device and lead to decreased medication delivery.

See attachments "Metered Dose Inhaler with Holding Chamber (Spacer) and Mouthpiece" for how to clean a spacer and mouthpiece and "Metered Dose Inhaler with Holding Chamber (Spacer) and Mask" for how to clean a spacer and mask.

Educational Considerations

- Develop IHP/504/IEP and emergency plans; request asthma action plan from healthcare provider.
- Educate faculty and staff on early and late warning signs and triggers.
- Adapt activity level for recess, physical education if needed.
- When exercise-induced asthma is a concern: pre-treatment with bronchodilator if ordered, hydration, adequate warm-up time, avoiding exercise during hottest part of the day, avoiding outside exercise when air quality is bad.
- Provide inhalant therapy assistance; educate student and staff in proper medication administration.
- Remove allergen triggers from child's classroom areas.
- Avoid pets in classroom, including fish (tanks may have mold growth).
- Promote attention to indoor air quality of the school.
- Accommodate medical absences, with make-up work, etc. as needed.
- Decrease absenteeism due to asthma by assuring asthma action plan is followed during yellow zone, even in the absence of clinical symptoms (i.e., student reports night awakenings due to symptoms the previous night).
- Provide access to water to ensure adequate hydration.
- Make healthcare needs known to appropriate staff.
- Provide indoor space for before and after school activities, recess and PE when outdoor air quality is bad.
- Be aware of the outdoor air quality index and inform staff to make adjustments in schedule and/or location as needed for more information). Make arrangements for self-administration of medications in consultation with family and student, as per school district policy.
- Viral illness is a common trigger for asthma in infants and toddlers. Proper hand hygiene is very important in this age group.

Resources

American Academy of Asthma Allergy and Immunology

aaaai.org

American Lung Association

lung.org

Asthma and Allergy Foundation of America

aafa.org

Asthma and Allergy Network

allergyasthmanetwork.org

Asthma – Centers for Disease Control and Prevention

cdc.gov/asthma

Asthma Center – Children’s at Hughes Spalding

choa.org/medical-services/asthma

Asthma Guidelines and Strategies

cdc.gov/asthma/pdfs/strategies_for_addressing_asthma_in_schools_508.pdf

At School with Asthma – Asthma and Allergy Foundation of America

aafa.org/asthma-in-schools

“How Asthma-Friendly is Your School?” – National Asthma Education and Prevention Program

nhlbi.nih.gov/files/docs/public/lung/asthma_friendly_checklist_en.pdf

Managing Asthma in the School Environment – Environmental Protection Agency

epa.gov/iaq-schools/managing-asthma-school-environment

Camp Information

Camp Breathe Easy

campbreatheeasy.com

The following asthma resources are included in this chapter:

1. Asthma Action Plan – Children’s version
2. How to use a metered dose inhaler (MDI)
3. Metered Dose Inhaler with Holding Chamber (Spacer) and Mouthpiece
4. Metered Dose Inhaler with Holding Chamber (Spacer) and Mask
5. How to Use a Peak Flow Meter
6. Asthma Georgia State Bill – For self-carrying asthma emergency medications
7. Asthma Georgia State Bill – Allowing stock albuterol
8. Form to inform parent/guardian of albuterol use at school for symptoms
9. Form to inform primary care physician of albuterol use at school for symptoms more than twice in one week
10. Outdoor Air Quality Fact Sheet

Asthma Action Plan

Name: Date of Birth:	Provider: Phone:
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Asthma triggers

Smoke Animals Exercise Dust Change in temperature Strong emotions Pollens Strong smells Respiratory infections Other _____

Go (Green Zone)	TAKE THESE CONTROLLER MEDICINE(S) EVERY DAY EVEN IF YOU FEEL OKAY
	<ul style="list-style-type: none"> <li style="width: 25%;">Good breathing <li style="width: 25%;">No cough or wheeze <li style="width: 25%;">Can go to school, work or play <li style="width: 25%;">Able to sleep well
	<input checked="" type="checkbox"/> Before exercising, take: Albuterol 2-4 puffs 15 minutes before exercise.

Caution (Yellow Zone)	TAKE THESE MEDICINE(S) AT THE START OF A COLD OR FIRST SIGN OF ASTHMA WARNING SIGNALS *BE SURE TO CONTINUE YOUR EVERYDAY CONTROLLER MEDICATIONS*
	<ul style="list-style-type: none"> <li style="width: 25%;">Chest tightness <li style="width: 25%;">Cough or wheeze <li style="width: 25%;">Working hard to breathe <li style="width: 25%;">Shortness of breath <li style="width: 25%;">Need rescue medicine more often <li style="width: 25%;">Difficulty with sleep, activity or exercise
	<input checked="" type="checkbox"/> If at any time the rescue medicines are not helpful call _____ right away. It may be time to begin an oral steroid. Please call your doctor or the doctor on call before using oral steroids.

Symptoms Better?



Symptoms Not Better or Worse?



Continue with plan for 2 days or until back to Green Zone	Take rescue medicine every 20 minutes for 3 treatments and call us at _____
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Danger (Red Zone)	IF SYMPTOMS ARE LIFE THREATENING OR IF SKIN, FINGERS OR LIPS ARE BLUE AT ANY TIME, CALL 911
	<ul style="list-style-type: none"> <li style="width: 25%;">Breathing rate is fast <li style="width: 25%;">Severe breathing problems <li style="width: 25%;">Continual cough <li style="width: 25%;">Waking up at night <li style="width: 25%;">Not as alert or active <li style="width: 25%;">Skin color pale <li style="width: 25%;">Bad wheezing <li style="width: 25%;">Hunched shoulders <li style="width: 25%;">Skin between ribs pulling in <li style="width: 25%;">Severe chest tightness <li style="width: 25%;">Trouble talking

CALL US AT _____ IF:
<ul style="list-style-type: none"> You are not getting better or if you have any questions. Your rescue medicines do not provide relief for 4 hours or if you need to take them every 4 hours for 24 hours. You started the prescribed on-hand prednisolone/prednisone.

****REMEMBER TO ALWAYS USE A SPACER WITH YOUR INHALER****

I certify that this child has a medical history of asthma and has been trained in the use of the listed medication, and is judged by me to be:

- Capable of carrying and self-administering the rescue medication(s) listed above.
- NOT capable of carrying and self-administering the listed medication(s).

The child should notify the school staff if one dose of asthma medication fails to relieve asthma symptoms for at least 3 hours.

Electronically signed by:

Metered dose inhaler with holding chamber (spacer) and mouthpiece



Patient and Family Education

This teaching sheet contains general information only. Talk with your child's doctor or a member of your child's healthcare team about specific care of your child.

What is a metered dose inhaler (MDI)?

A MDI, or inhaler, is a device that contains asthma medicine. It delivers the medicine into the lungs. The MDI needs to be used in a certain way or it will not work.

What is a spacer?

A spacer is a plastic tube with a mouthpiece that connects to the MDI. The spacer helps more of the medicine get into the lungs to help your child.

- If your child uses the MDI without a spacer, a lot of the asthma medicine can stick to the tongue and throat instead of going to the lungs.
- This “wastes” the medicine and decreases its usefulness.



MDI with spacer and mouthpiece

How should my child use an MDI with spacer?

Follow the directions from your child's therapist, nurse or doctor closely. Read the directions on the medicine, MDI and spacer labels carefully before use. Some general guidelines to follow include:

1. Wash your hands well.
2. Have your child sit up straight or stand to use the MDI.
3. Remove the caps from the spacer and inhaler.
4. Shake the inhaler well before using it each time. If it is a new inhaler or has not been used in several days, follow the manufacturer instructions for priming the inhaler.
5. Attach the inhaler to the spacer.
6. Have your child breathe out fully.
7. Place the mouthpiece of the spacer in your child's mouth.
8. Press the inhaler to spray the medicine into the spacer.

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

MDI with Holding Chamber and Mouthpiece, continued

9. Have your child take a slow, deep breath from the mouthpiece. Hold it for 5 to 10 seconds, and then, breathe out. Repeat.
10. If your child's doctor has told you to give more than 1 puff, wait at least 1 minute between puffs. Shake the MDI before each puff, and repeat steps 6 thru 9.

NOTE: If your child breathes through his nose when he inhales, have him pinch his nose shut. If he still has trouble, ask his therapist, nurse or doctor about using a spacer with a mask.

How can I keep track of how much medicine is left in the canister?

Many inhalers come with a dose counter. If yours does not have one, be sure to keep track of how much you use. Here are a few ways that may help:

- The best way is to count the number of doses your child uses each day, and mark it on the calendar.
 - Mark what day that you start using a new inhaler on the calendar so you can keep track of the number of doses left.
 - Compare the number of doses used with the number of doses on the canister. Most canisters tell you how many doses it contains.
 - For example, if your child uses 4 puffs each day from a 200-puff canister, get it refilled in 45 to 50 days.
- Place a blank label on the inhaler. Place a "✓" on the label after each puff until you reach the number of puffs listed on the canister label.
- Write a refill date on the canister each time you get a new MDI at the drug store. If your child uses about the same number of doses each day, you'll know to get a refill at the same time each month. This only works if your child does not use the inhaler for extra rescue doses.
- Do **NOT** float your canister in water to see if it sinks or floats. This is **NOT** accurate and may lead to not having medicine when your child needs it.
- Be sure to refill your prescription before the canister runs out. An inhaler never feels like it is getting empty. You must keep up with the number of puffs used, including puffs used to prime the inhaler.

How should I clean the spacer and mouthpiece?

Rinse the spacer and mouthpiece as needed with warm, running water. Clean them once a week with warm water and soap. Allow the spacer and mouthpiece to air dry between uses.

- Do not clean or dry the inside of the spacer with a cloth or fabric. This can create an electric charge on the inside of the spacer. The charge will decrease the amount of medicine that goes to your child's lungs.
- Once a week, rinse the mouthpiece (boot) that holds the canister with warm running water, do not soak it. When placing the canister back into the dried boot, it must be primed with 1 puff.

See the manufacturer's instructions for more information.

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

Metered dose inhaler with holding chamber (spacer) and mask

Patient and Family Education

This teaching sheet contains general information only. Talk with your child's doctor or a member of your child's healthcare team about specific care of your child.

What is a Metered Dose Inhaler (MDI)?

A MDI, or inhaler, is a device that contains asthma medicine. It delivers the medicine into the lungs. The MDI needs to be used in a certain way, or it will not work.

What is a spacer?

A spacer is a plastic tube with a mask that connects to the MDI. The spacer helps more of the medicine get into the lungs to help your child.

- If your child uses the MDI without a spacer, a lot of the asthma medicine can stick to the tongue and throat instead of going to the lungs.
- This “wastes” the medicine and decreases its usefulness.



MDI with spacer and mask

How should my child use an MDI with spacer and mask?

Follow the directions from your child's therapist, nurse or doctor closely. Read the directions on the medicine, MDI and spacer labels carefully before use. Some general guidelines to follow include:

1. Wash your hands well.
2. Have your child sit up straight or stand to use the MDI.
3. Remove the cap from the inhaler.
4. Shake the inhaler well before using it each time. If it is a new inhaler or has not been used in several days, follow the manufacturer instructions for priming the inhaler.
5. Attach the inhaler to the spacer.
6. Cover your child's mouth and nose with the mask. If your child fights the mask, have another person gently hold his arms.
7. Press the inhaler to spray the medicine into the spacer.

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.

MDI with holding chamber and mask, continued

8. Keep the mask in place until your child takes 6 or 7 deep breaths. If counting breaths is a problem, slowly count to 10. The number of breaths needed to remove all the medicine can vary based on the size of the child. Small babies may need to take 6 to 10 breaths to empty the spacer.
9. Remove the mask.
10. If your child's doctor has told you to give more than 1 puff, wait at least one minute between puffs. Shake the MDI before each puff and repeat steps 6 thru 9.
11. If the MDI contains a steroid, wipe your child's face with soap and water to remove any remaining medicine after using the device. If possible, also rinse your child's mouth with water. Infants and children who are too young to rinse their mouths can drink a liquid of their choice after using the MDI.

How should I use the mask with my child?

Giving asthma medicine should be a positive time for you and your child. Here are some ideas you can use to help get your child used to the mask:

- Explain the purpose of the mask and spacer to your child.
- Make a game of it. One idea is to have your child pretend he is an astronaut on a space ship.
- Give your child lots of praise when he does use the mask, even for a short time.
- Almost all children, even toddlers, can learn to use a spacer and mask. If you find your child always fights the mask as it is placed over the nose and mouth – **stop** and do not force the treatment.

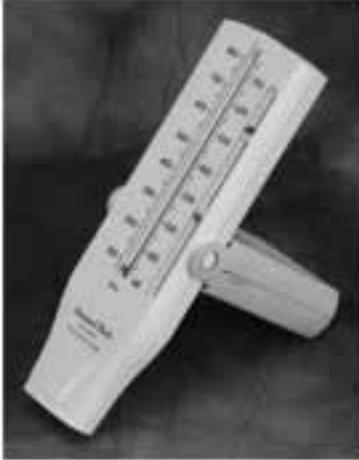
If your child still cannot use the mask, let your doctor know **right away**. Your child may be able to use a nebulizer instead to give the asthma medicines.

How can I keep track of how much medicine is left?

Many inhalers come with a dose counter. If yours does not have one, be sure to keep track of how much you use. Here are a few ways that may help:

- The best way is to count the number of doses your child uses each day, and mark it on the calendar.
 - Mark what day that you start using a new inhaler on the calendar, so you can keep track of the number of doses left.
 - Compare the number of doses used with the number of doses on the canister. Most canisters tell you how many doses it contains.
 - For example, if your child uses 4 puffs each day from a 200-puff canister, get it refilled in 45 to 50 days.
- Place a blank label on the inhaler. Place a “✓” on the label after each puff until you reach the number of puffs listed on the canister label.
- Write a refill date on the canister each time you get a new MDI at the drugstore. If your child uses about the same number of doses each day, you will know to get a refill at the same time each month. This only works if your child does not use the inhaler for extra rescue doses.
- Do **NOT** float your canister in water to see if it sinks or floats. This is **NOT** accurate and may lead to not having medicine when your child needs it.
- Be sure to refill your prescription before the canister runs out. An inhaler never feels like it is getting empty. You must keep up with the number of puffs used, including puffs used to prime the inhaler.

In case of an urgent concern or emergency, call 911 or go to the nearest emergency department right away.



How to Use a Peak Flow Meter

- Make sure that the device reads zero or is at base level.
- Stand up.
- Take as deep a breath as possible.
- Place the mouthpiece in your mouth and close your lips around it.
- Blow out as hard and as fast as possible (one to two seconds).
- Do not cough, spit, or let your tongue block the mouthpiece.
- Write down the number that you get.
- Repeat these steps two more times and record the best of the three blows in your chart.

Establishing your “personal best” peak flow number

- Your personal best peak flow number is the highest peak flow number that you can achieve over a two-week period when your asthma is under control.
- Good control is when you feel good and do not have any asthma symptoms.
- Take peak flow readings twice a day for two to three weeks (when you wake up and early evening).
- Once your personal best is established, your healthcare provider will determine a peak flow zone system specific to you. The zones are set up similar to a traffic light that can serve as a guide for how well your asthma is under control.

Green Zone - 80-100% of your personal best signals good control

Yellow Zone - 50-79% of personal best indicates asthma is worsening; adjust medications according to your asthma plan.

Red Zone - < 50% of personal best signals medical alert, GET HELP NOW!

Record your personal best peak flow number and peak flow zones in your asthma diary.

Asthma Clinic Report to Parent

School: _____ Date: _____

Student Name: _____ Teacher: _____ Grade: _____

Your child has been seen in our clinic ____ (#) of times in the past week for albuterol for symptom relief.

We also noticed the following: _____

According to the NIH guidelines, your patient may not be in control of his/her asthma (use of albuterol for symptom relief > 2 times per week). You may want to schedule an appointment with his/her primary care provider to reevaluate his/her medications and symptoms. Please feel free to bring this report to your visit and have your doctor call us if needed.

Please feel free to call the school if you have any further questions or concerns relating to this visit. I can be reached at: _____ (Phone #)

Sincerely,

Reported by

Title

Asthma Clinic Report to Primary Care Provider

School: _____ Date: _____

Student Name: _____ Teacher: _____ Grade: _____

Your patient has been seen in our clinic ____ (#) of times in the past week for albuterol for symptom relief.

We also noticed the following: _____

According to the NIH guidelines, your patient may not be in control of their asthma (use of albuterol for symptom relief > 2 times per week).

Please feel free to call the school if you have any further questions or concerns relating to this visit. I can be reached at: _____ (Phone #)

Sincerely,

Reported by

Title

Outdoor air quality and physical activity

Guidance for Georgia's childcare professionals

Air pollution can make you sick. Breathing polluted air can cause serious health problems—from asthma attacks to heart trouble. Health risks rise when outdoor air pollution is at its worst, especially for those most vulnerable—children, the elderly, and people with heart or lung disease.

Why are children more vulnerable to poor air quality than adults?

- Their lungs are still growing.
- They breathe more air in relation to body weight than adults.
- Children spend more time being active outside than adults.

How do you know when the air is unhealthy?

If you care for a child or someone with asthma, it is very important to know when the outdoor air is unhealthy. A measure called the Air Quality Index (AQI) rates daily air quality on a scale of 0 (the cleanest) to 500 (the most polluted). Health warnings are set according to health risks associated with different amounts of air pollution.

Resources

- The Georgia Environmental Protection Division (EPD) issues a smog alert when the AQI is predicted to be more than 100.
- Visit CleanAirCampaign.org to register for air quality email alerts.
- Call the EPD Air Quality hotline at 404-362-4909.
- Visit georgiaair.org/smogforecast to get an air quality forecast to help plan outdoor activities.

Where and when is air pollution a problem in Georgia?

There are two kinds of outdoor air pollution in Georgia: ground-level ozone and fine particles. When these pollutants occur at the same time, smog develops. The air is usually unhealthy during much of the spring and summer in larger cities like Atlanta and Macon. Mid-sized Georgia cities like Athens, Augusta and Columbus also have their share of bad air days, while rural areas of the state have high-particle pollution, usually from open burning, diesel engines and wildfires.

The Air Quality Index (AQI) Flag program is administered by the Captain Planet Foundation. Please contact Kathy Lively at kathy@captainplanetfdn.org or 404-522-4159 to adopt a flag program or for more information.



Though air pollution can be a problem any time of year, most smog forms during warmer months. Early May through late September is considered smog season.

It is important to pay attention to air quality during these months.

Recommended changes in outdoor activities based on the AQI

AQI	Health concern	Recommendation
GREEN 0-50	The air is considered healthy for everyone.	Outdoor activities are recommended for all children and adults.
YELLOW 51-100	The air is unhealthy mainly for very sensitive children and adults.	Outdoor activities are recommended for most children and adults except those known to react to air pollution at this level.*
ORANGE 101-150	The air is unhealthy for sensitive individuals, including all children under the age of 18, the elderly and those with heart or lung conditions.	Children, the elderly and sensitive adults should limit outdoor activity to times of the day when pollutant concerns are lowest.
RED 151-200	The air is unhealthy for everyone.	Children and adults should avoid outdoor activities completely. Some times during the day may be safe for outdoor activity (see information below).
PURPLE 201-400	The air is unhealthy or even hazardous for everyone.	All children and adults should avoid outdoor activities completely throughout the day.

**Parents and other caregivers should watch children and the elderly carefully for signs of distress to find out if they are particularly sensitive to air pollution. Always have asthma medication on hand if you care for people with asthma.*

Ozone and particle pollution fluctuates in patterns:

- Ozone pollution is usually at its worst between 2 p.m. and 7 p.m. Plan outdoor activities for the morning and limit time outdoors after 2 p.m. when possible.
- Particle pollution may peak during morning and evening rush hour but can stay high all day. Limit outdoor time during the day and in the evening.
- If both ozone and particle pollution are high, limit outdoor activity all day and in the evening.
- If an air-conditioned, indoor space is not available, reduce the time and force of outdoor activities. The harder the breathing, the more air pollution goes into the lungs.

 Visit georgiaair.org/tmp/today/amp_AQI.html to check the AQI for locations in Georgia.

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Dedicated to All Better™

Autism Spectrum Disorder (ASD)

Autism spectrum disorder (ASD) is a neurodevelopmental disability that causes significant social, communication and behavioral challenges. There is often nothing about how people with ASD look that sets them apart from other people, but people with ASD may communicate, interact, behave and learn in ways that are different from most other people. There is huge variability amongst individuals with ASD – with some being intellectually gifted to others having significant cognitive impairment. Others may be verbal while about 20 percent are nonverbal. Some have significant co-morbid symptomatology, such as difficulty with feeding, sleep and challenging behaviors, while others might have psychiatric co-morbidities, such as anxiety and depression.

To make a diagnosis of ASD, psychologists and other specialists use the criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM), 5th edition. These criteria for ASD include several conditions that used to be diagnosed separately: autistic disorder, pervasive developmental disorder not otherwise specified (PDD-NOS), and Asperger syndrome. Since 2013, these conditions are all included in the diagnosis called autism spectrum disorder. Multiple studies have shown that many parents report developmental problems before their child even turns one. The Marcus Autism Center specializes in early diagnosis, and can make a reliable determination of ASD as early as 18 months. Unfortunately, most children are not diagnosed with ASD until they are over four years old, which prevents them from getting crucial interventions earlier in their development.

ASD is a life-long condition; some people with ASD need a lot of help in their daily lives; others need less, but this can change over the course of their life. Current outcome research indicates that overall however, that the majority of individuals with ASD do not hold full time jobs or live independently. A study out of Europe in 2016 showed that people with ASD have a shorter lifespan, particularly women.

Signs and Symptoms

People with ASD often have difficulties with social, emotional, and communication skills. They might repeat certain behaviors and might not want change in their daily activities. They may also have a difficult time expressing how they might be feeling to others. Many people with ASD also have different ways of learning, paying attention, or reacting to things. Signs of ASD begin during early childhood and typically last throughout a person's life.

Children or adults with ASD might:

- Not point at objects to show interest (for example, not point at an airplane flying over)
- Not look at objects when another person points at them
- Have trouble relating to others and understanding their point of view
- Avoid eye contact and want to be alone
- Have trouble understanding other people's feelings or talking about their own feelings
- Not be comfortable giving or receiving physical affection such as hugs or cuddles
- Appear to be unaware when people talk to them, but respond to other sounds
- Be very interested in people, but not know how to talk, play, or relate to them
- Repeat or echo words or phrases said to them, or repeat words or phrases in place of normal language
- Have trouble expressing their needs using typical words or motions
- Not play "pretend" games (for example, not pretend to "feed" a doll)
- Repeat actions over and over again
- Have trouble adapting when a routine changes
- Have unusual reactions to the way things smell, taste, look, feel, or sound
- Lose skills they once had (for example, stop saying words they were using)
- Be more prone to being bullied, teased or being taken advantage of by others

Diagnosis

Diagnosing ASD can be difficult since there is no medical test, like a blood test, to easily get a yes/no answer. In addition, the same person with ASD will change over time, so professional evaluation is needed. Doctors look at the child's behavior and development to make a diagnosis. ASD can sometimes be detected at 18 months or younger, depending on the child. Research has shown that by age 2, a diagnosis by an experienced professional can be considered reliable, valid and stable. Studies have shown that parents of children with ASD notice a developmental problem before their child's first birthday. Concerns about vision and hearing were more often reported in the first year, and differences in social, communication, and fine motor skills were evident from 6 months of age. Unfortunately, many children do not receive a final diagnosis until much older. CDC prevalence studies found that children identified with ASD were not diagnosed until after age 4. This delay means that children with ASD might not get the early intervention services they need.

Treatment

Research shows that early intervention treatment services can improve a child's development. Early intervention services help children from birth to 3 years old (36 months) learn important skills. Services can include therapy to help the child talk, walk, and interact with others. Children under the age of 3 years (36 months) who are at risk of having developmental delays may be eligible for services under Individual with Disabilities Education Act (IDEA) Part C. These services are provided through an early intervention system in every state. In Georgia, this system is referred to as Babies Can't Wait and runs through the Georgia Department of Public Health. Through this system, parents can request an evaluation. In addition, treatment for particular symptoms, such as speech therapy for language delays, often does not need to wait for a formal ASD diagnosis.

Children age 3 and older who have an ASD can be eligible for two different programs through the school system. First, individuals with disabilities are protected by Section 504 of Rehabilitation Act. Section 504 aims to protect all individuals from discrimination based on a disability. Second, IDEA Part B provides specialized educational instruction to children with disabilities from ages 3 to 21 years of age. It is often referred to as special education. Since Section 504 is broader than IDEA, it includes individuals who may not qualify for special education services under IDEA. However, all students who receive special education services are likely protected by Section 504.

Medical diagnoses of ASD and special education eligibility criteria for ASD are similar, but vary slightly. Medical diagnoses of ASD are based on the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, while special education eligibility criteria are based on state special education regulations. The primary difference between the two sets of criteria is that special education criteria require that the ASD adversely affects a child's educational performance. This means that a child's academic, social, functional, and/or behavioral functioning must be negatively affected in the school setting.

There is not currently any medication that targets the core social communication deficits in children with ASD. However, medication is sometimes used to treat conditions that co-occur with ASD such as aggression, attention problems, anxiety and depression.

Prevalence

ASD is reported to occur in all racial, ethnic, and socioeconomic groups. More people than ever before are being diagnosed with ASD. Scientists believe that the increase in ASD diagnosis is likely due to a combination of factors: broader definition of ASD as defined by the DSM (see above), removing the stigma from receiving a diagnosis, and better efforts in standardizing criteria for ASD. The diagnosis of ASD is also tied to receiving certain services, and an increase in ASD awareness among parents and providers has also led to more diagnoses. However, a true increase in the number of people with an ASD cannot be ruled out.

- About 1 in 59 children in the US are estimated to meet the criteria for diagnosis of autism spectrum disorder (ASD) according to the CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network.
- ASD is about 4 times more common among boys than among girls. It is not clear whether boys are more prone to ASD, or girls are somehow "protected" against ASD by their biology or their environment.
- Studies in Asia, Europe and North America have identified individuals with ASD with an average prevalence of between 1 and 2 percent in many countries.

Causes

While not all of the causes of ASD are known, there is some evidence that the critical period for developing ASD occurs before, during, and immediately after birth. There are very few single gene changes that lead straight to ASD, so we will not find “an ASD gene” in children. Instead, in most children, ASD likely results from hundreds to thousands of contributions from their entire genetic code, as well as their interaction with their environment, and the complex interactions between all of these factors. Right now, scientists’ best estimates are that about half of a person’s risk for developing ASD comes from genes, and about half from environmental factors. This means that, although genetic testing is recommended for children with ASD to screen for any single gene changes that might be present (see below), most of the time families will not find one genetic cause for their child’s ASD, and they will not be able to use genetic testing to screen future pregnancies.

Risk Factors and Characteristics

- Parents who have a child with ASD have a 2-18% chance of having a second child who is also affected.
- Children born to older parents are at greater risk for having ASD. In large studies of second and third children at Marcus Autism Center, there is a recurrence rate around of 18-20%.
- Children born to older parents are at greater risk for having ASD.
- Children born either less than 18 months or more than 60 months apart from previous siblings are at a higher risk for ASD.
- Studies have shown that among identical twins, if one child has ASD, then the other will be affected about 36-95% of the time. This is obviously a large range! Scientists are still applying the newer diagnostic criteria for ASD to study populations and working to get a more precise number. In non-identical twins, if one child has ASD, then the other is affected about 0-31% of the time.
- ASD tends to occur more often in people who have certain genetic or chromosomal conditions. About 10% of children with autism are also identified as having Down syndrome, fragile X syndrome, tuberous sclerosis, or other genetic and chromosomal disorders.
- Almost half (46%) of children identified with ASD have average to above average intellectual ability.
- ASD commonly co-occurs with other developmental, psychiatric, neurologic, chromosomal, and genetic diagnoses. The co-occurrence of one or more non-ASD developmental diagnoses is 83%. The co-occurrence of one or more psychiatric diagnoses is 10%.
- About 20-30% of children with autism have seizures, and children with ASD are four times more likely to report gastrointestinal issues. They can also have feeding disorders or food selectivity, which can lead to serious nutritional deficits.

Economic Costs

- It is estimated to cost at least \$17,000 more per year to care for a child with ASD compared to a child without ASD. Costs include health care, education, ASD-related therapy, family-coordinated services and caregiver time. For a child with more severe ASD, costs per year increase to over \$21,000. Taken together, it is estimated that total societal costs of caring for children with ASD were over \$9 billion (2011 US dollars).
- Children and adolescents with ASD had average medical expenditures that exceeded those without ASD by \$4,110–\$6,200 per year. On average, medical expenditures for children and adolescents with ASD were 4.1–6.2 times greater than for those without ASD.
- In 2005, the average annual medical costs for Medicaid-enrolled children with ASD were \$10,709 per child, which was about six times higher than costs for children without ASD (\$1,812).
- In addition to medical costs, intensive behavioral interventions for children with ASD can cost up to \$60,000 per child per year.
- Studies suggest that starting treatment early, by ages 2-3, could save \$1.28 million over the lifetime of a child, when compared to starting treatments at 5-6 years old. These costs primarily occur in non-medical costs like housing and employment supports.

Considerations for Hearing and Vision Screenings

School nurses are sometimes responsible for conducting hearing and vision screenings for students. Accommodations are often necessary in order to assess children with ASD hearing and vision.

- Social stories that teach children about hearing and vision tests can be used to help children with ASD know what to expect. Reading the stories every day the week before the hearing and vision screening can be helpful.
- Use a “First-Then” picture board to help reduce the verbal instructions you are giving a child.
- Incorporate a child’s interest into testing. Reinforce their efforts with a two minute break with their preferred toy or video.
- Children with developmental levels below age 5 or 6 will likely struggle with hearing tests that require them to raise their hand when they hear a sound. Instead, encourage the child to throw a ball or drop a stuffed animal when they hear the sound.
- Allow a child to explore earphones first before placing them on the child to help decrease sensory defensiveness.
- Sometimes children with ASD are not able to participate in school-based hearing and vision screenings. They may need to be referred to an audiologist or optometrist with more specialized skills and techniques.

Support Strategies for School Nurses

Children with ASD may visit the school nurse for many reasons that are not related to their autism diagnosis but may be due to co-occurring conditions such as anxiety, sleep disorders, behavioral challenges, feeding and GI conditions, or seizures. Many children with ASD do require medication management during school hours, in addition to nursing care for routine injuries and illnesses not related to ASD. However, because of difficulties with verbal communication, and preference for structure and routines, children with ASD benefit from strategies such as:

- Pain assessment tools like FACES or Numeric pain rating scales.
- Social stories that teach children about what to expect when visiting the school nurse can be used to help children with ASD feel more comfortable.
- Use a “First-Then” picture board to supplement verbal instructions you are giving a child to explain a procedure or treatment, or let a child know what will happen next.

Resources

American Academy of Pediatrics Clinical Report

Myers, SM & Johnson, CP. Management of Children With Autism Spectrum Disorders. Pediatrics. Vol. 120, No. 5, November 2007. 1162-2362.

pediatrics.aappublications.org/content/120/5/1162

American Psychiatric Association Fact Sheet

Autism Spectrum Disorder (DSM-5 revised diagnosis)

dsm5.org/Documents/Autism%20Spectrum%20Disorder%20Fact%20Sheet.pdf

Autism Speaks Family Services School Community Tool Kit (see School Nurses pgs. 65-67)

autismspeaks.org/tool-kit/school-community-tool-kit

Bellando, J and Lopez, M. The School Nurse’s Role in Treatment of the Student with Autism Spectrum Disorders. Journal for Specialists in Pediatric Nursing, Vol. 14, No. 3, July 2009

Centers for Disease Control and Prevention

National Center on Birth Defects and Developmental Disabilities

<https://www.cdc.gov/ncbddd/autism/index.html>

Marcus Autism Center

<https://www.marcus.org/>

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Brain Injury/Concussion

Acquired Brain Injury

Acquired brain injury (ABI) is broadly defined and includes brain injuries from internal and external causes. According to the BIA (Brain Injury Association; biausa.org), acquired brain injury is an “injury to the brain which is not hereditary, not congenital (present at birth) or not degenerative (progressively worsening).” Acquired brain injury (ABI) is the leading cause of death and disability in children and young adults. ABI is an injury to the brain secondary to trauma (external) or internal causes including brain tumors, stroke, aneurysm, anoxia, infections or ingestion of toxic substances.

Traumatic Brain Injury

Traumatic brain injury (TBI) is the single most common cause of brain injury in the young child. TBI is the most common cause of death from 1 to 18 years of age. TBI results when a mechanical force is applied to the brain and disrupts normal function. Common injuries include motor vehicle accidents and falls. TBIs are categorized as “severe” (e.g., deep coma), “moderate” or “mild” (e.g., temporary confusion or disorientation), based on the degree of coma (or unconsciousness) sustained immediately after injury. This is assessed by the Glasgow Coma Score (GCS) which is universally used to evaluate the patient’s degree of unconsciousness. TBIs may be further categorized as “open” or “closed.” Open TBIs occur when the skull is breached such as occurs with wounds such as a gunshot injury. Closed TBIs occur when the scalp and skull remain intact, for example, after a fall. More than two million TBIs occur annually in this country. TBIs occur in all ages, with the highest rate in children under 5 years of age.

Concussion

A concussion is a type of TBI that produces a physiologic change to the brain rather than an anatomic change. Symptoms can be manifested with a relatively minor concussive injury and vary between individuals. Symptoms of a concussion may include but are not limited to headache, dizziness, nausea, vomiting, feeling dazed or confused, a brief loss of consciousness less than 30 minutes, difficulties with memory or concentration, changes in sleep patterns and feeling mentally foggy. These symptoms may present immediately, intermittently, or be delayed. There can be significant consequences such as poor cognition with subsequent academic decline for several weeks, months or longer. These symptoms usually resolve in time, but the student needs recognition and medical evaluation during this time to avoid further problems such as missed learning opportunities, loss of self-esteem and inappropriate labeling by peers and school staff. A school nurse may be the first one a student approaches with symptoms from a concussion or mild brain injury, and a child may only experience problems once back in school or playing sports.

School nurses can provide coaches, teachers, parents and players with educational materials from the Centers for Disease Control and Prevention: cdc.gov/concussion/HeadsUp/schools.html and from Children’s Healthcare of Atlanta at choa.org/concussion (refer to Chapter 12, For Families, for parent and patient teaching sheets).

Brain Injury / Concussion and the School Nurse Role

Regardless of the degree of TBI, children need medical evaluation at some point following the injury. Patients who are comatose (moderate to severe TBI) are almost always triaged and evaluated medically in an emergency room.

Depending on the injury, they may be transferred to the operating room, intensive care unit or a regular hospital floor. Inpatient and outpatient rehabilitation may be needed. School nurses usually encounter individuals who are discharged from the hospital.

For those that are not acute, a visit to their pediatrician or community clinic within days may be appropriate. In some cases, no evaluation is done, and the child may present to the school nurse first. Therefore it is important to ask if the student has experienced a recent TBI, in sports or recreational activities.

The younger the age at injury, the more at risk the child is for lifelong effects of the injury. This is especially true if two or more TBIs occur within a short period of time. This is known as the "second impact syndrome" which refers to potentially life-threatening brain swelling that occurs with a second head injury, before the first TBI has had time to heal.

Each brain injury, whether from internal or external causes, is unique and the signs and symptoms can vary depending on the severity and the specific area injured. Possible symptoms may include:

Physical Disabilities such as:

- Vision, hearing and other sensory difficulties
- Headaches, fatigue and sleep disturbances
- Muscle spasticity or paralysis
- Seizures
- Chronic pain
- Speech impairments
- Receptive and/or expressive language difficulty
- Difficulty with balance, mobility and normal physical activity
- Difficulty with fine motor skills, eye-hand coordination, such as writing or drawing

Cognitive Learning Problems such as:

- Short and/or long-term memory
- Concentration and attention
- Comprehension, processing and problem-solving
- Reading, writing, math, sequencing and judgment
- Time management
- Understanding cause and effect
- Inability to prioritize thoughts and determine the main idea
- Misperception of abstract or complex information

Social, Behavioral and Emotional Difficulties such as:

- Mood swings, anxiety and depression
- Difficulty with relationships
- Difficulty with monitoring impulsive reactions
- Difficulty with interpreting social gestures and body language
- Loss of self-esteem and confidence
- Restlessness
- Loneliness and isolation
- Inability to manage stress or cope with change
- Lack of motivation
- Frustration and embarrassment with life changes
- Emotional lability or anger, with loss of self-control

Management during School

During healing it is important to reduce the risk of another subsequent concussion or brain injury soon after the initial injury. We know that cognitive abilities can be exponentially affected if another injury occurs before the first has adequately healed. Investigators do not know the exact time it takes for the brain to heal from a TBI, but it is reasonable to assume that healing has occurred when the child is asymptomatic. Thus, the symptomatic child should return to school, play and sports gradually and under supervision.

As the student grows and develops, parents and teachers also may notice new problems when new tasks and curricula are introduced, as the earlier injury can make it hard for the student to learn new skills. Planning for the child's return to school after a brain injury is very important. "Brain function is highly interconnected, and an injury can sever or disrupt established pathways, requiring time to heal and new connections to form. Erratic academic performance should not be interpreted as failure or a sign that the student lacks intelligence. With the support of the school staff, the optimal combination of accommodations, student support strategies and medical interventions can be put in place to enable success." (The Student with a Brain Injury: Achieving Goals for Higher Education, American Council on Education, 2002; brainline.org/content/2008/10/student-brain-injury-achieving-goals-higher-education_pageall.html)

Educational Considerations

For students who are returning to school after a brain injury, treatment for ABI/TBI/Concussion may be lengthy. Students can make rapid advances in academic skills and knowledge, especially in the first six to 12 months after an injury. There may also be plateaus and regressions. The education plan must therefore be extremely flexible. Open communication with the family and the student must be ongoing. Formal special education with an IEP and related services will be necessary in many cases. When only minimal support is needed in the regular education program, modifications and accommodations should be developed in a 504 Plan. It is also important to obtain an adequate assessment of current functioning with which appropriate expectations and goals can be developed.

Students who have a concussion or mild brain injury need "brain rest" or "cognitive rest" following the injury, which will also affect their school performance (refer to Chapter 2 for table of information on "cognitive rest"). Listed below are possible modifications for students:

- Student support team or guidance counselor intervention.
- Develop an IHP/504/IEP, including emergency plan.
- Provide staff education/training for specific brain injury information.
- IEP may need much more frequent review than some other IEPs.
- Promote frequent and ongoing communication between parents, rehabilitation staff, teachers and related service providers.
- Educational accommodations may include:
 - **VERY IMPORTANT: Give directions both verbally and visually.**
 - Reduce length of school day on initial transition into school, increase length of day as much as possible depending on child's progress.
 - Provide multiple choice responses due to memory or retrieval difficulty.
 - Break up large tasks into smaller sections.
 - Modify amount of homework due to continued fatigue.
 - Permit modification for written output due to reduced handwriting speed/endurance.
 - Provide copy of a peer's and/or teacher notes for student with reduced endurance in handwriting.
 - Allow extra time to finish assignments and tests.
 - Give directions one step at a time for tasks with many steps, verbally and in writing.

- Demonstrate new tasks, and provide opportunities to practice.
- Give concrete examples of new ideas and concepts whenever possible.
- Keep consistent routines, discuss changes ahead of time.
- Help student with assignment book and daily schedule for organization.
- Allow rest periods as needed.
- Reduce distractions as much as possible, with seat placement, etc.
- Behavior modification plans should be concrete and short-term.

Management during Sports

Students with symptoms of concussion or mild brain injury need medical attention and should not return to playing sports until they have medical clearance from a physician. Students who are not fully recovered from a concussion are at high risk for cumulative and even catastrophic effects if a second concussion occurs soon after the initial injury.

New methods to detect the effect of concussions are available for athletes. A computerized pre-and post-concussion test, available through the Children's Healthcare of Atlanta Sports Medicine program, called ImPACT determines if the blow to the head affects cognitive skills, such as concentration and reflexes. Tests of this type add to the information that physicians use in the determination of safe return to play. Many schools now require baseline testing at the beginning of the sports season for student athletes as part of their required pre-participation physical examination. Students who receive a blow to the head during a game or practice are then re-evaluated using the ImPACT post-test to determine any changes that would determine return to play.

Returning to Regular Activities

Allow time for each stage of healing to occur. It is important to follow guidelines set for the student to slowly progress back into full schoolwork and full play/ sports. A student should be able to return to full schoolwork before returning to full game play in sports. A medical clearance will be needed from a doctor before returning to sports.

