Chapter 5: Chronic Health Conditions

Children's Healthcare
of Atlanta

Georgia School Health
Resources Manual
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Chapter 5: **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, they should alert the parent(s)/guardian(s) to the problem. Ensure that the family has a primary care provider 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 IDEA, IEPs and Section 504 plans that may involve the school nurse. Samples of an IHP form and 504 plan are included as well. The school nurse's commitment to maintaining confidentiality and obtaining permission from the parent(s)/guardian(s) before sharing health information is very important.

The school nurse's position as an advocate for these students in the educational setting also will depend on good communication with parents/guardians, 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 students, 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.

Georgia Resources for Children with Special Needs: pediatrics.emory.edu/divisions/neonatology/dpc/georgia.html

Section 1:
Asthma

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 that 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(s)/guardian(s), including advising medical follow-up. In addition, the school nurse should be alert to students 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.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 to 4 years of age, 5 to 11 years of age and youths older than 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 medication; 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 overreactive 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 stomachache (for younger children)

These early warning signs are indicative of the student'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 student's "red zone" in their asthma action plan and necessitate immediate treatment with a quick relief inhaler. Emergency help (911 call) may be necessary if these symptoms are noted and/or there is no improvement in symptoms 15 to 20 minutes after treatment.

Georgia Senate Bill 472, which was 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.

SB 472 also provides for self-administration of prescribed asthma medications by minor children in school settings. Supportive school policies are necessary to ensure 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:

- 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 per 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 per week or more than two nights per 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 as an MDI or nebulizer solution)

There may be circumstances when an asthmatic student needs their 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 they need 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 student 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, Arnuity)
- Leukotriene modifier (Singulair, Accolate)
- Inhaled non-steroid (Spiriva)
- Combination drugs: Inhaled corticosteroid and long-acting bronchodilator (AirDuo, Breo, Advair, Symbicort, Dulera)

Equipment

- Asthma medications are delivered by metered dose inhalers (MDIs), dry powdered inhalers (DPIs) 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, 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 an 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 their 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 their breath for up to 10 seconds to allow the medicine to reach all the parts of their 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 a Spacer

Although using an 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 their 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 student 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 student'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 student 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 student'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 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.

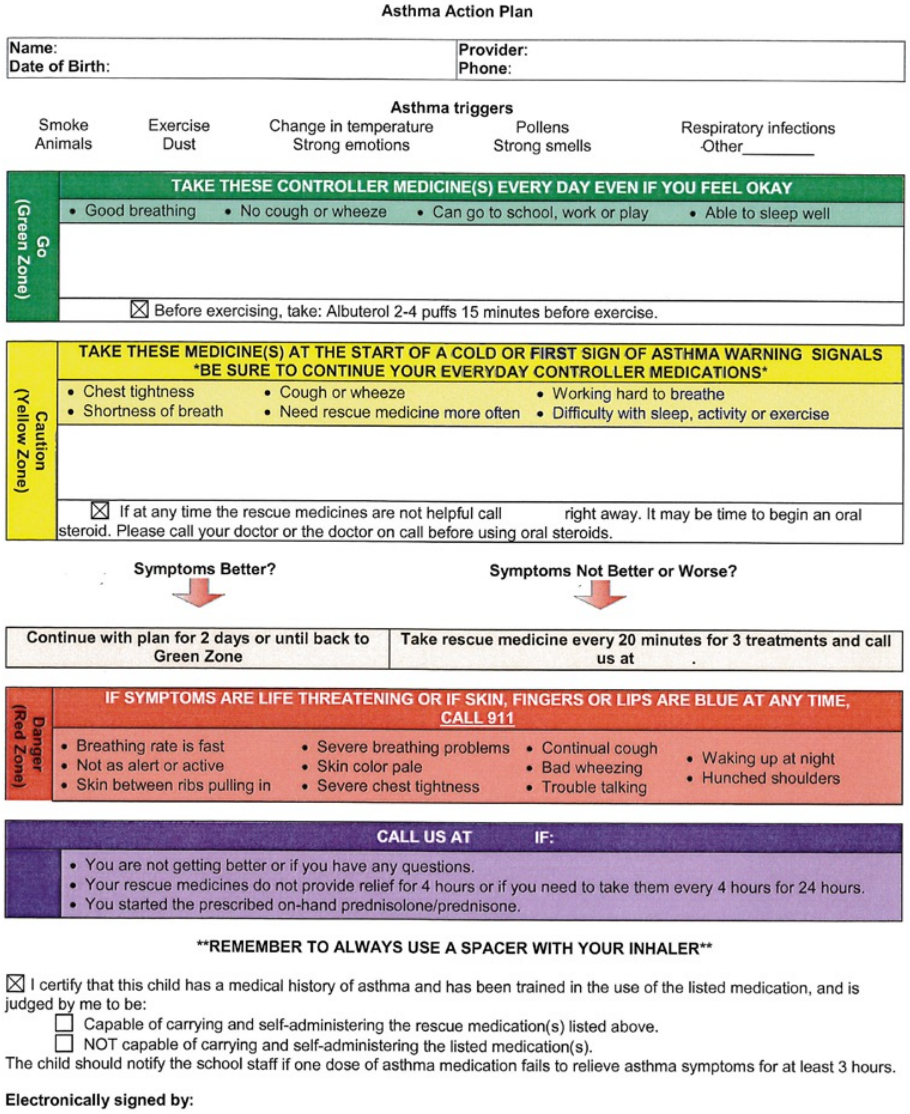
Asthma Educational Considerations

- 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 and PE 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 the student'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 makeup 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 (e.g., 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.
- 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 information from the CDC: cdc.gov/asthma
- Asthma information from Children's Healthcare of Atlanta: choa.org/medical-services/asthma
- Asthma guidelines and strategies from the CDC: cdc.gov/asthma/pdfs/strategies_for_addressing_asthma_in_schools_508.pdf
- Asthma in Schools from the Asthma and Allergy Foundation of America: aafa.org/asthma-in-schools
- Educational Materials to Help Patients and Caregivers Navigate Conditions, Diagnoses and Treatments from Children's Healthcare of Atlanta: choa.org/parent-resources/patient-handouts-and-educational-resources
- Managing Asthma in the School Environment from the Environmental Protection Agency: epa.gov/iaq-schools/managing-asthma-school-environment



Asthma Action Plan

Name: **Date of Birth:**	**Provider:** **Phone:**

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

- Good breathing
- No cough or wheeze
- Can go to school, work or play
- Able to sleep well

☒ 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

- Chest tightness
- Shortness of breath
- Cough or wheeze
- Need rescue medicine more often
- Working hard to breathe
- Difficulty with sleep, activity or exercise

☒ 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 .**

Danger (Red Zone)

IF SYMPTOMS ARE LIFE THREATENING OR IF SKIN, FINGERS OR LIPS ARE BLUE AT ANY TIME, CALL 911

- Breathing rate is fast
- Not as alert or active
- Skin between ribs pulling in
- Severe breathing problems
- Skin color pale
- Severe chest tightness
- Continual cough
- Bad wheezing
- Trouble talking
- Waking up at night
- Hunched shoulders

CALL US AT IF:

- 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:

Section 2:
Autism Spectrum Disorder

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 among 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 comorbid symptomatology, such as difficulty with feeding, sleep and challenging behaviors, while others might have psychiatric comorbidities, 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/guardians report developmental problems before their child even turns 1. 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 older than 4 years old, which prevents them from getting crucial interventions earlier in their development.

ASD is a lifelong 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, 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 life span, 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/guardians 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 motor skills were evident from 6 months of age. Unfortunately, many children do not receive a final diagnosis until much older. The CDC's 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 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 is run through the Georgia Department of Public Health. Through this system, parents/guardians 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 the 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/guardians 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 one in 59 children in the U.S. are estimated to meet the criteria for diagnosis of ASD according to the CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network.
- ASD is about four 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 percent 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 percent to 18 percent 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 of around 18 percent to 20 percent.
- 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 percent to 95 percent 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 percent to 31 percent of the time.
- ASD tends to occur more often in people who have certain genetic or chromosomal conditions. About 10 percent 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 percent) 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 percent. The co-occurrence of one or more psychiatric diagnoses is 10 percent.
- About 20 percent to 30 percent 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 healthcare, 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 U.S. dollars).
- Children and adolescents with ASD had average medical expenditures that exceeded those without ASD by $4,110 to $6,200 per year. On average, medical expenditures for children and adolescents with ASD were 4.1 to 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 to 3, could save $1.28 million over the lifetime of a child, when compared to starting treatments at 5 to 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 students with ASD hearing and vision.

- Social stories that teach about hearing and vision tests can be used to help students 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 student.
- Incorporate a student'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 student to explore earphones first before placing them on the student to help decrease sensory defensiveness.
- Sometimes students 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

Students 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 students 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, students with ASD benefit from strategies such as:

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

Resources

- Management of Children With Autism Spectrum Disorders from the AAP: pediatrics.aappublications.org/content/120/5/1162
- Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) from the American Psychiatric Association: psychiatry.org/dsm5
- School Community Tool Kit from Autism Speaks (see School Nurses pages 65 to 67): autismspeaks.org/tool-kit/school-community-tool-kit
- National Center on Birth Defects and Developmental Disabilities: cdc.gov/ncbddd/autism/index.html
- Marcus Autism Center: marcus.org

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Section 3:
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 Brain Injury Association of America, ABI is an "injury to the brain, which is not hereditary, not congenital (present at birth) or not degenerative (progressively worsening)." 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 non-trauma 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, being struck by or against an object 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 consciousness) sustained immediately after injury. This is assessed by the Glasgow Coma Score (GCS), which is universally used to evaluate the patient's degree of impaired unconsciousness and coma. TBIs may be further categorized as "open" or "closed." Open TBIs occur when the skull is breached, which occurs with wounds such as a gunshot injury. Closed TBIs occur when the scalp and skull remain intact, for example, after a fall. TBIs occur in all ages, with the highest rate in adolescents ages 15 to 19 years old.

Concussion

A concussion is a type of mild 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 student may only experience problems once back in school or playing sports.