Resources

Benefits of Strict Rest after Acute Concussion: A Randomized Controlled Trial

Danny George Thomas, Jennifer N. Apps, Raymond G. Hoffmann, Michael McCrea, Thomas Hammeke
Pediatrics, February 2015, Vol. 135, Issue 2

pediatrics.aappublications.org/content/135/2/213

Protective Equipment and Player Characteristics Associated With the Incidence of Sport-Related Concussion in High School Football Players: A Multifactorial Prospective Study,

Timothy A. McGuine, PhD, ATC, Scott Hetzel, MS , Michael McCrea, PhD

Volume: 42 issue: 10, page(s): 2470-2478

Article first published online: July 24, 2014; Issue published: October 1, 2014

journals.sagepub.com/doi/full/10.1177/0363546514541926

Additional Resources in this Manual include:

1. Concussion Signs and Symptoms Checklist – CDC, Chapter 2
2. Mild Head Injury and Concussion Teaching Sheet – Children’s Healthcare of Atlanta, Chapter 12. This sheet includes information on the following:
 - Cognitive Rest
 - Return to School, Book work, Studies Guidelines
 - Return to Sports, Play, Activities Guidelines
3. Know Your Concussion ABCs, Fact Sheet for School Nurses – CDC, Chapter 2

Brain Injury Resources

Brain Injury Association of America

biausa.org

Brain Injury Association of Georgia (BIAG)

800-444-6443

info@braininjurygeorgia.org

braininjurygeorgia.org

Brain and Spinal Injury Trust Fund Commission

bsitf.state.ga.us

Brain Injury Recovery Network

tbirecovery.org

Centre for Neuro Skills®

neuroskills.com

Elaine Parker Adams, Albert A. Adams Jr. “Reality Lessons in Traumatic Brain Injury.” 4(3) January 2008;

eric.ed.gov/?q=Reality%2bLessons%2bin%2bTraumatic%2bBrain%2bInjury+EJ967478&id=EJ967478

Lash and Associates: Books on Brain Injury

lapublishing.com

Rainbow Rehabilitation Centers for Brain and Spinal Cord Injury

<https://www.rainbowrehab.com/>

Spinal Cord Injury Information

sci-info-pages.com

Concussion Resources

Concussion and Mild TBI - CDC

[cdc.gov/headsup/index.html](https://www.cdc.gov/headsup/index.html)

Concussion Program - Children's Healthcare of Atlanta

choa.org/medical-services/concussion

Heads Up to Schools: Know Your Concussion ABCs

[cdc.gov/headsup/schools/index.html](https://www.cdc.gov/headsup/schools/index.html)

ImPACT

[impacttest.com](https://www.impacttest.com)

Celiac Disease

Celiac disease is an autoimmune inflammatory condition caused by ingestion of gluten-containing grains—wheat, barley, and rye. The gluten protein in these grains is toxic to people with celiac disease. When children or adults with celiac disease ingest gluten, there is an immune reaction that damages the lining of the small intestine where nutrients are normally absorbed. When the intestine lining is damaged, digestion of many nutrients may be abnormal (malabsorption), and children may have symptoms of abdominal pain, diarrhea or constipation, poor weight gain or weight loss.

In the past, children were diagnosed with celiac disease, only if they presented with diarrhea and abdominal distension. They would be underweight and might have muscle wasting. In the last 5 to 15 years with better tools to diagnose celiac disease, many more children and adults are being diagnosed without having diarrhea and malnutrition. Often people may have subtle or no apparent symptoms. Common symptoms include abdominal pain, loose stools, gassiness, delayed puberty or growth failure. However, many people are being diagnosed with constipation, nausea or just bloating. Many people now diagnosed with celiac may have very few symptoms but have a family member with celiac or another risk factor such as type 1 diabetes or Hashimoto's thyroiditis.

Other organ systems may be affected in celiac disease besides the digestive system. These include the skin (very itchy rashes on the arms), bones (osteoporosis), teeth (enamel defects), liver (elevated liver enzymes) and the nervous system (rarely seizures but also headaches and fatigue). Patients may also have iron deficiency anemia.

It is important to think of testing for celiac disease in children who have a close family member with celiac or in children with certain other medical conditions. Celiac disease may occur in about five percent of children with type 1 diabetes, five percent of children with Down syndrome or Williams syndrome and in some children with IgA (Immunoglobulin A) deficiency.

Diagnosis

If a doctor suspects celiac disease in a child, the first tests will include blood tests to look for antibodies to a protein in our bodies, tissue transglutaminase. This is the most useful initial test for celiac disease but must be performed while the patient is on a regular, gluten containing diet. Remember, testing for a serious lifelong disease like celiac disease is important prior to starting a gluten free diet. Finally, if screening tests are positive or if suspicion is strong, the definitive way to diagnose celiac disease is with an upper endoscopy. During this procedure, which is done under sedation and usually takes just 10 minutes or so, a pediatric gastroenterologist (GI doctor) will pass a scope down the mouth into the stomach and intestine. The scope allows the doctor to look at the small intestine lining and take tiny pieces of tissue (biopsies) to examine under the microscope for signs of intestinal damage caused by celiac disease.

Treatment

The treatment of celiac disease is dietary—strict avoidance of wheat, barley and rye for life. Since these grains are found in many foods, it is very important to meet with an experienced nutritionist to learn what foods to avoid and which are safe. Food is now labeled under guidance of the FDA as gluten free. This has made shopping for people with celiac disease much easier. Gluten free foods may be found in almost any grocery store. Many restaurants have gluten-free items on their menus, even pizza places!

Management at School

Children with celiac disease will need encouragement and support at school. Mealtimes with peers can be particularly challenging for children with celiac disease who may not want to appear "different" and may be tempted to eat foods that have gluten. Many kids may not understand the complications of "cheating" on the diet or may not yet be fully aware of all the foods that need to be avoided. It will be helpful to speak with teachers and cafeteria staff about the dietary restrictions that are so important to the treatment of this condition. Special class room snacks or treats are particularly difficult and it would be best to have gluten free options for birthday

snacks or special treats when the occasions arise. A child who eats gluten may experience no symptoms or may have abdominal pain, vomiting or lethargy. It is usually not a medical emergency if a child with celiac disease ingests gluten either inadvertently or on purpose. Handouts are available and the resource links below can help educate school staff and friends.

Educational Considerations

- Develop IHP/504/IEP and emergency plan
- The school nurse may want to:
 - Set up a meeting for the family with the nutrition director in the district or the cafeteria manager to make available gluten-free options for the child in the cafeteria, or to make the parent aware that gluten-free options are available.
 - Inform the classroom teacher to let parents know when bringing birthday treats or snacks in those younger grades, that a child in the class has gluten intolerance and can become very ill if given gluten-containing products. A child's parent can make a list of snack options for the other parents to choose from, or the parent can volunteer to provide snacks for the child with celiac themselves.

Resources

American Dietetic Association

eatright.org/health/diseases-and-conditions/celiac-disease/gluten-free-diet-for-celiac-disease-related-conditions

Celiac Disease Awareness Campaign - National Institutes of Health

niddk.nih.gov/health-information/digestive-diseases/celiac-disease

GI Kids – Celiac Disease

gicareforkids.com/conditions-we-treat/celiac-disease/index.php

gikids.org/celiac-disease

National Foundation for Celiac Awareness

beyondceliac.org/about

Camp Information

Camp Weekaneatit is held in collaboration with Camp Twin Lakes and the Georgia Celiac Foundation. It is a week long gluten free camp that is now more than 10 years old. Children ages 8 to 16 attend for a week full of fun activities and support programming.

glutenfreecamp.org

Cerebral Palsy

Cerebral palsy includes a group of nonprogressive disorders of movement and posture caused by a perinatal brain insult or injury. Thus, the insult may occur prenatal or postnatal in the period of early cerebral development before a child is two years of age. The conditions causing cerebral palsy do not worsen over time.

Conditions associated with cerebral palsy include:

Prenatal period (the majority of children)

- congenital brain defects
- Intrauterine infections
- Rh and ABO hemolytic conditions of the fetus
- Fetal anoxia
- Hemostatic abnormalities
- Maternal disorders
- Maternal substance abuse
- Metabolic abnormalities
- Chromosomal abnormalities

Perinatal

- Prematurity
- Trauma
- Hypoxic-ischemic encephalopathy
- Infection
- High bilirubin

Postnatal

- Hypoxia and acidosis in the child
- Meningitis and sepsis
- Trauma – brain injury including nonaccidental trauma
- Toxic exposures including lead

The incidence of cerebral palsy is two to three per 1000 live births. Cerebral palsy is characterized by abnormal muscle tone and function. Spastic cerebral palsy involves 70 percent of individuals with cerebral palsy. Spasticity is characterized by tight muscles and exaggerated reflexes. Diplegia is spasticity mainly involving the legs; hemiplegic is spasticity involving one side. Quadriplegic cerebral palsy is involvement of all four extremities. Ten (10) to 20 percent of those diagnosed with cerebral palsy are described as dyskinetic, having difficulty with movement control. Dyskinetic includes dyskinesia, athetosis, ataxia and rigidity. Cerebral palsy is usually diagnosed before a child is age 3 years. Cerebral palsy is usually diagnosed by the time children should begin to walk.

A child with mild cerebral palsy is able to walk independently; a child with moderate cerebral palsy is able to sit independently; and a child with severe cerebral palsy is unable to do either. The best way to describe a child's Cerebral Palsy is by the GMFCS, Gross Motor Function Classification Scale.

A Gross Motor Function Classification Scale (GMFCS) classifies Cerebral Palsy

	GMFCS Measure of Gross Motor Function
Levels	Mobility
I	Walks without limitations.
II	Walks with limitations.
III	Walks using a hand-held mobility device.
IV	Self-mobility with limitations; May use powered mobility
V	Transported in a manual wheelchair.

Palisano, R, Devel Med Child Neuro 39:214-223.

Treatment

There is no cure for cerebral palsy, only therapies aimed at improving a child's function and minimizing the movement disorder.

- The foundation of therapy includes: physical therapy, occupational therapy and speech therapy.
- These therapies should be initiated as soon as possible and focus on functional goals.
- Other therapies include: aquatic therapy, hippo therapy (use of horses in therapy) and using a neoprene suit called theratogs.
- Children may undergo orthopedic procedures to improve function and correct deformities including scoliosis and contractures.

Medications

- Baclofen® (lioresal)
- Klonopin® (clonazepam)
- Zanaflex® (tizanidine)

Other Medications

- Sinement® (dopamine/carbidopa) Artane® and Trihexylphenidyl to control tone and movement.
- Baclofen® may be administered by an intrathecal pump for better control in delivery of this medication.
- Children may receive injections of toxins to muscles or phenol to nerves to reduce spasticity.

Management at School

Children with cerebral palsy often rely upon the therapy resources available at school. During the day, the child needs to be upright as much as possible. Since the child needs to be able to use the walker and/or stander at school to accomplish this, he will require extra time for mobility in the classroom or in moving between classrooms.

The educator needs to be aware of potential sedation and other side effects from the medications used to control tone. Children with cerebral palsy also often need assistance with toileting skills. The spasticity may affect bladder function. In addition, sometimes a child's spasms may look like seizures. It is important for the educator to observe the movement and touch the child to help assess if the movement is a seizure. **The movement is not a seizure if it stops when the child is touched and repositioned.**

Finally, if the child has a Baclofen® pump, the educator needs to be aware of the pump's alarm and signs of Baclofen® withdrawal or overdose in the child.

Signs of Baclofen® withdrawal include:

- High fever
- Exaggerated rebound spasticity
- Altered mental status
- Muscle rigidity

Signs of Baclofen® overdose include:

- Signs of drowsiness
- Lightheadedness
- Dizziness
- Somnolence
- Loss of consciousness progressing to coma
- Respiratory depression
- Low muscle tone

Educational Considerations

Children with cerebral palsy are limited by their motor responses and thus may require more time to complete a task and respond to a request. More affected children may rely on assistive technology to maximize their communication and academic performance. Therefore children with cerebral palsy should be assessed for assistive technology early in their academic careers.

Children with cerebral palsy also may have associated learning disabilities. Many of them have visuomotor difficulties or attention problems. The possibility of associated learning difficulties should be investigated with psychological testing. Using the results of the testing, the student support team should implement a plan to maximize the student's educational performance.

Resources

American Academy for Cerebral Palsy and Developmental Medicine

aacpdm.org

Cerebral Palsy – Healthy Children, American Academy of Pediatrics

healthychildren.org/English/health-issues/conditions/developmental-disabilities/Pages/Cerebral-Palsy.aspx

Cerebral Palsy – National Institute of Neurological Disorders and Stroke

ninds.nih.gov/Disorders/Patient-Caregiver-Education/Hope-Through-Research/Cerebral-Palsy-Hope-Through-Research

Easter Seals

easterseals.com

FOCUS

focus-ga.org

March of Dimes

marchofdimes.org/complications/cerebral-palsy.aspx

United Cerebral Palsy
ucp.org

Childhood Cancers and Transplants

Successful treatment of childhood cancers has increased dramatically, and children with cancer are returning to normal school activities. A child who has received an organ transplant will also return to school, and school reentry issues will need to be addressed. Both of these types of students will probably be on medication to suppress the immune system. Risk of infection, body image concerns, fatigue, absenteeism due to treatment and possible late effects of treatment are the main considerations. Communication with parents is the key to a smooth transition for these students.

Childhood cancers affect about 15 children in 100,000, but the prognosis for these children is improving each year. Cancers are usually treated by one (or a combination) of the following: surgery, radiation and/or chemotherapy. Each type of cancer is different, and the treatment regimens vary according to the type. There are two main types: those involving the blood-forming tissues (lymphomas and leukemias) and those affecting bone, brain or internal organs (solid tumors). About one third of childhood cancers are leukemias. The most common solid tumors are brain tumors (e.g., gliomas and medulloblastomas), followed by the other solid tumors (e.g., neuroblastomas, Wilms' tumors and rhabdomyosarcomas).

A child may receive a kidney, heart, liver, bone marrow or heart-lung transplant for a variety of reasons, including: congenital malformations and illnesses, acquired organ failures or cancer. For these students, anti-rejection drugs will cause the same concerns with immunosuppression and body image.

Management at School

A child's resistance to infection is usually reduced significantly by treatment (immunosuppression). Thus, even one case of chicken pox, shingles or measles, as well as any widespread outbreaks of infectious diseases, becomes a particular concern and should be reported immediately to parents. Symptoms include fever above 100°F, lethargy and rashes. Emergency intervention may be required, as infection in these children can be life-threatening. When a child is known to have a medical history of cancer and/or transplant, school personnel should react quickly to these symptoms, notifying parents immediately.

If parents cannot be reached, a plan should be in place to obtain emergency care without delay. If the child is exposed to chicken pox in the school, notify the parents immediately. **Medicine can be administered to prevent or lessen the severity of the chicken pox if given to the child within 48 to 72 hours after exposure.** During outbreaks of certain diseases, a doctor may suggest that the child remain at home as a preventive measure against infections.

Children who are receiving chemotherapy will often have a central venous access line implanted for chemotherapy and lab monitoring. This line may be an implanted port (surgically placed under the skin) or a central venous line that is usually placed through the chest wall. The latter would be capped off during school hours and covered by clothing. The school nurse can assist in monitoring, to observe for early signs of infection. Students undergoing chemotherapy and radiation also will often experience a decreased energy level due to the effects of treatments, producing such symptoms as anemia. School schedules may need to be modified and made flexible to accommodate the student's treatment. The schedule of treatment, and the student's response to it, will necessitate frequent absences of varying lengths.

Homebound teaching may be needed from time to time. Bleeding and bruising may be problems as well since treatment can affect the body's ability to control bleeding. These incidents should also be promptly reported to parents. Issues of body image changes (hair loss, growth retardation, consequences of surgery such as amputation) are of utmost importance for children of all ages. With family and student permission, classmates should be prepared honestly for these changes and given concrete ideas for how to treat their friend when he or she returns. Ongoing communication with parents is always important, and school staff should never make assumptions about the child's knowledge and understanding about the disease.

Educational Considerations

“School is an essential part of a child’s life and well-being. It’s important to maintain the continuity of education even if the type of schooling varies. To promote a sense of normalcy...education should continue as smoothly as possible, both for learning and for social reasons, such as maintaining friendships...Not all of the changes a child undergoes as a result of this diagnosis are negative. By getting support from parents, teachers, school nurses and classmates, and by facing and overcoming obstacles, and by learning to accept and process difficult news, many children can grow and mature socially and emotionally far beyond their years.” (The Home Care Guide: Caring for Young Persons with Cancer at pennstatehershey.org/c/document_library/get_file?folderId=135815&name=DLFE-2703.pdf).

Students may be unable to attend school for periods of time during treatments. Hospital school programs and homebound instruction may be ordered if the child can tolerate these. “Late effects” can be associated even with successful cancer treatment, some of which can influence a child’s ability to process, learn and retain new information. School staff should be aware of these possibilities and evaluate with parents the child’s progress and the need for learning support services, during and after this critical period.

When the child returns to school, there may need to be:

- Development of an IHP/504/IEP and emergency plan
- Adaptations in the length of the day or schedule of classes and activities
- Support of increased dietary supplement needs
- Medications or treatments needed during school hours (central lines, etc.)
- Parent/student permission, education of staff and peers. Anticipated peer questions include:
 - What’s wrong with _____ ?
 - Is this disease contagious?
 - Will _____ die from it?
 - Should we talk about it or should we ignore it?
 - Should we treat _____ differently?
 - Why did _____ lose his hair?
- Set of textbooks at home or hospital
- Adaptation of physical education
- Access to professional school health services
- Peer tutoring
- Heightened awareness of potential problems from minor infectious illnesses of classmates.

Resources

Aflac Cancer and Blood Disorders Center

www.choa.org/medical-services/cancer-and-blood-disorders

American Cancer Society

cancer.org or call your local chapter

Band-aides and Blackboards

aboutspeakkids.org

Cells Alive (instructional site on cells)

cellsalive.com/toc.htm

Children's Brain Tumor Foundation

cbtf.org

CURE Childhood Cancer

curechildhoodcancer.org

National Cancer Institute

cancer.gov/types/childhood-cancers

Camp Information

Camp Sunshine

mycampsunshine.com

Crohn's Disease and Ulcerative Colitis

Crohn's disease and ulcerative colitis (UC) are the primary sub-types of the group of diseases called inflammatory bowel disease (IBD). The underlying cause(s) of IBD is not known. However, researchers believe that Crohn's and UC may be the result of an inappropriate and "over" active immune system in the affected patient. The overactive immune system attacks itself, particularly the intestines, but also other organ systems. This type of inappropriate immune system in which the body's immune cells attacks itself is called "auto" immunity or an auto-immune disease. Many people with IBD also have inflammatory arthritis, liver disease, eye involvement and skin rashes.

At present, research indicates that IBD, including both Crohn's and UC, are the result of an environmental trigger(s) in the genetically susceptible host. The specific environmental triggers are not yet known, but compelling research indicates that microbes may be the underlying catalyst. Whether diet or other environmental exposures also play a role in triggering the disease is not clear. It is also important to note that IBD (Crohn's or UC) is not an infectious disease. A child without the condition cannot "catch" IBD from an affected friend or classmate. In addition, exciting research over the past decade into the genetics of IBD has identified a number of candidate genes which may influence disease development.

Crohn's disease is a chronic condition in which the entire wall of the gastrointestinal tract can become irritated, inflamed and swollen. Unlike UC, Crohn's disease may occur in any section of the GI tract from mouth to anus. The most common area of the GI tract that is affected by Crohn's disease is the end part of the small bowel, called the ileum. When a part of bowel is inflamed, the term "-itis" is attached to the area involved. Hence, Crohn's disease is referred to as "ileitis" when it involves the ileum; "colitis" when the colon is involved; and "ileocolitis" when both regions are involved. In Crohn's disease, all layers of the intestine may be involved. When the entire bowel wall becomes involved, some patients can develop scarring and narrowed areas—called strictures—and other patients can actually develop holes or connections from one piece of bowel to the other or one piece of bowel to the skin, muscle or other organ systems, and these connections are called fistulae. In addition, Crohn's disease is not continuous through the bowel—normal healthy bowel can exist between patches of diseased bowel, and these are called skip lesions.

UC causes inflammation in the large intestine primarily. Other areas of the GI tract are generally not involved. In addition, UC affects only the superficial layers (lining of the mucosa) of the colon. UC tends to affect the person's colon in a more even and continuous distribution. UC generally progresses proximally—involves bowel from the very end of the colon, at the level of the anus and moves back towards the beginning of the large bowel, the cecum.

Both Crohn's disease and UC can involve other organ systems in varying percentages. These other organ systems involved in IBD are called extra-intestinal manifestations. Common extra-intestinal sites are the liver, a condition called sclerosing cholangitis; the joints—where involvement can range from arthralgias or simple pain on moving to frank arthritis – where the joint is swollen, painful, hot and tender to touch; and eyes—iritis, uveitis. Interestingly, extra-intestinal manifestations of IBD can actually precede the involvement of the gastrointestinal tract by weeks, months to years. Treatment of the extra-intestinal manifestations requires treatment of the underlying IBD whether Crohn's or ulcerative colitis.

The symptoms of Crohn's disease and ulcerative colitis can be very similar and distinct. The differentiation between the two types of IBD however cannot be made by symptoms alone. The symptoms generally reflect the area of the bowel involved. For example, in Crohn's disease if the upper GI tract is involved, symptoms such as nausea, vomiting, loss of appetite, heart burn and early satiety can be observed. If the lower GI tract is involved, the most common symptoms are abdominal pain; diarrhea, which is quite frequently mucus-like and bloody; urgency to have a bowel movement; feeling of not having evacuated the bowel movement after going (called tenesmus); frequent stools which often occur at night time; and fever. When there is a need to use the toilet, cramps can become severe and the urgency may be so great as to result in incontinence if there is any delay in reaching the bathroom. In addition, loss of appetite and weight loss may occur. During periods of active symptoms, the child may also experience fatigue, joint pains and skin problems. Children often become delayed in their progression into or through puberty and can have overall growth delay.

It is estimated that 1-2 million Americans have IBD, either Crohn's or UC. Crohn's occurs more commonly than UC with about two persons out of every three new cases of IBD being diagnosed with Crohn's disease. Moreover, children are being affected by IBD at younger and younger ages. Now a great number of cases of IBD are reported to have been diagnosed below two years of age, with some children even being diagnosed before their first birthday. However, IBD may occur in children of any age with an increased number of new cases being diagnosed in pre-adolescence and teenagers. An estimated 30 percent of IBD cases are diagnosed in children, i.e., before the patient's 18th birthday. Another 15-20 percent of adults diagnosed with IBD had symptom onset well before 21 years of age. Males and females appear to be affected equally. Studies have shown that about 20 to 25 percent of patients have a close relative with either Crohn's or UC.

Diagnosis and Treatment

The diagnosis of IBD, either Crohn's or UC, involves a thorough evaluation by the pediatrician and the pediatric gastroenterologist. At present, unfortunately, not one single diagnostic test can be performed to tell the physician and the patient/parents that a particular individual has IBD. Instead, the definitive diagnosis is made by a combination of the following: thorough history, including family history, and physical examination, blood tests (CBC with differential, C-reactive protein, sedimentation rate (ESR), comprehensive metabolic panel, and "IBD serologies"), X-ray studies (upper gastrointestinal series with barium) and endoscopy (both upper and lower) with biopsies of the gastrointestinal tract lining. The physician after putting together all of the information obtained from the evaluation then can make the diagnosis of IBD.

Crohn's disease and UC are lifelong illnesses. Medications are given to alleviate the discomfort, "quiet" and resolve the inflammation, facilitate growth, and improve quality of life by helping the patient's disease into remission—but do not cure the disease. Once symptoms are controlled, maintenance medical therapy is used to decrease the frequency of flare-ups and to maintain remission.

Several groups or classes of drugs are used to treat IBD. At present, physicians tend to use what is called the "step up" approach with medical therapy. This treatment approach uses medications with increasing potency in their immunosuppression effects with the least powerful drugs, often the more generalized in their treatment effects, utilized first. The medications used are in the following categories:

- **Aminosalicylates (5-ASA agents)** – aspirin-like drugs, which include sulfasalazine and mesalamine, given both orally and rectally. Some of these agents have more efficacy in the colon; some have both small and large bowel effects. These medications are typically used to treat mild to moderate symptoms.
- **Corticosteroid** – prednisone and methylprednisolone, and budesinide, available orally and rectally. Corticosteroids nonspecifically suppress the immune system and are used to treat moderate to severe active systems. Often steroids are used to treat acute inflammation or "flares," or they may be used as "bridge therapy" until other immunomodulators have time to work. These drugs have significant short- and long-term side effects and should not be used as maintenance medications. More recently, budesinide has been shown to be efficacious for maintenance of disease remission in more steroid refractory patients with less overall side effects observed.
- **Immune modifiers or immunomodulators** – azathioprine, (Imuran®), 6-MP (Purinethol®), methotrexate. Immune modifiers are used to help decrease corticosteroid dosage and can facilitate achieving remission in patients, particularly those with Crohn's disease; and can heal fistulas. In addition, the immune modulators have been very successful in maintenance of disease remission.
- **Biologics** – infliximab (Remicade®), natalizumab (Humira®). These agents given by intravenous infusion are medications targeted at a specific component of the inflammatory cascade which happens once Crohn's or UC is active. These drugs have been highly successful in quieting very active, refractory disease, achieving remission and maintaining a patient in remission.
- **Antibiotics** – metronidazole, ampicillin, ciprofloxacin and others. As mentioned above, microbial organisms have been felt to act as a trigger in the development and propagation of IBD. Research has shown in some patients that antibiotics, either as a part of the overall therapeutic regimen or alone, have been helpful in achieving some disease resolution and in the maintenance of remission.

Finally, surgery becomes necessary when medications can no longer control the symptoms, or complications of the disease occur e.g., when an intestinal obstruction, unresolved fistulae or other complication such as an intestinal abscess develop. At times, surgery can be used in the Crohn's patient with limited disease to help achieve even years of remission on no medication and help the patient through adolescence and puberty. Surgery for the patient with UC can be curative and is done in stages where the entire colon is first removed and an ostomy is created. At some point, depending on the surgeon, the bowel is reconnected (i.e., staging operation over 3-6 months), and these patients once connected can have bowel movements in a regular fashion.

Management at School

Being aware of IBD, the symptoms, signs and complications, the medications used and the potential recurrences and flares is critical for the education system to help these patients maintain as normal and high quality of life as possible. Children with IBD must be able to leave the classroom quickly while attracting minimal attention when attacks of pain and diarrhea occur suddenly and without warning. Questions should be avoided about the need to use the toilet especially in front of classmates, which will only cause further embarrassment and shame. Even a short delay may cause a humiliating accident. Any accommodation a school can provide to reduce anxiety in finding a toilet quickly for the child can be a great help. Providing a private bathroom in the nurse's or faculty's area is often beneficial.

Feeling different from everybody else is a major concern for the child with IBD. Children must deal with attacks of abdominal pain and diarrhea. They may be unable to eat, because eating causes even more pain and diarrhea. Poor dietary intake can often slow growth, making an affected child look younger and smaller than their classmates. These problems can cause a child to withdraw, causing depression and anger.

Drug treatment, such as use of cortisone-type drugs, can cause problems due to the side effects as well. These medications can cause the child to gain weight, to develop a rounded puffy face (moon face), to have an increase in acne, and to become moody and restless. These changes can isolate the child even further from classmates. Excessive intake of salty and high-caloric foods should be avoided in order to minimize the disfiguring effects of cortisone-type drugs. Children with IBD often need to take medication during the school day to help control their diarrhea, pain and other symptoms. Arrangements should be made to dispense the drugs in a timely manner so the affected child will not be late for class and stand out as being different.

It should be noted that children with IBD may appear to be well superficially, but may actually be quite ill. Many may require hospitalization from time to time, sometimes for several weeks. Surgery may be necessary to remove diseased intestines or to alleviate a particular complication. School nurses and teachers can help the child keep in touch with classmates and keep up with their schoolwork.

Children can participate in sports whenever their illness allows. A child may require a modified PE program, so that he or she can maintain at least some physical activity and not become inactive.

Educational Considerations

- Develop an IHP/504/IEP.
- Educate staff and peers.
- Promote good communication with parents, healthcare providers and school.
- Provide easy access to bathroom with privacy.
- Provide any needed accommodations in physical education and school schedules.
- Provide for proper administration of medications.
- Help child maintain individualized dietary needs.
- Support educational and emotional needs during absences and hospitalizations.

Resources

A Guide for Teachers and Other School Personnel – Crohn’s and Colitis Foundation of America
crohnscolitisfoundation.org/sites/default/files/legacy/assets/pdfs/teachersguide.pdf

Children’s Digestive Health and Nutrition Foundation
cdhnf.org

Colostomy: A Guide – American Cancer Society
cancer.org/acs/groups/cid/documents/webcontent/002823-pdf.pdf

Crohn’s and Colitis Foundation of America
ccfa.org

Crohn’s Disease – HealingWell.com
healingwell.com/ibd

North American Society for Pediatric Gastroenterology, Hepatology and Nutrition
naspghan.org

IBD U – A Site for Older Teens Transitioning into College
ibdu.org

Camp Information

Camp Oasis
ccfa.org/get-involved/camp-oasis

Cystic Fibrosis

Cystic fibrosis is a chronic, congenital genetic disease. It causes a widespread change in the mucus-secreting glands of the body. These include the pancreas, lungs, salivary and sweat glands. Symptoms of the disease include respiratory difficulties and problems maintaining adequate nutritional status due to the production of abnormally thick mucus by these organs. This mucus can clog bronchial passages and block ducts that deliver pancreatic enzymes needed in the intestines for digestion.

Treatment

Treatment involves maintenance of good nutrition and prevention of infection. High caloric, high protein foods are essential because a child with cystic fibrosis can lose up to 50 percent of all calories through bowel movements. Prevention of upper respiratory infections is imperative, and school personnel should notify a parent if the student has been exposed to an infectious disease. A child with cystic fibrosis requires the following to reach and maintain optimal health:

- Good hygiene practices geared toward prevention of infection
- Well-balanced, high caloric diet, tailored to meet special needs
- Pancreatic enzymes before meals or snacks, if needed
- Adequate rest
- Regular medical checkups.

Limitations: If all of the above needs are met, this child can usually participate in regular activities. In some cases, lack of stamina may restrict playground and PE activities. Make attempts to include the child in group activities to prevent feelings of being different or "left out" because of potential limitations caused by the condition.

Management at School

It is important to recognize the first sign of an impending infection. Such signs may be:

- Listlessness or fatigue
- Fever
- Loss of appetite or weight
- Cough with more mucus production
- Shortness of breath
- Pallor.

Parents should be notified immediately if any of these symptoms arise. Before any medications are administered, be certain that you have on file the required authorization medication form with parent and/or legal guardian signature. Be sure to document information concerning precipitating factors and/or complications, medications administered and reaction, on the clinic card and medication record.

Educational Considerations

- Train necessary school staff in proper medication administration, including medications commonly used for asthma.
- Develop an IHP/504/IEP, including emergency plan.
- Promote good communication with parents, hospital, home and school.
- Adapt physical education activities as needed.

- Recognize the need for privacy and encourage “good coughing,” as students often suppress cough for better peer acceptance.
- Recognize the need for extra hydration, frequent bathroom breaks.
- Educate staff and peers, per family’s request.
- Support educational needs during hospitalizations, and/or absences.

Resources

CF Living

cfliving.com

Cystic Fibrosis, Children’s Healthcare of Atlanta

choa.org/medical-services/cystic-fibrosis

Cystic Fibrosis Foundation (click on “Living with Cystic Fibrosis” then click on “At School”)

cff.org

Cystic Fibrosis Worldwide (worldwide information)

cfww.org

Diabetes Type 1 and Type 2

Approximately 23.2 million Americans have diabetes—a condition in which the body is unable to use food properly. When food is digested, it breaks down into a sugar called glucose. Glucose is absorbed into the blood and is carried by the bloodstream to body cells, where it will be used for energy. Glucose requires the assistance of a hormone called “insulin” to enter into the cell. The pancreas, a gland behind the stomach, produces insulin. The production or utilization of insulin is decreased or absent in diabetes. Without sufficient insulin, the body cannot use glucose for energy, and high blood sugars (hyperglycemia) result.

Currently, diabetes cannot be cured, but it can be managed. The goals of diabetes self-management include promoting normal growth and development, maintaining overall health and emotional well-being, and normalizing blood sugar levels.

Two main types of Diabetes

Type 1 Diabetes (insulin dependent)

The pancreas stops producing insulin. Type 1 diabetes requires daily insulin injections for survival. Although type 1 diabetes typically starts in children or young adults (previously known as juvenile-onset diabetes), it can occur at any age.

The cause of type 1 diabetes is not known, but research indicates it may involve a disorder in the functioning of the body's immune system. The immune system protects the body against disease. When this system malfunctions, the body can destroy one of its own parts. This is called an autoimmune response. In type 1 diabetes, the body destroys its own insulin-producing beta cells. Genetics and the environment may also play a part. At this point, type 1 diabetes cannot be prevented and onset is not related to poor diet.

Type 2 Diabetes

In type 2 diabetes, the pancreas still makes insulin, but the body does not use the insulin normally (insulin resistance). This type of diabetes typically develops in adults over 40 years of age, but there is an increasing incidence of newly diagnosed type 2 diabetes in youth in the United States.

Students at greatest risk for developing type 2 diabetes have one or more of these factors:

- Obesity
- Physical inactivity
- Family history of type 2 diabetes
- Exposure to diabetes in utero
- Non-European origin (Hispanic, African-American, Native American)
- Signs of insulin resistance called acanthosis nigricans (dark, velvety patches on the skin around the neck or armpits)

Obesity is a growing epidemic in the school-age population and should be addressed as a public health issue by healthcare providers and school health personnel. “Teaching a healthy lifestyle—one that includes good nutrition and physical activity—can reduce the risk of type 2 diabetes more effectively than medication designed to decrease the risk of diabetes.” (from Health in Action: Diabetes and the School Community, a 2002 publication of the American School Health Association)

Schools can focus on:

- Supporting increased physical activity in the school setting and promoting activities which can be maintained throughout the lifespan by individuals.
- Offering healthy food choices in school for breakfast, lunch and vending machines, especially removing sugared soft drinks, sports drinks or vitamin waters with sugar, and containers of juice more than 4-6 ounces.
- Reducing school-based social stigma associated with weight issues.
- Offering health education on health risks associated with obesity and inactivity.
- Encouraging students and families to turn off TV, video and computer games to allow more time for an active lifestyle.
- Offering counseling as needed to address the impact of negative body image, social development and personal health challenges.

Symptoms of Hyperglycemia (High Blood Sugar)

- **Frequent Urination**

Decreased insulin production causes the blood sugar (glucose) level to rise (hyperglycemia) and spill into the urine. The glucose pulls body fluid along with it into the urine, resulting in the formation of large volumes of urine and frequent trips to the bathroom. This is the body's way of attempting to remove excess sugar.

- **Excessive Thirst**

Due to the body fluid loss caused by frequent urination, the body becomes dehydrated. The brain signals its thirst center for additional fluid.

- **Increased Hunger**

Since the body is unable to utilize the glucose circulating in the blood for energy, the brain sends out a signal for more food.

- **Weight Loss**

The body, unable to use blood sugar for energy, utilizes stored body fat and muscle, which decreases body weight. As the body uses fat, ketones (a waste product of fat utilization) accumulate in the blood and urine. Ketones cause diabetic ketoacidosis (DKA) a serious condition, which can be life-threatening.

- **Fatigue**

The pancreas does not produce enough insulin to allow glucose to be used for energy.

- **Blurry Vision**

- **Dry Skin**

- **Slow Wound Healing**

Managing Diabetes at School

A written Diabetes Management Plan should be provided by the parent and child's healthcare provider for each individual child. It should be reviewed at least quarterly. The Diabetes Medical Management Plan (DMMP) is valid for one year. The diabetes management components outlined here are guidelines only.

It is important to allow the student with diabetes to participate fully in all school and extracurricular activities. Treatment for students diagnosed with type 1 diabetes is primarily insulin. They will need regular monitoring of blood sugar levels, as well as ketone testing when necessary. The only restrictions to diet are usually no sugared drinks or fruit juices, unless treating a low blood sugar. See Diabetes Management Plan for specifics.

Treatment of students diagnosed with type 2 diabetes includes regular monitoring of blood sugar levels, eating reasonably and on schedule, exercising regularly, ketone testing and adjusting diabetes medication as needed. Students can be treated with behavioral lifestyle changes, but they often need oral medications and occasionally insulin.

Students with type 2 diabetes are often on a "fixed carb" diet, where the grams of carbohydrates per meal are specified. They may also have other restrictions for fat or sodium. See Diabetes Management Plan for specifics.

In summary, the management components of type 1 and type 2 diabetes are:

- **Blood sugar testing**

Before meals, before and after physical activity, whenever symptoms of high or low blood sugar levels are noted, student is “not acting right” or feels ill. A student will also need to check blood sugar levels before and after PE until a pattern in how their body responds and a plan for adjusting their regimen can be established. This will need to be done in collaboration with their endocrinologist.

- **Insulin administration**

Typically given with meals, and sometimes with snacks. Given according to the Diabetes Management Plan

- **Oral diabetes medications**

According to the Diabetes Management Plan (type 2)

- **Regularly scheduled meals and snacks**

Depending on the types of insulin the student uses, the schedule may or may not be flexible. Allow AT LEAST 2 hours in between a rapid-acting insulin dose and the next blood glucose test. Due to the action time of insulin, there must be enough time for injection to take full effect. Follow the Diabetes Management Plan for specific instructions on correcting blood glucose.

- **Ketone testing**

When blood sugar level is over 300 (when on injections) or over 250 (when on insulin pump) or student is ill (vomiting, diarrhea, fever, infection).

- **Identifying and quick response to low blood sugar levels**

All school personnel that come in contact with a student who has diabetes need to know signs and symptoms of hypoglycemia and what actions to take.

Nutrition Management

A diet with a variety of nutrient rich foods is recommended for children with diabetes and their families. Following the USDA Dietary Guidelines, below, is one way to meet nutrient needs:

- Make half the plate fruits and vegetables
- Enjoy food, but eat less
- Drink water instead of sugary drinks
- Make at least half of grains whole grains
- Avoid oversized portions
- Compare sodium in foods and choose foods with lower sodium
- Switch to fat-free or low fat (1%) milk
- Limit solid fats such as butter, margarine, shortening and lard, as well as foods that contain solid fats
- Eat a variety of proteins, including seafood, lean meats such as poultry, eggs, legumes, nuts and seeds
- Find a balance between food and physical activity to maintain a healthy weight

Balancing children's plates will help them receive the nutrients they need for growth and maintaining optimal blood sugar levels: $\frac{1}{4}$ with starch or grain; $\frac{1}{4}$ with lean meat, poultry or fish; $\frac{1}{4}$ with non-starchy vegetables or salad; $\frac{1}{4}$ with fruit. These nutrients are carbohydrates, protein, fats, vitamins, minerals and fiber. Three of these nutrients, carbohydrates, proteins and fats, have the greatest impact on blood sugars.

Carbohydrate foods, such as grains, pasta, bread, cereal, starchy vegetables (like potatoes, beans, corn, peas and butternut and acorn squash), fruit, milk, yogurt, snack foods, desserts and sweets raise blood sugar levels, so the child needs to pay attention to how much of these foods they eat. However, carbohydrates also provide energy needed to grow and to do everyday activities, so it is important for children with diabetes to eat foods that contain carbohydrates.

Protein is found in meats, cheese, fish, poultry, eggs and nuts. Protein helps grow and repair body tissue such as muscle and bones, but it does not affect blood sugar levels. Many foods high in protein are also high in fat.

Fats are foods such as margarine, butter, oils, salad dressings, nuts, cheese and meat. Fat does not affect blood sugar levels, but that does not mean a child can eat all they want. Too much fat can cause weight gain and other problems like elevated cholesterol. The healthiest fats are monounsaturated or polyunsaturated fats that protect the heart. Some examples of monounsaturated fats include: canola and olive oils, nuts, avocado and seeds. Examples of polyunsaturated fats include: corn oil, soybean oil and sunflower oils, as well as Omega-3 (fish) oils.

Since carbohydrates affect (raise) blood sugar levels, accurately estimating how much a student eats is a required skill of nurses.

There are two ways to count carbohydrates:

1. Carbohydrate Serving List
2. Reading Food Labels

Carbohydrate Serving List

The school nutrition director or coordinator can provide the school nurse with the nutrition information including the grams of carbohydrates in the individual foods served at their cafeteria.

EXAMPLE OF A CARBOHYDRATE SERVING LIST

Food	kcal	Protein	*CHO	Fat
4 oz. orange juice, Ocean Spray	60	0	15	0
1 sandwich bun, Flowers Foods	120	5	24	1.5
1 slice white bread, Sunbeam	55	2	11	1
Baked french fries, 10 pieces	100	1.5	17	3
1 medium fresh apple	72	0.4	19	0
1 medium fresh orange	62	1	15	0.16
8 oz. 2% milk	130	8	12	5

*CHO = carbohydrates

EXAMPLE OF A SAMPLE SCHOOL LUNCH AND AN ESTIMATE OF THE GRAMS OF CARBOHYDRATES

Food	Grams of carbohydrate
One medium apple	19 grams
Hamburger on bun	24 grams
Lettuce and tomato	do not count-negligible carbohydrate
Baked fries (serving of 10 shoestring fries)	17 grams
Milk, 2%, 1 carton	12 grams
Total CHO	72 grams

Reading Food Labels

Food labels found on containers give the carbohydrate content information listed under the Nutrition Facts. So if a nutrition analysis is not available, but a food label is, the nurse can refer to it.

There are three steps to reading the "Nutrition Facts" on a food label:

1. Determine the serving size of the product.
2. Find the servings per container.
3. Look at the total grams of carbohydrate (in one serving).

Nutrition Facts	
Serving Size 1 Cup (228g)	
Servings per Container 2	
Amount per Serving	
Calories 260	Calories from Fat 120
	% Daily Value
Total Fat 13g	20%
Saturated Fat 5g	25%
Cholesterol 30 mg	10%
Sodium 660 mg	28%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugar 5g	
Protein 5g	

◀ this serving size is 1 cup

◀ there are 2 servings per container

◀ there are 31 grams carbohydrate for 1 cup

The above food label shows that one cup is the serving size and there are 31 grams of total carbohydrate in that amount. If the child chose to eat the entire container (2 servings), the student would have eaten two cups and 62 grams of carbohydrates.

A child's appetite and intake may vary greatly depending on his or her activity level. Therefore, the daily carbohydrate intake can vary as well. School-age children should use their dietitian/healthcare provider's recommended range for grams of carbohydrate per meal. This will allow adequate growth and development.

Other resources for carbohydrate counting include:

Diabetic Exchange List for Meal Planning
mayoclinic.com/health/diabetes-diet/DA00077

CalorieKing
calorieking.com

Nutri-Café
nutri-cafe.com

"The CalorieKing Calorie, Fat & Carbohydrate Counter 2018" Allan Borushek. Hudsonville, Mich: Family Health Publications, 2011.
calorieking.com/products/books/

USDA Nutrient Database Web site
ndb.nal.usda.gov

Blood sugar level monitoring

• Target blood sugar levels

Although it differs among individuals, a general blood sugar target range is (as recommended by the American Diabetes Association) 90-130 before meals and 90-150 before bed (may be higher for younger children). Healthcare providers set target ranges. When the blood sugar level is over 180, glucose begins to spill into the urine. When the blood sugar level is greater than 300 or during illness, ketones can accumulate in the blood and urine.

• Procedure

Testing the blood sugar level provides information needed to continually adjust the management program and prevent complications. Testing is done by obtaining a blood sample by performing a finger stick. A drop of blood is placed on a test strip and read by the blood sugar monitor. Blood sugar monitors and strips require a quality control system to ensure accuracy. For some meters, it is necessary to test the first strip from each strip container using a control solution. Some monitors also require coding of the monitor with each new vial of strips. Parents are responsible for teaching school personnel the method of quality control. It is also the responsibility of the parent to provide all equipment and supplies.

• When to test

Testing is usually done before meals, whenever symptoms of hypoglycemia or hyperglycemia occur, and as directed by the physician and/or parent. When children have symptoms of high or low blood sugar, they should always have an adult accompany them to the health clinic who can call for help in case they become sick on the way. It is recommended that monitoring and treatment be completed with as little loss of class time as possible. Treatment of a low blood sugar level requires supervision for all children. Results can be sent home or called to the parent daily or before follow-up appointments are scheduled.

Note: Wherever glucose monitoring or insulin administration is done, there should be provision for disposal of the sharps in an appropriate container.

To minimize learning disruption, blood sugar checks should be allowed in the classroom for students who can demonstrate the ability to check independently. Students who demonstrate accurate technique, appropriate infection control, disposal of sharps, and ability to interpret results and seek appropriate treatment can be considered for self-testing without constant supervision.

To facilitate this, a meeting with the family, classroom teacher, principal and clinic personnel should be held. A letter from the student's physician requesting that this procedure be done in the classroom may be presented at this meeting. It is a good idea for parents to demonstrate monitoring with their child for school personnel. This helps school personnel observe the child's reaction and ability. Most students will need some supervision to ensure upkeep of adequate supplies and compliance with their diabetes management. The pre-lunch blood sugar may be done in the school clinic to facilitate correct lunchtime insulin dose if the child is receiving insulin for carbs eaten and/or for correcting elevated blood sugar levels.

Ketone Monitoring

Urine or blood ketones are usually monitored any time the blood sugar level is over 300 (over 250 on an insulin pump) or when a child with diabetes is sick. Testing is done by obtaining a urine sample and using a test strip visually matched with a color guide. In addition to urine samples, there are blood sugar monitors that can test for blood ketones.

Parents need to review the procedure with school personnel and provide the needed supplies:

- When the blood sugar level is over 300 (over 250 on an insulin pump) or the student is sick, they will need access to water and sugar free fluids.
- Students with trace or small ketones should be allowed to stay in class.
- Ketone testing should be repeated in three to four hours.
- Moderate to large ketones results should be called immediately to parents first and doctor if parents cannot be reached.
- If ketones are positive, the student should not participate in PE or other physical activity.

Exercise

Regular exercise is important but it increases the risk of hypoglycemia for students taking insulin. Children will need to check their blood sugar levels and may need a carbohydrate snack before and/or after exercising. Refer to student's health care plan for specifics on blood sugar testing and snacks with exercise.

Insulin

There are four types of insulin:

1. Rapid acting insulin (Humalog®, Novolog®, Apidra®, Admelog®, Fiasp®)

- Used to help move glucose into the cells after eating
- Used to fix high blood sugars
- Usually given with meals; optimal to give before, but may give after meal for young children or picky eaters

2. Short acting insulin (Regular)

- Used to help move glucose into the cells after eating
- Used to fix a high blood sugar
- Less expensive alternative to rapid acting insulins
- Usually taken 30 minutes prior to meals

3. Intermediate acting insulin (NPH, 70/30, 75/25)

- Usually taken twice a day, at breakfast and dinner
- A "cloudy" insulin that can be mixed with a clear fast-acting insulin
- Because the peak action is delayed, regular timing of meals and snacks is important when using intermediate acting insulin.
- Usually used in combination with a rapid acting insulin

NOTE: Intermediate acting insulins also require a consistent amount of carbohydrates be eaten at meals and snacks. Students on this insulin regimen may not "skip" lunch, or they will be at risk for severe low blood sugar levels. They may only need rapid acting insulin to correct a high blood sugar level at lunch. If blood sugar level is in range, the student will not need an insulin injection with lunch.

4. Long acting insulin (Lantus®, Levemir®, Basaglar®, Toujeo®, Tresiba®)

- Is usually given once a day
- Is considered a "peakless" insulin
- Cannot be mixed in a syringe with other insulins

Type of insulin (Brand Names)	When it starts working	When it works the hardest	How long it lasts	When to take it
Rapid-acting				
Humalog Novolog Apidra Admelog Fiasp	5 - 15 minutes	1 to 2 hours	2 to 5 hours	Right before eating For young or picky eaters, give within 30 minutes of first bite.
Short-acting				
Regular	30 to 60 minutes	2 to 4 hours	6 to 8 hours	30 minutes before eating
Intermediate-acting				
NPH	1 to 2 hours	4 to 8 hours	10 to 20 hours	Varies. Take it at the same time each day.
Long-acting				
Lantus, Levemir and Basaglar	1 to 2 hours	No peak	Up to 24 hours	Varies. Take it at the same time each day.
Toujeo	6 hours	No peak	24+ hours (Steady state is reached at > 5 days)	Varies. Take it at the same time each day.
Tresiba	1 to 3 hours	No peak	24 + hours	Varies. Take it at the same time each day.
Mixed insulin (intermediate- and rapid- acting)				
Novolog 70/30 Humalog 75/25	5 to 15 minutes	1 to 6 hours	10 to 20 hours	Right before eating. Take it at the same time each day.

Note: Different types of insulin have different peak action times which may dictate timing of insulin and meals. It is ideal to give rapid acting insulin right before meals so that its action is peaking simultaneously with food digestion.

Insulin administration

Insulin is usually given in two to six injections per day, prior to breakfast, lunch, dinner, snacks and sometimes bedtime. At times, insulin may not be required prior to lunch and snacks. Refer to student's Diabetes Management Plan for specific instructions on insulin administration.

Insulin may be given with a pre loaded insulin pen, with the dose "dialed" in, or with a regular syringe. Insulin may also be administered continuously by the use of a battery-operated portable infusion pump. See Medication Administration, Chapter 3.

Insulin storage and expiration

After opening, insulin generally may be stored 30 days at room temperature, or under refrigeration. Label insulin vials with the date it will expire. Expiration dates need to be checked regularly. If allowed to reach 85 degrees or higher, insulin should be considered as spoiled and replaced. Also be aware that insulin should not freeze.

Insulin dosing

Dosing insulin is different for each student. Based on the type of insulin that is prescribed, students will have different dosing schedules. The students' diet is determined by their insulin regimen. Some students may have a set or "fixed" number of carbohydrates allowed for each meal, and others may have a flexible number of carbohydrates allowed at meals.

For instance, a student using intermediate and rapid acting insulins, will take intermediate acting insulin at breakfast and dinner that will provide coverage for the food that is eaten at meals and snacks. These students are usually on a “fixed” carbohydrate diet, meaning they should only eat the number of carbohydrates at meals and snacks that is in their carbohydrate range (for example: 60-75 grams of carbohydrates at lunch). These students will also require rapid-acting insulin for correcting a high blood sugar level at meals.

A student using rapid and long acting insulins will take rapid acting insulin at each meal based on the number of carbohydrates eaten (flexible) and for correcting a high blood sugar level. These students do not have a limit on the number of carbohydrates allowed because they take insulin based on advanced carbohydrate counting. Typically, it is not recommended to correct the blood glucose more often than every 2-4 hours, due to insulin action time. Follow specific dosing instructions for correction of hyperglycemia.

Students will require insulin at meals and snacks as directed by the Diabetes Management Plan. Typically only carbohydrate coverage may be needed at snack time (no correction.) Follow the Diabetes Management Plan.

Insulin for food

Advanced carbohydrate counting is a method used to dose rapid acting insulin based on the amount of carbohydrates eaten at a meal or snack. Students that require advanced carbohydrate counting methods are those that are on a pump (it uses rapid acting insulin) and those that take both rapid and long acting insulins. Students that take intermediate acting insulin do not require advanced carbohydrate counting insulin dosing. If short acting insulin is prescribed, see Diabetes Management Plan in regards to advanced carbohydrate counting.

First, the student/nurse will determine what food items will be eaten and what the carbohydrate content of each food is by referring to the school cafeteria nutrition analysis or food labels. Once the “total carbohydrates” in the meal or snack have been determined, the nurse will divide this total by the insulin-to-carbohydrate ratio prescribed by the physician. For example, a ratio of 1:15 means for every 15 grams of carbohydrates eaten, the student will receive 1 unit of rapid acting insulin.

Example:

1 wheat bagel =	38 grams
2 tbsp. cream cheese =	0 grams
Crystal Light =	0 grams
4 oz. apple =	15 grams

Total carbs (grams) =	53 grams

Insulin: Carbohydrate ratio = 1:15 (1 unit per 15 grams carbohydrates)

If your meal has 53 grams of carbohydrates, then $53 \div 15 = 3.5$ units of rapid acting insulin such as Humalog® or Novolog® (doctors usually advise to round up dosages that end in a 0.5 decimal point or higher, upward to the nearest whole). Younger or smaller children may dose to the nearest half unit of insulin. Please see specific dosing information in the Diabetes Management Plan.

Insulin for high blood sugar levels

THE CORRECTION FORMULA

A doctor monitoring a diabetes patient will prescribe a number called the "correction factor" to correct a high blood sugar. It is usually a number such as 20, 25, 30, 50 or 100. When using the correction formula, the student and nurse will subtract a target blood sugar (assigned by the doctor, usually 100) from their current blood sugar level. Then the difference is divided by the correction factor assigned to them.

For example, if the student's pre-meal blood sugar level is 200 and their correction factor is 20, he would take five units of insulin (in addition to the insulin for the carbohydrates eaten if practicing advanced carbohydrate counting) to bring his blood sugar level back down to his target:

Student's Blood Sugar Level – Target Blood Sugar	<u>200 – 100</u>	<u>100</u>	= 5 units of correction insulin
Correction Factor	20	20	

THE SLIDING SCALE FORMULA

Some physicians prefer to prescribe this method to manage a student's high blood sugar level instead of using a correction factor. The sliding scale formula is based on blood sugar ranges.

If your blood sugar level is between:	You will take this many units:
200 – 299	4 units
300 – 399	6 units
Over 400	8 units

For example, if your blood sugar level is 200, you would take four units of rapid acting insulin.

For students that require advanced carbohydrate counting, insulin for high blood sugar levels is given in addition to the required units needed for the total carbohydrates at meals. Corrections to high blood sugar levels should be performed no more than every four hours unless otherwise directed in the Diabetes Management Plan.

Note: Student may still have a snack within the 4 hour time period, but may need insulin to cover carbohydrates at that time. Before any medications are administered, be certain that the required **Medication Authorization Form** with required signature is on file stating the type of medication, dosage and time it is to be given (according to school policy). Be sure to document on the clinic record and student medication record, information concerning precipitating factors and/or complications, medications administered and reaction.

Insulin pumps in a school setting

Continuous Subcutaneous Insulin Infusion (CSII) also known as Insulin Pump Therapy is an alternative method of insulin delivery. The goal of insulin pump therapy is to mimic what normally happens physiologically in the body. The pump, a microcomputer, is about the size and weight of a pager and uses batteries. It is worn outside the body. It holds a reservoir of insulin inside the pump and is programmed to deliver the insulin through a small plastic catheter or cannula. The cannula is inserted into the subcutaneous fat and stays in place for two to three days.

How the pump works

The pump uses only rapid acting insulin. Insulin pumps combine a continuous basal rate of insulin with insulin boluses given at meals, snacks and at times of increased blood sugar levels.

Basal insulin – Basal insulin is a continual dose of insulin that the body requires. The basal rate is given 24 hours a day and is programmed as units per hour. Basal rates are programmed by the child's doctor, parent or even the student himself depending on his age. The basal rate also can be changed temporarily for alterations in schedule, activity, illness or food.

Bolus Insulin – The pancreas releases insulin when higher blood sugar levels are sensed such as after meals or during times of illness. An insulin pump mimics this release when the user programs a bolus dose at meals, snacks or other times that insulin may be needed. Each child wearing an insulin pump should have a plan that determines how much insulin he should take for the amount of food that is being eaten, high blood sugar and planning for exercise. Most pumps, now called "smart pumps," allow the insulin to carbohydrate ratios and correction formulas to be pre-programmed into them.

Teenagers using an insulin pump should be well educated in its use and about diabetes. Younger children with a pump will require more assistance.

Troubleshooting the insulin pump

The following companies make or sell insulin pumps in the United States:

- Medtronic MiniMed® 1-800-646-4633
- OmniPod® (Insulet) 1-800-591-3455
- Tandem Diabetes 1-877-801-6901

The following companies no longer make pumps, but school personnel may still come into contact with students who wear them.

- Roche ACCU-CHEK® Spirit (formerly Disetronic) 1-800-688-4578
- Animas Corporation 1-877-937-7867

The child's parents should instruct the school staff on programming the pump and what to do if any alarms should occur. If the parent cannot be reached at the time a problem arises or a trained staff member is not available, school staff can call the 800 number on the back of the pump designated as the "24-Hour Pump HelpLine." This number directs the caller to trained professionals who can answer any questions about the pump. A student can rapidly deteriorate if a pump malfunctions. There should be no delay in dealing with this situation.

Every student wearing an insulin pump at school should have a supplement to their Diabetes Management Plan that addresses the management of the Insulin Pump (see Diabetes Management Plan at the end of this section).

Continuous Glucose Monitoring

What is a continuous glucose monitor (CGM)?

A continuous glucose monitor (CGM) is a device that measures blood sugar levels every few minutes. Like a fingerstick, a CGM can give a single reading, but it can also give details about the direction a student's blood sugar is heading. Knowing when the

blood sugar is rising, falling or staying steady can be valuable information for students and school nurses. Low and high blood sugar alerts can be customized and programmed with the help of the student's diabetes provider. Sensors have an approved wear time from 7-10 days depending on the brand.

Refer to the student's Diabetes Management Plan for specific information regarding CGM.

The components of a continuous glucose monitor include:

- **Sensor:** the sensor is the small probe that sits under the skin and measures the sugar level in the surrounding fluid.
- **Transmitter (attaches to the sensor):** the transmitter is the part of the CGM that sends blood sugar readings from the sensor to the receiver.
- **Receiver:** the receiver receives the details from the transmitter and reports a real time blood sugar reading. The receiver may be a standalone device or may be built in to an insulin pump or even a smart phone. The receiver may also have alarms that warn you of highs, lows, fast drops and fast rises.

The American Diabetes Association recommends the following in regards to CGM use:

"If the CGM sensor/transmitter pod falls off at school, all parts should be collected and stored in a safe place and sent home with the student. No part of the CGM should be discarded. Sensor replacement requires training and should be performed at home. Blood glucose levels should continue to be monitored with a blood glucose meter in accordance with the student's DMMP. Students who have been identified as capable of managing diabetes independently may choose to respond to alarms and provide treatment without assistance. Younger students who cannot self-manage independently will require help responding appropriately to CGM alarms. All students, regardless of level of independence, may require assistance when they experience severe hypoglycemia.

It is recommended that the minimum number of alarms should be enabled to keep the student safe in the school setting, and delegated school staff should be prepared to respond to low and high BG alarms rather than trends/trend arrows."

Fingerstick blood sugar checks when using a CGM

- Calibration is required for some systems, while other systems do not require finger sticks.
- Some sensors continue to require a traditional fingerstick blood sugar test to verify a sensor reading before making any treatment decisions.
- Always use the student's blood sugar meter if symptoms do not match the sensor reading.

Closing the loop between CGM and insulin pump

The "artificial" or "bionic" pancreas refers to a mix of a continuous glucose monitor (CGM) and an insulin pump working together. The complete artificial pancreas is not yet available. Many parts for an "artificial" or a "bionic" pancreas already exist with some clinical trials planned. With more research and trials, this automated system will become a reality.

Stress Management

Stress, good or bad, may increase blood sugar levels. Other factors that increase blood sugar levels are growth, hormones and illness. Sometimes there is no identifiable reason for a high blood sugar level. It is important to refrain from showing a negative reaction to a high blood sugar level.

Complications and Treatment

Of utmost importance to school personnel is the ability to recognize the two most serious emergencies for diabetic children: low blood sugar level (insulin reaction or hypoglycemia) and high blood sugar level with moderate to large ketones (diabetic ketoacidosis). It is necessary to distinguish between the two because each condition requires completely different, but immediate actions. Always treat for low blood sugar levels if unable to distinguish between the two. The target blood sugar level is individualized; children generally are treated when the blood sugar level is below 70 or 80 or if they are symptomatic.

Treatment of high and low blood sugar levels is addressed in the student's Diabetes Management Plan. See also the Hypoglycemia and Hyperglycemia chart at the end of this Diabetes section.

Educational Considerations

Communicating with parents through an annual conference at the beginning of the school year is usually necessary to formulate or review the student's Diabetes Management Plan. This plan should include:

- Meal plan, snacks, eating lunch at an appropriate time with enough time to finish eating
- Current medications/formulas for dosing, assistance as needed/appropriate for age
- Blood sugar level monitoring schedule
- Access to water and bathroom privileges as needed
- Exercise management
- Stress management (testing accommodations, etc.)
- Participating fully in all school and extracurricular activities, planning for field trips
- Accommodations related to absences for medical visits and illness
- Emergency care plan that includes:
 - recognizing symptoms and treatment of low blood sugars, including the administration of glucagon if authorized
 - recognizing symptoms and treatment of high blood sugars
 - checking for ketones when the blood sugar level is over 300 or if the student is sick
 - checking for ketones when the blood sugar level is over 250 for a student on a pump
 - ensuring insulin and medication supplies and supplies to treat low blood sugars including glucagon is on hand in case of an emergency evacuation

Ongoing dialogue is needed as changes occur in lunch schedules or PE activity/schedules. Ideally, all school personnel (including the bus driver) involved with the student should receive diabetes education annually from the school nurse.

Other matters that can benefit from education and awareness

Parties

Notify parents ahead of time in order for them to decide if the child may eat the same food or if an alternative should be provided.

Field Trips

Trips may change meal times, which can affect blood sugar levels. Notify parents of changes so they can decide if an additional snack is needed and determine the timing of that snack.

Psychological Issues

School personnel's awareness of the possible impact of diabetes on personality development is essential. Children with diabetes should be perceived as normal and fully able to participate in all school activities. Both factors are critical for developing and maintaining self-esteem and peer acceptance. At the elementary level, at student and parent request, classmates may be oriented to diabetes and reassured that diabetes is not contagious.

At the middle and high school levels, teenagers are sometimes less comfortable disclosing a chronic disease for fear of being perceived as being different than their peers.

Manipulation

When a student's frequent requests for food or bathroom trips are questioned, blood sugar testing will usually resolve the issue. High blood sugar levels will increase the frequency of urination. They may need to urinate several times in an hour.

School Protocols

Refer to individual school protocols for the administration of medication and standard precautions. Remember that syringes and lancets for blood sugar testing require proper disposal in an approved sharps container. Gloves should be worn when assisting a child with blood sugar or ketone monitoring.

Diabetes Management in the Early Childcare Community

The child's healthcare team, parents/guardians and child care staff all play a role in making sure that proper care is given to the child with diabetes in a child care program.

In Georgia, only licensed professionals may administer insulin to children with diabetes in out-of-home child care. Bright from the Start, part of the Georgia Department of Early Care and Learning, enforces related rules and regulations. In some cases, however, Bright from the Start can grant variances to specific rules and regulations. The following items should be considered for a child in the early care and learning setting:

A written diabetes medical management plan (DMMP) should be provided by the diabetes care provider.

- Schedule a diabetes planning meeting with the daycare center director.
- Provide written authorization for diabetes-trained staff to inject insulin and do blood sugar monitoring.
- Provide/maintain appropriate diabetes supplies.
- Inform daycare (director and teachers) of any changes in diabetes management.
- Inform daycare (director and teachers) if the child is having out-of-range blood sugars at home.
- Have the child wear a Medical–Alert ID at all times.

Child care staff responsibilities:

- Receive basic diabetes training and know who to contact in an emergency. (This training should be provided to ALL child care staff and may be provided by a healthcare professional or a specially-trained, non-medical staff member. Parents may wish to be involved in the training.) Training should include:
 - What is diabetes? – type 1 and type 2
 - Signs and symptoms of hyperglycemia (including treatment and emergency procedures)
 - Signs and symptoms of hypoglycemia (including treatment and emergency procedures)

ALL staff must be aware of the identity of the child with diabetes.

- A small group of child care staff members should receive specialized training from a qualified health care professional, such as a doctor or a nurse with expertise in diabetes. Training should include:
 - Testing blood sugar levels
 - Knowing symptoms of hypoglycemia and hyperglycemia
 - Treating hypoglycemia and hyperglycemia
 - Administering insulin and glucagon (Child-specific dosing will be covered in detail by parent.)
 - Testing ketones)
- The child care center should keep a poster displayed showing the signs and symptoms of hypoglycemia and hyperglycemia.
- Keep a notebook that includes all care and communication. This should be kept with the child at all times and should include:
 - A diabetes medical management plan (DMMP). This includes emergency contact information.
 - A diabetes management log
 - A food diary and menus
 - Information about signs and symptoms of hypoglycemia and hyperglycemia

Resources

American Diabetes Association – Georgia Affiliate, Inc.

404-320-7100

diabetes.org

Children with Diabetes – Diabetes at School

childrenwithdiabetes.com/d_0q_000.htm

Children with Diabetes: a resource guide for families and schools – New York State Department of Health

health.ny.gov/publications/0944.pdf

Diabetes Association of Atlanta

diabetesatlanta.org

Diabetes Care Tasks at School: What Key Personnel Need to Know

diabetes.org/living-with-diabetes/parents-and-kids/diabetes-care-at-school/school-staff-trainings/diabetes-care-tasks.html

Diabetes Center – Children’s Healthcare of Atlanta (See Diabetes Education Handbook)

choa.org/medical-services/diabetes/diabetes-resources

Dial Program, Diabetes Information Action Line

1-800-DIABETES

Georgia Affiliate Juvenile Diabetes Research Foundation

jdrfgeorgia.org

Helping the Student with Diabetes Succeed: A Guide for School Personnel; A Joint Program of the National Institutes of Health and the Centers for Disease Control and Prevention, 2016

niddk.nih.gov/health-information/communication-programs/ndep/health-professionals/helping-student-diabetes-succeed-guide-school-personnel

Juvenile Diabetes Research Foundation International

jdrf.org

Dietary Guidelines for Americans, 2015-2020. USDA, Eighth Edition.

health.gov/dietaryguidelines/2015/resources/2015-2020_Dietary_Guidelines.pdf

Centers for Disease Control and Prevention. National Diabetes Statistics Report, 2017. Atlanta, GA: Centers for Disease Control and Prevention, US Department of Health and Human Services; 2017.

“The CalorieKing Calorie, Fat & Carbohydrate Counter 2018” Allan Borushek. Hudsonville, Mich: Family Health Publications.

calorieking.com/products/books/

American Diabetes Association. Diabetes Care 2018 Jan; 41(Supplement 1): S126-S136.

<https://doi.org/10.2337/dc18-S012>

PADRE Foundation (Pediatric Adolescent Diabetes Research Education)

padrefoundation.org

School Advisory Toolkit

Bright from the Start: Department of Early Care and Learning; Inclusion Services

dec.al.ga.gov/InstructionalSupports/InclusionServices.aspx

Publications

Countdown, quarterly magazine

1-800-JDF-CURE

Diabetes Forecast, monthly magazine

1-800-DIABETES

Taking Diabetes to School (Special Kids in Schools Series). Gosselin, Kim. St. Louis, MO.: Jayjo Books, 3rd ed., 2004 ISBN-10: 1891383280 (A book to read to classmates).

The Complete Guide to Carb Counting. Warshaw, Hope S. and Kulkami, Karmen. American Diabetes Association, 3rd ed, 2011; ISBN 1580404367

Camp Information

Camp Kudzu

campkudzu.org

The following resources are included in this section:

1. School Supply Box
2. Diabetes Checklist for School Nurses
3. Algorithm for Managing Blood Glucose Results
4. Procedure for Blood Glucose Monitoring
5. Procedure for Insulin Pump Therapy with Supervision
6. Diabetes Checklist for Teachers
7. Diabetes Monitoring Form
8. Diabetes Reference Images
9. Hypoglycemia and Hyperglycemia Chart
10. Hypoglycemia Fact Sheet
11. Improving Diabetes Management in Adolescence
12. Diabetes Management in the School Setting
13. Diabetes Management Plan – Information for School Management of Diabetes Mellitus
14. Georgia House Bill 879

SCHOOL SUPPLY BOX

It is recommended that a diabetes supply/emergency kit be brought to school and maintained weekly by family:

- Insulin, syringes and alcohol swabs
- Blood glucose monitor, test strips, lancet device and lancets
- Ketone strips
- Other medication taken on a regular basis
- Fast acting and slow acting carbohydrate foods for treatment of low blood sugar (non-perishable emergency snacks)
- Glucose tablets
- Glucose gel in case of a minor emergency
- Glucagon Kit—Be sure to include directions for use and dose.
- Logbook
- List of emergency contact numbers

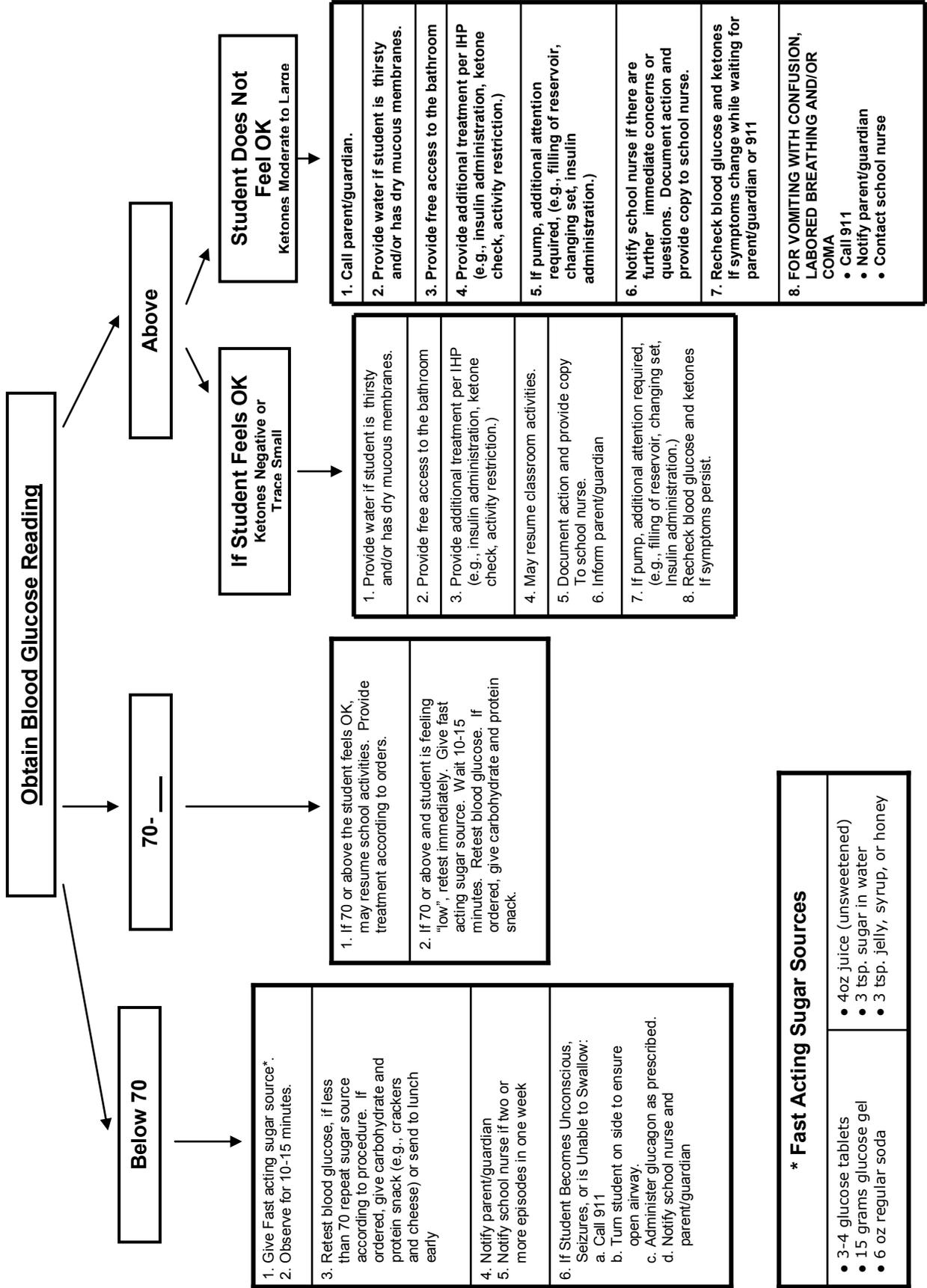
- _____
- _____
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- _____

**Communicate with your school nurse weekly. Supplies may need to be restocked. Remember to run controls on your blood sugar meter periodically and to check for expiration dates on supplies including insulin, ketone strips and Glucagon Kit.

Diabetes Checklist for School Nurses

- Arrange meeting between nurse, parent(s)/guardian and student, if appropriate.
- Discuss parent expectations of diabetes care while at school.
- Discuss school's policies, nurse staffing, expectations of parents.
- Determine equipment and supplies needed (including hypoglycemia treatment supplies, ketone sticks, sharps container, blood sugar meter and strips) and where supplies will be kept (hypoglycemia supplies may be kept in multiple locations for easy access).
- Discuss plans for communication of daily levels/issues.
- Have parents sign release of information form and other forms as needed/obtain school care plan from healthcare provider.
- Review school day schedule and assess student's level of independence.
- Identify potential issues requiring accommodations.
- Clarify specifics of treatment plan.
- Arrange meeting with appropriate educational team members.
- Provide education and training as necessary for other staff members.
- Provide classroom education if requested by parent or child.
- Possible accommodation issues:
 - blood sugar monitoring: when, where, who, what to do with results
 - recognition and management of low blood sugar levels (including someone to accompany student if symptomatic)
 - recognition and management of high blood sugar levels
 - insulin injections: who, where, when and how to communicate with parents
 - meals and snacks: timing, monitoring, carb counting, menu selection, special occasions (parties, field trips)
 - access to drinking water/ bathroom privileges
 - transportation issues
 - after school activities, field trips, etc.
 - plan for school absences/ make-up work.
- Review the Diabetes Management Plan at least annually or when changes occur. Revise as needed.
- _____
- _____
- _____
- _____
- _____

SAMPLE ALGORITHM FOR MANAGING BLOOD GLUCOSE RESULTS



PROCEDURE FOR BLOOD GLUCOSE MONITORING

Equipment and Supplies	<ol style="list-style-type: none"> 1. Alcohol prep pad (optional) 2. Finger lancing device 3. Blood glucose meter 4. Blood testing strips for specific meter 	<ol style="list-style-type: none"> 5. Tissue or cotton balls 6. Gloves 7. Sharps container
Essential Steps	Key Points & Precautions	
1. Wash hands and area to be tested with soap and water. Put on gloves. Student's hands must be washed as well. This is sufficient for prepping the site; however, alcohol may be used if soap and water are not available. (The site selected must be dry before pricking.)	Alcohol may cause toughening of the skin or burning sensation. If moisture (water or alcohol) remains on the skin it may alter test results.	
2. Place glucose test strip into meter according to manufacturer's instructions. Verify correct code for strip.		
3. Prepare lancing device according to manufacturer's instructions.		
4. Select a site. If using finger, use the sides of fingertips. Hang the arm below the level of the heart for 30 seconds to increase blood flow.	The tips and pads of the fingertips are more sensitive. The sides of the fingers should be used. Other sites can be used such as the forearm if approved by manufacturer, but should not be used if suspected hypoglycemia.	
5. Puncture the site with the lancing device. Gently squeeze the finger so that blood can be absorbed into test strip with wicking motion.		
6. Place blood on test strip and complete instructions according to manufacturer's instructions.		
7. Dispose of test strip and tissue or cotton ball in lined wastebasket. Dispose of lancet in Sharps container.	Compress lanced area with tissue or cotton ball until bleeding stops.	
8. Remove and dispose of gloves, wash hands.		
9. Record results per school policy.	Refer to student's IHP for management of blood glucose results.	

PROCEDURES FOR INSULIN PUMP THERAPY FOR THE STUDENT WHO REQUIRES SUPERVISION TO MANAGE THEIR CARE

Procedure for Hyperglycemia with Pump Therapy

Essential Steps	Key Points & Precautions
1. Check site for leakage, cannula dislodgement, redness and/or tenderness. If any of these are present, follow IHP regarding site changes.	Redness and/or tenderness at the site may indicate infection. The blood glucose can rise quickly since the delivery of rapid acting insulin has been interrupted and there is no long acting insulin in the body. If site is unable to be changed, a back up plan for removing the infusion set and insulin administration must be followed (IHP). The school nurse may contact the health care provider for insulin administration instructions.
2. Follow <i>Emergency Care Plan for Hyperglycemia</i> .	Blood glucose should be checked 30 minutes — 2 hours after a correction dose to ensure that the blood glucose is responding to insulin. It may be necessary to continue checking blood glucose levels periodically to prevent hypoglycemia.

Procedure for Hyperglycemia with Pump Therapy

Essential Steps	Key Points & Precautions
1. Follow <i>Emergency Care Plan for Hypoglycemia</i> .	Student may need assistance.
2. Follow <i>IHP for activity/exercise</i> .	Hypoglycemia cannot always be avoided although a plan should be in place regarding actions to prevent hypoglycemia during planned activity/exercise. If vigorous activity is anticipated a lower basal rate or intake of extra carbohydrates before, during and/or after activity may avoid hypoglycemia. Accommodations must be addressed in the IHP. School nurse will notify parents and confer with health care provider.
3. Notify the school nurse.	

Procedure for Pump Alarms

Essential Steps	Key Points & Precautions
1. Trouble shoot alarms.	Follow manufacturer's instructions for alarm indication. School nurse must be knowledgeable regarding pump alarms. A reference card can assist with troubleshooting steps or the manufacturer's 800 number can be called (listed on the back of the pump).
a. LOW BATTERY:	Insert new batteries per instructions.
b. NO DELIVERY. Check reservoir, check cannula. c. LOW CARTRIDGE: Check reservoir.	Cannula may be obstructed or kinked requiring a new infusion set. Check insulin reservoir; if it is empty follow IHP regarding refilling plan.
2. Call school nurse immediately.	School nurse will notify parents of above and may contact health care provider for further orders. An injection of rapid-acting insulin may be ordered.
3. Follow <i>Emergency Care Plan for Hyperglycemia</i> .	Keep parents/guardian informed of any issues at school.

Diabetes Checklist for Teachers

- Participate in the healthcare planning meeting and training
- Understand basic information about diabetes:
 - signs and symptoms of low and high blood sugar levels
 - how to treat low and high blood sugar levels
 - food and snack requirements and routines/importance of timing
 - daily blood sugar level monitoring
 - respect for privacy
 - safety procedures
 - communication with school nurse, parents and other students

- _____
- _____
- _____
- _____
- _____

Diabetes Monitoring Form

Name: _____ Grade: _____

Date/Time	Blood Glucose	Carb Count	Insulin Dose	Other Treatment / Comments <small>(note any unusual circumstances such as extra food intake, exercise, change in routine, hypoglycemic or hyperglycemic reactions, etc).</small>	Initials

Signature/Initials

Signature/Initials

Signature/Initials

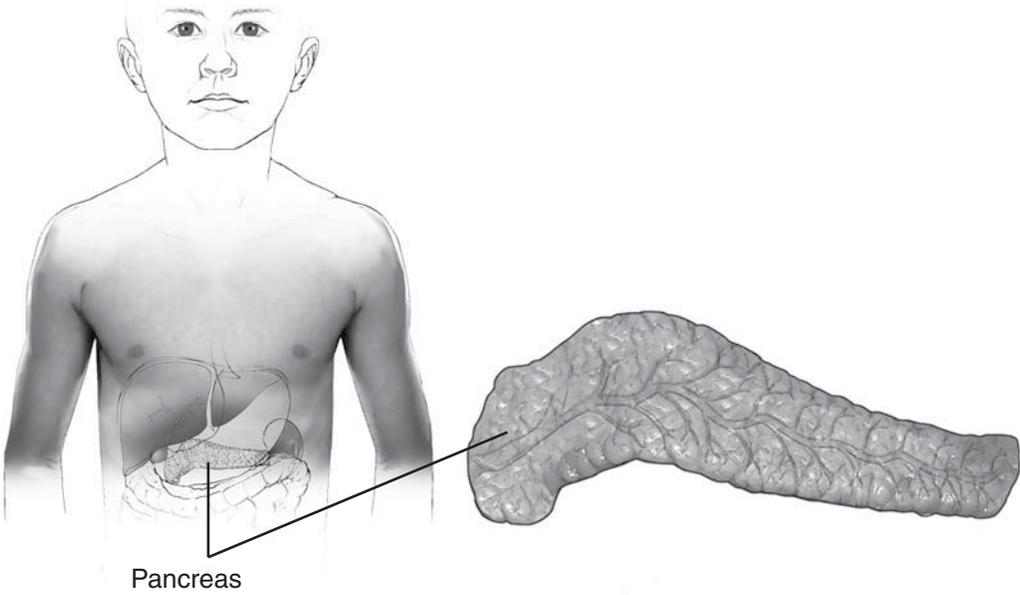
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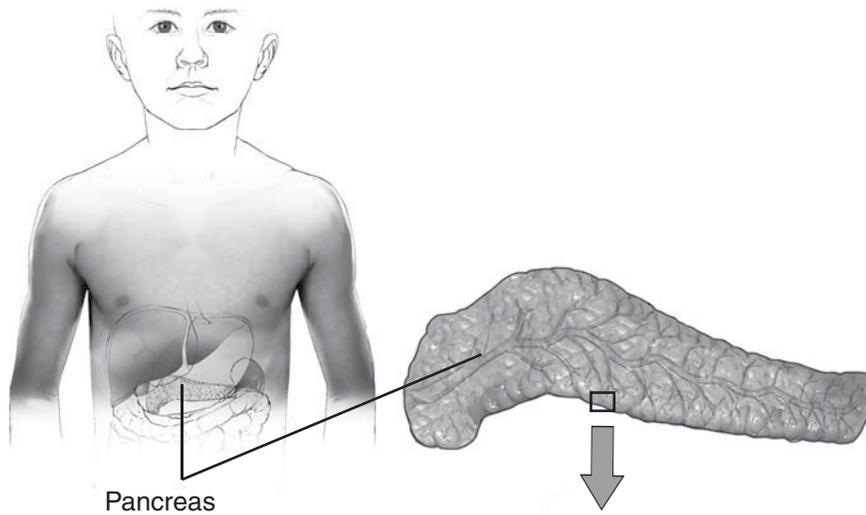
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Diabetes Reference Images

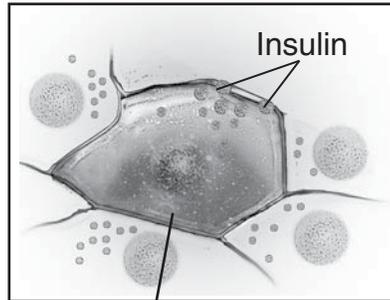
Where Insulin is Made



Where Insulin Comes From and What It Does



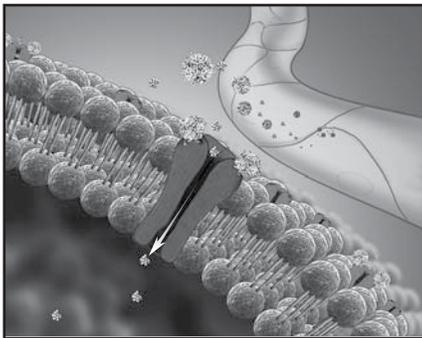
Pancreas



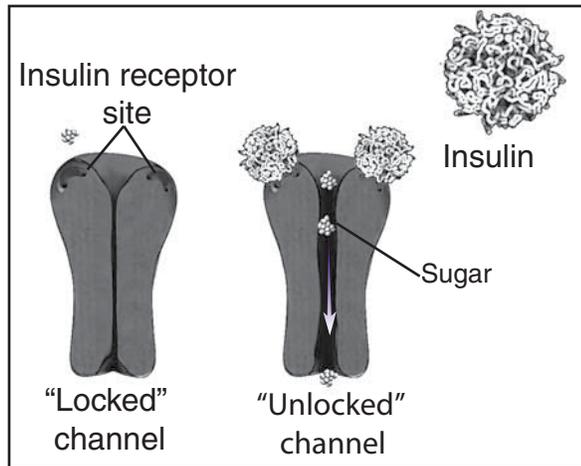
Insulin is made when we eat

Beta cell in pancreas

Close up of tissue cell wall



Insulin and glucose are both carried by the blood stream and released into tissues.