Brain Injury/Concussion and the School Nurse Role

Regardless of the degree of TBI, students 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 who 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 student may present to the school nurse first. Therefore, it is important to ask if the student has experienced a recent head injury in sports, recreational activities or MVC (motor vehicle collision).

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 and 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 liability 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 student is asymptomatic. Thus, the symptomatic student should return to school, play and sports gradually and under supervision.

As the student grows and develops, parents/guardians 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 student'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."

Source: *The Student with a Brain Injury: Achieving Goals for Higher Education, American Council on Education, 2002, Reviewed July 25, 2018; The Student with a Brain Injury: Achieving Goals for Higher Education | BrainLine*

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 the parent(s)/guardian(s), 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 student'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 trained in concussion care. 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. ImPACT, which is a computerized pre- and post-concussion test that is available through the Children's Healthcare of Atlanta Sports Medicine program, 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 trained in concussion management before returning to sports.

Resources

- Benefits of Strict Rest after Acute Concussion: A Randomized Controlled Trial: 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: journals.sagepub.com/doi/full/10.1177/0363546514541926
- Traumatic Brain Injury by Alan Georges and Joe M. Das: ncbi.nlm.nih.gov/books/NBK459300/
- Additional concussion resources are available in the appendix of chapter 2.

Brain Injury Resources

- Brain Injury Association of America: biausa.org
- Brain Injury Association of Georgia: 800-444-6443, info@braininjurygeorgia.org, braininjurygeorgia.org
- Brain Rehabilitation and Injury Network (B.R.A.I.N.): thebrainsite.org
- Centre for Neuro Skills: neuroskills.com
- Lash and Associates books on brain injury: lapublishing.com
- Spinal Cord Injury Information: sci-info-pages.com

Concussion Resources

- CDC Heads Up Concussion and Mild TBI: cdc.gov/headsup/index.html
- Concussion Program from Children's Healthcare of Atlanta: choa.org/medical-services/concussion
- Heads Up to Schools: Know Your Concussion ABCs from the CDC: cdc.gov/headsup/schools/index.html
- ImPACT Applications: Concussion Management and Training: impacttest.com

Section 4:
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 five 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 5 percent of children with type 1 diabetes, 5 percent of children with Down syndrome, or Williams syndrome and in some children with 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 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

Students with celiac disease will need encouragement and support at school. Mealtimes with peers can be particularly challenging for students with celiac disease who may not want to appear "different" and may be tempted to eat foods that have gluten. Many students 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 classroom snacks or treats are particularly different and it would be best to have gluten-free options for birthday snacks or special treats when the occasions arise.
A student 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

1. Develop IHP/504/IEP and emergency plan.
2. 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 student in the cafeteria, or to make the parent(s)/guardian(s) aware that gluten-free options are available.
    - Inform the classroom teacher to let parents/guardians know when bringing birthday treats or snacks in those younger grades, that a student in the class has gluten intolerance and can become very ill if given gluten-containing products. A child's parent(s)/guardian(s) can make a list of snack options for the other parents/guardians to choose from, or the parent(s)/guardian(s) can volunteer to provide snacks for the student with celiac themselves.

Resources

- Academy of Nutrition and Dietetics: eatright.org
- Beyond Celiac: beyondceliac.org
- Celiac Disease Awareness Campaign from the National Institute of Diabetes and Digestive and Kidney Diseases: niddk.nih.gov/health-information/digestive-diseases/celiac-disease
- Celiac Disease information from GI Care for Kids: gicareforkids.com/conditions-we-treat/celiac-disease/

Camp Information

Camp Weekaneatit is held in collaboration with Camp Twin Lakes and the Georgia Celiac Foundation. It is a weeklong 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

Section 5:
Cerebral Palsy

Cerebral palsy includes a group of nonprogressive disorders of movement and posture. More information includes genetic causes for cerebral palsy. The idea of Cerebral Palsies is better in that many processes may lead to a nonprogressive movement disability in a person that is manifest before the age of 2 years. 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 (the genetic causes)

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 1,000 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. About 10 percent 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 3 years old. 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 Gross Motor Function Classification System (GMFCS).

	GMFCS Measure of Gross Motor Function
Level	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

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

Treatment

There is no cure for cerebral palsy, only therapies aimed at improving a person'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)
- Sinemet (dopamine/carbidopa), Artane and Trihexyphenidyl to control tone and movement
- Baclofen may be administered by an intrathecal pump for better control in delivery of this medication
- Injections of toxins to muscles or phenol to nerves to reduce spasticity

Management at School

Students with cerebral palsy often rely upon the therapy resources available at school. During the day, the student needs to be upright as much as possible. Since the student needs to be able to use the walker and/or stander at school to accomplish this, they 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. Students with cerebral palsy also often need assistance with toileting skills. The spasticity may affect bladder function.

In addition, sometimes a student'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 student is touched and repositioned.

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

Signs of Baclofen Withdrawal

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

Signs of Baclofen Overdose

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

Educational Considerations

Students 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 students may rely on assistive technology to maximize their communication and academic performance. Therefore, students with cerebral palsy should be assessed for assistive technology early in their academic careers.

Students 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 information from Children's Healthcare of Atlanta: choa.org/medical-services/cerebral-palsy

- Cerebral Palsy in Children from HealthyChildren.org: healthychildren.org/English/health-issues/conditions/developmental-disabilities/Pages/Cerebral-Palsy.aspx
- Cerebral palsy information from the National Institute of Neurological Disorders and Stroke: ninds.nih.gov/health-information/disorders/cerebral-palsy
- Easterseals: easterseals.com
- FOCUS: focus-ga.org
- March of Dimes: marchofdimes.org/find-support/topics/planning-baby/cerebral-palsy
- United Cerebral Palsy: ucp.org

Section 6:
Childhood Cancers and Transplants

Successful treatment of childhood cancers has increased dramatically, and students with cancer are returning to normal school activities. A student 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/guardians 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 student 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 student's resistance to infection is usually reduced significantly by treatment (immunosuppression). Thus, even one case of chickenpox, shingles or measles, as well as any widespread outbreaks of infectious diseases, becomes a particular concern and should be reported immediately to the parent(s)/guardian(s). Symptoms include fever above 100 degrees Fahrenheit, lethargy and rashes. Emergency intervention may be required, as infection in these students can be life-threatening. When a student is known to have a medical history of cancer and/or transplant, school personnel should react quickly to these symptoms, notifying the parent(s)/guardian(s) immediately.

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

Students 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 the parent(s)/guardian(s). Issues of body image changes (hair loss, growth retardation, consequences of surgery, such as amputation) are of utmost importance for students 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 they returns. Ongoing communication with the parent(s)/guardian(s) is always important, and school staff should never make assumptions about the student's knowledge and understanding about the disease.

Educational Considerations

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

When the student 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.).
- Education of staff of peers, with permission from the parent(s)/guardian(s) and the student. Anticipated peer questions include:
- What's wrong with them?
- Is this disease contagious?
- Will they die from it?
- Should we talk about it or should we ignore it?
- Should we treat them differently?
- Why did they lose their hair?
- Set of textbooks at home or hospital.
- Adaptation of PE.
- 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 of Children's Healthcare of Atlanta: choa.org/medical-services/cancer-and-blood-disorders
- American Cancer Society: cancer.org or call your local chapter
- Children's Brain Tumor Foundation: cbtf.org
- CURE Childhood Cancer: curechildhoodcancer.org
- National Cancer Institute: cancer.gov/types/childhood-cancers
- Camp Sunshine: mycampsunshine.com

Section 7:
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 "overactive" 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 attack itself is called "auto" immunity, or an autoimmune 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 student 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 that may influence disease development.

Crohn's disease is a chronic condition in which the entire wall of the gastrointestinal (GI) 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 fistulas. 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—involving bowel from the very end of the colon, at the level of the anus and moving back toward 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 precede the involvement of the gastrointestinal tract by weeks, months or years. Treatment of the extra-intestinal manifestations requires treatment of the underlying IBD, whether Crohn's or UC.

The symptoms of Crohn's disease and UC 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, heartburn 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 nighttime; 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 to 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 teens. An estimated 30 percent of IBD cases are diagnosed before the patient's 18th birthday. Another 15 percent to 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 percent 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 and parent(s)/guardian(s) 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 they 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 budesonide, 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, budesonide 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 immunomodulators 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 three to six 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. Students 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 student 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 student with IBD. They 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 student look younger and smaller than their classmates. These problems can cause a student 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 student 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 student even further from classmates. Excessive intake of salty and high-calorie foods should be avoided in order to minimize the disfiguring effects of cortisone-type drugs. Students 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 student will not be late for class and stand out as being different.

It should be noted that students 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 student keep in touch with classmates and keep up with their schoolwork.

Students can participate in sports whenever their illness allows. A student may require a modified PE program, so that they 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/guardians, healthcare providers and school.
- Provide easy access to a bathroom with privacy.
- Provide any needed accommodations in PE and school schedules.
- Provide for proper administration of medications.
- Help the student maintain individualized dietary needs.
- Support educational and emotional needs during absences and hospitalizations.

Resources

- A Guide for Teachers and Other School Personnel from the Crohn's and Colitis Foundation of America: crohnscolitisfoundation.org/sites/default/files/legacy/assets/pdfs/teachersguide.pdf
- Colostomy Guide from the American Cancer Society: cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/colostomy.html
- Crohn's and Colitis Foundation of America: ccfa.org
- Crohn's Disease from HealingWell: healingwell.com/ibd

- North American Society for Pediatric Gastroenterology, Hepatology and Nutrition: naspghan.org
- Camp Oasis: crohnscolitisfoundation.org/get-involved/camp-oasis

Section 8:
Cystic Fibrosis

Cystic fibrosis (CF) is a chronic, inherited congenital genetic disease. It is not contagious and does not affect cognitive ability. The defective gene causes the body to produce unusually thick, sticky mucus that can clog the lungs, pancreas and other organs. This buildup can lead to severe respiratory and digestive problems that may warrant special accommodations in a school setting. 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. CF affects each individual differently. Some people with CF are in good general health, while others are severely limited by the disease and are unable to attend school regularly.

Treatment

In people with CF, mucus can obstruct the digestive system and prevent proper absorption of nutrients, which can slow growth. Treatment involves maintenance of good nutrition and prevention of infection. To boost growth and nutrition, students with CF follow a special diet, which includes pancreatic enzymes, vitamins, and high-calorie, high-fat foods. High-calorie, high-protein foods are essential because a student 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 the parent(s)/guardian(s) if the student has been exposed to an infectious disease. A student with cystic fibrosis requires the following to reach and maintain optimal health:

- Good hygiene practices geared toward prevention of infection.
- Well-balanced, high-calorie diet, tailored to meet special needs.
- Pancreatic enzymes before meals or snacks, if needed.
- Twice-daily airway clearance with vest and inhaled medications to help clear mucus.
- Adequate rest.
- Regular medical checkups.

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

Management at School

People with CF tend to cough a lot to clear mucus from their lungs. In a classroom, a student with CF may feel self-conscious about coughing in front of others. You can help your student feel more comfortable by:

- Making it easy for the student to drink water at their desk or slip out of the classroom for water.
- Not drawing attention to the student who is coughing.
- Encouraging your student to keep a box of tissues to cough into and a trash can near their desk to dispose of the tissue.
- Allowing the student to clean their hands with alcohol-based hand gel at their desk.

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

The parent(s)/guardian(s) 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 a signature from the parent(s)/guardian(s). Be sure to document information concerning precipitating factors and/or complications, medications administered and reaction on the clinic card and medication record.

While lung infections in people with CF pose no danger to the public, they do pose a significant danger to others with CF. If there is more than one person with CF at your school (unless they are siblings from the same household), it is essential that they keep a safe distance from each other. People with CF should maintain a 6-foot distance from each other, and they should not sit near each other in class or on a school bus and never share water bottles or other personal items.

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 the parent(s)/guardian(s), hospital, home and school.
- Adapt PE 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 and frequent bathroom breaks.
- Educate staff and peers, per family's request.
- Support educational needs during hospitalizations and/or absences.

Resources

- Cystic Fibrosis from Children's Healthcare of Atlanta: choa.org/medical-services/cystic-fibrosis
- Cystic Fibrosis Foundation: cff.org

Section 9:
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 controlling blood sugar levels.

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."

Source: 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 that 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 to 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 that can be life-threatening.
- Fatigue: The pancreas does not produce enough insulin to allow glucose to be used for energy.
- Blurry vision
- Slow wound healing

Managing Diabetes at School

A written diabetes management plan should be provided by the parent(s)/guardian(s) and the student's healthcare provider for each individual student. It should be reviewed at least quarterly. The diabetes management plan 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 insulin. They will need regular monitoring of blood sugar levels, as well as ketone testing when necessary. Intake of sugary drinks or fruit juices should be limited, 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. 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 for meals or snacks and to correct high blood sugars. 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 two 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 the insulin dose 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 needs 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.
- 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 students' plates will help them receive the nutrients they need for growth and maintaining optimal blood sugar levels: 1/4 with starch or grain; 1/4 with lean meat, poultry or fish; 1/4 with non-starchy vegetables or salad; 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 students 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. Many foods high in protein are also high in fat.

Fats are foods such as margarine, butter, oils, salad dressings, nuts, cheese and meat. 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, avocados and seeds. Examples of polyunsaturated fats include corn oil, soybean oil and sunflower oils, as well as omega-3 (fish) oils.

Carbohydrates have the biggest impact on blood sugar levels. However, protein and fat may help minimize spikes in blood sugar levels after meals because they help slow digestion. Accurately counting the number of carbohydrates in a meal 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.

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

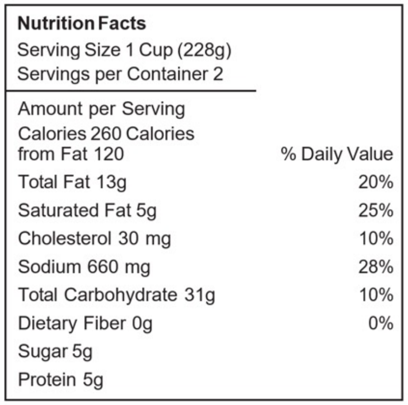
Food	Grams of carbohydrate
One medium apple	19 grams
Hamburger on bun	24 grams
Lettuce and tomato	do not count-negligible carbohydrate
Baked fries (serving of 10 shoestring fries)	17 grams
Milk, 2%, 1 carton	12 grams
Total CHO	**72 grams**

Reading Food Labels

Food labels found on containers give the carbohydrate content information listed under the Nutrition Facts. 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 student chose to eat the entire container (two servings), the student would have eaten two cups and 62 grams of carbohydrates.

A student's appetite and intake may vary greatly depending on their 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
- "The CalorieKing Calorie, Fat and Carbohydrate Counter" by Allan Borushek: calorieking.com/products/books/

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 to 130 before meals and 90 to 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. The parent(s)/guardian(s) are responsible for teaching school personnel the method of quality control. It is also the responsibility of the parent(s)/guardian(s) to provide all equipment and supplies.

- When to test: Testing is usually done before meals, whenever symptoms of hypoglycemia or hyperglycemia occur, before physical activity, and as directed by the physician and/or parent(s)/guardian(s). 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(s)/guardian(s) 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 the parent(s)/guardian(s) 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 student 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.

The parent(s)/guardian(s) need to review the procedure with school personnel and provide the needed supplies:

- When the blood sugar level is over 300 (or 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 the parent(s)/guardian(s) first and doctor if parent(s)/guardian(s) cannot be reached.
- If ketones are moderate or large, 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. Students will need to check their blood sugar levels and may need a carbohydrate snack before and/or after exercising. Refer to student's healthcare plan for specifics on blood sugar testing and snacks with exercise.

Insulin

There are four types of insulin:

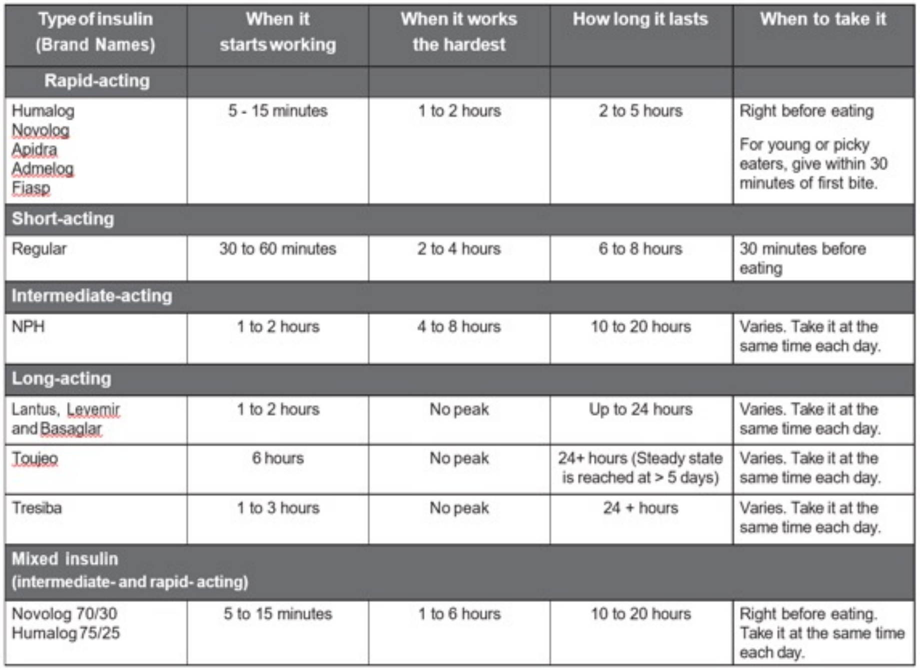
1. Rapid-acting insulin (Humalog, Novolog, Apidra, Admelog, Fiasp)
   - Used to help move glucose into the cells after eating.
   - Used to fix high blood sugar.
   - Usually given with meals; optimal to give before, but may give after meal for young children or picky eaters.
2. Short-acting insulin (Regular)
   - Used to help move glucose into the cells after eating.
   - Used to fix 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)
   - Usually taken once a day.
   - 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 the medication administration section in 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 they will expire. Expiration dates need to be checked regularly. If allowed to reach 85 degrees Fahrenheit 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. Each student's 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, which 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 (e.g., 60 to 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 two to four 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

Carbohydrate counting is a method used to dose rapid-acting insulin based on the amount of carbohydrates eaten at a meal or snack. Students who require advanced carbohydrate counting methods are those who are on a pump (it uses rapid-acting insulin) and those who take both rapid- and long-acting insulins. Students who take intermediate-acting insulin do not require advanced carbohydrate counting insulin dosing. If short-acting insulin is prescribed, see the diabetes management plan regarding 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 tablespoons cream cheese = 0 grams

Crystal Light = 0 grams

4-ounce apple = 15 grams

Total carbs = 53 grams

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

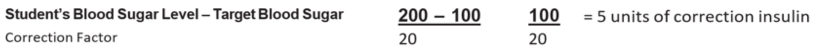
If your meal has 53 grams of carbohydrates, then 53÷15=3.5 units of rapid-acting insulin, such as Humalog or Novolog (doctors usually advise to round up dosages that end in a 0.5 decimal point or higher, upward to the nearest whole). Younger or smaller children may dose to the nearest half unit of insulin. See specific dosing information in the diabetes management plan.