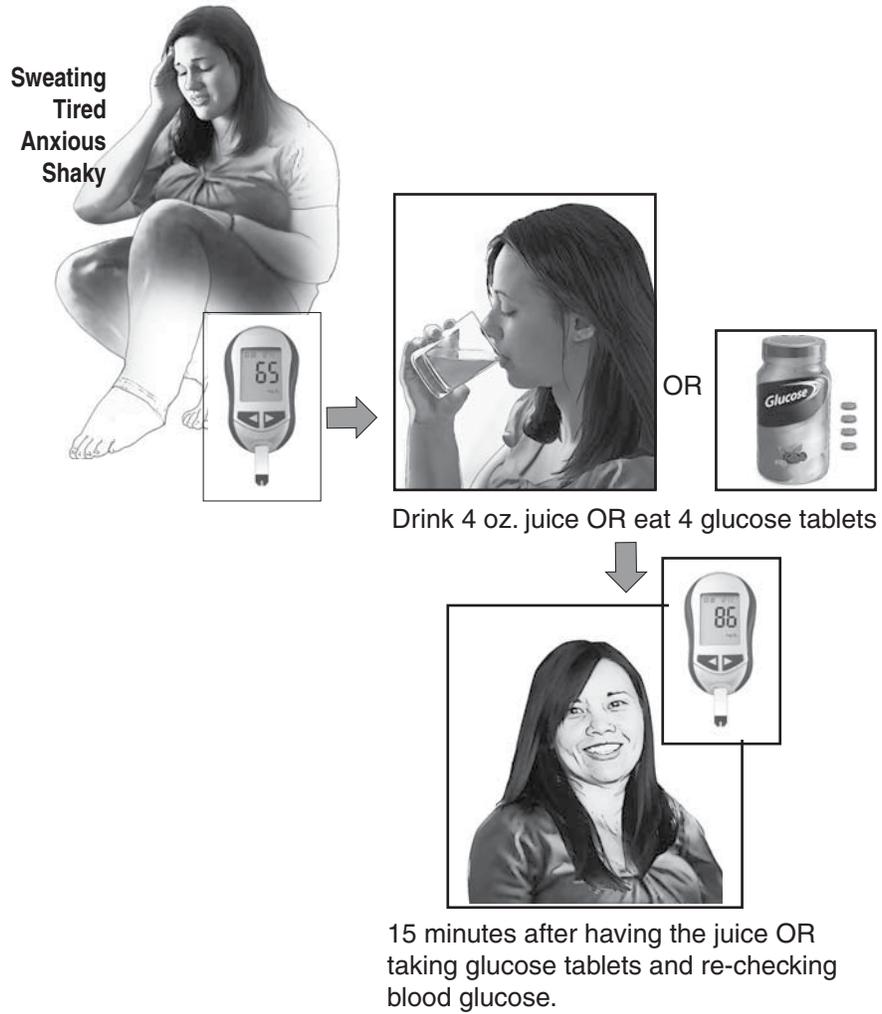


Insulin "unlocks" the cell channels so sugar can go inside

Subcutaneous injection of insulin



Hypoglycemia



Hyperglycemia and Ketones

Check urine ketones if:

- Child is sick
- Blood glucose is >300 mg/dL
- Nausea or vomiting

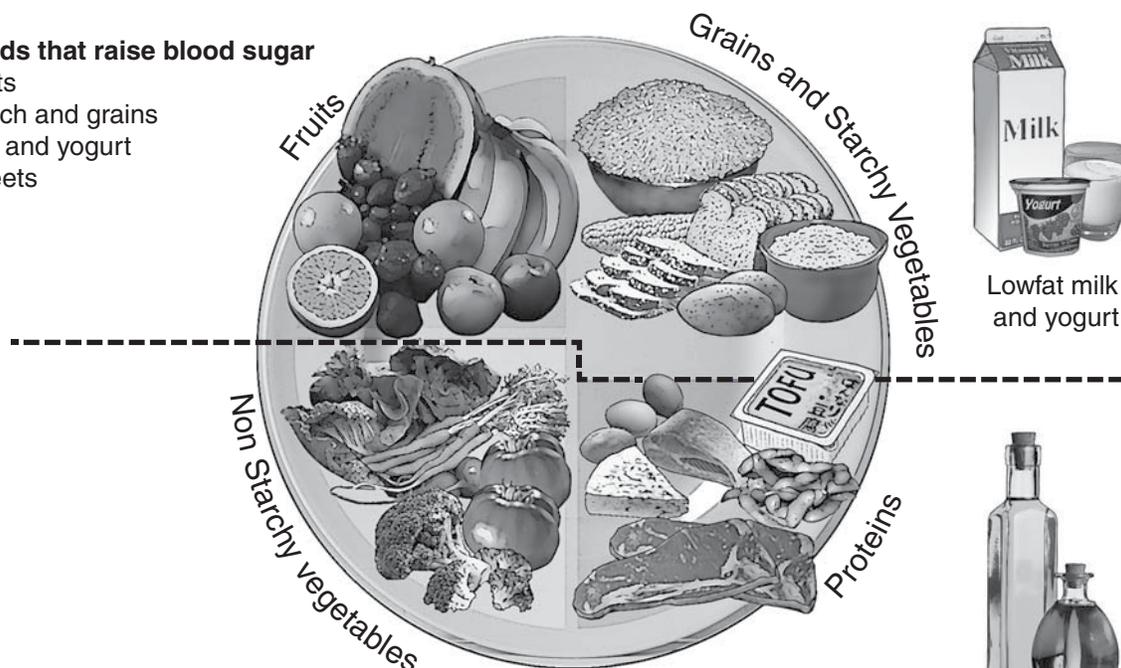


Call doctor if ketones are present

How Different Foods Affect Blood Sugar

Foods that raise blood sugar

Fruits
Starch and grains
Milk and yogurt
Sweets



Lowfat milk
and yogurt

Foods that do not raise blood sugar

Non-starchy vegetables
Meats and proteins (cheese, soy, eggs)
Fats and oils

Oils and Fats

Measuring Carbohydrates

1 serving equals 15 grams of carbohydrates



1 slice of bread

or



1/3 cup of rice

or



2 hard shell tacos

2 servings equals 30 grams of carbohydrates



2 slices of bread

or



2/3 cup of rice

or



one 12 inch tortilla

3 servings equals 45 grams of carbohydrates



1 cup of pasta

or



1 cup of rice

or



1 slice of bread +

+



Hypoglycemia

Causes	
Too much insulin	
Not enough food	
Increased physical activity	
Late or skipped meals (if on NPH, Novolog 70/30 or Humalog 75/25)	

Symptoms	
Sweating	Slurred speech
Shaky	Pale
Headache	Clammy skin
Hunger	Confusion
Irritable	Blurry vision
Weakness or Fatigue, Sleepy	Change in behavior
Anxious	Fast heartbeat
Numb lip/tongue	Dizzy
Poor coordination	Poor concentration

Do not leave student alone
Do not allow the student to return to class until blood sugar is greater than 70/80.
Notify parents of low blood sugar.

Severe Symptoms - Call 911
Unconscious
Unable to swallow
Combative
Seizure

Treatment - Check blood sugar level
Treat if blood sugar is below 70/80 or symptoms of low blood sugar are present as outlined in students' Diabetes Management Plan.
If the student does not have a plan or supplies and the student is having symptoms – TREAT AS OUTLINED BELOW
If student is able to swallow, give 15 grams of fast-acting carbohydrates such as 3-4 glucose tablets, 4 oz. fruit juice or regular (not diet) soda, or 3 packets (teaspoons) of sugar. If unable to take glucose tablets, juice, soda, or sugar, treat with 15 grams of glucose gel by placing small amounts of glucose gel into the student's mouth, allowing the mucous membranes to absorb the sugar, as quickly as possible, until all 15 grams have been given.
Recheck blood sugar in 10-15 minutes. If blood sugar level is not greater than 70/80, give another 15 grams of fast-acting carbohydrates. Then recheck blood sugar in 10-15 minutes. Repeat this three times. Notify the parent and/or doctor if it does not resolve after three attempts. Continue to treat with 15 grams of fast-acting carbohydrates and recheck blood sugar every 10-15 minutes until the parent/doctor returns the call.
Be prepared to give glucagon* and call 911 if student is not responsive, seizing or if their condition deteriorates.

Once the blood sugar is above 70/80
If the student is on intermediate acting insulin (ex: Novolog 70/30 or Humalog 75/25), after the above treatment follow with a snack like cheese and crackers or half of a sandwich.
If the student takes rapid acting insulin (Novolog Humalog, Apidra, Admelog or Fiasp) at meals and snacks and they will not be having a meal or snack within the next hour, follow the treatment for a low blood sugar with a small snack (15 grams of slow-acting carbohydrates such as crackers and peanut butter or half a sandwich).
If student is taking insulin using an insulin pump, follow Diabetes Management Plan for specific instructions on managing the pump.

* Glucagon Emergency Kit
If a severe low occurs (loss of consciousness, seizures or inability to safely eat or drink), Glucagon** should be administered if authorized by the Diabetes Management Plan.
A glucagon injection may be given for severe low blood sugars (unconsciousness, unresponsiveness, seizures or the inability to safely eat or drink). Refer to package insert and the Diabetes Management Plan for use and dose.
**Glucagon is a naturally occurring hormone made in the pancreas. It raises blood sugar levels by stimulating the liver to release stored glucose.

Hyperglycemia

Causes	
Not enough insulin	
Missed doses	
Too much food (carbohydrates)	
Infection, fever, illness	
Stress	
Growth and/or hormonal changes	
Spoiled or expired insulin (most insulin expires a month after opening)	

Symptoms	
Emotional stress	Poor Concentration
Blurry vision	Dry skin
Thirst	Face flushed
Dry mouth	Nausea
Frequent urination	Lethargic
Hunger	Sweet and fruity breath odor
Drowsiness / Sleepy	

Do not leave student alone
Extra insulin may be needed.
Follow instructions on Diabetes Management Plan .
When blood sugar level is high, students may need more frequent bathroom breaks and free access to water or sugar free fluids (if fully conscious and not vomiting).

Severe Symptoms – Call 911
Labored breathing
Confusion
Decreased consciousness - monitor airway

Treatment - Check blood sugar level
If blood sugar is greater than 300, check for ketones:
<ul style="list-style-type: none"> • If ketones are trace to small, encourage the student to drink water and recheck in 3-4 hours. • If ketones are moderate to large, call the parent as the student needs medical attention. <ul style="list-style-type: none"> – Call the doctor if parent cannot be reached. • If any ketones are present, students should refrain from any physical activity. • Notify the parent if hyperglycemia does not respond to treatment as outlined in Diabetes Management Plan.

If student is taking insulin using an insulin pump, follow Diabetes Management Plan carefully.
One should always suspect that the pump/tubing may not be working correctly:
<ul style="list-style-type: none"> • Check site and have student change site, tubing and reservoir using new vial of insulin if there is any leaking, redness, tenderness or the cannula is dislodged. • Check for ketones if blood sugar level is over 250.
IF NO ketones or ketones are TRACE to SMALL:
<ul style="list-style-type: none"> • Bolus with pump ONE TIME per school plan. • Recheck blood sugar level in 1-1.5 hours; if blood sugars have not decreased, give a second bolus by INJECTION of FAST-ACTING INSULIN using a SYRINGE per Diabetes Management Plan. • Change the site, tubing and reservoir of the pump using a new vial of insulin to refill the reservoir.
IF ketones are MODERATE to LARGE:
<ul style="list-style-type: none"> • Call the parent. • Give a bolus by INJECTION of FAST ACTING INSULIN using a syringe per Diabetes Management Plan. • Change the site, tubing and reservoir of the pump using a new vial of insulin to refill the reservoir. • Offer sugar-free liquids every 30 minutes until parent arrives.

Hypoglycemia Fact Sheet

- A. Hypoglycemia is a potential medical emergency at school.
- B. Hypoglycemia means the student's blood glucose is below normal. The exact blood glucose number, and when and how to treat a student's low blood glucose will be in the student's Emergency Care Plan (ECP) and/or Individualized Healthcare Plan (IHP), and explained to you by the school nurse.
- C. Causes of hypoglycemia include:
- Getting too much insulin
 - Not eating enough food
 - Meals or snacks that are missed, off schedule or delayed
 - Increased amounts of exercising without eating extra food
 - Illnesses that causes a lack of appetite or vomiting
 - Taking certain medications
 - Drinking alcohol, which may be a concern with adolescents
- D. Signs of hypoglycemia will depend on the student and how low the blood glucose is. The school nurse will explain signs unique to each student. In general, signs of hypoglycemia include:
- None at all – this can happen with a student who has become used to having episodes of low blood glucose. A reading from a blood glucose monitor may be the only indication that the student has hypoglycemia.
 - Headache
 - Sweating
 - Shaking
 - Change in behavior – including irritability, confusion, slurred speech, combativeness, uncooperativeness
 - Decreased ability to concentrate and do school work
 - Seizures
 - Passing out
- E. Treatment of hypoglycemia will be outlined on the student's ECP and/or IHP and explained by the school nurse. In general, plan on:
- Taking prompt action
 - Allowing the student to eat foods that provide quick sugar such as fruit juice, sugared soda, or candy. The food options and exact amount will be outlined in the student's ECP and/or IHP and explained by the school nurse.
 - Allowing the student to use a blood sugar monitor to test his/her blood.
- F. Never allow a student to walk alone to the health office check if you suspect hypoglycemia!
- G. With severe hypoglycemia the student may become unconscious or have seizures. This is an emergency medical situation.
- Call 911.
 - If a student is unconscious, never give them something to eat or drink.
 - Give Glucagon, if ordered on the Diabetes Medical Management Plan (DMMP) and you have been trained.
 - If a student is having a seizure, protect them from injury & keep them on their side.
 - Follow instructions previously given by the school nurse on what to do next.
- H. Prevention is key. Allow the student with diabetes to follow his/her diabetes management plan at school as described by the school nurse.
- I. Other: _____

Adapted with permission from National Association of School Nurses, 2011

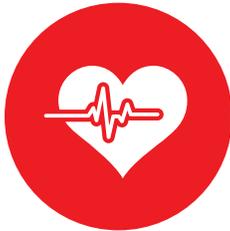
Hypoglycemia

Low blood sugar

Symptoms of hypoglycemia include:



Shakiness



Fast heartbeat



Sweating



Dizziness



Anxiety



Hunger



Blurry vision



Weakness
or fatigue



Headache



Irritability

Hypoglycemia often comes on suddenly and may lead to a medical emergency if not treated immediately.

Causes

- Too much insulin
- Too little food
- Skipped meal
- More activity than usual
- Vomiting

Take action:

- Check your blood sugar. If you can't check, treat anyway.
- Treat by eating three to four glucose (sugar) tablets, or by drinking 4 ounces of fruit juice or half a can of regular soda.
- Check your blood sugar again after 15 minutes. If it is still low, treat again. If symptoms don't stop, call your healthcare provider.



Hyperglycemia

High blood sugar

Symptoms of hyperglycemia include:



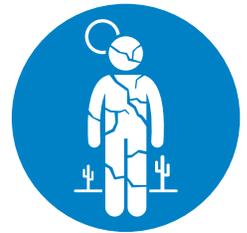
Extreme thirst



Need to urinate often



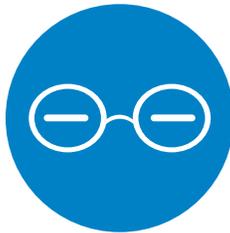
Vomiting



Dry skin



Hunger



Blurry vision



Drowsiness



Slow-healing wounds

Hyperglycemia often starts slowly, but it may lead to a medical emergency if not treated.

Causes

- Too little insulin
- Too much food
- Illness
- Stress

Take action:

- Check your blood sugar regularly.
- Check ketones if blood sugar levels are over 300. If moderate to large ketones are present, call your diabetes provider.
- If your blood sugar levels are higher than 240 three times in one day, call your diabetes provider.



Visit choa.org/diabetes to learn more.

Improving Diabetes Management in Adolescence

Myth

A pre-teen/teen should be able to check blood sugar and give insulin without constant reminders.

Fact

Teens are developmentally incapable of managing diabetes on a day-to-day basis and need the support of peers, school and most importantly FAMILY.

Suggestions

Check the meter daily. Record blood sugars for at least seven days/month especially under times of stress and/or growth as insulin needs increase rapidly during this time. Be sure to accurately set the date and time.

Observe them as much as possible. Do not ask: observe. Be confident the glucose has been checked. Blood sugars are not a private matter. If they are insisting on privacy, they are hiding numbers or not doing them.

Avoid the use of judgmental language when referring to your teen's numbers. Do not refer to blood sugars as "good" or "bad." Use terms such as in/above/below "range" or "target." Do not praise numbers that are in the desirable range nor punish numbers that are elevated.

Hold your teen accountable to an achievable goal. Tell him or her what the expectations are: four checks/day, all injections given/communication if he or she needs help. Tell him or her that you do not expect perfection. Establish clear and succinct consequences such as restricting cell phone usage or internet or video game time if the teen does not meet the expectations.

Thank your teen for checking his or her blood sugars each time they do it. This may sound silly but the simple act of thanking him or her acknowledges that diabetes is not easy. It is a very kind and compassionate way to reinforce a very important and necessary task.

Take on diabetes for a day. Mimic all the things that your teen has to do for one day. Check your blood sugar before every meal, count your carbs and give "insulin" for what you eat. This very act of trying to be empathetic will gain favor with your teen. Your teen will truly appreciate this even if he or she doesn't let you know.

Positively reinforce the actual self care behaviors (i.e. checking sugar/giving insulin), NOT the results!

Created by Maureen McGrath; 7/7/09

Diabetes Management in the School Setting



<https://www.nasn.org/nasn/advocacy/professional-practice-documents/position-statements/ps-diabetes>

SUMMARY

It is the position of the National Association of School Nurses (NASN) that the registered professional school nurse (hereinafter referred to as school nurse) is the school staff member who has the knowledge, skills, and statutory authority to fully meet the healthcare needs of students with diabetes in the school setting. Diabetes management in children and adolescents requires complex daily management skills (American Association of Diabetes Educators [AADE], 2016). Health services must be provided to students with diabetes to ensure their healthcare needs are met; requirements of relevant federal and state laws are met; and they can fully participate in school and school-sponsored events (AADE, 2016).

BACKGROUND

Diabetes is the third most common chronic health disease affecting an estimated 2.22/1,000 children and adolescents according to The Search for Diabetes in Youth (SEARCH) Study (Pettitt et al., 2014). Children and adolescents are defined as youth under the age of 20 years. In 2009, approximately 191,986 or one in 433 youth with diabetes lived in the U.S. From these, 87% have type 1 diabetes and 11% have type 2 diabetes (Pettitt et al., 2014). In the year 2008 to 2009, 18,436 youth were newly diagnosed with type 1 diabetes and 5,089 youth were newly diagnosed with type 2 diabetes (Centers for Disease Control and Prevention [CDC], 2014).

Advances in diabetes technology continue to enhance the students' ability to manage diabetes at school, thus improving their quality of life. Children and adolescents monitor blood glucose levels several times a day via blood glucose meters and continuous glucose monitors, conduct carbohydrate calculations, and inject insulin via syringe, pen and pump to attain blood glucose control (Brown, 2016). Intensive resources and consistent evidenced-based interventions will achieve the long-term health benefits of optimal diabetes control, according to the landmark study from the Diabetes Control and Complications Trial Research Group (DCCT, 1993).

Each student with diabetes is unique in his or her disease process, developmental and intellectual abilities, and levels of assistance required for disease management. An individualized Diabetes Medical Management Plan (DMMP) is completed by the healthcare provider and includes the medical orders to manage the student's diabetes needs during the school day and at school-sponsored activities (Jackson et al., 2015). The school nurse develops an individualized healthcare plan (IHP) in partnership with the student and his or her family, based on the medical orders in the DMMP and the nurse's assessment. (American Nurses Association/National Association of School Nurses [ANA/NASN], 2011). The IHP outlines the student's diabetes management strategies and personnel needed to meet the student's health goals in school (National Diabetes Education Program [NDEP], 2016). The school nurse also prepares an emergency care plan (ECP), based on the DMMP medical orders, that summarizes how to recognize and treat hypoglycemia and hyperglycemia and directs action to take in an emergency. Copies of the ECP should be distributed to all school personnel who have responsibilities for the student during the school day and during school-sponsored activities (NDEP, 2016).

Throughout childhood and adolescence, the student who has diabetes continuously moves through transitions toward increasing levels of independence and self-management (American Diabetes Association [ADA], 2016), requiring various levels of supervision or assistance to perform diabetes care tasks in school. Students who lack diabetes management experience or cognitive and developmental skills must have assistance with their diabetes management during the school day, as determined by nursing assessment and as outlined in the IHP (Wyckoff, Hanchon, & Gregg, 2015).

Hypoglycemia (low blood glucose) is the greatest immediate danger to the student with diabetes. During hypoglycemic incidents, the student may not be able to self-manage due to impaired cognitive and motor function. A student experiencing hypoglycemia should never be left alone, sent anywhere alone, or escorted by another student. Communication systems and trained school staff should be in place to assist the student. Hypoglycemia can occur suddenly and requires immediate treatment (NDEP, 2016).

Another complication of diabetes, hyperglycemia (high blood glucose), can develop over several hours or days (NDEP, 2016). If untreated, hyperglycemia can lead to the life-threatening condition, diabetic ketoacidosis (DKA) (Wyckoff et al., 2015). For students using insulin infusion pumps, lack of rapid-acting insulin increases their risks of developing DKA more rapidly (Brown, 2016). School nurses may utilize one or more of the model NDEP three levels of staff training to facilitate prompt, safe, and appropriate care for students with diabetes (NDEP, 2016).

Students with disabilities, which include students who have special healthcare needs such as diabetes, must be given an equal opportunity to participate in academic, nonacademic, and extracurricular activities. Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act prohibit recipients of federal financial assistance from discriminating against people on the basis of disability (NDEP, 2016). These laws are enforced by the Office for Civil Rights (OCR) in the U.S. Department of Education. Schools are required to identify all students with disabilities and to provide them with a free appropriate public education (FAPE) (NDEP, 2016).

Advances in science, technology, and evidence-based practices related to diabetes management require school nurses to attain and maintain current knowledge and competence in the delivery and coordination of the care for the student with diabetes (NDEP, 2016, Pansier & Schultz, 2015).

RATIONALE

Children and adolescents with diabetes are confronted with many challenges and potential educational barriers in school. Some of the main barriers include lack of informed and trained staff, absence of a school nurse who is on site daily, and lack of diabetes management policies (Pansier & Schultz, 2015). School-based diabetes interventions led by school nurses are essential to improve health and academic outcomes and ensure a safe school environment for children and adolescents with diabetes.

The increasing prevalence of health-related disabilities, including type 1 and type 2 diabetes, has compounded the need for coordination of care between the school, the student's healthcare team, the family, and service providing agencies (McClanahan & Weismuller, 2015). Recent studies show that care coordination in the school setting improves quality of life, diabetes glucose control, ability to self-manage, readiness to learn, classroom participation, and academic performance (Pansier & Schultz, 2015). Care coordination, a core professional school nursing principle, and its related practice components involve developing and maintaining competence in creating, updating, and implementing care plans that comprehensively create an environment where students will maintain optimal health in the school setting so that they can succeed academically (NASN, 2016).

School nurses implement the DMMP, develop IHPs and ECPs, and train school personnel (McClanahan & Weismuller, 2015). When nursing delegation of diabetes care tasks is deemed appropriate, the school nurse provides ongoing supervision and evaluation of student health outcomes (Wyckoff et al., 2015). School nurses are accountable for addressing the students' ongoing healthcare needs, encourage independence and self-care within the student's ability, and promote a healthy, safe school environment that is conducive to learning (NDEP, 2016).

Ineffective management of diabetes in school may lead to absenteeism, depression, stress, poor academic performance, and poor quality of life (Pansier & Schulz, 2015). Managing diabetes at school is most effective when there is a partnership among students, parents/guardians, school nurses, healthcare providers, and other school personnel (e.g., teachers, counselors, coaches, transportation, food service employees, and administrators). The school nurse provides the health expertise and coordination needed to ensure cooperation from all partners in assisting the student toward self-management of diabetes. Poorly controlled diabetes not only affects academic

performance but can lead to long-term complications such as retinopathy, cardiovascular disease, and nephropathy. Maintaining blood glucose levels within a target range can prevent, reduce, and reverse long-term complications of diabetes (DCCT, 1993).

CONCLUSION

Diabetes is listed as the third most common chronic health condition that impacts approximately one in 433 children and adolescents in the United States (Pettitt et al., 2014). The school nurse is the most appropriate staff member in the school to fully meet the healthcare needs of students and should be the key coordinator and care provider for the student who has diabetes (ADA, 2016). The school nurse's competence in the practice components of the principle of Care Coordination (e.g., case management, collaborative communication, providing and/or coordinating the provision of direct care, training of non-medical personnel) is essential to promoting the health, safety, and academic success of students who have diabetes within the school setting (AADE, 2016; McClanahan, 2015; NASN, 2016).

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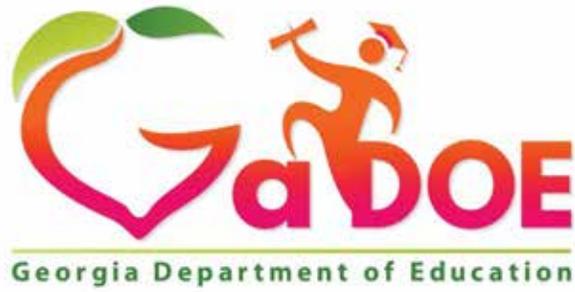
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Richard Woods, Georgia's School Superintendent
"Educating Georgia's Future"

Guidelines for the Care Needed for Students with Diabetes

for the implementation of

**State Board of Education Rule 160-4-8-.18 Diabetes Medical
Management Plans**

Version 1.2

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This document was developed with the gracious assistance of the Georgia Association of School Nurses (GASN). The Georgia Department of Education sincerely appreciates the dedication of GASN and school nurses for their dedication and devotion to the students and schools of Georgia.

(1) DEFINITIONS:

(a) **Diabetes medical management plan** - a document developed by the student's physician or other health care professional that sets out the health services, including the student's target range for blood glucose levels, needed by the student at school and is signed by the student's parent or guardian.

(b) **Diabetes** - a chronic disease in which blood glucose (sugar) levels are above normal. People with diabetes have problems converting food to energy. After a meal, food is broken down into a sugar called glucose, which is carried by the blood to cells throughout the body. Insulin, a hormone made in the pancreas, allows glucose to enter the cells of the body where it is used for energy. People develop diabetes because the pancreas produces little or no insulin or because the cells in the muscles, liver, and fat do not use insulin properly. As a result, the glucose builds up in the blood, is transported into the urine, and passes out of the body. Thus, the body loses its main source of fuel even though the blood contains large amounts of glucose. When insulin is no longer made, it must be obtained from another source insulin injections or an insulin pump. When the body does not use insulin properly, people with diabetes may take insulin or other glucose-lowering medications. Neither insulin nor other medications, however, are cures for diabetes; they only help to control the disease. (from "Helping the Student with Diabetes Succeed: A Guide for School Personnel", 2010 Edition, page 11)

(c) **Health care professional** - a doctor of medicine or osteopathy licensed by the Georgia Composite Medical Board pursuant to Article 2, Chapter 34, Title 43 of the Official Code of Georgia Annotated or a legally authorized designee acting pursuant to job description or nurse protocol agreement approved by the Georgia Composite Medical Board.

(d) **Trained diabetes personnel** - a school employee who volunteers to be trained in accordance with this rule. Such employee shall not be required to be a health care professional.

(2) PURPOSE.

(a) The purpose of these guidelines is to enable schools to ensure a safe learning environment for students with diabetes. These materials are based on the belief that children with diabetes can participate in all academic and non-academic school-related activities. In order for children with diabetes to be successful in school, a comprehensive health plan must be collaboratively developed by families, students, school personnel, and licensed health care providers. The individualized health plan (IHP) implements the Diabetes Medical Management Plan (DMMP) provided by the healthcare provider, physician orders and provisions appropriate to each student's needs during the school day and for other school-related activities. The IHP must be based upon and consistent with the DMMP.

(b) Federal laws that protect children with diabetes include Section 504 of the Rehabilitation Act of 1973, the Individuals with Disabilities Education Act (IDEA), and the Americans with Disabilities Act (ADA). Students with diabetes may be found eligible under Section 504 and the ADA, and some of these students may also be eligible under IDEA. Title II of the ADA prohibits discrimination on the basis of disability by public entities. These federal laws (ADA, IDEA, Section 504) mandate that all students attending public schools have access to health care during the school day and for extracurricular school activities, if necessary, to enable the student to participate fully in these activities.

(c) In Georgia, The Rules and Regulations Regarding the Delegation of Nursing Tasks does not allow the professional registered nurse to delegate nursing functions to Unlicensed Assistive Personnel (UAP). However many schools in Georgia do not have a full-time nurse, or a school nurse may not always be available on site. Even when a nurse is assigned to a school full time, he or she will not always be available to provide direct care during the school day. Thus it is often necessary for specific tasks for the care of a student with diabetes to be performed by trained diabetes personnel. Such tasks may include medication administration, blood sugar monitoring, and emergency interventions, including Glucagon, according to the student's IHP. Specific training and ongoing nursing supervision of diabetes care tasks is needed.

(3) REQUIREMENTS FOR SAFE MANAGEMENT OF STUDENTS WITH DIABETES IN THE SCHOOL SETTING.

(a) The school district is required by Georgia state law, O.C.G.A. § 20-2-779, to have a written Diabetes Medical Management Plan (DMMP), completed by the student's physician or legally authorized designee (healthcare provider such as a nurse practitioner or a physician's assistant). The DMMP must contain all items covered in the plan, including how, when, and under what circumstances the student should receive blood glucose monitoring and injections of insulin as well as steps to take in case of an emergency. The DMMP form must be signed by the parent and physician before medication and treatment can be administered by the school nurse or by the trained diabetes personnel.

(b) Schools must obtain written permission from the student's parent/guardian to allow monitoring of the student's blood glucose and to administer insulin by injection or the delivery system used by the student. This may be included in the DMMP

(4) TRAINING OF SCHOOL EMPLOYEES IN THE CARE NEEDED FOR STUDENTS WITH DIABETES.

(a) Georgia law, specifically O.C.G.A. § 20-2-779, requires schools to train at least two school employees in the care needed for students with diabetes. A school employee shall not be subject to any penalty or disciplinary action for refusing to serve as trained diabetes personnel.

(b) Training shall be conducted by a school nurse or other health care professional with expertise in diabetes and shall take place prior to the commencement of each school year, or as needed when a student with diabetes enrolls at a school, or when a student is newly diagnosed with

diabetes. Local boards of education shall ensure that the school nurse or other health care professional provides follow-up training and supervision as necessary

(c) Training shall include at a minimum:

1. Recognition and treatment of hypoglycemia and hyperglycemia;
2. Understanding the appropriate actions to take when blood glucose levels are outside of the target ranges indicated by a student's diabetes medical management plan;
3. Understanding physician instructions concerning diabetes medication dosage, frequency, and the manner of administration;
4. Performance of finger-stick blood glucose checking, ketone checking, and recording the results;
5. Administration of insulin and glucagon, an injectable used to raise blood glucose levels immediately for severe hypoglycemia, and the recording of results;
6. Performance of basic insulin pump functions;
7. Recognizing complications that require emergency assistance;
8. Recommended schedules and food intake for meals and snacks, the effect of physical activity upon blood glucose levels, and actions to be implemented in the case of schedule disruption; and
9. The requirements of O.C.G.A. § 20-2-779 and State Board of Education Rule 160-4-8-.18 *Diabetes Medical Management Plans*.

(d) Schools shall document training provided under O.C.G.A. § 20-2-779. Specifically, schools shall record the name, title, and credentials of the health care professional providing the training, and the names and titles of the school personnel receiving training as trained diabetes personnel.

(e) Suggested tools for providing training are [Helping the Student with Diabetes Succeed: A Guide for School Personnel](#) published by the National Diabetes Education Program and [Diabetes Care Tasks at School: What Key Personnel Need to Know](#) was produced by the American Diabetes Association (“School Training Modules”). The American Diabetes Association’s [School Training Modules](#) contain thirteen downloadable PowerPoint presentations and corresponding videos that are designed to be used by the school nurse or another health care professional to train school staff.

(f) The Georgia Department of Education recommends that all trained diabetes personnel and other school personnel be familiar with the National Diabetes Education Program’s publication [Helping the Student with Diabetes Succeed: A Guide for School Personnel](#). This resource was developed by the National Institute of Health, the Centers for Disease Control and Prevention, and other organizations and is available here:

<http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=97#main>

(5) GENERAL CARE NEEDED FOR STUDENTS WITH DIABETES.

(a) Each school shall review and implement the diabetes medical management plan provided by the parent or guardian of a student with diabetes who seeks diabetes care while at school. Generally, the school nurse is the most appropriate person in the school setting to provide care management for a student with diabetes. Other trained diabetes personnel shall be available as

necessary. The school nurse or at least one trained diabetes personnel shall be on site at each school and available during regular school hours to provide care to each student with a diabetes medical management plan being implemented by the school. For purposes of field trips, the parent or guardian, or designee of such parent or guardian, of a student with diabetes may, at the discretion of the school, accompany such student on a field trip.

(b) Each local school system and state chartered special school shall provide information in the recognition of diabetes related emergency situations to all employed or contracted bus drivers responsible for the transportation of a student with diabetes.

(c) The Georgia Department of Education recommends that all trained diabetes personnel and other school personnel be familiar with the National Diabetes Education Program's publication Helping the Student with Diabetes Succeed: A Guide for School Personnel. This resource was developed by the National Institute of Health, the Centers for Disease Control and Prevention, and other organizations and is available here:

<http://ndep.nih.gov/publications/PublicationDetail.aspx?PubId=97#main>

(d) School staff should:

1. Observe students with diabetes for signs and symptoms of hypoglycemia or hyperglycemia, and should notify the school nurse or trained diabetes personnel of negative signs and symptoms;
2. Be aware of the nutritional needs of students with diabetes;
3. Promote good hygiene to help prevent infection in students with diabetes;
4. Report any blood or other bodily fluid contamination to the school nurse or trained diabetes personnel for cleaning and handling in accordance with Universal Precautions.
5. Support students in the self-management of their diabetes as outlined in the DMMP; and
6. Offer emotional support to students with diabetes and refer students to the school nurse, trained diabetes personnel, or other resources when appropriate.

(e) In accordance with the request of a parent or guardian of a student with diabetes and the student's diabetes medical management plan, the school nurse or, in the absence of the school nurse, trained diabetes personnel shall perform functions including, but not limited to, responding to blood glucose levels that are outside of the student's target range; administering glucagon; administering insulin, or assisting a student in administering insulin through the insulin delivery system the student uses; providing oral diabetes medications; checking and recording blood glucose levels and ketone levels, or assisting a student with such checking and recording; and following instructions regarding meals, snacks, and physical activity. As provided in O.C.G.A. § 20-2-779, these activities do not constitute the practice of nursing and are exempted from all applicable statutory and regulatory provisions that restrict what activities can be delegated to or performed by a person who is not a licensed health care professional.

(f) Upon written request of a student's parent or guardian and if authorized by the student's diabetes medical management plan, a student with diabetes shall be permitted to perform blood glucose checks, administer insulin through the insulin delivery system the student uses, treat hypoglycemia and hyperglycemia, and otherwise attend to the monitoring and treatment of his or

her diabetes in the classroom, in any area of the school or school grounds, and at any school related activity, and he or she shall be permitted to possess on his or her person at all times all necessary supplies and equipment to perform such monitoring and treatment functions.

(6) REQUIREMENTS FOR DIABETES MEDICAL MANAGEMENT PLANS (DMMP).

(a) Sample forms of diabetes medical management plans (DMMP) are provided in Appendix A.

(b) A DMMP shall be signed by a health care professional.

(c) A DMMP shall:

1. Outline the dosage, delivery system, and schedule for blood glucose monitoring, insulin/medication administration, glucagon administration, ketone monitoring, meals and snacks, physical activity and include the student's usual symptoms of hypoglycemia and hyperglycemia, and their recognition and treatment;
2. Include emergency contact information; and
3. Address the student's level of self-care and management.

(d) A DMMP should be completed and submitted to the school at least annually.

(e) Emergency contact information and any medical history contained in the DMMP may be updated at any time without signature or assistance of a health care professional.

(7) ADDITIONAL REQUIREMENTS.

(a) A school must adhere to a DMMP for a student provided by a parent or guardian that is signed by a health care professional.

(b) A school shall not administer any treatment to a student with diabetes that is not outlined in his or her DMMP.

(c) A student's school choice under O.C.G.A. § 20-2-2130 or other applicable law shall in no way be restricted because the student has diabetes.

(d) No physician, nurse, school employee, local school system, or state chartered special school shall be liable for civil damages or subject to disciplinary action under professional licensing regulations or school disciplinary policies as a result of the activities authorized or required by O.C.G.A. § 20-2-779 when such acts are committed as an ordinarily reasonably prudent physician, nurse, school employee, local school system, or state chartered special school would have acted under the same or similar circumstances.

APPENDIX A

Form 1: Sample Diabetes Medical Management Plan (DMMP)

Form 2: Sample Hyperglycemia Emergency Care Plan

Form 3: Sample Hypoglycemia Emergency Care Plan

Georgia Department of Education
Guidelines for the Care Needed for Students with Diabetes

MANAGEMENT OF HIGH BLOOD GLUCOSE (above ____ mg/dl)

- Sugar-free fluids/frequent bathroom privileges.
- If BG is greater than 300, and it's been 2 hours since last dose, give HALF FULL correction formula noted above.
- If BG is greater than 300, and it's been 4 hours since last dose, give FULL correction formula noted above.
- If BG is greater than ____, check for ketones. Notify parent if ketones are present.
- Child should be allowed to stay in school unless vomiting and moderate or large ketones are present.

MANAGEMENT DURING PHYSICAL ACTIVITY:

Student shall have easy access to fast-acting carbohydrates, snacks, and blood glucose monitoring equipment during activities. Child should NOT exercise if blood glucose levels are below ____ mg/dl or above 300 mg/dl and urine contains moderate or large ketones.

- Check blood sugar right before physical education to determine need for additional snack.
- If BG is less than ____ mg/dl, eat 15-45 grams carbohydrates before, depending on intensity and length of exercise.
- Student may disconnect insulin pump for 1 hour or decrease basal rate by _____.
- For new activities: Check blood sugar before and after exercise only until a pattern for management is established.
- A snack is required prior to participation in physical education.

SIGNATURE OF AUTHORIZED PRESCRIBER (MD, NP, PA): _____ Date: _____

NOTIFY PARENT of the following conditions: (If unable to reach parent, call diabetes provider office.)

- a. Loss of consciousness or seizure (convulsion) immediately after calling 911 and administering glucagon.
- b. Blood sugars in excess of 300 mg/dl, when ketones present.
- c. Abdominal pain, nausea/vomiting, fever, diarrhea, altered breathing, altered level of consciousness.

SPECIAL MANAGEMENT OF INSULIN PUMP: Applicable to student? Yes No (If yes, select options below)

- Contact Parent in event of: * pump alarms or malfunctions * detachment of dressing/infusion set out of place *Leakage of insulin
- * Student must give insulin injection * Student has to change site * Soreness or redness at site
- * Corrective measures do not return blood glucose to target range within ____ hours
- Parents will provide extra supplies including infusion sets, reservoirs, batteries, pump insulin, and syringes.

<p>This student requires assistance by the School Nurse or Trained Diabetes Personnel with the following aspects of diabetes management:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Monitor and record blood glucose levels <input type="checkbox"/> Respond to elevated or low blood glucose levels <input type="checkbox"/> Administer glucagon when required <input type="checkbox"/> Calculate and give insulin injections <input type="checkbox"/> Administer oral medication <input type="checkbox"/> Monitor blood or urine ketones <input type="checkbox"/> Follow instructions regarding meals and snacks <input type="checkbox"/> Follow instructions as related to physical activity <input type="checkbox"/> Respond to CGM alarms by checking blood glucose with glucose meter. Treat using Management plan on page 1. <input type="checkbox"/> Insulin pump management: administer insulin, inspect infusion site, contact parent for problems <input type="checkbox"/> Provide other specified assistance: _____ 	<p>This student may independently perform the following aspects of diabetes management:</p> <p>Monitor blood glucose:</p> <ul style="list-style-type: none"> <input type="checkbox"/> in the classroom <input type="checkbox"/> in the designated clinic office <input type="checkbox"/> in any area of the school and at any school <ul style="list-style-type: none"> <input type="checkbox"/> Monitor urine or blood ketones <input type="checkbox"/> Calculate and give own injections <input type="checkbox"/> Calculate and give own injections with supervision <input type="checkbox"/> Treat hypoglycemia (low blood sugar) <input type="checkbox"/> Treat hyperglycemia (elevated blood sugar) <input type="checkbox"/> Carry supplies for blood glucose monitoring <input type="checkbox"/> Carry supplies for insulin administration <input type="checkbox"/> Determine own snack/meal content <input type="checkbox"/> Manage insulin pump <input type="checkbox"/> Replace insulin pump infusion set <input type="checkbox"/> Manage CGM
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LOCATION OF SUPPLIES EQUIPMENT: (Parent will provide and restock all supplies, snacks, and low blood sugar treatment supplies.)

This section will be completed by school personnel and parent:

		Clinic Room	With Student			Clinic Room	With Student
Blood glucose equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Glucagon kit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Insulin administration supplies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Glucose gel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ketone supplies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Juice/low blood glucose snacks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Georgia Department of Education
Guidelines for the Care Needed for Students with Diabetes

My signature provides authorization for the above Diabetes Mellitus Medical Management Plan. I understand that all procedures must be implemented within state laws and regulations. This authorization is valid for one year.

SIGNATURE of AUTHORIZED PRESCRIBER: _____ **DATE:** _____
Authorized Prescriber: MD, NP, PA

Name of Authorized Prescriber: _____

Address: _____

Phone: _____

SIGNATURES

I (Parent/Guardian) _____ understand that all treatments and procedures may be performed by the student and/or Trained Diabetes Personnel within the school, or by EMS in the event of loss of consciousness or seizure. I also understand that the school is not responsible for damage, loss of equipment, or expenses utilized in these treatments and procedures. I give permission for school personnel to contact my child's diabetes provider for guidance and recommendations. I have reviewed this information form and agree with the indicated information. This document serves as the Diabetes Medical Management Plan as specified by the Georgia state law.

PARENT SIGNATURE: _____

DATE: _____

SCHOOL NURSE SIGNATURE: _____

DATE: _____

Form 2: Sample Hyperglycemia Emergency Care Plan

Diabetes – Hyperglycemia Emergency Care Plan (For High Blood Glucose)

School Year: _____

Student Name: _____

Teacher: _____ Grade: ____ Date of Plan: _____

Emergency Contact Information	
Mother/Guardian _____	
Email address: _____	Home phone: _____
Work phone: _____	Cell: _____
Father/Guardian _____	
Email address: _____	Home phone: _____
Work phone: _____	Cell: _____
Health Care Provider _____	
Phone number: _____	
School Nurse: _____	
Contact number(s): _____	
Trained Diabetes Personnel: _____	
Phone number(s): _____	

Causes of Hyperglycemia	Onset of Hyperglycemia
<ul style="list-style-type: none"> Too little insulin or other glucose-lowering medication Food intake that has not been covered adequately by insulin Decreased physical activity Illness Infection Injury Severe physical or emotional stress Pump malfunction 	<ul style="list-style-type: none"> Over several hours or days

Georgia Department of Education
Guidelines for the Care Needed for Students with Diabetes

Hyperglycemia Signs	Hyperglycemia Emergency Symptoms (Diabetic Ketoacidosis, DKA, which is associated with hyperglycemia, ketosis, and dehydration)
Circle student's usual signs and symptoms.	
<ul style="list-style-type: none"> • Increased thirst and/or dry mouth • Frequent or increased urination • Change in appetite and nausea • Blurry vision • Fatigue • Other: _____ 	<ul style="list-style-type: none"> • Dry mouth, extreme thirst, and dehydration • Nausea and vomiting • Severe abdominal pain • Fruity breath • Heavy breathing or shortness of breath • Chest pain • Increasing sleepiness or lethargy • Depressed level of consciousness

Actions for Treating Hyperglycemia	
Notify School Nurse or Trained Diabetes Personnel as soon as you observe symptoms.	
Treatment for Hyperglycemia	Treatment for Hyperglycemia Emergency
<ul style="list-style-type: none"> • Check the blood glucose level: _____ mg/dL. • Check urine or blood for ketones if blood glucose levels are greater than: _____ mg/dL. • If student uses a pump, check to see if pump is connected properly and functioning. • Administer supplemental insulin dose: _____. • Give extra water or non-sugar-containing drinks (not fruit juices): _____ ounces per hour • Allow free and unrestricted access to the restroom. • Recheck blood glucose every 2 hours to determine if decreasing to target range of _____ mg/dL. • Restrict participation in physical activity if blood glucose is greater than _____ mg/dL and if ketones are moderate to large. • Notify parents/guardian if ketones are present. 	<ul style="list-style-type: none"> • Call parents/guardian, student's health care provider, and 911 (Emergency Medical Services) right away. • Stay with the student until Emergency Medical Services arrive.

from “Helping the Student with Diabetes Succeed: A Guide for School Personnel,” 2010 Edition, pages 111 - 112)

Form 3: Sample Hypoglycemia Emergency Care Plan

Diabetes – Hypoglycemia Emergency Care Plan (For Low Blood Glucose)

School Year: _____

Student Name: _____

Teacher: _____ Grade: ____ Date of Plan: _____

Emergency Contact Information	
Mother/Guardian _____	
Email address: _____	Home phone: _____
Work phone: _____	Cell: _____
Father/Guardian _____	
Email address: _____	Home phone: _____
Work phone: _____	Cell: _____
Health Care Provider _____	
Phone number: _____	
School Nurse: _____	
Contact number(s): _____	
Trained Diabetes Personnel: _____	
Phone number(s): _____	

The student should never be left alone, or sent anywhere alone, or with another student, when experiencing hypoglycemia.

Causes of Hypoglycemia	Onset of Hypoglycemia
<ul style="list-style-type: none"> Too much insulin Missing or delaying meals or snacks Not eating enough food (carbohydrates) Giving extra, intense, or unplanned physical activity Being ill, particularly with gastrointestinal illness 	<ul style="list-style-type: none"> Sudden – symptoms may progress rapidly

Georgia Department of Education
Guidelines for the Care Needed for Students with Diabetes

Hypoglycemia Symptoms Circle student's usual symptoms.	
Mild to Moderate	Severe
<ul style="list-style-type: none"> • Shaky or jittery • Sweaty • Hungry • Pale • Headache • Blurry vision • Sleepy • Dizzy • Confused • Disoriented 	<ul style="list-style-type: none"> • Uncoordinated • Irritable or nervous • Argumentative • Combative • Changed personality • Changed behavior • Inability to concentrate • Weak • Lethargic • Other: _____
<ul style="list-style-type: none"> • Inability to eat or drink • Unconscious • Unresponsive • Seizure activity or convulsions (jerking movements) 	

Actions for Treating Hypoglycemia	
Notify School Nurse or Trained Diabetes Personnel as soon as you observe symptoms. If possible, check blood glucose (sugar) at fingertip. Treat for hypoglycemia if glucose level is less than _____ mg/dL. WHEN IN DOUBT, ALWAYS TREAT FOR HYPOGLYCEMIA AS SPECIFIED BELOW.	
Treatment for Mild to Moderate Hypoglycemia	Treatment for Severe Hypoglycemia
<ul style="list-style-type: none"> • Provide quick-acting glucose (sugar) product equal to _____ grams of carbohydrates. Examples of 15 grams of carbohydrates include: <ul style="list-style-type: none"> ○ 3 or 4 glucose tablets ○ 1 tube of glucose gel ○ 4 ounces of fruit juice (not low-calorie or reduced sugar) ○ 6 ounces of soda (1/2 can)(not low-calorie or reduced sugar) • Wait 10 to 15 minutes. • Recheck blood glucose level. • Repeat quick-acting glucose product if blood glucose level is less than _____ mg/dL. • Contact the student's parents/guardian. 	<ul style="list-style-type: none"> • Position the student on his or her side. • Do not attempt to give anything by mouth. • Administer glucagon: _____ mg at _____ site. • While treating, have another person call 911 (Emergency Medical Services) • Contact the student's parents/guardian. • Stay with the student until Emergency Medical Services arrive. • Notify student's health care provider.

from "Helping the Student with Diabetes Succeed: A Guide for School Personnel," 2010 Edition, pages 109 - 110)

DIABETES MELLITUS MEDICAL MANAGEMENT PLAN

School Year: 20__ to ____

This student requires assistance by the School Nurse or Trained Diabetes Personnel with the following aspects of diabetes management:

- Monitor and record blood glucose levels
- Respond to elevated or low blood glucose levels
- Administer glucagon when required
- Administer insulin or oral medication
- Monitor blood or urine ketones
- Follow instructions regarding meals and snacks
- Follow instructions as related to physical activity
- Insulin pump management: administer insulin, inspect infusion site, contact parent for problems
- Provide other specified assistance: _____

This student may independently perform the following aspects of diabetes management:

Monitor blood glucose:

- in the classroom
- in the designated clinic office
- in any area of the school and at any school related activity

- Monitor urine or blood ketones
- Administer insulin
- Treat hypoglycemia (low blood sugar)
- Treat hyperglycemia (elevated blood sugar)
- Carry supplies for blood glucose monitoring
- Carry supplies for insulin administration
- Determine own snack/meal content
- Manage insulin pump
- Replace insulin pump infusion set

LOCATION OF SUPPLIES/EQUIPMENT: (To be completed by school personnel and parent. Parent to provide and restock snacks and low blood sugar supplies box.)

	Clinic room	With student		Clinic room	With student
Blood glucose equipment	<input type="checkbox"/>	<input type="checkbox"/>	Glucagon kit	<input type="checkbox"/>	<input type="checkbox"/>
Insulin administration supplies	<input type="checkbox"/>	<input type="checkbox"/>	Glucose gel	<input type="checkbox"/>	<input type="checkbox"/>
Ketone supplies	<input type="checkbox"/>	<input type="checkbox"/>	Juice / low blood glucose snacks	<input type="checkbox"/>	<input type="checkbox"/>

EMERGENCY NOTIFICATION: Notify parents of the following conditions:

- a. Loss of consciousness or seizure (convulsion) immediately after calling 911 and administering glucagon.
- b. Blood sugars in excess of 300 mg/dl, when ketones present.
- c. Abdominal pain, nausea/vomiting, fever, diarrhea, altered breathing, altered level of consciousness.

Parent/Guardian: _____ Phone at Home: _____ Work: _____ Cell/Pager: _____

Parent/Guardian: _____ Phone at Home: _____ Work: _____ Cell/Pager: _____

Other emergency contact: _____ Phone #: _____ Relationship: _____

Insurance Carrier: _____ Preferred Hospital: _____

SIGNATURES: I understand that all treatments and procedures may be performed by the student and/or Trained Diabetes Personnel within the school, or by EMS in the event of loss of consciousness or seizure. I also understand that the school is not responsible for damage, loss of equipment, or expenses utilized in these treatments and procedures. I give permission for school personnel to contact my child's diabetes provider for guidance and recommendations. I have reviewed this information form and agree with the indicated information. This document serves as the Diabetes Medical Management Plan as specified by Georgia state law.

PARENT SIGNATURE: _____ DATE: _____

SCHOOL NURSE SIGNATURE: _____ DATE: _____

My signature provides authorization for the above Diabetes Mellitus Medical Management Plan. I understand that all procedures must be implemented within state laws and regulations. This authorization is valid for one year.

- Dose/treatment changes may be relayed through parent.
- Student is due for medical appointment for review of diabetes management plan.

HEALTHCARE PROVIDER SIGNATURE: _____ Date: _____

Diabetes Care Provider: _____ Phone #: _____

Address: _____

Eczema

Eczema is a form of dermatitis or inflammation of the upper layer of the skin called epidermis. The term eczema is applied to a range of persistent skin conditions which include dryness, recurring skin rashes, itching, redness, skin swelling, flaking, blistering, cracking, oozing or bleeding.

One type of eczema, atopic dermatitis, is a chronic, inflammatory skin condition that begins in early childhood due to a skin barrier defect. Atopic dermatitis affects about 10-15 percent of the population and is becoming more common for reasons that are not well understood. It affects up to 20 percent of children worldwide. Children with atopic dermatitis often have a family or personal history of asthma and hay fever. Atopic dermatitis is not contagious to others, but it often runs in families. The psychological impact of this disease is significant, especially feelings of embarrassment and frustration.

Itch is the main clinical feature of eczema and can cause sleep disturbance and stress for the affected person and their family. Sleep disruption is common (80 percent), and 60 percent report the condition affecting their daily activities. Although there is no cure, most patients can expect to gain good control of their eczema through proper management with support from their parent/caregiver, schools and community.

Types of Eczema	Symptoms
Atopic eczema or atopic dermatitis	Hereditary component; particularly noticeable on the face, scalp, neck, inside of elbows, behind knees, flexural area of the arms and buttocks, and starts before the age of two.
Contact dermatitis	Allergy resulting from a direct reaction to nickel or poison ivy or other topical agents.
Seborrheic dermatitis	Causes dry or greasy scaling of the scalp (dandruff or cradle cap), eyebrows, inside of ears, behind the ears, sides of nose, mid-chest, axilla or suprapubic region. It is the most common cause of dandruff.
Dyshidrotic hand/foot eczema	Only occurs on the palms, soles, sides of fingers or toes; tiny bumps or vesicles appear on the affected areas; this type of eczema is extremely itchy. Stress can be a trigger.
Nummular eczema	Characterized by round spots that are dry, scaly, red, flaking and sometimes cracking, oozing, or bleeding; can often be confused with fungal infections. This type is more common in winter.
Eczema herpeticum	Widespread herpes infection of the skin in children with eczema.
Perioral dermatitis	This skin condition is more of an acne than an eczema. It responds well to both topical and systemic antibiotics. Topical steroids are not an effective treatment because rash returns often worse than before when the topical steroid is discontinued.

Diagnosis of Eczema

The diagnosis of eczema/atopic dermatitis is largely done on the basis of history and physical examination. To specifically diagnose a rash as atopic dermatitis, at least three major features and three minor features should be present. (See chart below):

Major Features
Itching (that can be severe at times)
Chronic and recurring (repeatedly occurring symptoms)
Typical distribution of the atopic dermatitis rash: <ul style="list-style-type: none">• Infants and young children – scalp, face (chin and cheeks) and extensor surfaces of extremities• Older children and adults – flexor surface of elbow and knee (inside creases), neck, wrist and ankles
Past/Family history of atopic diseases like asthma, rhinitis (hay fever), etc.
Minor Features
Dryness of skin
Thickening of palm skin with increase in skin lines
Small and pointed rough bumps
Elevated serum IgE (Immunoglobulin E) levels
Facial pallor (around the mouth)
Food intolerance often wheat, eggs, peanuts
Impaired immunity (trouble fighting infection)
Eyes: cataracts, cone-shaped cornea (keratoconus), prominent skin folds below the eyes (Morgan Dennie lines)

Prevention of Eczema

Eczema outbreaks can usually be minimized with some simple precautions. The following suggestions may help to reduce the severity and frequency of flare-ups:

- Moisturize frequently (emollients such as petrolatum are best). Avoid scented lotions.
- Avoid sudden changes in temperature or humidity.
- Avoid sweating or overheating.
- Reduce stress.
- Avoid scratchy materials (e.g., wool or synthetics, just use cotton).
- Avoid harsh soaps, detergents and solvents.
- Avoid environmental factors that trigger allergies (e.g., pollens, molds, mites and animal dander).
- Be aware of any foods that may cause an outbreak and avoid those foods.

Eczema and Skin Cleansers

Recommendations in choosing soap generally include:

- Avoid harsh detergents or drying soaps. Avoid soaps with fragrance.
 - Use Cetaphil® or CeraVe™ or Dove®. Aveeno makes an oatmeal based soap that is gentle.
- Avoid cleansers that are drying.
- Avoid hand sanitizers that have a high concentration of alcohol.
- Instructions for using soap:
 - Use soap sparingly.
 - Use your hands or a soft washcloth as opposed to a harsh scrub device or Loofa sponge that might abrade the skin.
 - Use soap only on areas where it is necessary—intertriginous areas.
 - Soap up only at the very end of the bath.
 - Use a fragrance-free barrier-type moisturizer such as petroleum jelly before drying off—other moisturizers include Aquaphor®, Eucerin®, CeraVe™, Cetaphil®, Aveeno®, Cutemol®
 - If a cleanser stings or burns when applied, avoid it.

Treatment

Treatment focuses on reducing inflammation and associated skin abnormalities such as itch, dryness, heat, redness and secondary infection. Secondary infection can present as broken, bleeding or oozing skin. Parents and patients should be educated about the chronic nature of the disease and the need for continued adherence to proper skin care. There is no cure for atopic dermatitis but often the condition improves with age.

When the skin becomes tender, red, stings or no longer responds to the topical medication, then a secondary infection might have occurred and an antibiotic will need to be prescribed by your doctor. This can happen several times a year in patients with severe eczema.

Treatment	
Bathing and Moisturizers	Reasonable recommendation for bathing is once daily with warm water rather than hot water. Avoid long hot baths as they dry the skin. Immediately after bathing and before the skin is completely dry, patients/parents should apply a moisturizer liberally. There are many lotions and creams that are recommended for very dry skin. Avoid heavily fragranced products. Moisturizers help make up for the defective barrier.
Antihistamines	Pruritus (itch) that is refractory to moisturizers and conservative treatment can be treated with antihistamines. The sedating agents such as hydroxyzine and diphenhydramine are more effective in controlling pruritus than the newer non-sedating histamines—Claritin®, Clarinex®, XYZAL®, Zyrtec®.
Antibiotics	Antibiotics should be used to treat secondary bacterial infections. If skin infections are not treated, the eczema will not improve.
Corticosteroids	Systemic corticosteroids should be avoided and only sparingly used in patients with severe treatment-resistant disease. Topical corticosteroids are effective in patients with eczema, but therapy with these agents should not replace the frequent use of moisturizers. Local side effects of topical steroids include skin atrophy (thinning), striae (stretch marks), telangiectasias, hypopigmentation, rosacea, perioral dermatitis and acne. Steroids should be used as directed by physician.
Immunomodulators	Topical immunomodulators like Elidel® and Protopic® can be very effective in treating eczema and atopic dermatitis and do not have the side effects of topical steroids. The US Food and Drug Administration has issued a public health advisory about the possible risk of lymphoma or skin cancer from use of these products, but many professional medical organizations disagree with the FDA's black box warning because the FDA used data from monkeys force-fed with immunomodulators in extremely large doses. These products should also be used as directed by physician.

Management at School

The difficulties faced by children with eczema at school are often underestimated. Problems include time away from school, impaired performance because of disturbed sleep at night, social restrictions, teasing and bullying. Eczema can also cause practical problems relating to handwashing, writing, physical education and swimming. Some children may need to bring milder soaps to wash hands (avoiding harsh antibacterial soaps) and apply emollients and topical medications while at school. Other children may require additional treatment with dressings or bandages. Application of these dressings should be done at home, but school staff should be aware and support children, helping them to overcome feelings of embarrassment. Children with severe eczema may be regarded as having special educational needs if the condition affects their education.

Students with eczema may present with behaviors and characteristics that impact their education and social well-being. Students may benefit from assistance and support with additional issues. These may include:

- fatigue
- poor concentration
- body image
- self-esteem
- social connectedness
- attendance

Communication

School nurses play a key role in communicating between the child, the family and the school and in educating school staff about eczema and its effects.

The school, health professionals, family and student should work together to ensure comfort with the provision of information to school and peers, as well as discuss other related health concerns such as dietary requirements and allergies if relevant. Parents should take the time to fully explain their child's eczema problem to administrators and classroom teachers. Eczema is not just a rash, and symptoms should be taken seriously by educators. Establish a key contact person with whom the family and student can communicate with regard to eczema and school issues such as the school nurse and/or clinic aide.

Stress or Anxiety

Stress or anxiety can cause flare-ups in children with eczema. Schools are encouraged to explore support mechanisms available to students with a chronic health condition, as required. There should be a key contact person who can monitor, explore and assist with stress-related issues. School-related stress can be a major source of anxiety for students, from fears of other students' comments about the rash or the scabbing that goes with it, to dealing with the general discomfort of the condition. Parents and educators should work together to reduce a student's stress and to ease any concerns that could contribute to flare-ups.

Environment

- Sit on a chair rather than the carpet.
- Children should wear 100 percent cotton clothing and loose cotton clothes where possible.
- Put a cotton cloth or towel over plastic chairs before sitting.

Medications and Other Related Medical Issues

- Lack of moisture is a major symptom of eczema. Be sure the student has constant access to his or her emollients for immediate relief of itchy, dry skin that can cause bouts of scratching and interfere with concentration. Pump action dispensers for emollients are easier, more hygienic and less "messy" for use in a classroom.

- Child should have predetermined spaces for moisturizing, cool compressing and changing clothes if necessary. Arrange for children with eczema to have somewhere private to apply emollients and for young children to receive help to apply emollients.
- Children should have access to their soap substitute at all times.
- Children should avoid use of alcohol-based hand sanitizer gels and sprays.
- Monitor attendance. Students who are unable to attend school due to eczema should seek medical attention.
- If required, notice should be distributed requiring parents/guardians to notify the school of measles and chickenpox on school letterhead.
- As with all students, discuss medication needs with student/parent/guardian and use as directed. Be aware that some types of sunscreens may act as a trigger especially those that contain alcohol such as sprays.
 - Discuss a discreet signal/sign to encourage student to apply cool compress or moisturizer to minimize itch. Students can find it extremely difficult to refrain from itching, so adopting strategies that help to distract children from scratching would be beneficial.
 - Develop IHP and update at least once at the beginning of each school year or more frequently as needed.

Education for staff & students on eczema

Each year, the school nurse, teacher, bus drivers and before/after school care providers should be given updates on the condition of a child with eczema. These updates should include current triggers, new allergies and current medications and dosages. Students and families may benefit from discussions on the educational, social and future implications of school attendance. Class education about eczema in consultation with the student may assist with possible adverse reactions from peers.

The National Eczema Society provides information packs for schools at eczema.org/eczema-at-school

Exercise

Negotiate maximum participation in physical activities with consideration of eczema; students may need to apply moisturizer before and after swimming. Involvement in extracurricular activities is important, keeping in mind that changes in temperature can aggravate eczema. Be aware of the problems caused by temperature changes in PE lessons and allow either long-sleeved shirt or being excused in extremes of temperature.

Other Accommodations

- Allow students to have a drink bottle on desk.
- Remind students not to sit near a heater or in direct sunlight; keep cool, avoiding radiators and sunny windows.
- Ensure access to wet towels/wipes to apply directly to affected skin.
- Keep the student active to divert their attention from the itch.
- Consider requiring short rest breaks to assist with issues of concentration and fatigue that may result from disrupted sleep patterns.
- Use non-irritant gloves to protect hands during Art, Pottery and Food Technology activities. Students may benefit from wearing gloves when working or playing with various mediums such as paint, glue or sand. If a child has been playing in sand, ensure sand is washed off gently.
- Allow the child to watch, rather than handle chemicals, in science class.

Headaches

Headaches in children are common and can be divided into two categories: primary and secondary. Primary headaches occur without any underlying health problem and include tension-type, migraine (with or without aura) and cluster headaches.

Secondary headaches result from another condition or cause, including:

- Concussion
- Brain tumor
- Blood vessel problems
- Medication side effects
- Infections such as strep throat, sinusitis and meningitis
- Hypoglycemia
- Caffeine dependence
- Visual impairment (refractive error)
- High blood pressure

A sudden, severe headache, or a headache accompanied by stiff neck, fever and/or rash, should be evaluated immediately.

Medical attention to address the cause of headaches is important if they are frequent, severe or accompanied by symptoms such as fever, nausea, vomiting, neck pain, light or sound sensitivity, auras or warnings, or if there is a family history of headaches. A pattern of headaches that occur early in the morning and then improve as the day goes on is particularly worrisome and requires prompt attention. In the case of early morning headaches, the cause for concern is a tumor. Other issues may also cause AM headaches, but generally not when waking in the morning.

Headaches secondary to hypoglycemia are fairly easily recognized by timing in relation to food intake (or lack thereof) and response to food (juice is usually used). Specifically, these might present in the AM if breakfast was skipped or later in the day if lunch was skipped. They are always associated with other symptoms such as dizziness, sweating, confusion and—if severe—loss of consciousness.

Disability from headaches can be significant, causing absenteeism and lost learning opportunities while the student is feeling pain. Headaches can also manifest when there is undiagnosed vision impairment. Vision screening should always be considered when recurrent headaches are occurring and can easily help to identify a refraction error. Caffeine dependence is becoming a problem in older children and teens likely because of energy drinks.

Post-concussion headaches, as part of post-concussion syndrome, have become more common with increasing participation in contact sports. Post-concussion syndrome can cause significant decrease in school performance. Controlled return to normal classroom work, as well as a controlled return to normal physical activity, is necessary for the child who has suffered a concussion.

Most children with recurrent headache have migraines. Migraines are estimated to occur in four to five percent of children, often beginning before age 10. Before puberty, boys and girls are affected equally. After puberty, girls with migraines outnumber boys 3:1. The cause of migraine is considered to be genetic. However, these headaches are often triggered by changes in the environment such as bright lights, changing weather patterns, allergies, certain foods or strong odors.

Some children with migraines will experience an aura before the headache starts, such as visual loss or a sensation of flashing lights. These headaches are usually described as throbbing, or pulsating, may be felt in the frontal area or unilaterally, and often are accompanied by intolerance for light and noise as well as nausea and sometimes vomiting. Stress is probably the strongest trigger factor for migraine headaches.

Tension-type headaches can occur anywhere on the head, and are usually bilateral and constant.

Treatment

The frequency and severity of migraine may be decreased by adequate sleep, balanced meals at regular times, and avoidance of identified triggers and stressful situations. Hydration is very important with avoidance of sugar and caffeine-containing beverages. Fluid intake should be equivalent to body weight in pounds up to 100 oz. maximum. Ibuprofen at 10-15mg/kg body weight (maximum 600mg) is the recommended pain medication for children with headache. Several additional types of medication may be ordered by the child's healthcare provider to be used either prophylactically or at the onset of a headache.

The school nurse can help a student and family by keeping track of headaches that occur at school (frequency, precipitating factors, timing, medications and their effects) and reporting this data back to parents. The nurse can also educate teachers and help the child identify early symptoms so that medication may be taken as soon as possible for optimum effectiveness. An adequate rest period (30-60 minutes) in a quiet environment, if combined with very early use of prescribed medication, may enable the child to return to classes for the rest of the day.

Use of a pain scale (Wong-Baker FACES Pain Rating Scale, Chapter 2) is helpful to the nurse, both to assess the child and to educate the child in self-care skills. Children may also benefit from being taught how and when to use relaxation techniques. Finally, any child with a headache should have his/her blood pressure taken.

Educational Considerations

- Develop IHP/504/IEP as needed.
- Provide any needed accommodations in physical education and/or school schedule.
- Provide for proper administration of all prescribed treatments, medications.
- Provide staff education for needed educational support during school absences.

Resources

Headaches in Kids, What Parents Can Do to Help – American Council for Headache Education

americanmigrainefoundation.org/resource-library/headaches-kids-parents-can-help/

Kids with Chronic Migraines do Better in School

americanmigrainefoundation.org/resource-library/understanding-migraine-kids-with-chronic-migraines-do-better-in-school/

Migraine in Children – American Migraine Foundation

americanmigrainefoundation.org/resource-library/migraine-in-children/

Heart Disease

Heart disease in children can be either congenital or acquired. Each year over 10,000 newborns in the U.S. have congenital heart disease that requires surgery before age 1. These defects range in severity from septal defects between chambers to complete absence of one chamber or valve. Advances in medical and surgical treatments have improved survival rates for even the most complex conditions and are often completed before the child reaches school age. The most common cardiac surgeries during school age include repair of septal defects, valve replacements, revisions to a previous surgery and pacemaker or internal defibrillator implants. More information on individual congenital anomalies can be seen at choa.org/medical-services/cardiac-care.

Other types of congenital heart conditions are inherited structural or electrical anomalies that increase the child's risk of arrhythmias and sudden cardiac arrest. These include hypertrophic and dilated cardiomyopathy, as well as long QT syndrome. These conditions often remain undiagnosed until the child is noticed to have some of the early warning signs such as fainting during exercise or a sudden cardiac arrest occurs. An explanation of these risk conditions for sudden cardiac arrest can be seen on choa.org/medical-services/cardiac-care/project-save-program and sads.org.

Acquired heart diseases that can develop during childhood include Kawasaki disease, rheumatic fever, bacterial endocarditis, cardiomyopathy and myocarditis. Kawasaki disease occurs primarily in children ages 1 to 5 and is characterized by fever, rash, swelling of the hands and feet, swollen lymph glands, reddened eyes and inflammation of the mouth, lips and throat. Long-term heart complications can include things like myocarditis, valvulitis and aneurysms. Rheumatic fever is caused by a strep infection and can result in heart valve damage. Viral heart infections are a major cause of cardiomyopathy, a progressive disease that causes the heart to lose its ability to pump effectively, can cause arrhythmias and is the leading reason for heart transplantation in children. Long QT syndrome can also be acquired by taking certain prescription or OTC drugs such as adrenaline, Elavil, Propulsid, Bactrim, erythromycin and compazine (see complete list at sads.org/living-with-sads/drugs-to-avoid).

Other arrhythmias that can be seen in school-age children include Wolff-Parkinson-White (WPW) syndrome and supraventricular tachycardia (SVT). In WPW, an extra conduction pathway causes the ventricles to contract early, resulting in tachycardia, palpitations, dizziness and fainting. In SVT, children may describe their heart as "racing" or may complain of chest pain, dizziness or fainting. The heart rate can be too fast to count (200-300/min). These two conditions may be treated with medication or catheter ablation. Children can also experience sudden cardiac arrest from trauma to the chest (commotio cordis) and drugs such as ephedra and cocaine.

The most common heart conditions developing in school-age children today are lifelong cardiovascular diseases such as hypertension and atherosclerosis which often begin with risk factors that develop during early childhood and adolescence. These risks include high blood pressure, high cholesterol, smoking, obesity, physical inactivity and type 2 diabetes. Controlling these risk factors during childhood will help reduce the child's chances of developing heart disease, the major cause of death as an adult. School nurses are crucial to advocating for and promoting heart-healthy behaviors among children and youth. This task can be accomplished through encouraging parents and school communities to provide a heart-healthy environment through improved nutrition and increased physical activity and teaching students to eat a healthful diet (including less saturated fats), exercise and not smoke.

Cardiac Surgery

After cardiac surgery, a student can usually return to school seven to 10 days after discharge (as directed by their surgeon). The incision (median sternotomy or left lateral thoracotomy) and chest tube sites will be healing. The surgical incision may have steri-strips or Dermabond. Keep incision uncovered. Clean with soap and water only. Do not use Neosporin® or lotions. The nurse can expect the student to fatigue easily. Students may need frequent rest periods. Physical education class and contact sports are

restricted by their physician for a period of six weeks post surgery to allow complete healing of the sternum. Avoid activities that may cause a direct blow to the chest while the sternum is healing. There may be some discomfort and decreased appetite, and the student may be on diuretics and possibly other medications. Parents may have high anxiety when the child first returns to school and can be reassured, especially on the first day or two, by a phone call from the nurse letting them know how the child is doing.

Medications

- **Diuretics** – side effects include photosensitivity and excessive thirst; liberal use of sunscreen, provide frequent bathroom breaks and water bottle.
- **Analgesics** – may need a dose at school, as ordered.
- **(ACE inhibitor, often Lisinopril, used for post-op hypertension or heart function)** – administer on empty stomach, no need to monitor BP, may develop “dry, non-productive cough and/or dizziness.”
- **Beta-blockers** (used for many arrhythmias) – common side effects are cold hands and feet, fatigue and sleep disturbances, wheezing, dizziness.

Post-operative Complications

- Possible wound infection if incision line is erythematous and fever is over 101°F.
- Post-pericardiotomy syndrome (PPS) usually occurs about the seventh day after surgery. Look for fever, irritability, fatigue, poor appetite, pale gray skin color or cyanosis and chest pain radiating to left shoulder that is worse when supine. Child complains of body aches similar to influenza.
- Pleural effusion includes increased work of breathing, increased respiratory rate, grunting and intercostal or sternal retractions, fatigue and pale grey skin color, duskiess or cyanosis.
- Broken sternal wire will involve pain and tenderness. You will be able to palpate something hard under skin surface along incision line, or a wire will be visibly poking through the skin. Call the parent to make an appointment with surgeon.

Cardiac Catheterization

Many children with heart disease will undergo a cardiac catheterization (cardiac cath). A cardiac cath may be done to assist with diagnosing heart disease, evaluating current cardiac health in patients with known cardiac disease, pre-operative planning or even for the treatment of some congenital heart defects.

Cardiac catheterizations are performed through blood vessels via a puncture or very small incision. For pediatric patients, the most common vessels used for vascular access are in the groin or neck. A cardiac cath may be done in the vein and or artery. Most often the procedure is done as an outpatient and the child may go home the same day. Sometimes he/she will stay overnight for observation.

After a cardiac cath, the patient can often return to school the next day after he/she is discharged from the hospital. Each patient will have post cath instructions from the doctor that will have instructions or limitations specific to the procedure performed. In general, for a diagnostic cath the patient should avoid excessive physical activity (running, lifting anything over 10 lbs, contact sports) for about a week post procedure to reduce the chance of having bleeding at the cath site. If bleeding at the cath site does occur, have the patient lie down and apply pressure at the site with clean gauze for 15 minutes. Physical activity restrictions may be extended for up to six weeks if an intervention was performed during the cardiac cath. This will be specified in the instruction given to the families. All cath patients should also avoid submerging the cath site in water for a week after the cath (no swimming/bath). A shower is fine after 24 hours.

When to call the cardiologist

- Bleeding that does not stop after holding pressure for 15 minutes
- Difficulty breathing or shortness of breath
- Chest pain
- Irregular heartbeat
- Fever over 101°F
- Redness, swelling, pain and or drainage at catheterization site
- New onset fatigue
- If the extremity below the cath side becomes cold, numb, painful.

Pacemakers and Implanted Cardioverter-Defibrillators (ICD)

Approximately 400 students are being followed in Georgia, and 60 more are implanted with pacemakers and five with ICDs annually. The most common reason for pacemaker implants is surgical heart block. Defibrillators are usually implanted for aborted sudden cardiac death or family history of sudden cardiac death with a diagnosed genetic condition such as long QT syndrome, Brugada syndrome or congenital heart disease leading to arrhythmias.

When these devices have been implanted, the school nurse should observe for the following complications:

- Wound infection
- Fever
- Hiccoughing (due to phrenic nerve stimulation)
- Dizziness
- Syncope
- Palpitations
- The device may emit an audible alert or tone. If the alert is associated with symptoms (dizziness, chest pain, syncope), please contact parent or guardian immediately as the child may need to seek medical attention.

The care plan should be individualized by physician orders, which may include:

- Avoid lifting the arm on the side of the implant (or carrying backpack with that arm for five weeks following implant procedure).
- Physical education is recommended.
- Time to rest should be allowed when needed.
- Contact or collision sports should generally be avoided.
- Do not wear music headphones around the neck.
- Be sure to keep music headphones at least one and a half inches from the device.
- Activate EMS and use the AED for unresponsiveness without breathing, as you would for any student.

Management at School for Cardiac Surgery

School Schedule

Sometimes half-days are recommended at first. Student may need to use elevators and be allowed extra time to change classes.

Activity and PE

Carrying and lifting is limited to less than four pounds; avoid picking child up under the arms or pulling to a sitting position by their arms; the child should not carry a backpack for six weeks after surgery; no contact sports for six weeks after surgery.

Emergency Plans

Children with known arrhythmias and other risk factors for sudden cardiac arrest should have a comprehensive emergency care plan, and an AED (automatic external defibrillator) in the building is recommended for some students if ordered by the physician.

Educational Considerations

The school nurse should ask for the following information for the IHP (Individualized Healthcare Plan):

- Diagnosis
- Date of surgery
- Type of surgery
- Location of incision
- Activity level/restrictions
- Diet restrictions
- Medications taken at home and needed at school
- Emotional needs
- Parent's expectations
- Contact information
- Has a neuropsychological evaluation been done with the child? (please see article in Resources, Supporting Development in Children with Congenital Heart Disease, Brosig, C. et al. (2014) *Circulation*; 130: e175-e176).

Possible actions to take include:

- Develop IHP/504/IEP, emergency plan as needed.
- Make needed accommodations with school schedule and physical education.
- Provide for proper administration of all prescribed treatments and medications.
- Extra set of books for use at home
- Work with parents for a referral to a Neuropsychologist. Visit choa.org/neuropsych or call 404-785-2849 to schedule a visit.

Making Sure Your School is HeartSafe



Claire's Story

High school volleyball player Claire had just sent a serve over the net when she grabbed her chest, then collapsed to the floor. She wasn't breathing and her heart wasn't beating. Fortunately for Claire, her school had worked with Project S.A.V.E. to train members of its staff in the use and maintenance of AEDs. Immediately after Claire's cardiac arrest, one of those teachers grabbed the nearest AED and used it to save her life.

Two and a half minutes after her heart stopped, Claire received a shock from the AED. Eleven minutes after she fell, paramedics arrived to take her to the hospital. There, doctors told her parents that because of her specific condition, CPR alone would not have revived her. The paramedics would have been too late. Claire's heart needed a shock to get it working and in rhythm again—a shock that only came in time because her school was prepared and had a plan for a cardiac emergency.

Visit choa.org/projectSAVE to learn more about Claire and her SCA story.



Contact

Contact **Richard Lamphier**, Clinical Program Manager of Project S.A.V.E., at **404-785-7201** or richard.lamphier@choa.org for more information or to arrange a free consultation for your school or organization.

Project S.A.V.E. is an affiliate of Project ADAM, a program of Children's Hospital of Wisconsin.



Project S.A.V.E.

- S** Sudden cardiac arrest
- A** Awareness
- V** Vision for prevention
- E** Education



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Project S.A.V.E.

Children's Healthcare of Atlanta started Project S.A.V.E. in 2004 with the mission of promoting and facilitating the prevention of sudden cardiac arrest (SCA) in children, adolescents and others in Georgia communities.

Highlights

- Since the program's inception, Project S.A.V.E. has:
- Saved more than 85 lives.
 - Brought automated external defibrillator (AED) and CPR training to every county in Georgia.
 - Awarded more than 1,250 HeartSafe certificates to schools across Georgia.
 - Helped one Georgia city become HeartSafe.

Primary prevention and awareness

- Warning signs of possible heart risk in a student:
- Fainting, nearly fainting or seizure-like activity during or immediately after exercise, high emotions or being startled
 - Excessive, unexpected and unexplained fatigue or shortness of breath with exercise
 - Unusual chest, shoulder, back or jaw pain
 - Unexplained heart murmur or high blood pressure

- Premature, unexplained death in a close relative younger than 50
- Close relatives with conditions such as hypertrophic cardiomyopathy, dilated cardiomyopathy, long QT syndrome, Marfan syndrome or clinically important arrhythmias

If any of these signs or family history are present, or if an adult witnesses these symptoms in a student, the student should be further evaluated by his primary care provider, with appropriate referral as indicated.

Project S.A.V.E. supports the use of the standardized preparticipation evaluation endorsed by the Georgia High School Association to identify student athletes at risk for SCA. Use of other screening techniques, such as electrocardiogram (ECG) and echocardiogram, should be at the discretion of a student's healthcare provider.

Secondary prevention

The American Heart Association chain of survival

With prompt recognition of the signs of SCA, children, adolescents or adults who experience a sudden collapse because of ventricular fibrillation can often be successfully treated with early CPR, rapid defibrillation with an AED and early activation of emergency medical services (EMS). All are critical factors for the victim's survival.

An AED is a device that looks for a shockable heart rhythm and delivers a shock only if needed. It is small, portable, automated and easy to operate. Voice prompts give instructions, and the machine will not shock someone who does not need to be shocked. Successful resuscitation depends on treatment with CPR and an AED within three to five minutes. Prompt SCA recognition, a first responder team with CPR skills and an AED in the community are critical to saving a life.

A successful community emergency action plan

Purchasing an AED is only a small part of a successful program. The key elements of a good emergency action plan (EAP) are:

- An AED coordinator who will ensure up-to-date AED maintenance and training of first responder teams
- A written plan that includes communication, response team training and practice, and actions to take after the device is used
- A first responder team of five to 10 people trained in CPR, use of the AED and the EAP
- An AED practice drill at least annually

Visit choa.org/EAP to learn more about creating an EAP.

You can be a Project S.A.V.E. HeartSafe Community

Consultation

Our Project S.A.V.E. staff will provide a free consultation on prevention of sudden cardiac death in your community. Those that request this assistance will receive up-to-date information on:

- How to train staff, students and citizens to recognize SCA and be aware of emergency treatments to prevent death
- Implementation of a comprehensive best-practice AED program and EAP

Recognition

Georgia communities can be recognized as HeartSafe after completing a checklist that demonstrates successful implementation of all program elements. A comprehensive EAP may save the life of a student, staff member, parent or visitor who experiences SCA. This EAP is also a template that can be used to respond to any medical emergency in the community.

Visit choa.org/projectSAFE to learn more about becoming HeartSafe.

Resources

American Heart Association

heart.org/children

Be the Beat

bethebeat.heart.org

Children's Cardiomyopathy Association

childrenscardiomyopathy.org

Heart Disease Risk Factors for Children and Teenagers – Texas Heart Institute

texasheartinstitute.org/HIC/Topics/HSmart/children_risk_factors.cfm

Hypertrophic Cardiomyopathy Association

4hcm.org

Information on ICDs

sads.org/living-with-sads/ICDs

National Association for Children's Heart Disorders

kidswithheart.org

Project ADAM – Children's Hospital of Wisconsin

projectadam.com

Project S.A.V.E. – Children's Healthcare of Atlanta

choa.org/medical-services/cardiac-care/project-save-program

Sudden Arrhythmia Death Syndromes – Information for School Personnel

sads.org/Awareness#.W09Yb9JKjZs

Supporting Development in Children with Congenital Heart Disease

circ.ahajournals.org/content/130/20/e175

The Heart Center at Cincinnati Children's

cincinnatichildrens.org/heart

Medline Plus

nlm.nih.gov/medlineplus/ency/patientinstructions/000096.htm

Camp Information

Camp Braveheart

choa.org/camps/camp-braveheart

Hemophilia-Bleeding Disorders

Hemophilia is typically an inherited blood disorder in which a vital blood-clotting factor is missing or decreased, causing prolonged bleeding. The most common type of hemophilia is Hemophilia A, a deficiency of clotting factor VIII. Hemophilia B, also known as Christmas disease, is a deficiency of clotting factor IX. Hemophilia can also be classified as mild (6-45 percent), moderate (1-5 percent) or severe (<1 percent). Hemophilia classifications (mild, moderate, or severe) describe the amount of factor that the person's body makes, not necessarily the severity of the bleeding symptoms. The majority of people with hemophilia have severe hemophilia (60 percent). The prevalence of hemophilia is 1:5000 males in the U.S. Although males are primarily affected, female carriers may experience bleeding problems as well.