Insulin for High Blood Sugar Levels

The Correction Formula

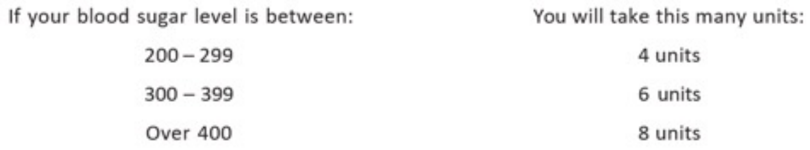
A doctor monitoring a diabetes patient will prescribe a number called the "correction factor" or the sensitivity factor to correct a high blood sugar. It is usually a number such as 20, 25, 30, 50 or 100. When using the correction formula, the student and nurse will subtract a target blood sugar (assigned 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, they would take five units of insulin (in addition to the insulin for the carbohydrates eaten if practicing advanced carbohydrate counting) to bring their blood sugar level back down to their target:



$$\frac{\text{Student's Blood Sugar Level – Target Blood Sugar}}{\text{Correction Factor}} \quad \frac{200 - 100}{20} \quad \frac{100}{20} = \text{5 units of correction insulin}$$

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 who 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: The student may still have a snack within the four-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(s)/guardian(s) or even the student themselves depending on their 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 student wearing an insulin pump should have a plan that determines how much insulin they should take for the amount of food that is being eaten, high blood sugar and planning for exercise. Most pumps allow the insulin-to-carbohydrate ratios and correction formulas to be pre-programmed into them.

Troubleshooting the Insulin Pump

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

- Medtronic MiniMed: 800-646-4633
- Omnipod (Insulet): 800-591-3455
- Tandem Diabetes: 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): 800-688-4578
- Animas Corporation: 877-937-7867

The student's parent(s)/guardian(s) should instruct the school staff on programming the pump and what to do if any alarms should occur. If the parent(s)/guardian(s) 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 their insulin pump (see the diabetes management plan at the end of this section).

Continuous Glucose Monitoring

A continuous glucose monitor (CGM) is a device that measures blood sugar levels every few minutes. Like a finger stick, 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 10 to 14 days depending on the brand.

Refer to the student's diabetes management plan for specific information regarding CGM.

The components of a CGM:

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

The American Diabetes Association recommends the following regarding 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 diabetes management plan. Students who have been identified as capable of managing diabetes independently may choose to respond to alarms and provide treatment without assistance. 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."

Finger-Stick 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 finger-stick 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 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 (risk for 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 charts at the end of the diabetes section.

Educational Considerations

Communicating with parents/guardians 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 glucon, are on hand in case of an emergency evacuation

Ongoing dialogue is needed, as changes occur in lunch schedules or PE activities/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 Benefit from Education and Awareness

Parties

Notify the parent(s)/guardian(s) ahead of time in order for them to decide if the student 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 the parent(s)/guardian(s) 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. Students 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, by request of the student and parent(s)/guardian(s), classmates may be oriented to diabetes and reassured that diabetes is not contagious.

At the middle and high school levels, teens 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 student with blood sugar or ketone monitoring.

Diabetes Management in the Early Child Care Community

The child's healthcare team, the parent(s)/guardian(s), 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 management plan should be provided by the diabetes care provider.

- Schedule a diabetes planning meeting with the early care center director.
- Provide written authorization for diabetes-trained staff to inject insulin and do blood sugar monitoring.
- Provide/maintain appropriate diabetes supplies.
- Inform early care center (director and teachers) of any changes in diabetes management.
- Inform early care center (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 whom 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. The parent(s)/guardian(s) 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 healthcare 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 the parent(s)/guardian(s).)
  - 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 management plan, including 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.: diabetes.org, 404-320-7100
- Children with Diabetes: A Resource Guide for Families and Schools from the New York State Department of Health: health.ny.gov/publications/0944.pdf
- Diabetes Association of Atlanta: diabetesatlanta.org
- Diabetes Care from Children's Healthcare of Atlanta: choa.org/medical-services/diabetes
- Dial Program, Diabetes Information Action Line: 800-DIABETES
- Helping the Student with Diabetes Succeed: A Guide for School Personnel from the National Institute of Diabetes and Digestive and Kidney Diseases: 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, Eighth Edition from the USDA: health.gov/dietaryguidelines/2015/resources/2015-2020_Dietary_Guidelines.pdf
- "2022 CalorieKing Calorie, Fat and Carbohydrate Counter" by Allan Borushek: calorieking.com/products/books/
- Children and Adolescents: Standards of Medical Care in Diabetes—2018 from the American Diabetes Association: diabetesjournals.org/care/article/41/Supplement_1/S126/29757/12-Children-and-Adolescents-Standards-of-Medical
- PADRE Foundation (Pediatric Adolescent Diabetes Research Education): padrefoundation.org
- Inclusion and Behavior Support Services from Bright from the Start: Georgia Department of Early Care and Learning: decal.ga.gov/InstructionalSupports/InclusionServices.aspx
- Camp Kudzu: campkudzu.org

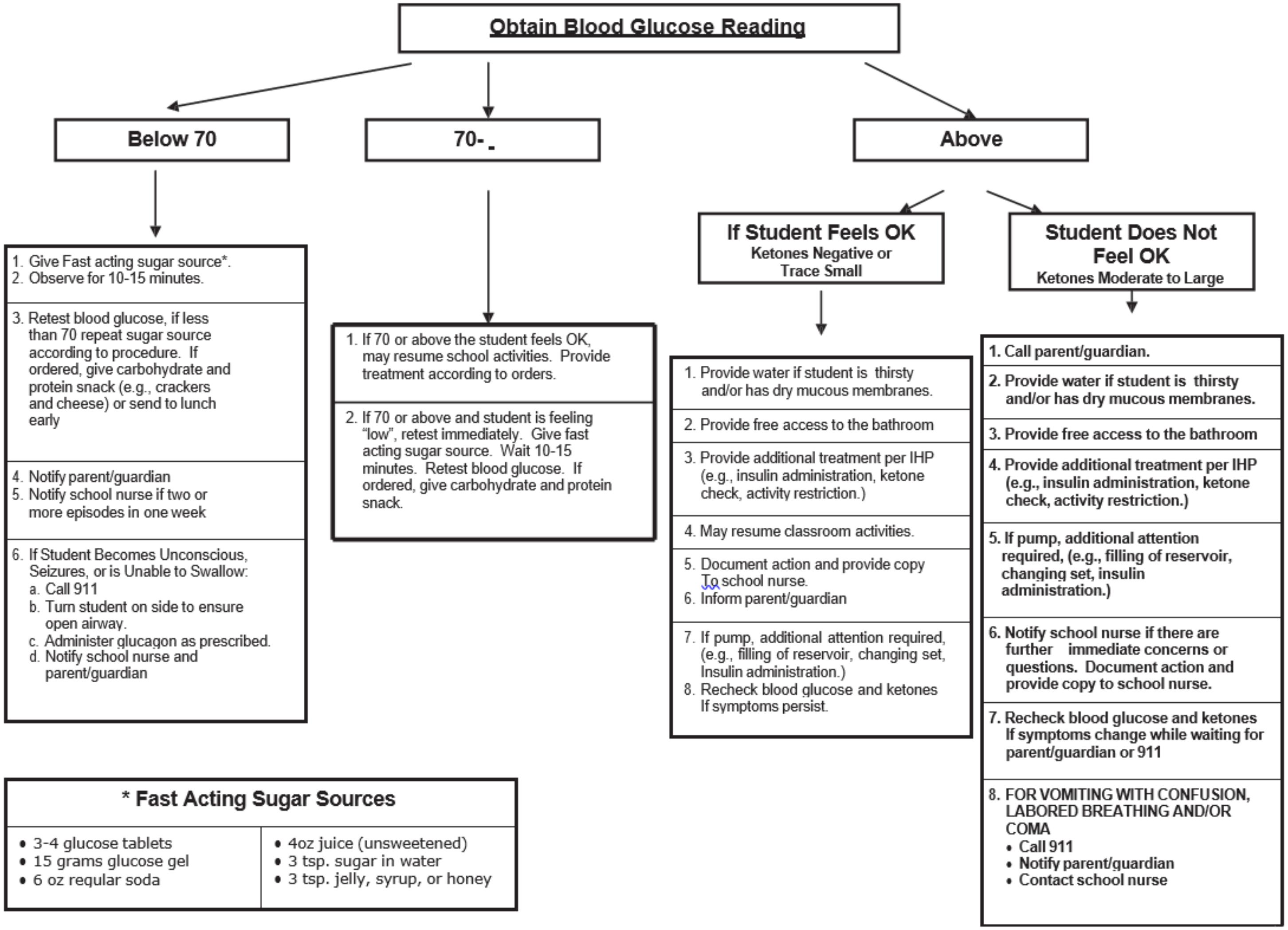
Publications

- Countdown, quarterly magazine: 800-JDF-CURE
- Diabetes Forecast, monthly magazine: 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

The following resources are included below or linked:

1. Sample Algorithm for Managing Blood Glucose Results
2. Procedure for Blood Glucose Monitoring
3. Procedure for Insulin Pump Therapy with Supervision
4. Diabetes Checklist for Teachers
5. Diabetes Reference Images
6. Hypoglycemia and Hyperglycemia Charts
7. Hypoglycemia Fact Sheet
8. Improving Diabetes Management in Adolescence
9. Diabetes Management in the School Setting
10. Diabetes Management Plan – Information for School Management of Diabetes Mellitus
11. Georgia House Bill 879: legiscan.com/GA/bill/HB1183/2023

SAMPLE ALGORITHM FOR MANAGING BLOOD GLUCOSE RESULTS



Obtain Blood Glucose Reading

Below 70

1. Give Fast acting sugar source*.
2. Observe for 10-15 minutes.

3. Retest blood glucose, if less than 70 repeat sugar source according to procedure. If ordered, give carbohydrate and protein snack (e.g., crackers and cheese) or send to lunch early

4. Notify parent/guardian
5. Notify school nurse if two or more episodes in one week

6. If Student Becomes Unconscious, Seizures, or is Unable to Swallow:
   a. Call 911
   b. Turn student on side to ensure open airway.
   c. Administer glucagon as prescribed.
   d. Notify school nurse and parent/guardian

70-_

1. If 70 or above the student feels OK, may resume school activities. Provide treatment according to orders.

2. If 70 or above and student is feeling "low", retest immediately. Give fast acting sugar source. Wait 10-15 minutes. Retest blood glucose. If ordered, give carbohydrate and protein snack.

Above

If Student Feels OK
Ketones Negative or
Trace Small

1. Provide water if student is thirsty and/or has dry mucous membranes.

2. Provide free access to the bathroom

3. Provide additional treatment per IHP (e.g., insulin administration, ketone check, activity restriction.)

4. May resume classroom activities.

5. Document action and provide copy To school nurse.
6. Inform parent/guardian

7. If pump, additional attention required, (e.g., filling of reservoir, changing set, Insulin administration.)
8. Recheck blood glucose and ketones If symptoms persist.

Student Does Not Feel OK
Ketones Moderate to Large

1. Call parent/guardian.

2. Provide water if student is thirsty and/or has dry mucous membranes.

3. Provide free access to the bathroom

4. Provide additional treatment per IHP (e.g., insulin administration, ketone check, activity restriction.)

5. If pump, additional attention required, (e.g., filling of reservoir, changing set, insulin administration.)

6. Notify school nurse if there are further immediate concerns or questions. Document action and provide copy to school nurse.

7. Recheck blood glucose and ketones If symptoms change while waiting for parent/guardian or 911

8. FOR VOMITING WITH CONFUSION, LABORED BREATHING AND/OR COMA
- **Call 911**
- **Notify parent/guardian**
- **Contact school nurse**

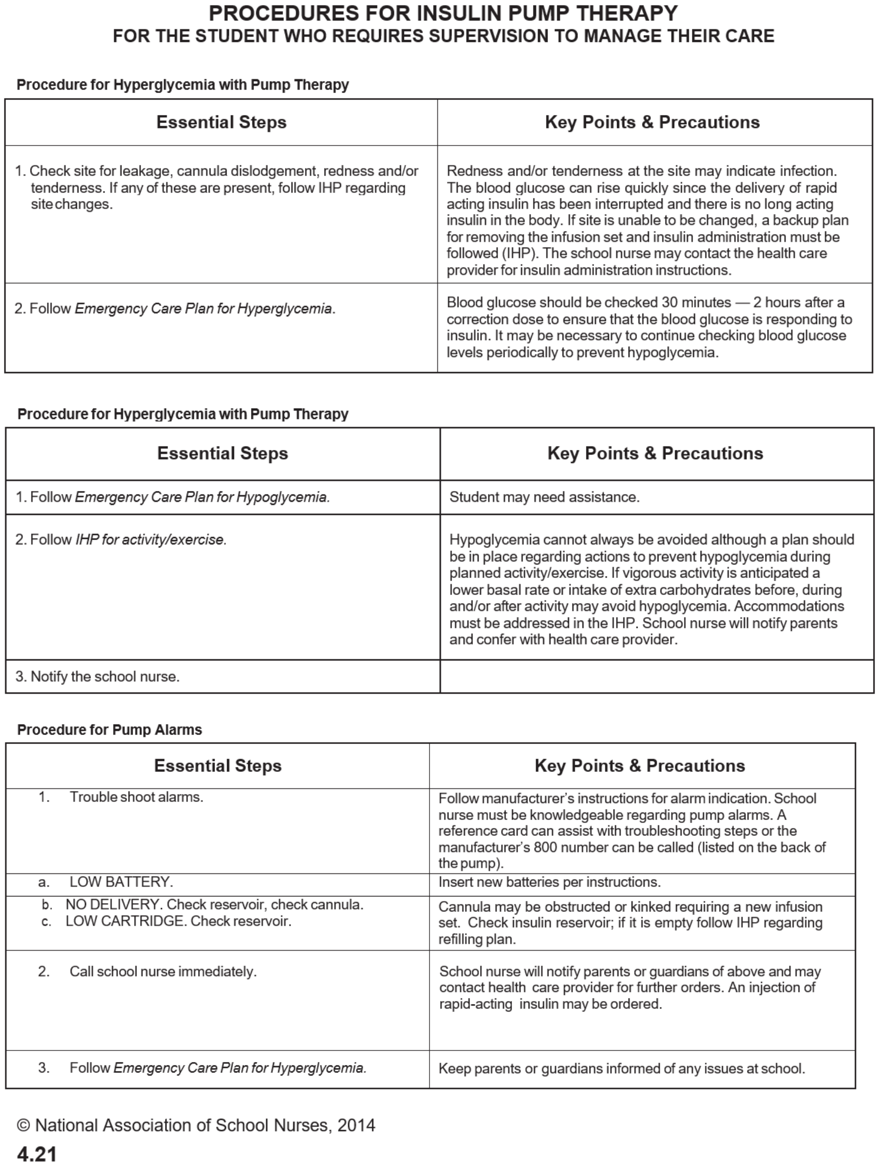
*** Fast Acting Sugar Sources**

• 3-4 glucose tablets • 15 grams glucose gel • 6 oz regular soda	• 4oz juice (unsweetened) • 3 tsp. sugar in water • 3 tsp. jelly, syrup, or honey

PROCEDURE FOR BLOOD GLUCOSE MONITORING

Equipment and Supplies	1. Alcohol prep pad (optional) 2. Finger lancing device 3. Blood glucose meter 4. Blood testing strips for specific meter	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 backup 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 *Emergency Care Plan for Hyperglycemia*.	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 *Emergency Care Plan for Hypoglycemia*.	Student may need assistance.
2. Follow *IHP for activity/exercise*.	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 or guardians of above and may contact health care provider for further orders. An injection of rapid-acting insulin may be ordered.
3. Follow *Emergency Care Plan for Hyperglycemia*.	Keep parents or guardians informed of any issues at school.

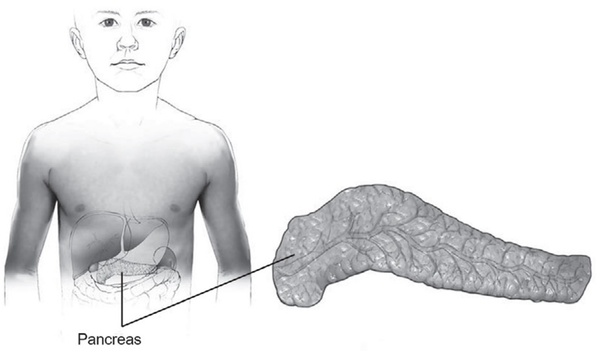
4.21

Diabetes Checklist for Teachers

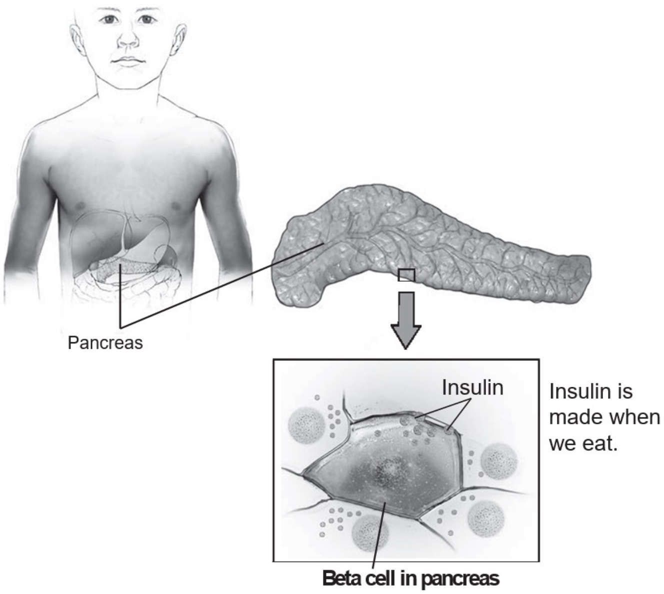
- ☐ Participate in the healthcare planning meeting and training
- ☐ Understand basic information about diabetes:
  - ☐ signs and symptoms of low and high blood sugar levels
  - ☐ how to treat low and high blood sugar levels
  - ☐ food and snack requirements and routines/importance of timing
  - ☐ daily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

Diabetes Reference Images

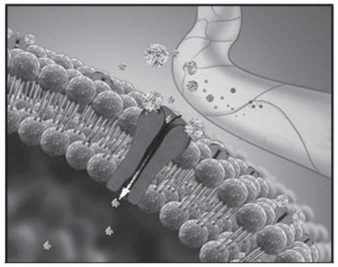
Where Insulin is Made



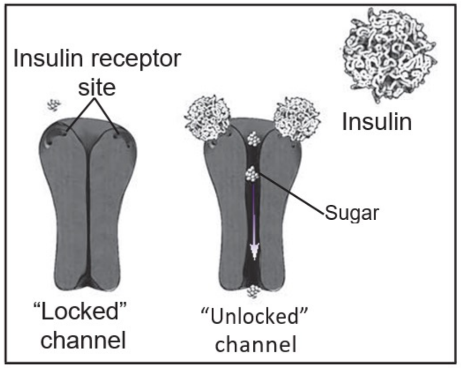
Where Insulin Comes From and What It Does



Close up of tissue cell wall

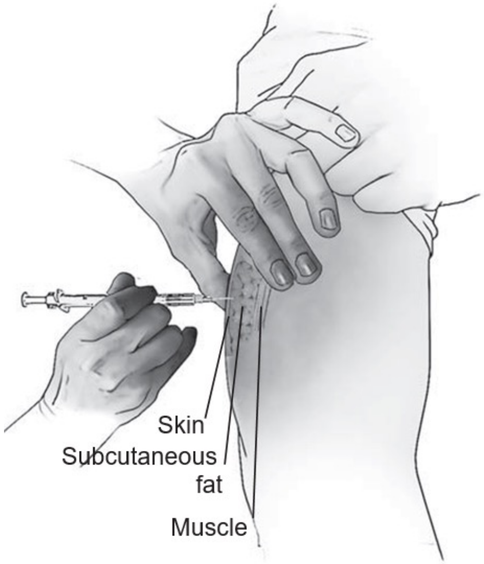


Insulin and glucose are both carried by the blood stream and released into tissues.



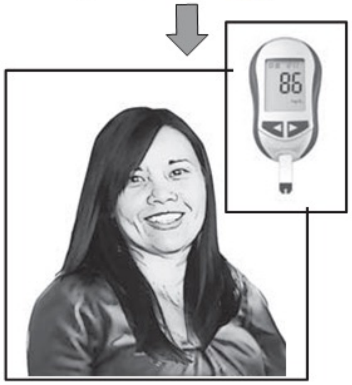
Insulin "unlocks" the cell channels so sugar can go inside.