Another inherited bleeding disorder is von Willebrand disease (vWD), a deficiency of or defect in another clotting protein (von Willebrand protein). Von Willebrand proteins carry factor VIII and interact with platelets to form a plug at the site of injury to promote clotting and allow healing. There are many different types of von Willebrand disease (1, 2A, 2B, 2M, 2N, 3...). The type of vWD is determined by the amount, structure, and function of von Willebrand protein. The most common type of vWD is type 1, where there are a low number of von Willebrand proteins that are normally shaped and function well. In type 3 vWD, von Willebrand proteins and factor VIII are low or absent. vWD is thought to occur in 1-2 percent of the population.

Other bleeding conditions include platelet function defects and other clotting factor deficiencies (I, II, V, VII, X, XI, XII, XIII). Platelets promote clotting by accumulating at the site of injury, sticking to von Willebrand protein, and sticking to each other. Platelets form the surface where other clotting factors interact to make a fibrin covering to secure the clot and facilitate healing. Other clotting factor deficiencies are rare.

Bleeding Problems

People with bleeding disorders may experience bleeding from a variety of sites. Mucosal bleeding (nose, gums, bruising, soft tissue hematomas) is common in many bleeding disorders. Women with bleeding disorders may experience heavy or prolonged menstrual periods. Bleeding into joints or muscles occurs more frequently in people with hemophilia. Common joint bleeding sites include knees, ankles and elbows. Early signs of joint bleeding are tingling, stiffness, decreased range of motion, swelling or a decreased ability to use the limb/joint. Blood, outside of blood vessels, is an irritant. Blood inside a joint causes pain, warmth and swelling. The blood inside a joint can damage the cartilage and joint surfaces over time, producing arthritis and disabling joint function. Blood in the gastrointestinal tract can result in nausea, vomiting, and diarrhea. Bleeding may be spontaneous or occur after an injury. Bleeding from lip or tongue lacerations can be persistent. Bleeding may be intermittent and mild or life-threatening.

People with bleeding disorders are at risk for developing bleeding inside their head (intracranial hemorrhage). While most intracranial hemorrhages are the result of trauma to the head, some bleeding disorder patients bleed into their head spontaneously (without trauma). Signs of intracranial hemorrhage include: headaches, changes in consciousness, change in vision, nausea/vomiting and/or neurological changes (inability to move or function normally). Bleeding inside the head can be life-threatening and have long-term consequences.

Treatment

Bleeding from hemophilia is commonly treated by giving intravenous doses of the missing clotting factors. These factor products can be recombinant or plasma derived. Many of the newer agents have extended half-lives, so they do not need to be infused as often. Blood products are sometimes needed for bleeding that does not respond to other bleeding medications or for which no manufactured clotting protein is available. Students, usually around the age of 7 years, and their families are frequently taught how to self-administer intravenous factor infusions. Aminocaproic acid (Amicar) and tranexamic acid (Lysteda) are now available as nose sprays. These are very effective at treating or preventing nosebleeds and many bleeding disorder patients now use them regularly.

Emicizumab (Hemlibra) is the first drug to prevent bleeding in hemophilia A that can be given by subcutaneous injection rather than IV. Although it is effective at preventing a lot of bleeds, additional treatment with traditional products may be needed in the case of injury or trauma.

Students with mild hemophilia and those with vWD may use desmopressin acetate nasal spray (Stimate®). Students who use Stimate® must avoid chocolate, caffeine and drinking plain water for 24 hours after Stimate® use. Stimate® causes the body's salt or sodium level to fall. In order to avoid seizures and other symptoms of hyponatremia (low blood sodium), students are instructed by their medical team to drink a prescribed limited amount of salt-containing beverages (Gatorade® preferred) for 24 hours after using stimate. The Stimate® fluid restriction amount is calculated based on the student's weight. Amicar® (liquid, tablets or nasal spray) or tranexamic acid (tablets or nasal spray) also may be given by mouth to slow the breakdown of clots once they are formed and encourage healing. Both Stimate® and Amicar® may be taken routinely to manage menstruation or other mucosal bleeding (nose, gastrointestinal, or gum).

Bleeding medications may be used intermittently in response to an injury or routinely to prevent or treat a significant bleeding episode. Regular exercise, an important adjunct to treatment, strengthens muscles and protects joints. However, temporary physical limitations may be placed on students who are recovering from a joint or muscle injury in order to promote complete healing and prevent early recurrent bleeding. Students who are physically fit and toned experience fewer bleeding episodes and improved psychological and emotional development. Students with bleeding disorders are encouraged to receive the standard childhood vaccinations recommended by the CDC.

Management at School

Close communication with parents will assist in planning care. Small cuts and scrapes can usually be treated with normal first aid measures. Management of nosebleeds includes: sitting up with the head straight or leaning slightly forward, application of pressure for 20 minutes without interruption, and application of topical nasal moisturizer in addition to administration of bleeding medications. Deep lacerations and internal bleeding require prompt administration of bleeding medications in addition to initiation of first aid. Any moderate or severe trauma to the head, abdomen or bones warrants immediate attention.

Similar plans of action are needed for childcare facility or other child care situations including in-home daycare or camps. Unlike older children, these children need a caregiver to administer factor treatment if needed. This often requires either calling the parent to come infuse or taking the child to the nearest urgent care or emergency room. Do NOT delay treatment because someone is not immediately available to infuse. Parents and child care providers should work together to identify a plan for prompt treatment if the need arises, including contingencies if a parent is not available or able to infuse.

Some, primarily younger, children may have a port-a-cath or some other central line device. These lines put the kids at risk for serious infections. In the case of a fever, patients with central lines need to be promptly evaluated at their treatment center or emergency department.

Early and adequate treatment can prevent serious complications such as joint and muscle damage, intracranial hemorrhage and vision damage. Care considerations include:

- Listen to the student for early signs of bleeding that may not be obvious.
- Even apparently minor episodes of trauma, such as a sprained ankle, require prompt treatment.
- Follow the individual student's IHP and emergency care plan.
- Treat bleeding episodes promptly with gentle direct pressure and elevation.
- Older students may be able to self-administer clotting factor intravenously as needed.
- Keep the student at rest.
- Apply lightweight ice pack to the area.
- Notify parents or guardian immediately.

- If parents cannot be reached, call 911.

Maintaining up-to-date emergency contact information and authorization for emergency treatment is critical. Documentation of any precipitating factors, complications, medications administered and reactions is also important. Sports and PE participation are encouraged in most cases, although there may be limitation of some contact sports.

Educational Considerations

- Develop IHP/504/IEP, emergency plans as needed.
- Provide any needed accommodations in physical education and/or school schedule.
- Provide for proper administration of all prescribed treatments and medications.
- Provide for adequate hydration and bathroom breaks.
- Provide needed support during hospitalizations and school absences.

Resources

Hemophilia of Georgia

hog.org

Hemophilia Federation of America

hemophiliafed.org/for-patient-families/resources/toolkits/back-to-school/

National Hemophilia Foundation

hemophilia.org

National Hemophilia Foundation Resources

hemophilia.org/resources

Camp Information

Camp Wannaklot

hog.org/camp

HIV/AIDS

Acquired immunodeficiency syndrome (AIDS) is caused by the Human Immunodeficiency Virus (HIV). Most young children with HIV have contracted the disease during birth or through contact with infected blood or blood products. Although HIV has been isolated in saliva and tears, transmission by exposure to these sources has not been documented. None of the pediatric AIDS cases in the United States have been transmitted in the school, day care or foster care setting; and indirect casual person-to-person contact poses no risk for viral transmission. There are also no medical or legal reasons to restrict a child who is infected with HIV or has a parent infected with HIV from attending school.

Protecting an HIV-positive child's confidentiality is extremely important, and written parental permission should be required before sharing any health information. Clinic personnel, required under HIPAA regulations, should not discuss any child's HIV-status or test results to any other person. Georgia statutory law (O.C.G.A. 24-9-47) defines AIDS Confidential Information (ACI) and makes the confidentiality requirements for the disclosure of ACI more stringent than for other medical conditions. Therefore it does not require parents to disclose their child's HIV status to the school, in order to protect the confidentiality of the child. However, sometimes parents will decide to disclose the child's HIV status to the school system in order for the appropriate personnel to respond should the child fall ill while on school property.

A patient's written consent (or a parent or guardian in the case of a minor) is required to disclose ACI unless the disclosure is otherwise authorized or required by law. According to state law, any person or legal entity intentionally or knowingly disclosing ACI in violation of the law will be guilty of a criminal offense and subject to criminal penalties and civil liability. Unintentional disclosure due to gross negligence or wanton and willful misconduct is also a criminal offense subject to criminal penalties and civil liability (O.C.G.A. 24-9-47).

Go to the following web sites for more information:

Summary of Georgia HIV and STD Laws

hiveis.com/Forms/GeorgiaHIVandSTDLaws.pdf

Georgia Code (search: Georgia Code: 24-9-47)

archives.gadoe.org/DMGetDocument.aspx/O.C.G.A.%2024-9-47%20Disclosure%20of%20AIDS%20Confidential%20Information.pdf?p=6CC6799F8C1371F6230FC4DE0A134D12330278F0BBA09A63DE3109FD9E6C9E51&Type=

Children with HIV infection should not receive live virus vaccinations, depending on the severity of their immunodeficiency. Eligibility should be determined by the child's primary HIV physician. Those with severely compromised immune systems should not receive live virus vaccinations and should be excused from regulations requiring them. Any student, including an HIV-infected child, who has contracted a potentially serious contagious disease, should not be allowed to attend school without clearance from the public health department or private physician.

The treatment of HIV infection requires several different daily medications. If there is any question regarding the patient's medications, then the primary HIV physician should be contacted. A resource for these medications can be found at aidsinfo.nih.gov/drugs.

Standard precautions should be followed with HIV-positive children just as with any other child. The key elements include:

- Hand hygiene proper handling and disposal of sharps
- Cleaning and disinfecting patient equipment and environment to prevent transmission of infectious agents, personal protection equipment (gloves, gowns, masks, goggles, etc.) when handling infectious fluids (i.e., blood or body fluids)

Educational Considerations

- Administer medications/treatments as prescribed.
- Adjust attendance policy, adjust schedule or shorten day, if needed.
- Provide rest periods, if needed.
- Adapt physical education curriculum.
- Develop IHP/504/IEP and emergency plan.
- Know child's primary care physician, and who to contact if there is an emergency during school hours.
- Arrange for home tutoring, homebound teacher, if needed.
- Provide staff training on confidentiality, peer education per family request.

The section in this chapter on Childhood Cancers and Transplants has additional information on the immunosuppressed child, which is also applicable to the child being treated for HIV/AIDS.

Resources

AIDS Info

aidsinfo.nih.gov

Guidelines for the Prevention and Treatment of Opportunistic Infections among HIV-Exposed and HIV-Infected Children

aidsinfo.nih.gov/contentfiles/OI_Guidelines_Pediatrics.pdf

H.E.R.O for Children

heroforchildren.org

HIV among Youth

cdc.gov/hiv/risk/age/youth/index.html

HIV – Georgia Department of Public Health

dph.georgia.gov/office-hiv-aids

HIV/AIDS – Opportunistic infections and other conditions

womenshealth.gov/hiv-aids/opportunistic-infections-and-other-conditions

Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection

aidsinfo.nih.gov/contentfiles/PediatricGuidelines.pdf

Parenting a child with HIV

womenshealth.gov/hiv-and-aids

Camp Information

Camp High Five

heroforchildren.org/index.php/h-e-r-o-programs/camp-high-five

Hypertension

Fewer than five percent of children in the U.S. have high blood pressure, but that number is on the rise with the increase in risk factors for cardiovascular disease in the pediatric age group, and may be higher in some minority populations. There can be a genetic link for high blood pressure in children, and heart, kidney or sickle cell disease can cause secondary hypertension. Hypertension in children is classified based on age, sex and height. Multiple blood pressure checks with high readings are needed to refer for or diagnose hypertension. The following table is the guideline for screening BP values that require further evaluation per the American Academy of Pediatrics Clinical Guidelines (pediatrics.aappublications.org/content/pediatrics/140/3/e20171904.full.pdf). It does not provide the detailed breakdowns, which vary by a child's age and sex. For more complete information and values by age and sex see nhlbi.nih.gov/files/docs/guidelines/child_tbl.pdf.

Screening BP Values Requiring Further Evaluation

Age, y	BP, mm Hg			
	Boys		Girls	
	Systolic	DBP	Systolic	DBP
1	98	52	98	54
2	100	55	101	58
3	101	58	102	60
4	102	60	103	62
5	103	63	104	64
6	105	66	105	67
7	106	68	106	68
8	107	69	107	69
9	107	70	108	71
10	108	72	109	72
11	110	74	111	74
12	113	75	114	75
≥13	120	80	120	80

Treatment

Treatment usually consists of correcting the underlying condition. A low salt diet may be recommended. Most hypertensive children can be treated with lifestyle modifications such as achieving and maintaining a healthy weight, controlling fat and salt in the diet, regular aerobic exercise, controlling stress and avoiding caffeine, tobacco and illicit drugs. For primary or essential hypertension, a few children may require daily medications to control high blood pressure, particularly if there are signs of organ damage. Children with hypertension may need to be monitored regularly at school per physician's order.

Management at School

Children with high blood pressure can benefit from family education in reducing risk factors such as

- Achieving and maintaining a healthy weight
- Controlling diet, lowering intake of fats and salt, and increasing fruits and vegetables
- Exercising regularly and aerobically and avoiding weight lifting

- Controlling stress (children can benefit from learning relaxation techniques)
- Avoiding caffeine
- Avoiding smoking and exposure to secondhand smoke
- Controlling diabetes.

Screening

Current recommendations by the American Academy of Pediatrics are for annual blood pressure screenings for all children and adolescents over age 3. Some schools routinely screen blood pressure with weights. An appropriate size cuff is the most important factor in the measurement. Cuff size refers to the internal bladder, not the cloth covering. The cuff bladder width should be about 40 percent of the arm circumference between the shoulder and elbow (should cover 80-100 percent of the arm circumference). A cuff that is too narrow may give a falsely high reading. A low reading may result when a cuff that is too large is used. Also be sure to have the student sitting with both feet on the floor and his or her arm at heart level.

Stabilize the limb during deflation, as movement of the arm interferes with an accurate reading. Whenever a high reading is obtained (above the 90 percentile), recheck the reading later in the day and repeat measurements at least three times on different days. If blood pressure readings remain above the 90th percentile over time, notify parents and refer students to their primary care provider.

Resources

Complete Pediatric Blood Pressure Tables

nhlbi.nih.gov/files/docs/guidelines/child_tbl.pdf

High Blood Pressure in Children

heart.org/en/health-topics/high-blood-pressure/why-high-blood-pressure-is-a-silent-killer/high-blood-pressure-in-children

International Pediatric Hypertension Association

American Academy of Pediatrics

pediatrics.aappublications.org/content/pediatrics/140/3/e20171904.full.pdf

Juvenile Idiopathic Arthritis

Juvenile Idiopathic Arthritis (JIA) was previously termed juvenile rheumatoid arthritis, but the name was changed to distinguish it from adult rheumatoid arthritis. JIA is the most common form of chronic arthritis in children and is characterized by varying levels of joint inflammation with pain and swelling and less often by joint contracture, joint damage and altered growth. Joint stiffness after decreased activity is commonly seen. An estimated 300,000 children and adolescents in the U.S. are affected by JIA and related conditions. JIA affects girls twice as often as boys and can occur at any age, with a peak at age 2 years. In the first six months, if arthritis affects five or more joints, it is termed polyarticular; It is called oligoarticular JIA when it affects less than five joints; and when arthritis occurs in addition to fever and rash, it is called systemic JIA. Other JIA categories include enthesitis related arthritis (which can cause inflammation of lower back and tendons), and psoriatic arthritis (psoriasis rash with joint pain and swelling).

Juvenile arthritis can affect the student's mobility, strength and endurance. However, there may not be any visible signs of the disease. The major symptoms in children with arthritis are pain, swelling and stiffness of joints. Children may be irritable and listless, as well as experience decreased appetite and fatigue. They sometimes avoid movements that cause pain.

Arthritis education is very important for the child and family. The Arthritis Foundation offers educational brochures and pamphlets, as well as rheumatologist referrals and ways to become more active in arthritis management. To obtain more information, call the Georgia Arthritis Foundation chapter at 800-933-7023. The Juvenile Arthritis Alliance (JAA) is a virtual community connected through the Arthritis Foundation web site. It provides educational opportunities through an annual conference and assists with educating teachers and school administrators to ensure that the educational needs of children with arthritis are met. For more information, call the Georgia chapter, listed above.

Treatment

The goal of treatment is to control the disease to prevent joint damage and maximize the child's quality of life. Treatment may include one or more medications; exercises (PT and OT) and splinting as needed. Avoidance of high impact activity or stress to joints is often indicated. Regular eye exams for uveitis is also recommended. Depending on the treatment plan, possible medications to be used in children are:

- Non-steroidal anti-inflammatory drugs
- Methotrexate (given weekly as tablets or subcutaneous injections)
- Anakinra® (Kineret)® (daily injections)
- Etanercept (Enbrel)® (weekly subcutaneous injection)
- Adalimumab Humira® (biweekly subcutaneous injection)
- Tocilizumabv (Actemra)® (intravenous infusions at two to four week intervals) , or as biweekly subcutaneous injections
- Abatacept (Orencia)® (intravenous infusions at four week intervals) or as weekly subcutaneous injections.
- Remicade® (intravenous infusions at four to eight week intervals)
- Ilaris (subcutaneous injections every four weeks)
- Steroids (such as prednisone or prednisolone). Steroids can be given as pills, liquid or sometimes by intravenous injections)

Medications are often beneficial, but their side effects can complicate care. For example, non-steroidal anti-inflammatory drugs can cause stomach upsets.

Management at School

It is important to openly communicate with parents and the child and be aware of any limitations. Discuss activity guidelines and restrictions with parents and modify the child's schedule as necessary. Allow the child to move as needed to avoid stiffness and pain. Watch for both verbal and nonverbal signs that the child is in pain. Assist the child to stay on her/his medication, to see the school physical therapist if needed, and to participate in physical and academic activities as fully as possible with appropriate modifications. Learn the side effects of the medications.

Attendance may be an issue because of pain, medical appointments or associated illnesses, so the child may need time and assistance with make-up work. Often morning stiffness can delay the child getting to school. Exercise is important in the therapeutic regimen to keep joints mobile and muscles strong and to give the child a psychological lift. Physical therapy may be required to preserve range of motion.

Children should be free to participate in everything they are able to, and the child usually can be the judge of how much she/he can do on a particular day. Encourage students to look at their strengths, rather than their limitations.

Sports and recreational activities are important to help the students develop confidence in their physical abilities but may need to be modified. Frequent communication between the coach, nurse, teacher and family will help everyone understand the current symptoms.

Accommodations that may be needed include planning stretch breaks to alleviate stiffness, giving extra time to change classes, and allowing adaptive equipment, such as foam shells to build up pencils and computers for writing assignments. Another helpful tactic might be to recruit a "buddy" to help with carrying heavy items and cafeteria trays, opening milk cartons, etc.

Educational Considerations

- Train school personnel in proper medication administration if a school nurse is not available at all times.
- Develop a specific 504 plan to better address academic and physical needs.
- Promote good communication with parents, healthcare providers and school personnel.
- Adapt activities and hours of instruction as needed.
- Educate staff and peers, especially in recognizing that significant symptoms may not be visible.
- Plan stretch breaks to relieve stiffness.
- Modify PE activities to allow student to participate (using pinch runners, softer balls, etc.).
- Support educational needs during absences and hospitalizations.
- Adjust student's schedule to limit fatigue (i.e., classes closer together, on one floor).
- Supply second set of text books if needed to avoid heavy backpacks.
- Allow adaptations for writing, sitting, as needed.
- Encourage students to look at strengths, not limitations.
- Observe for body language that may indicate pain or fatigue.
- Encourage acceptance of diversity and individual differences in the classroom.

Resources

Arthritis Foundation

arthritis.org

Kids Get Arthritis, Too

kidsgetarthritis.org

The Basics of Juvenile Arthritis

kidsgetarthritis.org/about-ja/the-basics

Your School Action Plan

kidsgetarthritis.org/kids-and-teens/teens/every-day-with-ja/your-school-action-plan.php

WebMD - Juvenile Arthritis at School: 504 Plans, IEPs, and Pain Issues

webmd.com/rheumatoid-arthritis/features/juvenile-arthritis-at-school-504-plans-ieps-and-pain-issues

Camp Information

Camp AcheAway

arthritisfoundationsoutheast.campbrainregistration.com/

Kidney Disease

There are a variety of kidney diseases that may affect children in the classroom.

Glomerular diseases may cause the child to have swelling of the legs, belly or arms. In addition, these diseases are often treated with prednisone and other powerful medications. Some names of glomerular diseases are nephrotic syndrome, minimal change disease and focal segmental glomerulosclerosis (FSGS). Lupus can cause a glomerular disease of the kidneys. Complications of glomerular diseases can include abdominal infections, skin infections, high blood pressure and formation of blood clots. Symptoms requiring immediate attention include fever, severe abdominal pain, pain and swelling in an arm or leg. Parents should be notified.

Kidney failure occurs when the kidneys don't remove toxins from the body. In children, congenital diseases are the most common cause of chronic kidney failure, but acquired diseases also cause chronic kidney failure. In mild or moderate chronic kidney failure, children may need to take medications and limit their diet. When the kidney failure becomes severe, the child needs to receive dialysis or a kidney transplant. Children with chronic kidney disease often have growth-retardation and may be teased by classmates if staff is not vigilant and does not teach students to value individual differences.

Treatment

A child with kidney disease may require medications, some of which may need to be given during the school day. In some circumstances, it is extremely important that these medications be given at the exact time ordered by the physician. Prednisone, usually given for glomerular diseases, has many side effects including: increased appetite, weight gain, mood swings, overactivity, immunosuppression, cataracts, acne, decreased growth rate and high blood pressure. Kidney disease patients often have high blood pressure. Blood pressure monitoring at school may be requested to assist in the treatment regimen, and school nutrition services may need to address dietary restrictions.

Artificial Kidney Treatment (Renal Dialysis) is used for patients whose kidneys have failed.

There are two types of dialysis:

1. Hemodialysis

The patient's blood is pumped through a tube to an artificial kidney machine. This machine removes excess fluid and waste and returns the clean blood to the body through a second tube. During treatment, the patient can read, sleep, watch TV, etc. The treatment is usually done three times a week for three or more hours at a time. Patients usually go to the dialysis center for treatment; rarely, the patient or family may learn how to perform dialysis at home if their medical condition allows it.

2. Peritoneal Dialysis

A solution called dialysate flows from a bag through a tube into the abdomen. Waste products and excess fluids pass from the blood into the dialysate. The used solution is then removed from the body through a tube—by gravity or by a machine. If done by a machine, peritoneal dialysis is performed each night. The patient connects the tube to the machine before going to bed and disconnects it in the morning. This is the most common type of peritoneal dialysis for children.

If peritoneal dialysis is done by gravity, the patient usually changes the bag of solution four times a day. Each exchange takes about half an hour. Patients who perform dialysis at home must receive special training and follow instructions exactly.

Children who are on hemodialysis usually have to miss school at least three half-days per week. Homebound teaching may be needed, or students may be able to attend school in the morning and have dialysis in the afternoon. The student on peritoneal dialysis will have a catheter in their belly which will need to be monitored for safety and signs of infection.

Management at School

As with most chronic diseases, it is important to attempt to include students with chronic kidney disease in the mainstream of student activities including physical education. Occasionally physical education will be limited, and the physician should prescribe limitations on an individual basis.

It is important to notify the parents if children with kidney disease have fatigue, decreased mental alertness, nausea or vomiting. Additionally, children with chronic kidney disease will likely miss school frequently due to hospitalizations and appointments.

If medications are required, school personnel should follow current policies regarding administering medications to children at school. The student who is on hemodialysis will have a venous access device such as a fistula or dialysis catheter, which will need to be monitored for safety and signs of infection. The student who is on peritoneal dialysis will have a catheter that goes into their belly (abdomen); it usually goes in below the belt line. Some children with bladder problems may need to periodically use a catheter to urinate. In some cases, the child may urinate through a stoma (hole) in the abdomen. Other children may need to urinate more frequently, and thus need more frequent bathroom privileges. In addition, some children may need to drink more than other children and should be provided with increased access to water or carry a water bottle at school.

Educational Considerations

- Develop IHP/504/IEP, emergency plans as needed.
- Provide any needed accommodations in physical education and/or school schedule.
- Provide for proper administration of all prescribed treatments, medications.
- Provide for adequate hydration, bathroom breaks.
- Provide for nutritional support as needed.
- Provide needed support during hospitalizations, school absences.

Resources

Kidney School

kidneyschool.org

National Kidney Foundation

kidney.org

Patient and Family Resources

kidney.org/patients/resources

Camp Information

Camp Independence

choa.org/camps/camp-independence

Duchenne Muscular Dystrophy

Muscular dystrophy is the general designation for a group of diseases that cause progressive weakness and degeneration of the skeletal (voluntary) musculature. These conditions are hereditary. There are approximately 40 different types of muscular dystrophy, and accordingly they may vary in severity. Each type has various characteristics, and what you see below may not fit all types of muscular dystrophy. For details on each disorder, you may go to the Muscular Dystrophy Association (MDA) web site mda.org/disease/list.

Duchenne Muscular dystrophy (DMD) is the most common muscular dystrophy condition that significantly affects boys as compared to girls, who are mostly asymptomatic. The onset of symptoms is usually in toddler age range and is most noticeable at the age of 4-5 years old. Initial signs of DMD include delayed walking, enlargement of the calves, due to abnormal muscle tissue, clumsy with frequent falls, difficulty arising from a sitting position and climbing stairs. When a child enters the early teens, around 10-12 years of age, walking become laborous and results in a hyperlordotic gait, which is often described as "sway back," to keep their body balance. On average, by the age of 12 years old, a child with DMD will be relying on a wheelchair for transportation. As this condition progresses, the arms and hands muscles, as well as the breathing muscles, will become increasingly weak, making simple daily activities such as feeding, dressing and other personal care tasks insurmountable. Medical complications such as lung infections can be due to weakness of respiratory muscles. Additionally, as this condition progresses, cardiac dysfunction ensues and ultimately heart failure is often expected. These severe respiratory or cardiac problems mark the final stages of the disease, often in the person's 20s.

Treatment

Medical therapy is aimed at slowing the progression of the disease. At the current time, prednisone or deflazacort, as a steroid medication is the proven treatment that will allow for children to keep their ability to walk as they age. Side effects of steroid medication should be closely monitored.

Daily physical therapy for stretching and range of motion also are important to increase flexibility which will allow for continued ambulatory capability. Additionally, bracing or splinting the legs can also maintain joint flexibility and prevent contractures which often hinder a child's ability to walk.

Surgical intervention may be necessary at the later stages of the condition including spine surgery to lessen scoliosis. Environmental adaptations will be needed to maintain as much independence as possible (i.e., raised toilet seats, special desktops, ramps). Annual flu shots and pneumonia vaccine will probably be given, and prevention of respiratory infections with careful handwashing is important.

Management at School

The student should be encouraged to live as normal and full a life as possible. Assistive devices can help him to reach a greater degree of independence. The small muscles of the hand are often the last to be affected, so the child can continue to use his fingers. Encourage participation in as many activities as the child's condition will allow. As the muscles become weaker, the children may tire easier and require more time for completion of activities and schoolwork.

It is important to recognize the first sign of an impending infection. Such signs may include listlessness, loss of appetite, fever or cough. Parents should be notified immediately if an infection is suspected.

Educational Considerations

- Develop IHP/504/IEP, emergency plans as needed.
- Provide any needed accommodations in physical education and/or school schedule.
- Provide for proper administration of all prescribed treatments and medications.
- Provide needed support during school absences.
- Ensure that bathroom facilities, water fountains, sinks, elevators, etc., are readily accessible.
- Practice emergency exit from school building.
- Provide extra time to get to class if needed.
- Provide extra time to complete assignments, or exams. May need adaptive equipment for note-taking (computer, or note-taker).

Resources

A Teacher's Guide to Neuromuscular Disease

mda.org/sites/default/files/Teachers_Guide_booklet.pdf

Duchenne/Becker Muscular Dystrophy

cdc.gov/ncbddd/muscular dystrophy/

Fact about Duchenne/Becker Muscular Dystrophy

mda.org/sites/default/files/publications/Facts_DMD-BMD_P-211_0.pdf

Muscular Dystrophy Association

mda.org/disease

Parent Project Muscular Dystrophy (PPMD), Education Matters – A Teachers Guide to Duchenne Muscular Dystrophy

parentprojectmd.org/wp-content/uploads/2018/04/EdMatters_Teachers.pdf

Camp Information

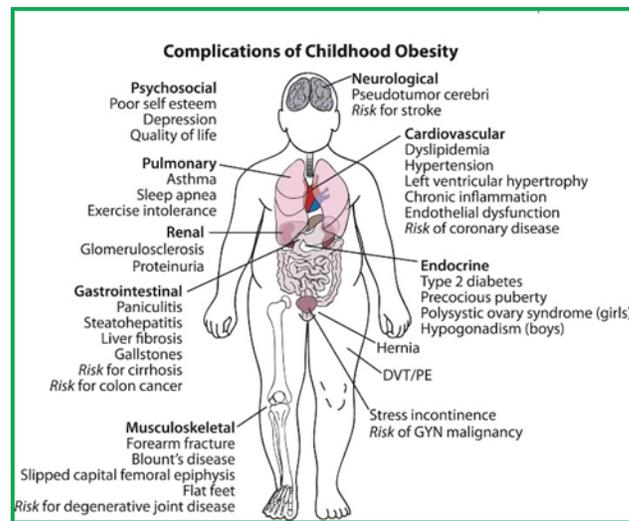
MDA Summer Camp

mda.org/summer-camp

Weight Management

Overweight and obesity continue to be primary public health concerns, affecting over 70% of US adults and over 31% of children ages 10-17 years. In Georgia in 2016, 32% of 10-17 year olds were overweight or obese, down from 35% in 2011. While recent progress is promising, nearly 1,000,000 kids in Georgia are still struggling to manage their weight.

Studies show that children who are overweight or obese are at a high risk of becoming overweight or obese adults. This characteristic puts them at greater risk for all of the health problems associated with obesity, such as increased incidence of heart disease, type 2 diabetes, obstructive sleep apnea, hyperlipidemias, hypertension, polycystic ovary syndrome, joint pain and strokes. These conditions are recognized now—not only in adulthood, but as problems starting during the childhood and adolescent years—and conditions, such as type 2 diabetes and sleep apnea have been shown to have a definite effect on a student's ability to learn. A child's quality of life, social interactions and self-esteem also can be critically affected by being overweight.



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Causes

The causes of a child being overweight or obese are multifactorial and include genetic, behavioral, environmental, cultural and socioeconomic factors. Public health researchers agree that the principal reasons for the increase in obesity in the school-aged population are lack of physical activity and unhealthy eating habits. According to the Institute of Medicine, many factors have influenced this development in our society, including:

- Urban and suburban designs that discourage walking and other physical activities
- Pressures on families to reduce food costs and less home prepared meals, resulting in frequent consumption of convenience foods that are high in empty calories, added sugars, added fats and sodium
- Reduced access and affordability in some communities to fruits, vegetables and other nutritious food (see Chapter 9 for information on addressing Hunger and Student Health)
- Decreased opportunities for physical activity at school and after school as well as reduced walking or biking to and from school
- Replacement of free time, that was once spent playing outdoors, with sedentary activities like screen time, including using smartphones/tablets/computers, watching TV or playing video games

How to be Supportive

The goal should be to help children maintain a healthy body weight by adopting healthy lifestyle habits, including healthy eating, reducing screen time, increasing water intake, limiting sugary beverages and daily physical activity. Children come in all shapes and sizes, and health and fitness can be achieved for all children. The National Institutes of Health (NIH) have provided the following recommendations for parents and all adults who interact with children:

- Be supportive. Children know if they are overweight and don't need to be reminded or singled out. They need acceptance, encouragement and love.
- Set guidelines for the amount of time your children can spend watching TV or playing video games.
- Plan family activities that involve exercise. Instead of watching TV; hike, bike, wash the car or walk around a mall.
- Offer multiple healthy food choices and let your children decide which to enjoy.
- Be sensitive. Find activities your children will enjoy that aren't difficult or could cause embarrassment.
- Eat meals together as a family, and eat at the table—not in front of the TV. Eat slowly and enjoy the food.
- Don't use food as a reward or punishment.
- Children should not be placed on restrictive diets unless done so by a doctor (for medical reasons). Children need food for growth, development and energy.
- Caregivers should avoid overly restrictive feeding practices and allow the child to self-regulate his or her own meals.
- Involve your children in meal planning and grocery shopping. This helps them learn and gives them a role in the decision-making.
- Keep healthy snacks on hand. Good options include those that incorporate vegetables, fruits, low-fat dairy, whole grains, legumes, nuts/nut butters and seeds. Below are some healthy snack ideas:
 - Sliced fruit or veggies with nut butter
 - Healthy trail-mix (whole grain cereal, raisins and nuts)
 - Part skim mozzarella strong cheese or reduced fat cheese stick and baby carrots
 - Hummus and celery sticks
 - Plain yogurt with fresh, frozen or canned fruit (no added sugar).



Weight Status Assessment

Children 2 to 19 years old should have their weight status assessed yearly at well-child visits. Screening of height and weight and Body Mass Index (BMI) in schools provide an opportunity for weight status assessment (see Chapter 8 for instructions on Height and Weight Screening and BMI calculation).

BMI Evaluation

The BMI (Body Mass Index) measurement for children and adolescents 2 to 20 years of age is an important tool for overweight and obesity assessment. BMI is an indirect estimate of body fatness. Since June of 2000, the BMI measurement has been included in the Centers for Disease Control and Prevention and the National Center for Health Statistics Growth Charts. The BMI measurement involves an accurate measurement of height and weight and application of a formula, to determine the BMI number. This number is then plotted on the growth chart/BMI percentile graph for girls or boys. Established cut-off points are used to identify underweight, overweight and obese children and adolescents. The following (excluding normal weight) are extremes in BMI-for-age that raise concern in the pediatric population:

Underweight	BMI-for-age	< 5th percentile
Normal Weight	BMI-for-age	5th to 84th percentile
Overweight	BMI-for-age	85th to 94th percentile
Obese	BMI-for-age	≥ 95th percentile

Georgia Shape and Fitnessgram

The Governor's Childhood Obesity Initiative, Georgia Shape, aims to encourage healthy behaviors and promote individual health through coordinated statewide policy and school/community efforts. It includes the statewide implementation of Fitnessgram, a comprehensive physical fitness and health assessment for children in grades one through 12. Fitnessgram is implemented in all public schools with a certified PE teacher. Fitnessgram assesses children in several areas (aerobic capacity, muscular strength, muscular endurance, flexibility) and it also includes a BMI measurement component. By law, families receive a copy of the results either electronically or a hard copy. Results should not be shared with students while at school. The school nurse is encouraged to collaborate with PE teachers and request Fitnessgram reports—results may be used in their assessment of students, particularly BMI status. You can find out more about the Fitnessgram on the Shape Act web site (georgiashape.org/).

Treatment

Treatment programs targeted for overweight and obese children and adolescents are now being offered in healthcare systems, and school nurses need to be aware of what is available in their community.

Children's Healthcare of Atlanta Strong4LifeSM

Children's Healthcare of Atlanta launched Strong4Life to help parents inspire their kids to eat right and get moving with easy, manageable tips and advice from our doctors, nutritionists and wellness experts. Strong4Life makes improving family nutrition and physical activity habits fun and provides parents and caregivers the support they need to accomplish their goals. Visit Strong4Life.com for tips on how to make simple changes at home, and at school, to encourage healthy lifestyle habits.

The Strong4Life Clinic is a program for families struggling with weight and weight-related health issues. Children's Healthcare of Atlanta doctors, dietitians, psychologists and exercise physiologists work with families to make major lifestyle changes healthy, achievable and fun. The child's medical doctor will provide the referral to the clinic. More information about referrals can be found on strong4life.com, click on the "for providers and professionals" tab.

Strong4Life also hosts an overnight summer camp. Camp is a unique opportunity to help jump-start a healthier future for rising fourth-, fifth- and sixth-grade children with a BMI greater than the 85th percentile. Kids spend a fun-filled, action-packed week with our clinical team, including nutritionists and exercise physiologists, learning to set healthy goals and incorporate them at home.

Guide to One-on-One Encounters

1. Assess Weight Status

- Obtain weight status from Fitnessgram or height and weight screening.
- School nurse may communicate with parents about student's Fitnessgram results via the Fitnessgram letter provided at the end of this chapter.
- Avoid using terms such as "fat," "overweight" or "obese" in your conversations with students and/or parents.
- To help facilitate discussions about student BMI with parents, you may use the Strong4Life BMI chart, which displays color-coded BMI "zones." You may use language such as, "unhealthy red zone" to describe a child's BMI status that is above the 95th percentile.

(The Strong4Life BMI chart is available as a resource at the end of this chapter.)

2. Assess Health Behaviors

- Key health behaviors to review include:
 - Sugary beverage consumption
 - Vegetable and fruit intake
 - Screen time (TV, computers, video games, smartphones, etc.)
 - Physical activity
 - Fast food consumption

- You may assess student health behaviors via the Strong4Life Healthy Habits Assessment. This assessment evaluates key health behaviors identified by childhood obesity experts and assesses student readiness to adopt healthy habits. The Fitnessgram assessment may also serve as a conversation starter for behavior change and goal setting.

(The Strong4Life Healthy Habits Assessment is available as a resource at the end of this chapter).

3. Set Health Behavior Goal

- Behavioral goals, not weight loss goals, should be the focus:
 - The American Academy of Pediatrics endorsed Expert Committee Recommendations on the Assessment, Prevention and Treatment of Child and Adolescent Overweight and Obesity, and recommends weight maintenance with growth for overweight/obese children and adolescents.
- Motivational Interviewing techniques may be used to help facilitate goal setting with students and/or parents.
 - Ask open-ended questions instead of questions that can be answered with a “yes” or “no.” For example, you may ask a student “Which beverages do you like to drink?” instead of “Do you like to drink soda?”
 - Use reflective listening to let the student and/or parent know you understand what they are telling you. For example, you may reflect back to them what they’ve shared with you: “So it sounds like you’re saying...”
- Collaborate with students to set health behavior goals that are S.M.A.R.T. (Specific, Measurable, Attainable, Realistic and Timely). For example, “I will have water instead of juice during lunchtime at school four days a week starting Monday.”
- Goals may be based off of student’s health behavior assessment but should be limited to no more than two to promote success and sustainability.
- Key health behaviors to promote:
 - Make half your plate vegetables and fruits.
 - Limit screen time and no TV in the room where the child sleeps.
 - Be physically active each day.
 - Drink more water.
 - Limit sugary drinks.
 - Limit meals outside the home (this includes fast food, etc., not meals served at school).
- To help guide, record and monitor health behavior goals, the school nurse may provide students with the Strong4Life Goal Sheet. Students can fill out the goal sheet and the school nurse can make a copy for the student’s file. (The Strong4Life Goal Sheet is available as a resource at the end of this chapter).
- The school nurse may provide the student and/or parent with educational handouts, tip sheets, healthy recipes, etc., to help support the adoption of healthy behavior (the Strong4Life Healthy Habits handouts are available at the end of this chapter).

4. Follow-Up and Document

- Follow-up with students and/or parents on progress with goals. Follow-up time frame will vary based on the student, the nature of their goal(s) and school structure and schedule.
- During follow-ups, praise students for all successes—big and small. Talk with students about any barriers faced and provide practical solutions. Be sure to document.
- Collaborate with students to maintain and/or build upon goal(s) once success is attained.

Underweight

Some children are naturally thin, while others may be thin as a result of inadequate food intake, food insecurity, restrictive dieting or chronic disease. Children with a BMI below the fifth percentile should be referred to their primary healthcare provider for further assessment (see Chapter 9 for information on Hunger and Student Health for ways to address student food insecurity).

Referral

Referral parameters should be established prior to the initiation of height and weight screening and one-on-one encounters, and they should be focused on giving information to the parents. The first step for all families concerned about weight issues is with their pediatrician. Children who fit the established criteria for being overweight, obese or underweight should be referred to their primary healthcare providers for further evaluation. The treatment of obesity is complex and involves both the student and his family. Pediatricians, dietitians and other health professionals work with families to overcome these issues. School nurses can be part of the solution by using appropriate opportunities to talk to students and parents about healthy food and beverage choices and the benefits of physical activity over sedentary activities.

Educational Considerations

Accommodations are not usually needed, but if sleep apnea is a concern, a child's learning may be affected. Appropriate physical activity and healthy food choices should be encouraged.

Normal Weight Students

All children (normal weight, overweight and underweight) should be offered information on healthy habits and encouraged to make small, simple changes to be healthier. All students should be taught acceptance of different body types, and teasing should not be tolerated. Healthy habits are for all children.

See Chapter 9 for information on general health promotion for all students (School-Wide Health Promotion) and refer to Chapter 7 for information on addressing bullying.