Subcutaneous injection of insulin



Hypoglycemia

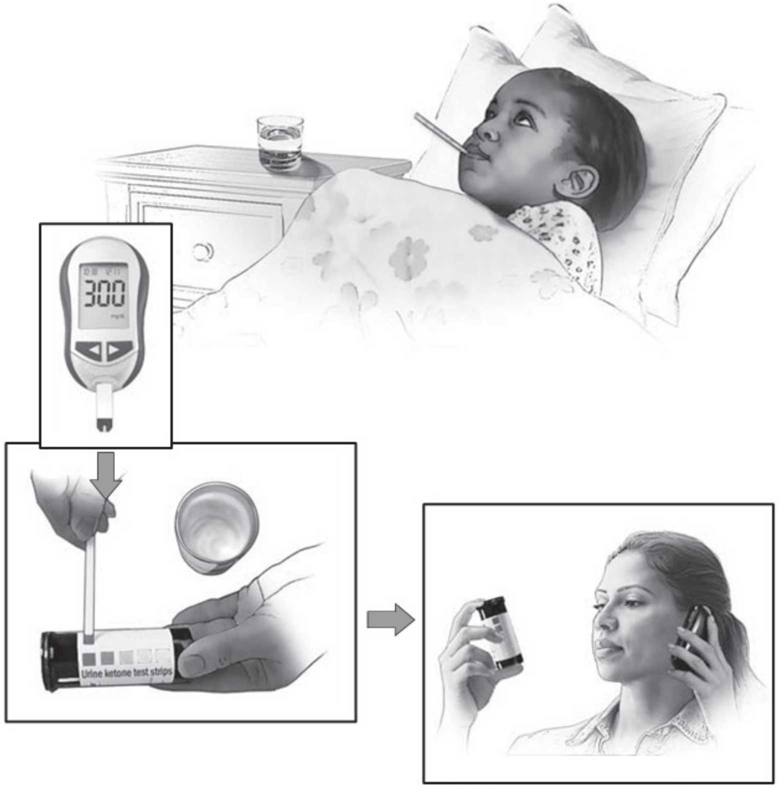
Drink 4 oz. juice OR eat 4 glucose tablets



15 minutes after having the juice OR taking glucose tablets and re-checking blood glucose.

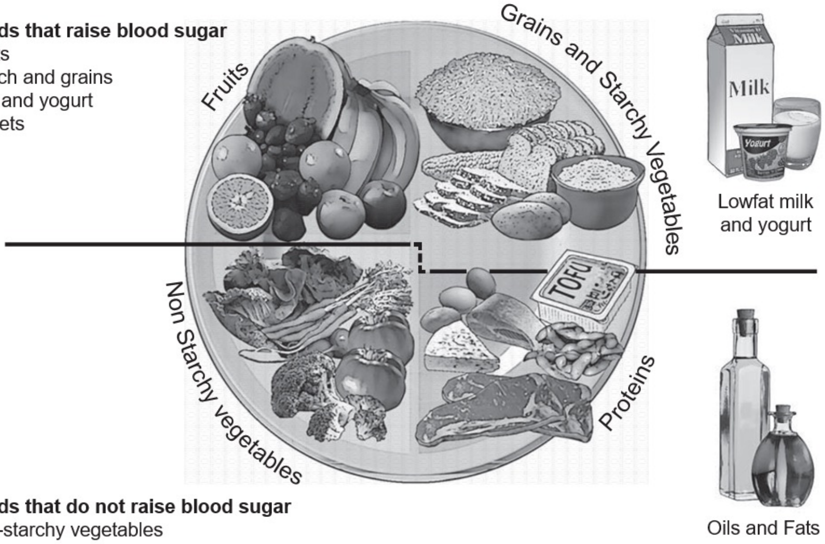
Hyperglycemia and Ketones

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

Foods that do not raise blood sugar
Non-starchy vegetables
Meats and proteins (cheese, soy, eggs)
Fats and oils

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 + 2/3 cup of rice

Hypoglycemia Chart

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

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.

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

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 Chart

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)

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).

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	

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:
• 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. – **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:
• 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:
• 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:
• 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 health 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 schoolwork
- 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 management plan and you have been trained.
- If a student is having a seizure, protect them from injury and 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.

Adapted with permission from NASN, 2011

Hypoglycemia

Children's Healthcare of Atlanta

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.

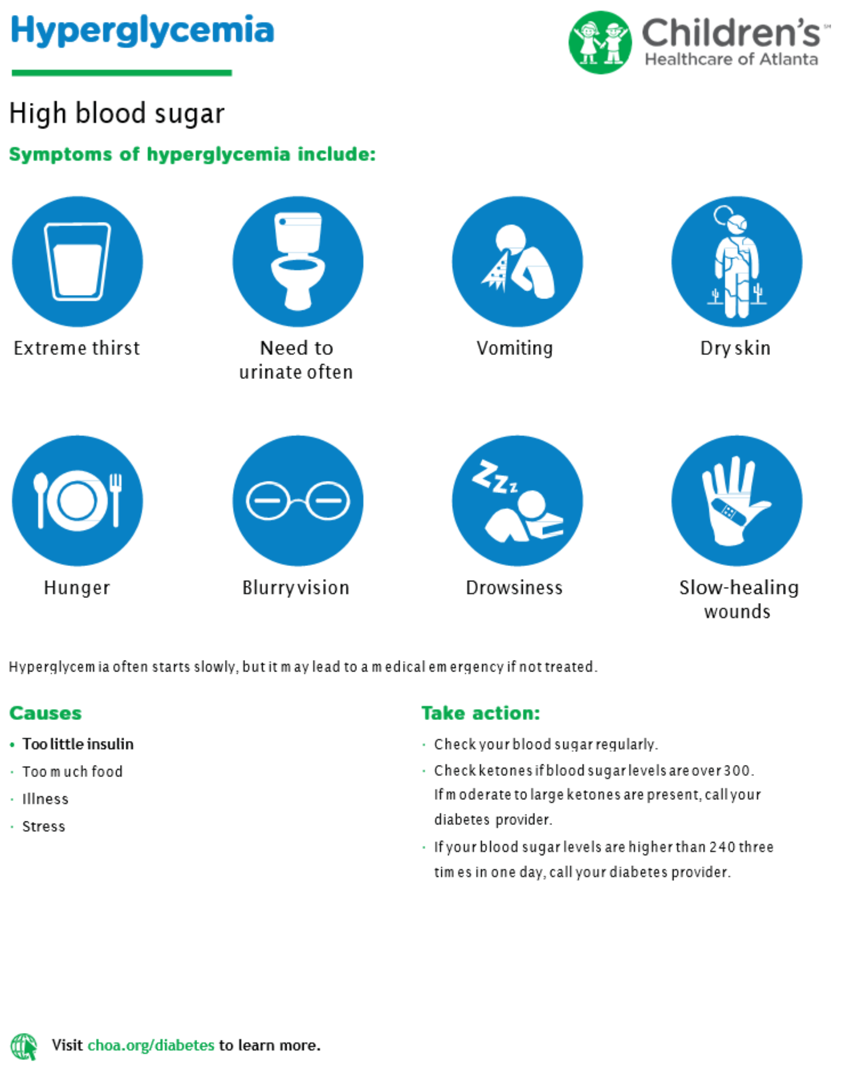
Causes

- **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.

Visit choa.org/diabetes to learn more.



Hyperglycemia

Children's Healthcare of Atlanta

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

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 percent have type 1 diabetes and 11 percent 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 and 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 (ADA) 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 and 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 and 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 and 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 and 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 and 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 and 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 also 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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All position statements from the National Association of School Nurses will automatically expire five years after publication unless reaffirmed, revised, or retired at or before that time.

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GaDOE
Georgia Department of Education

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

Table of Contents

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 healthcare 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) Healthcare 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 healthcare 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 healthcare 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 healthcare 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 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 healthcare 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 healthcare 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 healthcare 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 healthcare 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 CDC 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 CDC, 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 healthcare 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 healthcare 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 healthcare 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 healthcare 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.

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Section 10:
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% to 15% of the population and is becoming more common for reasons that are not well understood. It affects up to 20% 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%), and 60% 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(s)/guardian(s), school 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 2
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; 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; 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:

Major Features
Itching that can be severe at times
Chronic and recurring (repeatedly occurring symptoms)
Typical distribution of the atopic dermatitis rash: • 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 (Dennie-Morgan 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, 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 loofah 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 and 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/guardians 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, the patient/parent(s)/guardian(s) 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 FDA 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 students 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, PE and swimming. Some students may need to bring milder soaps to wash hands (avoiding harsh antibacterial soaps) and apply emollients and topical medications while at school. Other students 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 students, helping them to overcome feelings of embarrassment. Students 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 student, 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. The parent(s)/guardian(s) 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 students 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. The parent(s)/guardian(s) 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.
- Students should wear 100% 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 their 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.
- The student should have predetermined spaces for moisturizing, cool compressing and changing clothes if necessary. Arrange for students with eczema to have somewhere private to apply emollients and for young children to receive help to apply emollients.
- Students should have access to their soap substitute at all times.
- Students 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 the parent(s)/guardian(s) to notify the school of measles and chickenpox on school letterhead.
- As with all students, discuss medication needs with the student and parent(s)/guardian(s), 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 the student to apply cool compress or moisturizer to minimize itch. Students can find it extremely difficult to refrain from scratching, so adopting strategies that help to distract the student 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 and Students

Each year, the school nurse, teacher, bus drivers and before- and after-school care providers should be given updates on the condition of a student 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 their 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 student has been playing in sand, ensure sand is washed off gently.
- Allow the student to watch, rather than handle chemicals, in science class.

Section 11:
Headaches

Headaches in students 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 morning 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 morning 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 a 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 student who has suffered a concussion.

Most students with recurrent headache have migraines. Migraines are estimated to occur in 4% to 5% 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 students 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 ounces maximum. Ibuprofen at 10 to 15 mg/kg body weight (maximum 600 mg) 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 the parent(s)/guardian(s). The nurse can also educate teachers and help the student identify early symptoms so that medication may be taken as soon as possible for optimum effectiveness. An adequate rest period (30 to 60 minutes) in a quiet environment, if combined with very early use of prescribed medication, may enable the student to return to classes for the rest of the day.

Use of a pain scale (Wong-Baker FACES Pain Rating Scale, which can be found in chapter 2) is helpful to the nurse, both to assess the child and to educate the child in self-care skills. Students may also benefit from being taught how and when to use relaxation techniques. Finally, any student with a headache should have their blood pressure taken.

Educational Considerations

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

Resources

- Kids with Chronic Migraine Do Better in School: americanmigrainefoundation.org/resource-library/understanding-migrainekids-with-chronic-migraines-do-better-in-school/
- Migraine in Children from the American Migraine Foundation: americanmigrainefoundation.org/resource-library/migraine-in-children/

Section 12:
Heart Disease

Heart disease in students 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 found at choa.org/medical-services/heart-center.

Other types of congenital heart conditions are inherited structural or electrical anomalies that increase the student'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 student is noticed to have some of the early warning signs, such as fainting during exercise or a sudden cardiac arrest. An explanation of these risk conditions for sudden cardiac arrest can be found on choa.org/medical-services/heart-center/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 over-the-counter drugs, such as adrenaline, Elavil, Propulsid, Bactrim, erythromycin and Compazine (see complete list at sads.org/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 to 300 a minute). These two conditions may be treated with medication or catheter ablation. Students 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/guardians 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 the 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. PE 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. The parent(s)/guardian(s) 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 the incision line is erythematous and fever is over 101 degrees Fahrenheit.
- Post-pericardiotomy syndrome 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. Student 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 gray skin color, duskiness 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(s)/guardian(s) to make an appointment with surgeon.

Cardiac Catheterization

Many students 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 patient may go home the same day. Sometimes they will stay overnight for observation.

After a cardiac cath, the patient can often return to school the next day after they are 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 pounds, 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, baths). 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 degrees Fahrenheit
- Redness, swelling, pain and/or drainage at cath site
- New onset fatigue
- If the extremity below the cath site becomes cold, numb or 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), contact the parent(s)/guardian(s) immediately, as the student 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 a backpack with that arm for five weeks following implant procedure).
- PE 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 the student up under the arms or pulling them to a sitting position by their arms. The student should not carry a backpack for six weeks after surgery. No contact sports for six weeks after surgery.

Emergency Plans

Students with known arrhythmias and other risk factors for sudden cardiac arrest should have a comprehensive emergency care plan, and an automatic external defibrillator (AED) 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:

- 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
- Expectations of the parent(s)/guardian(s)
- Contact information
- Has a neuropsychological evaluation been done with the student?

Possible actions to take include:

- Develop IHP/504/IEP, emergency plan as needed.
- Make needed accommodations with school schedule and PE.
- Provide for proper administration of all prescribed treatments and medications.
- Provide an extra set of books for use at home.
- Work with the parent(s)/guardian(s) for a referral to a neuropsychologist. Visit choa.org/medical-services/neurosciences/neuropsychology or call 404-785-2849 to schedule a visit.

Resources

- American Heart Association: heart.org
- Be the Beat: bethebeat.heart.org
- Children's Cardiomyopathy Association: childrenscardiomyopathy.org
- 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 from Children's Hospital of Wisconsin: projectadam.com
- Project S.A.V.E. from Children's Healthcare of Atlanta: choa.org/medical-services/cardiac-care/project-save-program
- Information for School Personnel on Sudden Arrhythmia Death Syndromes: sads.org/schools/
- Supporting Development in Children With Congenital Heart Disease: circ.ahajournals.org/content/130/20/e175
- The Heart Institute at Cincinnati Children's: cincinnatichildrens.org/heart
- Medline Plus: nlm.nih.gov/medlineplus/ency/patientinstructions/000096.htm
- Camp Braveheart: choa.org/camps/camp-braveheart

Section 13:
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% to 45%), moderate (1% to 5%) or severe (<1%). 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%). The prevalence of hemophilia is 1:5,000 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 vWD (1, 2A, 2B, 2M, 2N, 3 and so on). 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 is 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% to 2% 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 the parent(s)/guardian(s) 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 child care facilities or other child care situations, including in-home child care or camps. Unlike older children, these children need a caregiver to administer factor treatment if needed. This often requires either calling parent(s)/guardian(s) 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/guardians and child care providers should work together to identify a plan for prompt treatment if the need arises, including contingencies if a parent/guardian 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 a lightweight ice pack to the area.
- Notify the parent(s)/guardian(s) immediately.
- If the parent(s)/guardian(s) 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 PE 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
- National Bleeding Disorders Foundation: hemophilia.org
- National Hemophilia Foundation resources: hemophilia.org/community-resources
- Camp Wannaklot: hog.org/camp

Section 14:
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, early care center 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 student who is infected with HIV or has a parent/guardian infected with HIV from attending school.

Protecting an HIV-positive student'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 student'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 the parent(s)/guardian(s) to disclose their child's HIV status to the school, in order to protect the confidentiality of the student. However, sometimes the parent(s)/guardian(s) will decide to disclose their 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 the parent(s)/guardian(s) 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).

Summary of Georgia HIV and STD laws: hivlawandpolicy.org/sites/default/files/Georgia%20-%20Excerpt%20from%20CHLP%27s%20Sourcebook%20on%20HIV%20Criminalization%20in%20the%20U.S._0.pdf

Georgia Code (search: Georgia Code: 24-9-47): law.justia.com/codes/georgia/2022/title-24/chapter-12/article-3/section-24-12-21/

Students with HIV infection should not receive live virus vaccinations, depending on the severity of their immunodeficiency. Eligibility should be determined by the student'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 student, 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 hivinfo.nih.gov/understanding-hiv/fact-sheets/fda-approved-hiv-medicines.

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

- Hand hygiene and 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 PE curriculum.
- Develop IHP/504/IEP and emergency plan.
- Know student'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 student, which is also applicable to the student being treated for HIV/AIDS.

Resources

- Guidelines for the Prevention and Treatment of Opportunistic Infections Among HIV-Exposed and HIV-Infected Children: ncbi.nlm.nih.gov/pmc/articles/PMC4169043/
- H.E.R.O. for Children: heroforchildren.org
- HIV Among Youth: cdc.gov/hiv/risk/age/youth/index.html
- HIV/AIDS Care and Prevention from the Georgia Department of Public Health: dph.georgia.gov/georgia-hivaids-care-prevention
- Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection: clinicalinfo.hiv.gov/sites/default/files/guidelines/documents/pediatric-arv/guidelines-pediatric-arv.pdf
- HIV and aids information from the Office on Women's Health: womenshealth.gov/hiv-and-aids
- Camp High Five: heroforchildren.org/index.php/h-e-r-o-programs/camp-high-five

Section 15:
Hypertension

Fewer than 5% 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 blood pressure values that require further evaluation per the AAP's 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 students may require daily medications to control high blood pressure, particularly if there are signs of organ damage. Students with hypertension may need to be monitored regularly at school per physician's order.

Management at School

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

Screening

Current recommendations by the AAP 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% of the arm circumference between the shoulder and elbow (should cover 80% to 100% 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 their 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 90th 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 the parent(s)/guardian(s) and refer the student 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: iphapediatrichypertension.org
- Clinical Practice Guideline for Screening and Management of High Blood Pressure in Children and Adolescents from the AAP: publications.aap.org/pediatrics/article/140/3/e20171904/38358/Clinical-Practice-Guideline-for-Screening-and

Section 16:
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 fewer 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. Students 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 student 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. It provides educational opportunities through an annual conference and assists with educating teachers and school administrators to ensure that the educational needs of students 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 student's quality of life. Treatment may include one or more medications, exercises (physical therapy and occupational therapy) 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)
- Tocilizumab (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 (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 upset stomachs.

Management at School

It is important to openly communicate with the parent(s)/guardian(s) and the student and be aware of any limitations. Discuss activity guidelines and restrictions with the parent(s)/guardian(s), and modify the student's schedule as necessary. Allow the student to move as needed to avoid stiffness and pain. Watch for both verbal and nonverbal signs that the student is in pain. Assist the child to stay on their 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 student may need time and assistance with makeup work. Often morning stiffness can delay the student getting to school. Exercise is important in the therapeutic regimen to keep joints mobile and muscles strong and to give the student a psychological lift. Physical therapy may be required to preserve range of motion.

Students should be free to participate in everything they are able to, and the student usually can be the judge of how much they 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/guardians, 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 the student to participate (using pinch runners, softer balls, etc.).
- Support educational needs during absences and hospitalizations.
- Adjust the student's schedule to limit fatigue (i.e., classes closer together, on one floor).
- Supply a second set of textbooks 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
- Juvenile Arthritis at School: 504 Plans, IEPs, and Pain Issues from WebMD: webmd.com/rheumatoid-arthritis/features/juvenile-arthritis-at-school-504-plans-ieps-and-pain-issues

Section 17:
Kidney Disease

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

Glomerular diseases may cause a student 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 and swelling pain in an arm or leg. The parent(s)/guardian(s) should be notified.

Kidney failure occurs when the kidneys do not 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 are not vigilant and do not teach students to value individual differences.

Treatment

A student 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, difficulty sleeping, 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:

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 go to the dialysis center for treatment.

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 peritoneal dialysis must receive special training and follow instructions exactly.

Students 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. The catheter should be secured under the child's clothing.

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 PE. Occasionally PE will be limited, and the physician should prescribe limitations on an individual basis.

It is important to notify parents/guardians if students with kidney disease have fatigue, decreased mental alertness, nausea or vomiting. Additionally, students with chronic kidney disease may miss school frequently due to hospitalizations and appointments.