Prevention

Prevention is the key to approaching obesity in Georgia, and increasing public awareness of healthy lifestyle habits through media campaigns and public health education efforts is necessary. A combined family, community and school-based effort are essential as well. Again, Strong4Life makes improving family nutrition and physical activity habits fun and provides parents and caregivers the support they need to accomplish their goals.

References

National Center for Health Statistics. Health, United States, 2016: With Chartbook on Long-term Trends in Health. Hyattsville, MD. 2017.
[cdc.gov/nchs/fastats/obesity-overweight.htm#](https://www.cdc.gov/nchs/fastats/obesity-overweight.htm#)

The National Survey of Children's Health. The Child and Adolescent Health Measurement Initiative.
[childhealthdata.org/learn/NSCH](https://www.childhealthdata.org/learn/NSCH)

Resources

Strong4Life

strong4life.com

Children's Healthcare of Atlanta

choa.org

Georgia Shape

georgiashape.org

University of Georgia Extension

extension.uga.edu/topic-areas/food-health/nutrition-health.html

Georgia Safe Routes to School

www.saferoutesga.org

Body and Mind - Centers for Disease Control and Prevention

cdc.gov/bam/index.html

Go Noodle- Movement and Mindfulness for Kids

www.gonoodle.com

Kids Health

kidshealth.org

Alliance for a Healthier Generation

healthiergeneration.org/about.aspx

Division of Nutrition, Physical Activity and Obesity, CDC

cdc.gov/nccdphp/dnpao/index.html

Ways to Enhance Children's Activity & Nutrition, We Can

nhlbi.nih.gov/health/public/heart/obesity/wecan/index.htm

Choose My Plate, United States Department of Agriculture

choosemyplate.gov

National Nutrition web site

nutrition.gov

Camp Information

Camp Strong4Life

choa.org/campstrong4life

The following resources are included in this section:

1. Strong4Life Eat Right Handout
2. Strong4Life Healthy Choices for Healthy Kids
3. Strong4Life BMI Chart
4. Strong4Life Healthy Habits Assessment
5. Strong4Life Goal Sheet
6. FitnessGram Letter to Parents



*Smart foods
help your
body and
mind grow
strong.*

Be **STRONG⁴LIFESM**



Children'sSM
Healthcare of Atlanta
STRONG⁴LIFESM



Children'sSM
Healthcare of Atlanta
STRONG⁴LIFE

Healthy Choices for Healthy Kids



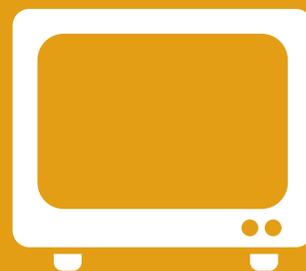
Make *half* your plate
veggies & fruits

Be active



Drink more water
& limit sugary drinks

Limit
screen time



Bring Healthy Habits Home!

A habit is something you do over and over again, sometimes without even thinking about it. Healthy habits keep you and your family feeling good—now and in the future!

Here are some ways to help your family use the Strong4LifeSM Healthy Habits:

Get Your Whole Family to Join In – Set goals, like eating right or moving more, with your whole family. Then, work on them together to help everybody get healthier, faster!

Be Their Healthy Hero – Kids love to copy adults! Show them just how important healthy habits are by using them yourself. Nobody's perfect, but try to make healthy choices whenever you can.

Make One Small Change at a Time – The best way to make big changes with your family is to make one smaller change at a time. It's a lot easier and more likely to work than trying to change everything at once.

Ask for Help – Start by visiting Strong4Life.com/getstarted. We give you easy ideas you can use right away.

Ready, Set, Go! – Ready to set your first goal? Explain the idea of goals to your family. Pick a goal that works for everyone in the family (like drinking water or 1% (low-fat) or fat-free milk instead of sugary drinks)—then, go for it! Tip: write down the goal and tape it to the fridge as a reminder.

Use these ideas to make your family's habits healthier:



Make half your plate veggies and fruits

- Try to include several different colors.
- Make sure to eat breakfast every day.
- Eat meals together as a family.



Be active

- Try to be active for at least 60 minutes during the day (it doesn't have to be all at once!).
- Remind kids to go outside and play as often as you can.
- Take a family walk around the neighborhood or play at a park.
- Play sports, dance, play tag...the choice is yours, just have fun!



Drink more water and limit sugary drinks

- Carry a water bottle with you.
- Drink water or 1% (low-fat) or fat-free milk at meal and snack time.
- Choose water (instead of sports drinks or soda) at sports activities and playtime.



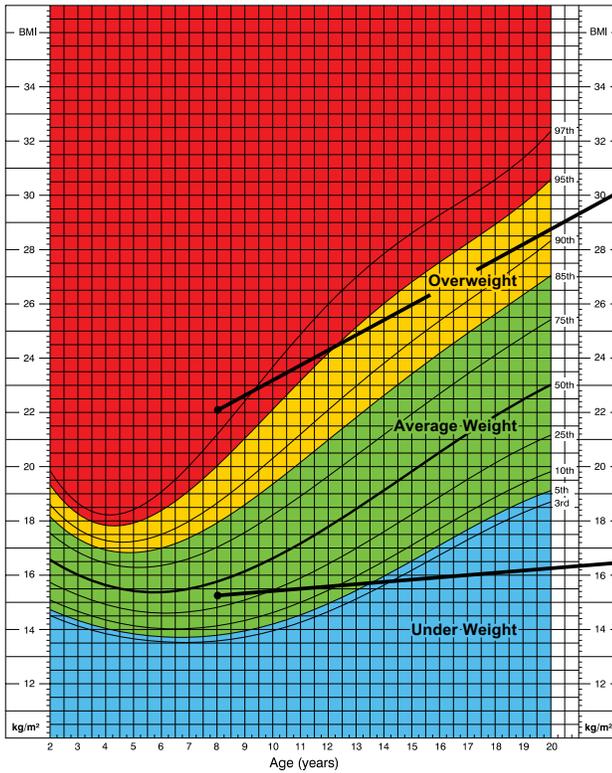
Limit screen time

- After 30 minutes of screen time (phones, computers, TV), get 30 minutes of activity.
- Turn TV and video games off and play!

Is Your Student's Weight Healthy?



Children's
Healthcare of Atlanta
STRONG4LIFE



8 years old
102 pounds; 4 feet, 9 inches

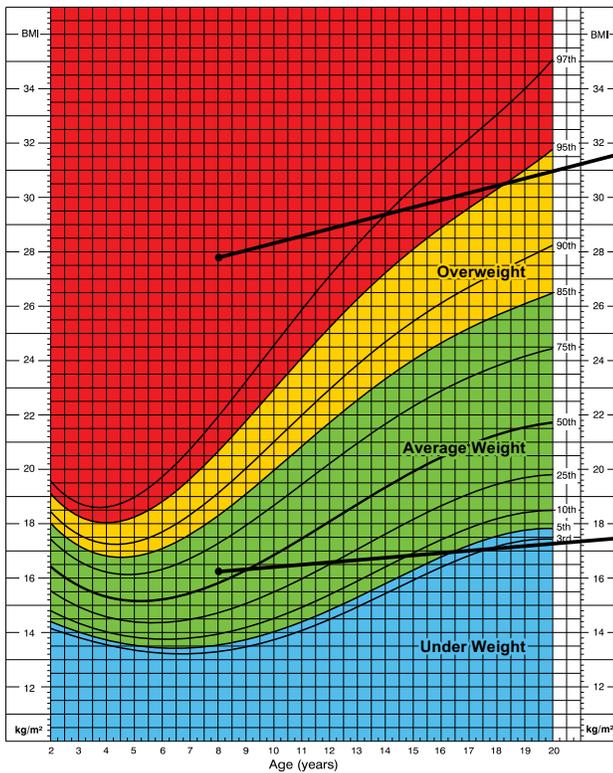
BMI and weight in the
unhealthy red zone



8 years old
70 pounds; 4 feet, 9 inches

BMI and weight in the
healthy green zone

Body Mass Index (BMI) Chart



8 years old
103 pounds; 4 feet, 3 inches

BMI and weight in the
unhealthy red zone



8 years old
60 pounds; 4 feet, 3 inches

BMI and weight in the
healthy green zone

Published May 30, 2000.
SOURCE: Developed by the National Center for Health Statistics in collaboration with
the National Center for Chronic Disease Prevention and Health Promotion (2000).



SAFER • HEALTHIER • PEOPLE



NAME: _____ DATE: _____

Healthy Habits Assessment

Circle the answer that best describes your family's average eating and activity habits.

My child eats veggies and fruits:



My child eats out:



My child is active:



My child has sweet drinks (cola, sweet tea, sports drinks, fruit drinks, other juice drinks):



My child has 100% fruit juice:



My child watches television, spends time on the computer or plays video games:



Have you thought about trying a new healthy habit for your child?



If you could work on one Healthy Habit, which would it be?

- | | |
|--|--|
| <input type="radio"/> Fill half your plate with veggies and fruits | <input type="radio"/> Be active |
| <input type="radio"/> Limit screen time | <input type="radio"/> Drink more water and limit sugary drinks |



Goal Sheet

My Child's Healthy Habit Goal: *(circle one)*



Make **half** your plate **veggies and fruits**



Be active



Drink more water & limit sugary drinks



Limit **screen time**

OTHER:

How will you work with your child on his goal? *(e.g., He will ride his bike.)*

When will you work with your child on his goal? *(e.g., After school.)*

How often will you work with your child on his goal? *(e.g., 20 minutes, 3 days a week.)*

Who can support your child? *(e.g., Me, his grandmother, etc.)*

When will you start working on your child's goal? *(e.g., Today, when I go to the grocery store, etc.)*

FITNESSGRAM LETTER TO PARENTS

Today's Date

Dear _____,

Each school year, your child takes the Fitnessgram assessment in PE class. This fitness assessment provides information about your child's body composition and fitness levels; which, in turn, tell us a lot about your child's health.

Attached, you will find your child's Fitnessgram results. These results are confidential, meaning they are not shared publicly. Please look at your child's results carefully. Check to see if your child scored in the green "Healthy Fitness Zone" (HFZ) on all of the Fitnessgram sections. Read the messages along the side for more information about each piece of the assessment.

If you have questions or concerns about your child's Fitnessgram results, please contact myself or _____, your child's PE teacher. We will be happy to talk to you about your child's results. If you have questions about any other part of your child's health and wellness, please contact me.

I look forward to working with you to keep your student healthy and well. Thank you.

Sincerely,

[Signatures here]

School Nurse Name

School Nurse

Your School's Name

XXX-XXX-XXXX

Your email address

PE Teacher Name

PE teacher

Your School's Name

XXX-XXX-XXXX

Your email address

Seizure Disorders

A seizure is an involuntary sudden change in sensation, behavior, muscle activity or level of consciousness, caused by a disruption of normal electrical activity in the brain. Seizures may be caused by medical conditions such as high fever, central nervous system infections, poisoning, hypoglycemia, electrolyte imbalance, head injury and structural brain lesion. Epilepsy is a condition of the brain characterized by a susceptibility to have recurrent seizures of unknown causes. Someone is considered to have epilepsy if they have had more than two unprovoked seizures at least 24 hours apart.

Seizure Recognition

Teachers and school nurses may be the first to detect possible seizure activity. Commonly seen signs of possible seizure activity include: brief staring spells (5-10 seconds) when the child is unresponsive; periods of confusion; head dropping; sudden loss of muscle tone; episodes of rapid blinking or eyes rolling upwards; rhythmic twitching of the mouth or face; aimless, dazed behavior including walking around or repetitive behavior; involuntary stiffening and/or jerking of arm or leg. A pattern of behaviors such as these should be reported to parents.

Important things to observe and document about a seizure:

- Precipitating events
- Student's behavior prior to seizure
- Type of seizure and duration
- Description and duration of post-seizure sleep or drowsiness.

Groups of Seizures/Description

Group 1 - Generalized Seizures (affects both sides of the brain); Absence Seizure; Tonic Clonic Seizures

Characterized by:

- A staring spell, lasting a few seconds
- Momentary loss of awareness, interrupting ongoing activity
- Movements of face/arms
- Return to full awareness after episode

Generalized tonic-clonic seizures (grand mal)

May include some or all of the following:

- Body stiffens and/or jerks
- Cries out
- Becomes unconscious or unresponsive
- Loses bowel/bladder control
- Usually lasts one to two minutes
- Shallow breathing and turning blue around lips or mouth
- Confused, sleepy or belligerent after the seizure
- Grinding motion of teeth or jaw

Group 2 – Focal Seizures; (affects one area of the brain) Simple Focal Seizure, Complex Focal Seizure, Secondary Generalized Seizures

Simple focal seizures

The student may:

- Remain conscious, but may not be able to control body movements
- Have distorted senses of sight, smell, hearing, touch
- Be confused and frightened afterwards

Complex focal seizures

The student may:

- Exhibit automatic behaviors in which consciousness is clouded, lasts one to two minutes
- Get up and walk around, as if sleepwalking
- Be unresponsive to spoken direction, or respond inappropriately
- Be fearful
- Exhibit repetitive behaviors
- Be confused and have no memory of the event afterwards

Treatment

Almost all seizures are self-limited events, and the abnormal activity will abate with time, usually in less than five minutes. In some instances, the administration of medication per rectum, intranasal, intramuscularly sub lingual, buccal, or intravenously is necessary to stop the seizure activity.

Emergency medications may be needed for children who have prolonged or cluster seizures. One medication is called Diastat®, rectal Valium®, which is ordered now for many children who have prolonged or cluster seizures. See Diastat® in Chapter 3. More information on this drug can be found at: diastat.com. An additional medication being used is Intranasal or IN Versed. See teaching sheet in Chapter 3 for information regarding the use of this medication.

The seizure disorder, epilepsy, can be partially or completely controlled with the use of anticonvulsant medications in most individuals. These medications must be taken on a routine basis each day. Some children may also be on a special Ketogenic Diet, which would require accommodations from school nutrition services.

Another treatment being used for some children involves vagal nerve stimulation (VNS, Vagal Nerve Stimulator) by an electrical pulse generator that is surgically implanted (most often under the skin on the chest). Vagus nerve stimulation uses regular pulses of electrical energy to prevent or interrupt the electrical disturbances in the brain of the child with epilepsy. In these children, a magnet the child wears can be used to deliver extra stimulation when the child senses a seizure coming on (an aura). For some, the magnet can be used when a seizure occurs to shorten or lessen the severity, stop the seizure, or reduce recovery time.

Management at School

Follow Seizure Action Plan for each individual child

ABSENCE SEIZURE:

- Repeat key parts of the class that may have been missed.
- Note and report all seizures to parents.

GENERALIZED TONIC-CLONIC SEIZURES:

- Note the time when it starts and ends.
- Remain calm and remove other students from the area if possible.
- Stay with student until seizure ends.
- Ease the student to the floor, cushioning the head.
- Remove dangerous objects from the area.
- Do not restrain the child or put anything into the mouth.
- Loosen clothing, remove eyeglasses.
- Turn the student on his side to allow fluids to escape out the side of the mouth and to keep the airway clear (choking hazard may not only be vomit, but sometimes a build-up of excess saliva can cause a child to choke.).
- Maintain open airway.
- Ensure school nurse has rescue medication readily available to avoid any delay in administration if indicated.
- Give rescue medication as ordered if seizure is prolonged.
- Provide a change of clothes if incontinence occurs.
- Allow student to rest quietly after seizure stops.
- Notify parent.

SIMPLE FOCAL SEIZURE:

- Comfort and reassure after seizure.
- Maintain student's safety

COMPLEX FOCAL SEIZURE:

- Ignore automatic behaviors.
- Speak calmly and gently return child to his seat if able.
- Do not force a child to do anything because they may act out and could hurt themselves or others.
- Keep the child in the classroom to provide for safety.
- Reorient the child if confused after the seizure.

When to Call 911

- If there is no past history of seizures
- If the seizure lasts more than five minutes, and if there is no rescue medication ordered, or if one has been used without success
- If consciousness does not return after seizure has stopped
- As designated by student's healthcare provider
- If the child turns blue or vomits
- If seizures occur in clusters (back-to-back seizures)
- If severe injury occurs before, during or after seizure
- If pregnant or has diabetes
- If seizure is a different type than is noted in the seizure action plan.

Educational Considerations

- Develop IHP/504/IEP and emergency plans (seizure action plan).
- Communicate with parents about seizures.
- Monitor breathing during and after seizure.
- Provide proper and timely administration of medications.
- Provide in-service education for staff.
- Anticipate need for recovery time after a seizure, provide place to rest.
- Plan for academic make-up work during school absences.
- Observe for consistent triggers as identified by parent or physician.
- May need modified PE schedule/activities, although most students can participate without restrictions.
- Encourage acceptance of diversity and individual differences in the classroom.
- Provide education for classmates with parent and student permission, so that they understand and can support their friend.

Key points you may want to cover:

- Explain what happened to the child and what the condition is called.
- It is not contagious.
- Medication can help control seizures.
- What they can do during and after a seizure to help their classmate.

Resources

American Epilepsy Society

aesnet.org

Centers for Disease Control and Prevention - Epilepsy Programs

cdc.gov/epilepsy

cdc.gov/epilepsy/spanish/index.html (Spanish version)

Epilepsy Classroom

www.epilepsyclassroom.com

Education of Kids with Epilepsy

epilepsy.com/info/family_kids_education

Epilepsy Foundation of America

epilepsyfoundation.org

Epilepsy Foundation of Georgia

epilepsyga.org

Epilepsy Foundation – Spanish language Web site

fundacionparalaepilepsia.org

Kids Health (type "seizures" in search box)

[Kidshealth.com](https://kidshealth.com)

Neurosciences Program – Children’s Healthcare of Atlanta

choa.org/medical-services/neurosciences

Seizure Tracker

seizuretracker.com

Vagus Nerve Stimulation (VNS Therapy)

neurologychannel.com/vagus

Camp Information

Camp Carpe Diem

choa.org/camps/camp-carpe-diem

The following resources are included in this section:

1. Seizure Parent Questionnaire
2. Seizure Action Plan (Epilepsy Foundation)
3. Seizure Observation Record
4. Seizure Action Plan (Children’s Healthcare of Atlanta)



QUESTIONNAIRE FOR PARENT OF A STUDENT WITH SEIZURES

Please complete all questions. This information is essential for the school nurse and school staff in determining your student's special needs and providing a positive and supportive learning environment. If you have any questions about how to complete this form, please contact your child's school nurse.

CONTACT INFORMATION:

Student's Name: _____ School Year: _____ Date of Birth: _____

School: _____ Grade: _____ Classroom: _____

Parent/Guardian Name: _____ Tel. (H): _____ (W): _____ (C): _____

Other Emergency Contact: _____ Tel. (H): _____ (W): _____ (C): _____

Child's Neurologist: _____ Tel: _____ Location: _____

Child's Primary Care Dr.: _____ Tel: _____ Location: _____

Significant medical history or conditions: _____

SEIZURE INFORMATION:

1. When was your child diagnosed with seizures or epilepsy? _____

2. Seizure type(s):

<i>Seizure Type</i>	<i>Length</i>	<i>Frequency</i>	<i>Description</i>

3. What might trigger a seizure in your child? _____

4. Are there any warnings and/or behavior changes before the seizure occurs? YES NO

If YES, please explain: _____

5. When was your child's last seizure? _____

6. Has there been any recent change in your child's seizure patterns? YES NO

If YES, please explain: _____

7. How does your child react after a seizure is over? _____

8. How do other illnesses affect your child's seizure control? _____

BASIC FIRST AID: Care and Comfort Measures

9. What basic first aid procedures should be taken when your child has a seizure in school? _____

Basic Seizure First Aid:

- ✓ Stay calm & track time
- ✓ Keep child safe
- ✓ Do not restrain
- ✓ Do not put anything in mouth
- ✓ Stay with child until fully conscious
- ✓ Record seizure in log

For tonic-clonic (grand mal) seizure:

- ✓ Protect head
- ✓ Keep airway open/watch breathing
- ✓ Turn child on side

10. Will your child need to leave the classroom after a seizure? YES NO

If YES, What process would you recommend for returning your child to classroom: _____

SEIZURE EMERGENCIES

11. Please describe what constitutes an emergency for your child? (Answer may require consultation with treating physician and school nurse.) _____

12. Has child ever been hospitalized for continuous seizures? YES NO
If YES, please explain: _____

A Seizure is generally considered an Emergency when:

- ✓ A convulsive (tonic-clonic) seizure lasts longer than 5 minutes
- ✓ Student has repeated seizures without regaining consciousness
- ✓ Student has a first time seizure
- ✓ Student is injured or diabetic
- ✓ Student has breathing difficulties
- ✓ Student has a seizure in water

SEIZURE MEDICATION AND TREATMENT INFORMATION

13. What medication(s) does your child take?

Medication	Date Started	Dosage	Frequency and time of day taken	Possible side effects

14. What emergency/rescue medications needed medications are prescribed for your child?

Medication	Dosage	Administration Instructions (timing* & method**)	What to do after administration:

* After 2nd or 3rd seizure, for cluster of seizure, etc. ** Orally, under tongue, rectally, etc.

15. What medication(s) will your child need to take during school hours? _____

16. Should any of these medications be administered in a special way? YES NO
If YES, please explain: _____

17. Should any particular reaction be watched for? YES NO
If YES, please explain: _____

18. What should be done when your child misses a dose? _____

19. Should the school have backup medication available to give your child for missed dose? YES NO

20. Do you wish to be called before backup medication is given for a missed dose?

21. Does your child have a Vagus Nerve Stimulator? YES NO
If YES, please describe instructions for appropriate magnet use: _____

SPECIAL CONSIDERATIONS & PRECAUTIONS

22. Check all that apply and describe any considerations or precautions that should be taken

- General health _____
- Physical functioning _____
- Learning: _____
- Behavior: _____
- Mood/coping: _____
- Other: _____
- Physical education (gym)/sports: _____
- Recess: _____
- Field trips: _____
- Bus transportation: _____

GENERAL COMMUNICATION ISSUES

23. What is the best way for us to communicate with you about your child's seizure(s)? _____

24. Can this information be shared with classroom teacher(s) and other appropriate school personnel? YES NO

Parent/Guardian Signature: _____ Date: _____ Dates Updated: _____, _____



SEIZURE ACTION PLAN

Effective Date _____

THIS STUDENT IS BEING TREATED FOR A SEIZURE DISORDER. THE INFORMATION BELOW SHOULD ASSIST YOU IF A SEIZURE OCCURS DURING SCHOOL HOURS.

Student's Name: _____ Date of Birth: _____
 Parent/Guardian: _____ Phone: _____ Cell: _____
 Treating Physician: _____ Phone: _____
 Significant medical history: _____

SEIZURE INFORMATION:

<i>Seizure Type</i>	<i>Length</i>	<i>Frequency</i>	<i>Description</i>

Seizure triggers or warning signs: _____

Student's reaction to seizure: _____

BASIC FIRST AID: CARE & COMFORT:

(Please describe basic first aid procedures)

Does student need to leave the classroom after a seizure? YES NO
 If YES, describe process for returning student to classroom _____

Basic Seizure First Aid:

- ✓ Stay calm & track time
- ✓ Keep child safe
- ✓ Do not restrain
- ✓ Do not put anything in mouth
- ✓ Stay with child until fully conscious
- ✓ Record seizure in log
- For tonic-clonic (grand mal) seizure:
- ✓ Protect head
- ✓ Keep airway open/watch breathing
- ✓ Turn child on side

EMERGENCY RESPONSE:

A "seizure emergency" for this student is defined as:

Seizure Emergency Protocol: *(Check all that apply and clarify below)*

- Contact school nurse at _____
- Call 911 for transport to _____
- Notify parent or emergency contact
- Notify doctor
- Administer emergency medications as indicated below
- Other _____

A Seizure is generally considered an Emergency when:

- ✓ A convulsive (tonic-clonic) seizure lasts longer than 5 minutes
- ✓ Student has repeated seizures without regaining consciousness
- ✓ Student has a first time seizure
- ✓ Student is injured or has diabetes
- ✓ Student has breathing difficulties
- ✓ Student has a seizure in water

TREATMENT PROTOCOL DURING SCHOOL HOURS: (include daily and emergency medications)

Daily Medication	Dosage & Time of Day Given	Common Side Effects & Special Instructions

Emergency/Rescue Medication _____

Does student have a **Vagus Nerve Stimulator (VNS)**? YES NO

If YES, Describe magnet use _____

SPECIAL CONSIDERATIONS & SAFETY PRECAUTIONS: *(regarding school activities, sports, trips, etc.)*

Physician Signature: _____ Date: _____

Parent Signature: _____ Date: _____

Student Name:			
Date & Time			
Seizure Length			
Pre-Seizure Observation (Briefly list behaviors, triggering events, activities)			
Conscious (yes/no/altered)			
Injuries (briefly describe)			
Muscle Tone/Body Movements	Rigid/clenching		
	Limp		
	Fell down		
	Rocking		
	Wandering around		
	Whole body jerking		
Extremity Movements	(R) arm jerking		
	(L) arm jerking		
	(R) leg jerking		
	(L) leg jerking		
	Random Movement		
Color	Bluish		
	Pale		
	Flushed		
Eyes	Pupils dilated		
	Turned (R or L)		
	Rolled up		
	Staring or blinking (clarify)		
	Closed		
Mouth	Salivating		
	Chewing		
	Lip smacking		
Verbal Sounds (gagging, talking, throat clearing, etc.)			
Breathing (normal, labored, stopped, noisy, etc.)			
Incontinent (urine or feces)			
Post-Seizure Observation	Confused		
	Sleepy/tired		
	Headache		
	Speech slurring		
	Other		
Length to Orientation			
Parents Notified? (time of call)			
EMS Called? (call time & arrival time)			
Observer's Name			

Please put additional notes on back as necessary.



SEIZURE ACTION PLAN

This student is being treated for a seizure disorder. The information below should assist you if a seizure occurs during school hours.

Student's Name: _____ Date of Birth: _____

Parent/Guardian: _____ Phone: _____ Cell: _____

Other Emergency Contact: _____ Phone: _____ Cell: _____

Treating Provider: _____ Phone: _____

Significant Medical History: _____

Seizure Information

Seizure Type	Length	Frequency	Description

Seizure triggers or warning signs: _____

Student's response after a seizure: _____

Emergency Medications

Medication	Dosage	Common Side Effects & Special Instructions

Green Zone Less than 2 minutes	Yellow Zone 2 to 5 minutes	Red Zone More than 5 minutes or 3 or more seizures in an hour
<ul style="list-style-type: none"> * Begin seizure First Aid * Closely observe student until recovered from seizure * Notify parent/guardian * Return student to class 	<ul style="list-style-type: none"> * Continue Seizure First Aid * Call for help * Prepare to administer Diastat/Versed * Closely observe student until recovered * Notify parent/guardian * Student may return to class/home as instructed by parent/guardian 	<ul style="list-style-type: none"> * Continue Seizure First Aid * Administer Diastat/Versed * Monitor respirations and heart beat and start CPR if needed * Notify parent/guardian * Call 911 if seizure is greater than 7 minutes

Basic Seizure First Aid

- | | |
|--|--|
| <ul style="list-style-type: none"> - Stay calm & track time - Keep child safe - Do not restrain - Do not put anything in mouth - Record seizure in log - Stay with child until fully conscious | <p>For tonic-clonic seizure:</p> <ul style="list-style-type: none"> - Protect head - Keep airway open/watch breathing - Turn child on side |
|--|--|

A seizure is generally considered an emergency when:

- Convulsive (tonic-clonic) seizure lasts longer than 5 minutes
- Student has repeated seizures without regaining consciousness
- Student is injured or has diabetes
- Student has a first-time seizure
- Student has breathing difficulties
- Student has a seizure in water

Special Considerations and Precautions (regarding school activities, sports, trips, etc)

Describe any special considerations or precautions: _____

Provider Signature _____ Date _____ Time _____

Parent/Guardian Signature _____ Date _____ Time _____



PLAN DE ACCIÓN PARA CONVULSIONES

Este estudiante está siendo tratado por un trastorno convulsivo.
La información a continuación le será de ayuda si la convulsión se produce durante el horario escolar.

Nombre del estudiante:	Fecha de nacimiento:
Padre, madre o tutor:	Teléfono: Celular:
Otro contacto de emergencia:	Teléfono: Celular:
Médico tratante:	Teléfono:
Antecedentes médicos importantes:	

Información sobre las convulsiones

Tipo de convulsión	Duración	Frecuencia	Descripción

Desencadenantes o signos de advertencia de las convulsiones:

Respuesta del estudiante después de una convulsión:

Medicamentos de emergencia

Medicamento	Dosis	Efectos secundarios comunes e instrucciones

Zona verde Menos de 2 minutos	Zona amarilla 2 a 5 minutos	Zona roja Más de 5 minutos o 3 o más convulsiones en una
<ul style="list-style-type: none"> * Comenzar los primeros auxilios para las convulsiones * Observar con atención al estudiante hasta que se recupere de las convulsiones * Notificar al padre, madre o tutor * El estudiante vuelve a clase 	<ul style="list-style-type: none"> * Continuar los primeros auxilios para las convulsiones * Pedir ayuda * Prepararse para administrar Diastat/Versed * Observar con atención al estudiante hasta que se recupere * Notificar al padre, madre o tutor * El estudiante puede regresar a la clase o a su hogar según lo indicado por el padre, madre o tutor 	<ul style="list-style-type: none"> * Continuar los primeros auxilios para las convulsiones * Administrar Diastat/Versed * Supervisar las respiraciones y los latidos del corazón e iniciar reanimación cardiopulmonar (CPR, según sus siglas en inglés) si es necesario * Notificar al padre, madre o tutor * Llamar al 911 si la convulsión dura más de 7 minutos

Primeros auxilios básicos para las convulsiones

- Mantener la calma y tener en cuenta el tiempo transcurrido
- Mantener seguro al niño
- No sujetarlo
- No ponerle nada en la boca
- Registrar la convulsión en el registro
- Quedarse con el niño hasta que esté completamente consciente

Para convulsiones tónico-clónicas generalizadas:

- Proteger la cabeza
- Mantener las vías respiratorias abiertas y vigile la respiración
- Poner al niño de costado

En general, una convulsión se considera una emergencia cuando:

- La convulsión (tónico-clónica) dura más de 5 minutos.
- El estudiante tiene convulsiones repetidas sin recobrar el conocimiento
- El estudiante está lesionado o tiene diabetes
- El estudiante tiene una convulsión por primera vez
- El estudiante tiene dificultades respiratorias
- El estudiante tiene una convulsión en el agua

Sickle Cell Disease

Sickle cell disease is an inherited red blood cell disorder. Normal red blood cells are round like discs, and they can move easily through small blood vessels in the body to deliver oxygen. Sickle red blood cells may become hard, sticky and crescent or sickle-shaped. When these hard and sticky sickle-shaped cells pass through the blood vessels, they stick to the blood vessels, block the blood flow and break apart. This process results in pain, organ damage, low blood count or anemia, and many other problems. Sickle cell disorders occur in all racial and ethnic groups, but are most common in people of African, Mediterranean, Indian and Middle Eastern heritage. In the United States, these disorders are commonly observed in African Americans and Hispanics from the Caribbean, Central America and parts of South America.

In sickle cell disease, hemoglobin (the substance inside the red blood cells that carries oxygen and gives blood its red color) is abnormal. The hemoglobin in sickle cell disease sticks together and polymerizes, causing the red blood cells to have a crescent or sickle shape. There are several different types of sickle cell disease, which are determined by the specific hemoglobin mutations that are inherited. The most common types of sickle cell disease in the U.S. are Hemoglobin SS or sickle cell anemia, Hemoglobin SC disease and Hemoglobin S-Beta-Plus thalassemia, and Hemoglobin S-beta-Zero thalassemia. All 50 states screen all newborns for sickle cell disease. The confirmatory test for the disease is a simple blood test called the hemoglobin electrophoresis.

Complications from sickle cell disease include:

- Episodes of severe, sometimes excruciating pain that can occur in any part of the body
- Acute chest syndrome (like pneumonia)
- Stroke
- Anemia and fatigue
- Enlargement of the spleen and trapping of sequestration of blood inside the spleen
- Delayed growth and pubertal development
- Decreased resistance to bacterial infections (due to abnormal splenic functional)
- Bone damage (avascular necrosis)
- Eye damage (retinopathy)
- Kidney damage
- Gallstones
- Priapism, a painful and sustained erection of the penis, that lasts for hours or days
- Neurocognitive defects, secondary to "silent strokes"
- Depression, secondary to recurrent pain and other symptoms

* The severity of SCD is highly variable among individuals. Some patients have more frequent and severe complications than others. It is important to appreciate that some children with SCD also have asthma which, if poorly controlled, can increase the risk of SCD complications

Signs and symptoms requiring emergency treatment include:

- Fever 101° or greater, regardless of whether other signs of illness are present
- Severe pain not relieved by rest and oral pain medications
- Neurological – signs including severe headache, weakness on one side, facial asymmetry, difficulty swallowing, slurred speech or seizure
- Extreme pallor and fatigue due to an acute worsening of anemia due to enlargement of the spleen, increased break-down of sickle cells, or infection of the bone marrow
- Significant respiratory symptoms such as severe cough, difficulty breathing, chest pain with or without fever

Sickle Cell Pain Crises

Acute episodes of severe pain can be precipitated by cold temperatures, decreased oxygen saturation (due to sleep apnea, asthma or respiratory infection), dehydration, physical or emotional stress, infection, pregnancy and menses.

The most common symptoms of sickle cell crises and other conditions requiring medical attention are:

- Sudden onset of acute, severe abdominal pain
- Sudden, acute, severe onset of joint or bone pain
- Fever (do not give acetaminophen/ibuprofen for fever; these medications may be given for pain)
- Headache
- Chest pain, breathing difficulty
- Abdominal swelling
- Sudden weakness or loss of feeling
- Difficulty speaking
- Sudden vision changes
- Priapism.

Treatment

Treatment of symptoms as soon they occur is crucial. Pain management should be aggressive and given quickly. An opioid medication such as hydrocodone may be alternated with ibuprofen. Stronger opioid medications are often needed and prescribed. Fever is considered to be a sign of potentially dangerous infection and is treated immediately with intravenous antibiotic after blood cultures are obtained. Red Blood Cell (RBC) transfusions are often necessary to treat severe complications from the disease. Hydroxyurea is a daily oral medication which increases levels of healthy fetal hemoglobin (thereby decreasing sickle hemoglobin) and decreases the frequency of pain and other complications in most patients. L-glutamine is an amino acid that is often depleted in the blood of individuals with sickle cell disease; daily oral supplementation with L-glutamine (trade name Endari) has been shown to reduce pain episodes in some people. Bone marrow transplants are available for patients who have a well-matched bone marrow donor and are the only cure for sickle cell disease.

Management at School

Adequate fluids are essential to help prevent sickling of the red cells. Students should be allowed and encouraged to carry water bottles at all times and drink plenty of fluids. Patients with sickle cell disease lose extra water in their urine and can become easily dehydrated and require frequent bathroom breaks for urination. Anemia can cause extreme fatigue, and students' schedules may have to be adjusted. These students have difficulty fighting certain infections, so all infectious outbreaks in the school (including influenza) should be reported immediately to parents. Many students with sickle cell disease can participate in PE, but should avoid overexertion, excessively cold temperatures or overheating. During exercise, students with sickle cell disease require good hydration with frequent breaks to drink water. Information about the student's treatment, medications and any activity limitations should be provided and updated annually by the child's physician. All students with sickle cell disease should have a 504 plan that is shared with teachers, staff, bus drivers and other appropriate personnel. Because of the increased frequency of learning and cognitive problems in children with sickle cell disease, some may require an IEP.

Report symptoms of pain crisis to the school nurse and parents. If any of these symptoms occur, have the child lie down, or rest and notify a parent or guardian immediately. Know your student, his capabilities and limits. Believe what he or she tells you about pain. Use a pain scale (Wong-Baker FACES Pain Rating Scale, Chapter 2). Parents are an excellent source of knowledge about their children, and should be consulted whenever questions arise about the plan or treatment. Also remember that not all pain is associated with sickle cell disease. These students can have pain from fractures, appendicitis and other illnesses just like any other child. Do NOT use ice with a suspected orthopedic injury because exposure to cold can precipitate a sickle cell crisis with pain.

Preschool and Early Childcare Management (ages 0 – 5)

Young children with sickle cell disease are at higher risk for many serious and life-threatening complications, including serious bacterial infections in the blood stream, enlargement of the spleen with severe anemia, acute chest syndrome (trapping of sickle cells in the lungs, which can resemble pneumonia), pain and stroke. All children ages 0 – 5 years should take a prophylactic antibiotic twice a day to reduce the risk of serious infection. Any fever of 101 degrees Fahrenheit (38.3 degrees Celsius) is considered a warning sign for infection or other sickle complication that must be taken seriously with immediate medical attention at a hospital or clinic. Medications, such as ibuprofen or acetaminophen, should not be given to reduce fever, as this does not treat the potential infection or complication. A child with sickle cell disease and fever requires a physical exam for signs of acute chest syndrome or enlarged spleen, blood work to check for infection and anemia, and an intravenous antibiotic. Children with fever may sometimes require hospitalization.

Young children with sickle cell disease may often have enlargement of their spleen all the time, or may have acute episodes of spleen enlargement, where the blood traps in the spleen. This is known as splenic sequestration, a potentially very serious complication that requires hospitalization and possible blood transfusion. Parents of young children are taught how to feel for their child's spleen, which is located beneath the ribs on the left side of the abdomen. If a child always has an enlarged spleen, caretakers should be aware of the normal size and feel of the spleen.

Respiratory symptoms, including productive cough and difficulty breathing may be a sign of acute chest syndrome, or may place a child at risk for developing acute chest. In acute chest syndrome, sickle cells become trapped in the lungs, preventing oxygen from reaching those areas of the lungs. Without hospital treatment including antibiotics, fluids, and oxygen, the condition may worsen. In severe cases of acute chest, where not enough oxygen is reaching the lungs and body, blood transfusion or even a full exchange of the patient's blood volume may be needed.

Stroke is a complication that affects up to 10 percent of children with sickle cell disease, with the highest risk being between ages 2 – 5 years old. Signs of stroke may include weakness of part of the body, difficulty using legs, arms, or hands, difficulty speaking or facial droop. Headache may or may not accompany symptoms. Sometimes a child may report pain in the part of the body that they cannot easily move. Any concern for stroke symptoms is a medical emergency, and caretakers should call Emergency Medical Services for hospital transport.

Young children with sickle cell disease may participate in daycare, play and most of the same activities as other children, with special precautions for increased rest, increased hydration, and immediate medical attention for illness.

Resources

Georgia Comprehensive Sickle Cell Center dwb.unl.edu/Teacher/NSF/C10/C10Links/emory.edu/PEDS/SICKLE/serv01.htm

Medline Plus web site
nlm.nih.gov/medlineplus/sicklecellanemia.html

Sickle Cell – current research (in search bar, type sickle cell)
clinicaltrials.gov

National Coordinating and Evaluation Center – Sickle Cell Disease and Newborn Screening Program
sicklecelldisease.net

Sickle Cell Disease Association of America
sicklecelldisease.org

Sickle Cell Foundation of Georgia

sicklecellga.org

Sickle Cell Kids

sicklecellkids.org

Understanding the Child With Sickle Cell Disease, A Handbook for School Personnel

vdh.virginia.gov/content/uploads/sites/64/2016/12/SchoolHandbook_SickleCellChild_PDF1

Sickle Cell Disease – National Institutes of Health

nhlbi.nih.gov/health-topics/sickle-cell-disease

Camp Information

Camp New Hope

sicklecellga.org

Skin Rash Resources

Acne

American Academy of Dermatology

aad.org/public/publications/pamphlets/common_acne.html

Childhood Skin Rashes/Problems

Cutaneous Conditions in Febrile Patients

fpnotebook.com/mobile/id/derm/ctnscndtnsinfbrlptnts.htm

Dermatology Image Atlas

dermatlas.net/atlas/index.cfm

Family Doctor.Org – Seborrheic dermatitis

familydoctor.org/familydoctor/en/diseases-conditions/seborrheic-dermatitis.html

Index of photos and Illustrations

dermatologyinfo.net/english/chapters/index_of_pics.htm

Mayo Clinic – Slideshow: Common Skin Rashes

mayoclinic.com/health/skin-rash/SN00016

Medline Plus: Rashes

nlm.nih.gov/medlineplus/rashes.html

Rashes in Children: Types, Causes, Diagnosis and Treatment

emedicinehealth.com/skin_rashes_in_children/article_em.htm

Skin Condition Finder

skinsight.com/skinConditionFinder.htm

Skin Rashes - LoveToKnow Skincare

skincare.lovetoknow.com/Skin_Rashes

Skin Rashes and Other Changes: algorithm chart on different rashes
familydoctor.org/online/famdocen/home/tools/symptom/545.html

Slideshow: Childhood Skin Problems on eMedicineHealth.com
emedicinehealth.com/script/main/art.asp?articlekey=90497

Dermatitis

Atopic Dermatitis

A.D.A.M. Multimedia Encyclopedia – Atopic Dermatitis
pennstatehershey.adam.com/content.aspx?productId=117&pid=1&gid=000853

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
niams.nih.gov/Health_Info/Atopic_Dermatitis/default.asp

Contact Dermatitis

Contact Dermatitis – Emedicine Health
emedicinehealth.com/contact_dermatitis/article_em.htm

Contact Dermatitis – Mayo Clinic
mayoclinic.com/health/contact-dermatitis/DS00985

Dyshidrotic Dermatitis

Dyshidrosis – Mayo Clinic
mayoclinic.com/health/dyshidrosis/DS00804

Dyshidrosis – Skin Sight.com
skinsight.com/adult/dyshidroticDermatitis.htm

Mayo Clinic
mayoclinic.com/health/seborrheic-dermatitis/DS00984

Seborrheic Dermatitis

Seborrheic Dermatitis – American Academy of Dermatology
aad.org/public/publications/pamphlets/common_seb_dermatitis.html

Seborrhoeic dermatitis – Derm Net NZ
dermnetnz.org/dermatitis/seborrhoeic-dermatitis.html

Skinsight – Information for Adults

skinsight.com/search-results?q=Dermatitis%2C+Seborrheic

Treatment of Seborrhoeic Dermatitis – American Academy of Family Physicians

aafp.org/afp/20000501/2703.html

Drug Eruption

Drug Eruption in Adults

skinsight.com/adult/drugEruption.htm

Drug Eruption in Pediatrics

skinsight.com/child/drugEruptionPediatric.htm

Erythema Multiforme

Erythema Multiforme – Dermatology Info Net

dermatologyinfo.net/english/chapters/chapter29.htm#221

Herpes

Genital Warts – CDC Treatment Guidelines 2010

cdc.gov/std/treatment/2010/genital-warts.htm

Genital Warts – WebMD slideshow

webmd.com/sexual-conditions/ss/slideshow-std-pictures-and-facts

Herpes Zoster

Viral Skin Infections – Herpes Zoster

cdc.gov/healthcommunication/toolstemplates/entertainmented/tips/GenitalWarts.html

Hookworms

Hookworms – Life Tree

parasitecleanse.com/hookworms.htm

Molluscum

The Society for Pediatric Dermatology

pedsderm.net/

MRSA

Methicillin-Resistant Staphylococcus aureus (MRSA) – Georgia Department of Public Health

health.state.ga.us/mrsa

MRSA Toolkit for Middle and High Schools – Georgia Department of Public Health

dph.georgia.gov/mrsa

Staph Infection Resources

staph-infection-resources.com/mrsa-pictures.html

Nevus Sebaceous

Nevus Sebaceous – Medscape Reference

emedicine.com/DERM/topic296.htm

Psoriasis

National Psoriasis Foundation

psoriasis.org/home

Psoriasis – Mayo Clinic

mayoclinic.com/health/psoriasis/DS00193/DSECTION=treatments-and-drugs

Psoriasis Net

skincarephysicians.com/psoriasisnet/whatis.html

Psoriasis Pictures

verywellhealth.com/psoriasis-4014661

Treatment of Psoriasis: An Algorithm-Based Approach for Primary Care Physicians – American Academy of Family Physicians

aafp.org/afp/20000201/725.html

Lyme Disease

American Lyme Disease Association (Go to the bottom of the page for a great video on how to remove ticks.)

aldf.com

Dermatology Information System

dermis.net/dermisroot/en/home/index.htm

Sun Protection

American Academy of Dermatology

aad.org/media/stats/prevention-and-care/sunscreen-faqs

Skin Cancer – CDC

cdc.gov/cancer/skin

Sun Safety at Schools – What You Can Do

cdc.gov/cancer/skin/pdf/sunsafety_v0908.pdf

Topical Steroids

Topical Steroids – DermNet NZ

dermnetnz.org/treatments/topical-steroids.html

Viral Exanthem

Exanthems – DermNet NZ

dermnetnz.org/viral/exanthem.html

Wounds

Emergency Wound Care after a Natural Disaster

cdc.gov/disasters/woundcare.html

Wounds and Wound Care – Emedicinehealth

emedicinehealth.com/wound_care/article_em.htm

Wound Care Information Network

medicaledu.com

Resources

American Academy of Dermatology

aad.org

aad.org/skin-conditions/dermatology-a-to-z

DermNet

dermnet.com/menuCasePhotos.html

Eczema Guide-Eczema Image

eczemaguide.com/eczema_basics/images/eczema_2.html

Life-Threatening Skin Rashes

emedicinehealth.com/life-threatening_skin_rashes/article_em.htm

National Eczema Association

nationaleczema.org

Rash, Rashes, and the Art of Skin Diagnosis - Self-paced online dermatology course

skinsight.com/info/for_professionals/rash-rashes

National Eczema Society

eczema.org/

Spina Bifida

Spina bifida is a congenital condition in which the vertebral bones fail to fuse, leaving the enclosed spinal cord unprotected. In the most severe form of spina bifida, myelomeningocele, a portion of the spinal cord protrudes through the vertebral bones. This occurs in about 1:1250 births. The effects of myelomeningocele include muscle weakness or paralysis below the level of the spine where the incomplete closure occurred, loss of sensation below that level, and loss of bowel and bladder control. In 70-90 percent of the children, fluid may build up and cause an accumulation of fluid in the brain called hydrocephalus. The hydrocephalus can be controlled by implanting a shunt in the ventricles of the brain to drain the fluid into the abdomen.

Treatment

Primary treatment of spina bifida is surgical, and is often started in the neonatal period (or even prenatally). Treatment can include the following procedures:

- Repair of the skin defect in lower back
- Shunt type procedures in the brain (for those children who have a shunt; not all children with spina bifida have shunts)
- Orthopedic procedures to the legs to enable the child to walk with braces and crutches at an appropriate time
- Urological evaluation to determine the best method of bladder management

Management at School

Most children with spina bifida can be mainstreamed into regular classes with adaptations made to accommodate their wheelchair, walkers or braces. Special scheduling may also be necessary to meet their toileting needs. To promote personal growth, families and teachers should encourage children, within the limits of safety and health, to be independent and to participate in activities with their classmates.

Children are usually on an intermittent catheterization schedule for bladder control. If bowel or bladder control is a problem, they may need diaper changes. The school must provide space and privacy to perform these procedures. The principal is responsible for designating personnel to assist the child or to perform these procedures if the child is unable to do so himself. School personnel should be aware of possible pressure sores from braces and wheelchairs, and observe the child for any signs of skin breakdown. The child should also be observed for signs of infection such as fever, loss of appetite or listlessness, and parents should be notified if an infection is suspected.

At times the shunt may malfunction (become clogged or break), indicating a need for replacement. Signs of shunt failure include:

- Headache
- Changes in vision
- Irritability
- Vomiting or loss of appetite
- Seizures
- Lethargy
- Deterioration in school performance
- Decrease in sensory or motor function
- Swelling along the shunt tract
- Increasing head size
- Personality changes

Anyone observing any of these symptoms should report it to the school nurse and parents. Since students have a loss of sensation below the level of the lesion, they do not experience normal skin sensitivity to pain, touch or temperature. Because of this, they are at risk of injury from sources such as hot water, heaters, hot metal surfaces in the summer and prolonged exposure to cold in the winter. Students must also shift their weight at least every 20 minutes to prevent pressure sores. When they are involved in classwork, they may need to be reminded to do this by doing wheelchair push-ups. Areas of pressure from the braces or shoes also need to be monitored.

Many students with spina bifida are also latex allergic, from repeated exposures to surgeries, catheters, etc. In these children, serious reactions can occur when exposed to latex, and some do not even have to touch the latex. The reaction can occur just from being in the same room with a latex object and can be life-threatening. Obviously latex gloves cannot be used around these children. An article and list of latex-containing objects that may be found in schools is included on the next page. Some students with spina bifida also have learning disabilities that impact their success in school.

Educational Considerations

- Develop IHP/504/IEP, emergency plans as needed.
- Provide any needed accommodations in PE and/or school schedule.
- Provide for proper administration of all prescribed treatments and medications.
- Provide for privacy, support for intermittent catheterizations.
- Provide needed support during school absences.
- Ensure that bathroom facilities, water fountains, sinks, etc., are readily accessible.
- Practice emergency exit from school building.
- Provide extra time to get to class if needed.
- Arrange for in-service to other students and staff with parent/student permission.
- Assist with Bowel and Bladder Training Program and schedule.

Resources

Spina Bifida Association

spinabifidaassociation.org

Spina Bifida Association of Georgia

spinabifidaofgeorgia.org

Camp Information

Camp Krazy Legs

choa.org/campkrazylegs



THE JEFFRAS' PROGRAM THAT PROMOTES
A HEALTHY SCHOOL ENVIRONMENT
FOR STUDENTS WITH SPINA BIFIDA

HYDROCEPHALUS & SHUNTS

Most people with Spina Bifida also have hydrocephalus. Hydrocephalus means there is a build-up of cerebral spinal fluid (CSF) around the brain. Like a bathtub with the water on and a partially clogged drain, this CSF on the brain can't drain fast enough. This CSF is made by brain cells to protect the brain and spinal cord. When there is too much CSF, it can be dangerous.

Most of the time, it is easy for doctors to see that there is too much CSF on the brain by using imaging techniques to measure the CSF-filled pockets, or cavities, called ventricles. The ventricles of the brain get too big when there is too much CSF. The CSF must be drained regularly in order to prevent too much pressure on the brain. The most common treatment for hydrocephalus is to insert a tube, called a shunt, to drain excess CSF from the head to another space so the body can remove it naturally.

Shunt Problems

The most common problem with shunts is that they can get blocked up, break or come apart. The signs of shunt problems in people with Spina Bifida are different for each person. This can make it hard for families and health care providers to know what's going on. The most common sign of a shunt problem is headache. Vomiting and nausea can happen, too, but not always.

Less common signs of a shunt problem include:

- seizures (either the onset of new seizures or an increase in the frequency of existing seizures)
- a significant change in intellect, personality, or school performance
- back pain at the Spina Bifida closure site
- worsening arm or leg function (increasing loss of sensation, weakness, worsening coordination or balance, worsening orthopedic deformities)
- increasing scoliosis
- worsening speech or swallowing difficulties
- changes in bowel or bladder function

Infections

Infection is a major problem that can happen with shunt operation. Infections are commonly treated with antibiotics and with surgical removal and replacement of the shunt system.

Signs and symptoms of an infection include:

- fever
- neck stiffness
- pain
- redness
- drainage tenderness
- from the shunt incisions or tract

Making decisions

The opinion of a health care provider is very important when working with someone with Spina Bifida and shunted hydrocephalus.

When making decisions, here is some helpful advice:

- Abdominal pain
- Pay attention to a parent's gut feeling about shunt problems — these feelings are usually right
- Be aware that shunt problems can cause many symptoms that may not be obviously shunt-related but doctors will always check the shunt to be sure
- Be on the lookout for shunt problems, and when the child shows suspicious behavioral or physical changes, contact parents, guardian or physician

Physical Activity & Hydrocephalus

Children with hydrocephalus are encouraged to live and play normally with other children their developmental age. Therefore, sports, swimming and most other activities are allowed unless a physician states otherwise.

Tips for safe play with shunt:

- Avoid putting the child in an upside down position because shunts drain best with gravity and head up positioning
- Protect the child's neck with safety equipment (helmets)
- Shunt tubing goes down the side of the head and neck, just under the skin. Try to prevent damage to the tubing through rough play, and discourage activities that are likely to injure the head or neck



This information does not constitute medical advice for any individual. As specific cases may vary from the general information presented here, SBA advises readers to consult a qualified medical or other professional on an individual basis.

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THE JEFFRAS' PROGRAM THAT PROMOTES
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ADAPTED PHYSICAL EDUCATION (APE)

Physical activity is necessary for social and physical development, but the functional level (orthopedic, neuromuscular, social, and cognitive) of a child with Spina Bifida (SB) varies according to level and severity of the deformity, presence of hydrocephalus and other associated conditions.

There is no specific physical education program that can apply to all children with SB.

Consider the following for developing an adapted physical education plan for a student with SB:

- Deformities (hip, knee, foot, and scoliosis) may limit safe participation and require bracing (AFO's KFO's), crutches for ambulation, a wheelchair or a walker.
- Hydrocephalus requiring a ventricular shunt occurs in most students with the severe form of SB (myelomeningocele). The shunt is used to remove excessive cerebrospinal fluid from the head and prevent brain damage. Children with hydrocephalus should be included in normal activities but avoid those which could cause head or neck injury, and impede proper shunt function, such as neck twisting or hanging upside down for extended periods.
- Bowel and bladder accidents may occur during physical activity. Children with SB should be permitted to use the bathroom for catheterization, bowel management or to change soiled clothing as needed.
- Abdominal, orthopedic or neurological surgeries are common in children with SB. Postoperative orders should be followed until the child is healthy enough for full participation.
- Avoid using latex products in the physical education environment. (Refer to latex list in schools, courtesy of Latex Allergy Association of America).
- When planning physical education activities, consider that children with SB may have hand-eye limitations and slower response times.
- Cognitive function varies in children with SB. Cognitive function includes: attention span, ability to compete or self advocate, developmental stage in relation to chronological age, the ability to follow instructions, understand rules, use equipment and be safe in the physical environment should be given consideration.
- With awareness and thoughtful planning, the APE environment, can be safely and creatively modified to suit the needs of the student with special needs.

ADDITIONAL RESOURCES

Physical Activities for Young People with Severe Disabilities (Canales & Lytle, 2011)
www.pecentral.org/adaptedphysed



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Educational Issues Among Children With Spina Bifida

Children with SB may require extra support in school.

This sheet explains some things about school that children with Spina Bifida and their families should know. They include:

- Evaluation and testing
- Getting into the right school and classes
- Getting the right services at school
- Meeting the child's social and emotional needs

Evaluation

In order to provide the right educational environment for children with SB and Hydrocephalus, teachers and counselors need to identify children's strengths as well as areas where they need more support. For that reason, special testing is required. These tests help them learn more about a child's intellect, achievements and general social and emotional functioning:

- Intelligence testing
- Academic testing
- Visual motor testing

Other tests might be given to help teachers and counselors learn more about a child's:

- Language ability
- Learning skills
- Social/emotional functioning

To get special services at school, the government requires these tests. Some people believe that the tests won't help, since their children are being compared with others who don't have disabilities. But for children with Spina Bifida, there are comparison data which provides substantial support for testing. This helps school systems find the right schools, classes and services.

When you start looking for help it is good to know about children with Spina Bifida and hydrocephalus in general, because most of this information relates the physical aspects of Spina Bifida and hydrocephalus to intelligence and learning.

Children with Spina Bifida and hydrocephalus often have:

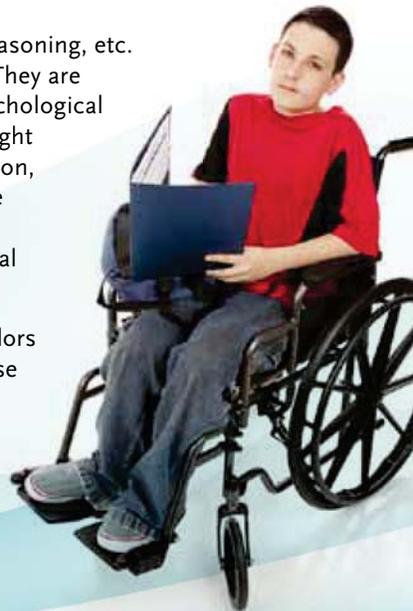
- Average IQs. But every child is different. So there can be a broad range of scores on IQ tests—among children with Spina Bifida and hydrocephalus—from exceptional performers to those with learning difficulties. Also, health problems may negatively impact performance.
- Word skills and IQs that are higher than performance skills.
- Poor eye-hand coordination. This can make things like handwriting difficult.
- Higher grades in reading and spelling than in math. (See SBA's reading and math competencies information sheets.)

Other things to know:

- Verbal IQ scores are better at predicting how well a child will do at school than other parts of an IQ test.
- The more the spinal cord is damaged, the greater the chance that a child will have learning problems. Also, children with severe hydrocephalus tend to have low IQs.
- Even when children are very smart, other things will affect how well they do at school. These things are memory, comprehension, attention, impulsivity, sequencing, organization and reasoning.

Memory, attention, sequencing, reasoning, etc. should be checked along with IQ. They are usually checked during a neuropsychological evaluation. These types of tests might check a child's ability to pay attention, impulsivity, or verbal learning. (See SBA's learning information sheet and SBU presentation on non-verbal learning disorders.)

Once parents, teachers and counselors learn as much as they can from these tests, they must then use what they learned to help children get the most from school.



Testing for everyone

Some parents ask if their children should have psychological or neuropsychological tests when they are already doing well at school. If a child is in early grades, it is important to have these tests done so future problem areas can be addressed early. It is especially important to learn about things like sequencing, organization and problem-solving. When children have problems in these areas, they tend to have less success as school gets harder. A difference usually is seen in 4th grade.

Interpreting test results and placement

Many people think that once the test results are back, it will be easy to see what should be done for a child. This is not always true, because children with Spina Bifida and hydrocephalus show inconsistencies on these tests. Often, people assume that children with Spina Bifida and hydrocephalus who are not in a regular class will go in a class for orthopedically handicapped (OH) children. This isn't always true. A child's learning disability usually is the biggest factor in this decision. Test scores may show that children could go in classes for children with mild to severe learning problems.

Knowing how to read the results and make decisions based on test scores is crucial. A child with Spina Bifida and hydrocephalus may have an average score on verbal IQ but below average in nonverbal IQ. This often makes the overall IQ score slightly below average. This does not necessarily substantiate placing a child in a class for those with severe learning problems.

Parents and educators must know that verbal IQ is usually better at showing the child's overall functioning than the nonverbal IQ score. This is true for two reasons:

- The nonverbal IQ is lowered by having Spina Bifida, including hydrocephalus and Chiari malformation
- Research shows that verbal IQ is better at showing how well a child with Spina Bifida will do in school than the other test scores

Understanding this distinction is vital to ensure provision of the classes and services that are best for the child's needs. A psychologist can further explain the details of this.

Like all children, those with Spina Bifida and hydrocephalus can be placed in a range of classes. Parents, educators, health care professionals and sometimes children must work together to choose the best option, which can become part of the child's Individual Education Plan (IEP).

Learning problems

Beyond getting a child into the right classes, there are other decisions to make. Parents often ask how to work with the

school if their children have perceptual-motor, inattention, memory or other learning problems, but are in regular classes. Teachers often see these problems and will work with the parents and children. If a child is receiving special education services, the parent can ask that these problems be addressed in the IEP. More can be found in the SBA fact sheet "Learning Among Children With Spina Bifida" and the SBU presentation on non-verbal learning disorders.

Emotional Independence

Parents often hear from schools that their children aren't doing well because they are too dependent on the parents. Like all children, those with Spina Bifida may try to avoid of school work, chores or personal care. This is normal. At the same time, some children with Spina Bifida and hydrocephalus can become too dependent on parents or others for things that they can do for themselves. Parents should be able to acknowledge this so they can help their children achieve emotional independence.

Homework

When a child has trouble with physical movement, board work and homework can be a problem. Most children with disabilities can identify alternative ways to learn. Therefore, it is often helpful for a child to have less homework as long as he or she is learning. Computers and calculators can be used to help with written work and math, which are often problems for children with Spina Bifida and hydrocephalus.

Drugs for ADHD

Some children require medication if they have problems paying attention or are easily distracted. These children might have Attention Deficit/Hyperactivity Disorder (ADHD). To know if a child has ADHD, he or she must see a health care provider who specializes in mental health issues. If the health care provider says the child has ADHD, then medications might be used. One indicator of successful treatment is a behavior change that is evident at home and school.

Parents, teachers, older children and others must be aware of all these issues to provide the best education possible for children with Spina Bifida and hydrocephalus.

Children with Spina Bifida and hydrocephalus often have problems at school. So it is important to always focus on the child's best interests. When a student comes first, progress is possible.

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Donald J. Lollar, EdD



THE JEFFRAS' PROGRAM THAT PROMOTES
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CONTINENCE MANAGEMENT IN SCHOOLS

What is a neurogenic bowel and bladder?

In Spina Bifida (SB) the nerves do not function normally at the level of and below the deformity, which is usually in the lowest part of the back. The damaged nerves cause varying degrees of paralysis (neuro muscular weakness) and decreased sensation. This means all children with SB have problems with lower body function which includes mobility.

The connections between the brain, spinal cord, bladder and bowel do not correctly send messages. Therefore, sensation and voluntary emptying of bowel and bladder are not always possible. This is called a "neurogenic" or "neuropathic" bladder or bowel. Urinary and bowel control in children and adolescents are important for short and long term health; and also in the development of independence. Therefore, bowel and bladder continence is a central focus for children with SB.

A neurogenic bladder either does not empty completely, causing urine to "back up" into the kidneys (which can cause permanent damage over time) or it leaks continuously (incontinence).

Furthermore, children with neurogenic bladder may have frequent urinary tract infections.

Clean Intermittent Catheterization (CIC)

This is the primary method to prevent problems and give the child social continence. In CIC, a small flexible tube is inserted into the bladder to drain the urine. It is a simple, quick procedure that takes no longer than it takes to urinate normally. Some children are not able to perform self-catheterization through the urethra. In such cases, the child may have a catheterizable "stoma" (surgical opening) in the belly button or side of the abdomen. This option makes it possible for many young children and teens to handle catheterization independently. If this isn't already achieved before entering school, then learning self- catheterization should be included in the child's IEP. The need for assistance should decrease with age.

CIC is done every day, and as frequently as "anyone" would need to empty their bladder.

Also, CIC:

- helps to avoid urinary tract infection (UTI)
- helps to avoid serious bladder and kidney damage
- is necessary to become (socially) continent
- has to be combined with bowel training if there is constipation

Care & Storage of Catheters: **ADDITIONAL RESOURCES**

Unless otherwise stated by parents or physician, CIC is done with clean washed hands-gloves are not necessary. Some catheters can be easily disposed of, but some need to be washed out and laid out on a paper towel to dry. In such cases, public bathrooms would not be an acceptable place to leave them. The nurse's office may be most appropriate.

Bowel Management (Managing Incontinence & Constipation)

Because most children with SB also experience difficulty controlling bowel movements, a bowel management program may be necessary for both health and social acceptance. As children grow older, bowel continence offers an enormous increase in the successful social development and self-esteem, which impacts overall success in school.

Bowel management in school may include:

- recognizing and reporting bowel accidents or soiled clothing
- removing or replacing clothing
- inserting suppositories
- assembling supplies
- cleaning up supplies and restroom
- participating in bowel washouts or increasing personal responsibility for bowel program
- communicating with school nurse or trusted employee or friend

Constipation in SB is a life-long medical issue. Constipation in SB cannot be cured and children do not outgrow it. This means that children with SB have problems with lower body function, which includes mobility and bowels and bladder.

Bowel Management & Spina Bifida



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Maintaining Continence at Camp and Sleepovers

There is no vacation from neurogenic bowel and bladder...
but it doesn't have to ruin your vacation

Bowel and bladder management is one of the most important health practices, but also one of the most distressing issues for young people with Spina Bifida. Incontinence is a difficult problem to solve. Success requires strict adherence to routine catheterization and bowel care. Staying clean and dry is vital to skin health, well-being, social acceptance and independence. For this reason, many children need support, assistance and encouragement at home and school. What happens when you are away from home overnight? This document outlines how to plan and take care of yourself at camp or at sleepovers.

To understand the importance of a good bladder routine, you need to understand how the kidneys and bladder work. Kidneys are important organs. They filter (remove) waste products from the blood and make urine which goes through the ureters and then to the bladder where it is stored until urination or catheterization. Urine must be removed from the bladder several times each day in order to prevent urinary tract infections and maintain healthy kidneys. Bowels must be cleaned out daily or at least several times each week.

Bladder management affects bowel continence. Both affect how you feel and your overall health. Sitting in soiled clothing may lead to urinary tract infections and skin breakdown.

Avoid Constipation or leakage

Bowel accidents do happen, but may be avoided with good habits:

- Eat a healthy diet loaded with grains and a variety of fruit and vegetables.
- Drink plenty of fluids (mainly water), and avoid caffeine, alcohol and carbonated beverages because they irritate the bladder.
- Do normal bowel care (medications, washouts, suppositories or enemas) before leaving for camp or sleepover, and continue to do it as scheduled even if you are not at home.
- Anal plugs approved by your healthcare provider may be temporarily helpful overnight or during swimming.



Supply Kit

Before you leave home, pack your bag! You will need many things including:

- Packaged disposable catheters (bring extra just in case)
- Lubrication unless catheters are pre-lubricated
- Wet wipes
- Hand held mirror (girls may need this to see where to insert the catheter)
- Pads or disposable briefs if needed
- Hand soap
- Plastic bags for soiled items or disposal of used equipment
- Clean clothes, especially extra underwear

Take extra supplies and keep them where you can get them when needed. Plan your day to include bathroom time.

Tips about the space you need for bowel and bladder care

- Be sure you have a space that allows for privacy and personal safety (door that can easily be locked and unlocked, appropriate lighting).
- Be sure to acquire a bathroom large enough for you to move as needed, fully accessible with wide doorways and with safety rails firmly on the wall if standing or transferring is necessary
- The sink must be accessible.
- Wash your hands before and after bladder and bowel routine.
- Perform bladder care first, then bowel care.
- While undressed, do careful skin inspection for redness or irritation.
- Check your appearance for cleanliness and neatness.
- Tidy the bathroom before leaving.

Other considerations

- Practice at home so you can be prepared to be away from home.
- You may need a reminder such as an alarm on your watch or someone to remind you to catheterize, or take medications or to do your bowel routine.
- If you need assistance, be sure to let a friend or adult know how they can help before you arrive at your destination.
- If you have a trusted person that you can tell about your neurogenic bowel and bladder, ask that person to alert you if they notice unpleasant smells or leakage.
- Do not allow a stranger or person you do not trust to assist you with personal care.
- Report any person who makes you feel unsafe or uncomfortable.
- Keep copies of your prescriptions, important medical records or medical alert information with you when away from home.
- If you have a shunt, bring copies of your most recent scans on disc, and also information about your shunt in case there is a medical emergency.
- Be aware of the nearest regional neurosurgical center and ensure there is a responsible adult present to provide emergency care or transportation to hospital.

Other Resources

Carry When to call the doctor: signs and symptoms of urinary tract infection pocket card

[Carry When to call the doctor: signs and symptoms of shunt malfunction pocket card](#)

[Pediatric Urinary Tract Infection Sheet](#)

[Learn about Urinary Tract Infections in Children with Neurogenic Bladder & Bowel](#)

[SB University: Save our Skin \(S.O.S.\) – under general health and preventative medicine](#)



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This list provides a guide to some of the most common objects containing latex and offers some alternatives. It is not meant to be a comprehensive listing. **Manufacturers are not required to label home and community products which contain natural rubber.** ALWAYS CHECK THE PRODUCTS PACKAGING. If in doubt regarding the safety of an item, call the manufacturer.

Frequently contains LATEX	LATEX-Safe Alternatives
School/Office/Art supplies: paints, glue, erasers, fabric paints, grips for writing utensils, duct tape	Elmers (School Glue, Glue-All, GluColors, Carpenters Wood Glue, Sno-Drift paste) FaberCastel erasers, Crayola (except stamps, erasers), Liquitex paints, DickBlick tempera, acrylic paints and soap erasers, Play-Doh, Pro-Craft, Clic Eraser, Pentel erasers, pens, and pencils, 3M Post-it Notes, Staedtler Mars Plastic Eraser, masking tape, STATtape, Dixon/Ticonderoga Company (Erasers, Wooden Pencils and Art Supplies)
Balloons	Mylar balloons, Mister Balloon, plastic ballons
Balls: Koosh balls, tennis balls, bowling balls, ball pits	PVC (Hedstrom Sports Ball), Nerf Foam Balls, Gertie Balls, Googlie Imperial Toys, AMF Bowling balls
Carpet backing, gym floor, gym mats	Broadloom carpets contain no NRL. For other products, provide barrier cloth or mat.
Chewing gum	Bubblicious, Trident (Warner-Lambert), Wrigley gums (check new products), Bazooka gum, Bubble Yum, Ice Breakers gum
Clothes: liquid appliques on tee-shirts, elastic on socks, underwear, sneakers, sandals	Cloth-covered elastic, neoprene (Decent Exposures, NOLATEX Industries), Buster Brown elastic-free socks (Vermont Country Store)
Condoms, contraceptive sponges, diaphragm	Polyurethane (Avanti), female condom (Reality), Wideseal Silicone Diaphragms (Milex), Trojan Supra Condom, FemCaps
Costumes: masks, face paint, nail polish, etc.	Check all products
CPR manikins and medical training aids	Most Laerdal products
Crutches: tips, axillary pads, hand grips	Cover with cloth or tape
Dental dams, cups, bands, root canal material, orthodontic rubber bands	PURO/M27 intraoral elastics (Midwest Orthodontic), wire springs, sealant (Delton) dams (Meer Dental, Hygenic Corp), John O Butler, Earloop masks (Richmond)
Diapers, incontinence pads, rubber pants	Huggies, First Quality, Gold Seal, Tranquility, Always, Attends, Drypers Diapers (not training pants), Confidence (Paper-Pak), Pampers, Luvs, Seventh Generation Diapers
Feeding nipples	Silicone, vinyl (selected Gerber, Evenflo, MAM, Ross, Mead Johnson)
Food handled with latex gloves	Synthetic gloves for food handling
Handles on racquets, tools, bicycles	Vinyl, leather handles or cover with cloth or tape
Kitchen cleaning gloves	PVC MYPLEX (Magla), cotton liners (Allerderm)
Mattress / pressure relief	Check each one for latex content
Miscellaneous items	Some medical stickers by MediBadge, UAL, Cushie Tushie Potty Seat, Bumbo Seat, Water Pik shower head and hose
Newsprint, ads, coupons, lottery scratch tickets	None
Pacifiers	Soothies (Children's Med Ventures), selected Binky, Gerber, Infa, Kip, MAM
Paints, sealants, stains, etc.	There is NO NATURAL RUBBER in latex paint, though it may be present in some waterproof paints and sealants
Playpits, playground surfaces	Natural rubber latex may be a component of surfaces, Boundless Playgrounds
Rubber bands, bungee cords	Plasti bands
Toothbrushes / infant massager	Soft bristle brush or cloth, Gerber/NUK, all Oral B products
Toys: Stretch Armstrong, old Barbies	Jurassic Park figures (Kenner), 1993 Barbie, Disney dolls (Mattel), many toys by Fisher Price, Little Tikes, Playschool, Discovery, Trolls (Norfin), Silly-putty

Frequently contains LATEX	LATEX-Safe Alternatives
Water toys and equipment: beach thongs, masks, bathing suits, caps, scuba gear, goggles	PVC, plastic, nylon, Suits Me Swimwear
Wheelchair cushions	Jay, ROHO cushions, Sof Care bed/chair cushions (Gaymar)
Wheelchair tires	Recommend using leather gloves
Zippered plastic storage bags	Waxed paper, plain plastic bags, Ziploc bags, Glad Press N' Seal

Associated Allergies

Foods include: banana, avocado, chestnut, kiwi, pear. Plants include: Poinsettia and milk weed pods.

About These Lists

These lists are offered by the Latex Committee of the Nursing and Healthcare Professionals Council of the Spina Bifida Association as a guideline to individuals, families, and professionals. It is updated annually.

The information contained in these lists is constantly changing as manufacturers improve their products and as we learn more about latex allergy.

PLEASE NOTE: The latex content of products may vary between companies and product series. Companies that offer “alternatives” may ALSO make many LATEX products. We recommend that you check with suppliers before exposing individuals with latex allergies to the product.

REMEMBER: Always check the label—even if the product is on this list. If a product has recently replaced latex, many institutions will continue to use the old stock before they replace it with the new.

For More Information

For the most current version of this list, visit the SBA Web site at www.spinabifidaassociation.org.

Online Resources

Spina Bifida Association

www.spinabifidaassociation.org

American Latex Allergy Association/ALERT

www.latexallergyresources.org

Type I Versus Type IV Allergic Reactions: How do they Differ?

www.latexallergyresources.org/Newsletter/newsletterArticle.cfm?NewsletterID=16

Centers for Disease Control and Prevention—latex in vaccine packaging

www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/latex-table.pdf

Decent Exposures

(latex free undergarments)

1-800-524-4949

www.decentexposures.com

OSHA

www.osha.gov/SLTC/latexallergy

American College of Allergy, Asthma & Immunology

www.acaai.org

Center for Disease Control Latex in Vaccine Packaging

www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/latex-table.pdf

IDEA and Section 504

Professional school nurses can be included as related service providers under the Individuals with Disabilities Education Act (IDEA). Including the professional school nurse on the multidisciplinary IEP or Student Support team will help ensure that the specialized health services and adaptations needed for eligible children with disabilities to participate fully in their educational program are safely and appropriately provided (adapted from the National Association of School Nurses-Issue Brief: School Nurses and the Individuals with Disabilities Act). The nurse's role with advocacy, planning and provision of needed services for children eligible under the Rehabilitation Act of 1973, Section 504 (www2.ed.gov/about/offices/list/ocr/504faq.html) is also important.

The IDEA was enacted in 1975, and amended in 1986, 1990, 1997 and 2004 (idea.ed.gov/explore/home%20). It guarantees that eligible children with disabilities have the right to receive a free appropriate public education in the least restrictive setting possible. IDEA provides federal funding to school districts to support special education and related services.

IDEA provides for special education services for those students who meet the criteria for eligibility in at least one of 13 areas of disability:

- Hearing impairments
- Vision impairments
- Speech and language impairments
- Intellectual disabilities
- Specific learning disabilities
- Orthopedic impairments
- Serious emotional disturbance
- Traumatic brain injury
- Autism
- Significant developmental delay
- Multiple disabilities
- Deaf-blindness
- Other health impairments

If the child meets the criteria listed under one or more of these categories, his disabling condition adversely affects educational performance, and he requires special education, the child may be eligible to receive services under this law. An Individualized Education Plan (IEP) will then be written after a meeting of a multidisciplinary team of regular and special educators, parents, other service providers (such as the school nurse, PT, OT, speech therapists) and, sometimes, the child. Educational goals and short-term, measurable objectives are developed with the participation of the parents and reviewed annually. Children eligible under IDEA will also be covered legally under Section 504.

Section 504 of the Rehabilitation Act was enacted as a civil rights act, to eliminate barriers to full participation by persons with disabilities. There is no federal funding attached to these requirements and services. Another difference between the two laws is the definition of disability. Section 504 covers a disability (permanent or temporary) that substantially limits one or more major life activity: caring for oneself, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning or working. For the school-age child, a limitation of learning related to the disability can usually qualify him under Section 504. Students who can be protected under Section 504 (and not necessarily IDEA) may include students with:

- Communicable diseases (i.e. hepatitis, AIDS)
- Temporary disabilities arising from an accident or medical treatment

- Allergies or asthma
- Diabetes
- Environmental illnesses
- ADD and ADHD
- Cosmetic disfiguration
- Anatomical loss
- Neurological problems, such as seizures
- Cancer
- Dyslexia
- Special medical procedures such as catheterizations, injections, and administration of some medications

Under Section 504, schools are required to identify students, but evaluation is less structured. A 504 accommodation plan can be written to meet the needs of the identified student as they relate to his educational experience. A parent or school professional may refer a student for services and planning under Section 504. The evaluation is determined by the type of disability present and must accurately assess the extent of the disability and the recommended services.

The 504 plan should include all modifications and services required to ensure a student's right to free and appropriate education. The plan may include:

- Environmental strategies – changing student seating; adapting non-academic times such as lunch, recess and PE; altering location of personal or classroom supplies for easier access or to minimize distractions; rescheduling of classes to one floor of the building; more frequent water and bathroom breaks.
- Organizational strategies – modeling organizational systems like color-coding, adaptation of time expectations for assignments, checking a student's recording of homework assignments, providing a second set of texts—one for home and one for class.
- Behavioral strategies – behavioral/academic contracts, logical consequences, parent conferences, daily or weekly progress reports.
- Presentation strategies – allow students to tape lessons, use computer-aided instruction, and/or school provides alternative textbooks and workbooks, teacher simplifies and repeats instructions about assignments.
- Evaluation strategies – provide for oral testing, segment testing, practice testing, blood-glucose monitoring prior to tests.

The National Association of School Nurses (nasn.org) has defined the role of the school nurse, as a member of the multidisciplinary educational team to include the following responsibilities:

- Assists in identifying children who may need special educational or health-related services.
- Assesses the child's sensory and physical health status in collaboration with the child, parent/guardian and healthcare providers.
- Develops individualized health and emergency care plans.
- Assists in development of the IEP or 504 plan.
- Assists the parents and child to identify and utilize community resources.
- Assists the parent and teachers to identify and remove health-related barriers to learning.
- Provides in-service training for teachers and staff regarding the individual health needs of the child.
- Provides and/or supervises assistive personnel to provide specialized healthcare services in the school setting.
- Evaluates the effectiveness of the health-related components of the IEP with the child, parents and other team members, and suggests revisions to the plan as needed.

(Adapted from the NASN Issue Brief on School Nurses and the Individuals with Disabilities Education Act, 1996, nasn.org/PolicyAdvocacy/PositionPapersandReports/NASNPositionStatementsFullView/tabid/462/smId/824/ArticleID/491/Default.aspx).

The school nurse's involvement in this process will vary with each child and his or her health needs as they relate to the educational success of the child. This chapter of this manual includes some educational considerations for the chronic conditions included. A sample 504 plan is included here as well, although your school system may already have a form to use.

Americans with Disability Act (A.D.A) Amendment of 2008

S. 3406 was signed by President George W. Bush on September 25, 2008 and took effect on January 1, 2009, which clarifies and broadens the definition of disability and expands the population eligible for protections under the Americans with Disabilities Act of 1990. It includes major changes to when impairment is considered a disability. To view the bill, go to govtrack.us/congress/billtext.xpd?bill=s110-3406.

New changes: major life activities include, but are not limited to, caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating and working.

Resources

Bravekids

bravekids.org

Clay, Daniel L. Helping School Children with Chronic Health Conditions: A Practical Guide. New York, NY: Guilford Press, 2004; ISBN 1593850433, 9781593850432.

amazon.com/s/ref=nb_sb_noss?url=search-alias%3Daps&field-keywords=ISBN+1593850433

Protecting Students with Disabilities - U.S. Department of Education-Office of Civil Rights (OCR)

ed.gov/about/offices/list/ocr/504faq.html

Sevier County School System Section 504 Plans - Examples of Program Accommodations and Adjustments

heartlandaea.org/

Special Education Information for Teachers

legacy.teachersfirst.com/sped/prof/index.html

The following resources are included in this section:

1. Individual Health Care Plan Form
2. Section 504 Plan Form
3. Medical Report Form for Schools

Individual Health Care Plan

Student: _____ **Date of Birth:** _____

Date: _____

Health Information to Teacher:

_____ has a health condition which you as his teacher need to be aware of. The description of this problem, as well as emergency care and individual considerations, are listed below:

Medical Diagnosis/Condition: _____

Actions: _____

Individual Considerations/Accommodations Needed: _____

Parent Signature

Date

Physician or School Nurse Signature

Date

Section 504 Plan

Student's Name: _____ DOB: _____ Date developed/reviewed: _____

School: _____ Grade: _____ School year: _____

Multidisciplinary team: _____

Type of referral: Initial _____ Reevaluation _____ Modification _____

Disability(s) identified (i.e. medical condition, communicable disease, physical or learning disability—temporary or permanent): _____

Life Activity(s) substantially limited/ Educational impact: _____

Necessary academic accommodations: _____

Necessary non-academic accommodations: _____

Location of accommodations: () Regular class () Other _____

Reevaluation date: _____ or earlier, if deemed appropriate.

Committee signatures	Title	Date	Committee signatures	Title	Date
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

I have participated _____ or was invited to participate _____ in the development of this plan and have received a copy of the Section 504 Parental Rights form.

Parent/ Legal Guardian Signature _____ Date _____

Medical Report Form for Schools

This form may be attached to the district form.

The student named below is a patient at _____ . This report provides important medical information for school personnel.

Check one:

Release of Medical information completed: ____ / ____ / ____

No release – Gave/Mailed directly to parent on ____ / ____ / ____

I. Identifying Information

Student Name:	Grade:	Date of Birth:
Parent Name:	School System:	School Name:
Residence Street Address:	City, ST:	Zip:
Home Phone:	Work Phone:	Cell Phone:

II. Medical Information

Diagnosis	Date of Onset	Severity	
		mild moderate severe	chronic acute, expected duration: _____
		mild moderate severe	chronic acute, expected duration: _____
		mild moderate severe	chronic acute, expected duration: _____
		mild moderate severe	chronic acute, expected duration: _____

Medical Report Form for Schools

This form may be attached to the district form.

III. Recent Surgeries

Date	Type	Modifications required during recuperation

IV. Medications that MAY BE ADMINISTERED AT SCHOOL

Medication Name	Dosage/Frequency	Side Effects

V. Other medications with side effects that may affect school performance:

Medication Name	Side Effects

VI. Medical condition may adversely affect the student in the following areas:

Attendance:

extended absences

intermittent absences

inability to attend a full academic schedule

other comments regarding attendance:

Alertness:

normal

heightened alertness to environmental stimuli

decreased alertness

other:

Attention:

normal

decreased ability to attend to tasks

other:

Other areas adversely affected by medical condition, please explain:

strength:

vitality:

Medical Report Form for Schools

This form may be attached to the district form.

daily living activities:

academics:

communication abilities:

ability to sit/move/manipulate materials:

other:

Physical Function/Ambulation:

normal

other:

Physical Education:

may participate in regular P.E. without restriction

may participate in regular P.E. with the following modifications:

requires adaptive P.E. with the following modifications:

may not participate in P.E. until ___/___/___

VII. Medical needs during the school day (other than medication):

VIII. Symptoms that may indicate potential medical problems, and action required:

Symptom(s)	Required Action

Medical Report Form for Schools

This form may be attached to the district form.

Physician Signature:

Date:

Physician Name:

GA License #:

Physician Address:

M.D. Phone:

Hospital Social Worker Contact:

Comments:

Note: School nurses may receive a medical report such as this from Children's Healthcare of Atlanta as a communication tool used between medical staff (including hospital school teachers) and the child's school system. This form has been helpful in communications during the planning of the IEP.