If medications are required, school personnel should follow current policies regarding administering medications to students 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 empty out their bladder of urine. In some cases, the student may urinate through a stoma (hole) in the abdomen. The stoma may drain urine continuously or need to be catheterized periodically to drain urine. Some students may need to urinate more frequently, and thus need more frequent bathroom privileges. In addition, some students may need to drink more than other students 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 PE 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
- Resources for parents/guardians from the AAP: healthychildren.org/English/Pages/default.aspx
- Patient and Family Resources from the National Kidney Foundation: kidney.org/patients/resources
- Camp Independence: choa.org/camps/camp-independence

Section 18:
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. Details on each disorder from the Muscular Dystrophy Association (MDA): 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 to 5 years old. Initial signs of DMD include delayed walking, enlargement of the calves due to abnormal muscle tissue, clumsy with frequent falls, and difficulty arising from a sitting position and climbing stairs. When a child enters the early teens, around 10 to 12 years of age, walking become laborious 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 arm and hand 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 (e.g., 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 them to reach a greater degree of independence. The small muscles of the hand are often the last to be affected, so the student can continue to use their fingers. Encourage participation in as many activities as the student's condition will allow. As the muscles become weaker, the student 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. The parent(s)/guardian(s) should be notified immediately if an infection is suspected.

Educational Considerations

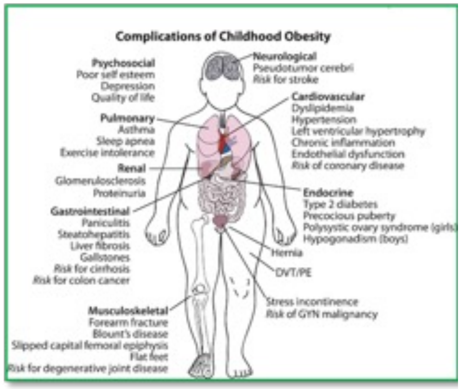
- Develop IHP/504/IEP, emergency plans as needed.
- Provide any needed accommodations in PE and/or school schedule.
- Provide for proper administration of all prescribed treatments and medications.
- Provide needed support during school absences.
- Ensure that bathroom facilities, water fountains, sinks, 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 from the CDC: cdc.gov/ncbddd/musculardystrophy/
- About Neuromuscular Diseases from the Muscular Dystrophy Association: mda.org/disease
- Education Matters – A Teacher's Guide to Duchenne Muscular Dystrophy from Parent Project Muscular Dystrophy,: parentprojectmd.org/wp-content/uploads/2018/04/EdMatters_Teachers.pdf
- MDA Summer Camp: mda.org/summer-camp

Section 19:
Obesity

Overweight and obesity continue to be primary public health concern for adults and children nationally and in Georgia. Studies show that children who have excess weight or obesity are at a high risk of becoming adults with obesity. This risk increases their chances of developing several health issues, such as type 2 diabetes, high cholesterol and non-alcoholic fatty liver disease. Type 2 diabetes and sleep apnea have been shown to have a definite effect on a student's ability to learn. A student's quality of life, social interactions and self-esteem also can be critically affected by having overweight.



How to be Supportive as a School Nurse

The goal should be to help students adopt 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.

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). All height and weight assessments should be done in a private room.

BMI Evaluation

The BMI measurement for children and adolescents 2 to 20 years of age is a screening tool for overweight and obesity assessment. BMI is an indirect estimate of body fatness. 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 children and adolescents with underweight, overweight and obesity. The following are the BMI categories 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 Georgia Department of Education 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. Learn more about the Fitnessgram: georgiashape.org

Underweight

Students with a BMI below the fifth percentile should be referred to their primary healthcare provider for further assessment.

Referral

The first step for all families concerned about weight issues is with their pediatrician. Children who have overweight, obese or underweight according to the BMI chart should be referred to their primary healthcare providers for further evaluation. The treatment of weight issues is complex and involves both the student and their 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/guardians about healthy eating habits and activity options.

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#
- The National Survey of Children's Health. The Child and Adolescent Health Measurement Initiative. childhealthdata.org/learn/NSCH

Resources

- Strong4Life from Children's Healthcare of Atlanta: strong4life.com
- Children's Healthcare of Atlanta: choa.org
- University of Georgia Extension: extension.uga.edu/topic-areas/food-health/nutrition-health.html
- Georgia Safe Routes to School: saferoutesga.org
- BAM! Body and Mind from the CDC: cdc.gov/bam/index.html
- Go Noodle Movement and Mindfulness for Kids: gonoodle.com
- KidsHealth: kidshealth.org
- Alliance for a Healthier Generation: healthiergeneration.org
- Division of Nutrition, Physical Activity and Obesity from the CDC: cdc.gov/nccdphp/dnpao/index.html
- Ways to Enhance Children's Activity and Nutrition from We Can!: nhlbi.nih.gov/health/public/heart/obesity/wecan/index.htm
- Choose My Plate from the U.S. Department of Agriculture: myplate.gov
- Nutrition.gov from the U.S. Department of Agriculture: nutrition.gov
- Camp Strong4Life: strong4life.com/camp

The following resources are included in this section:

1. Strong4Life Healthy Habits Handout

2. Strong4Life BMI Chart
3. Strong4Life Healthy Habits Assessment
4. Strong4Life Healthy Habits Goal Sheet
5. FitnessGram Letter to Parents and Caregivers

The Strong4Life Healthy Habits

STRONG4LIFE

Children's Healthcare of Atlanta

Eat smarter, drink water

Screens away, go play

Get rest to be your best

Emotions are real, express how you feel

Help your family use the Strong4Life healthy habits

A habit is something you do over and over again, sometimes without even thinking about it. Healthy habits help you build a strong body and mind—now and in the future.

Get the whole family involved with small changes – The best way to make big changes with your family is to make one small change at a time (instead of changing everything all at once). Everyone's more likely to be successful if you're working on the habits together.

Be a role model – Kids are always watching and listening to adults. Now is the time to show them how important healthy habits are by using them yourself. Try to make healthy choices whenever you can, and make sure your kids see you being healthy.

Ask for help – We are all in this together. Let us help. Start by visiting **Strong4Life.com** to find age-appropriate, expert advice and easy ideas you can use right away.

EAT SMARTER, DRINK WATER

- Fuel your body and brain with three meals and two to three snacks a day, adding a colorful variety of veggies and fruit to half your plate.
- Choose water instead of sugary drinks like soda, juice and sports drinks.
- Make mealtimes family time. Put phones away and turn off the TV.

SCREENS AWAY, GO PLAY

- Limit screen time and focus on activities that energize your body and brain.
- Try to be active for at least 60 minutes during the day (it doesn't have to be all at once), and get outside as much as possible.
- Make screen-free time fun! Read, take a walk, visit a park, play with friends or dance.

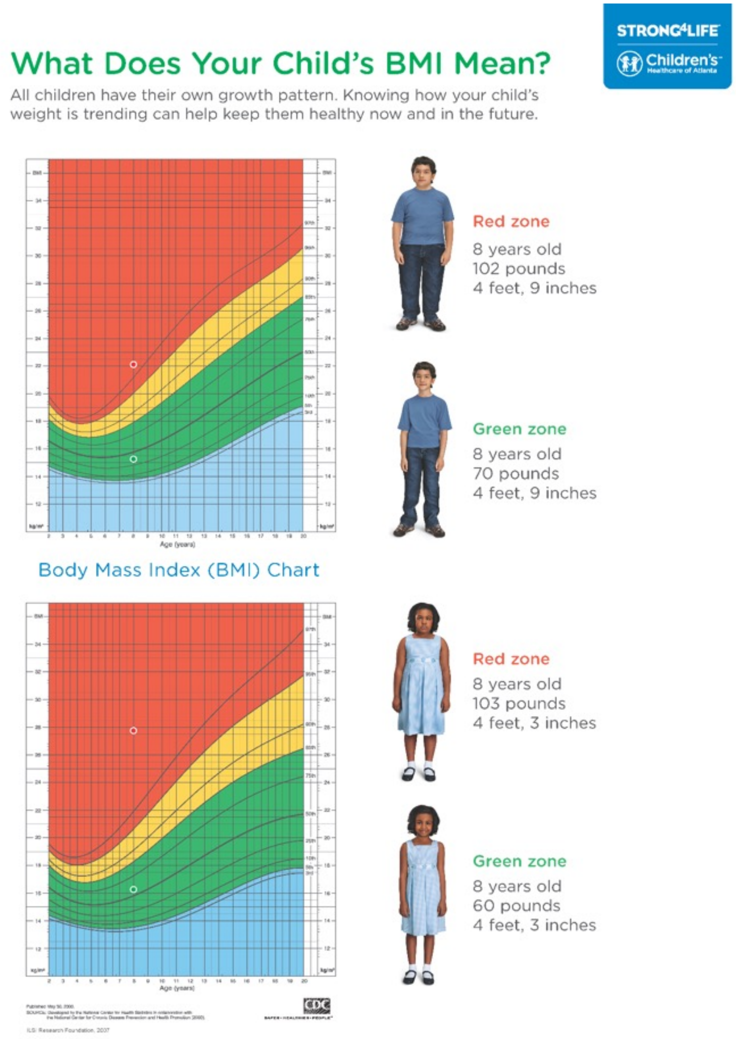
GET REST TO BE YOUR BEST

- Give your body and brain a chance to reset and recharge with rest. This can help boost energy, mood and even memory.
- Start a habit of going to bed and waking up at the same time every day, power down all screens an hour before bed (phone, TV, etc.), and keep screens out of the bedroom.
- Create a calming bedtime routine, such as brushing teeth, reading, journaling, connecting with a family member or listening to relaxing music.

EMOTIONS ARE REAL, EXPRESS HOW YOU FEEL

- Identify and acknowledge your feelings and allow yourself to feel them.
- Explore different ways to express your feelings, such as journaling, drawing, or talking to someone you trust.
- Manage your feelings using healthy coping skills, such as going for a walk, playing a game, taking deep breaths or listening to music.

For more tips, visit **Strong4Life.com**



STRONG4LIFE
Children's Healthcare of Atlanta

What Does Your Child's BMI Mean?

All children have their own growth pattern. Knowing how your child's weight is trending can help keep them healthy now and in the future.

Red zone
8 years old
102 pounds
4 feet, 9 inches

Green zone
8 years old
70 pounds
4 feet, 9 inches

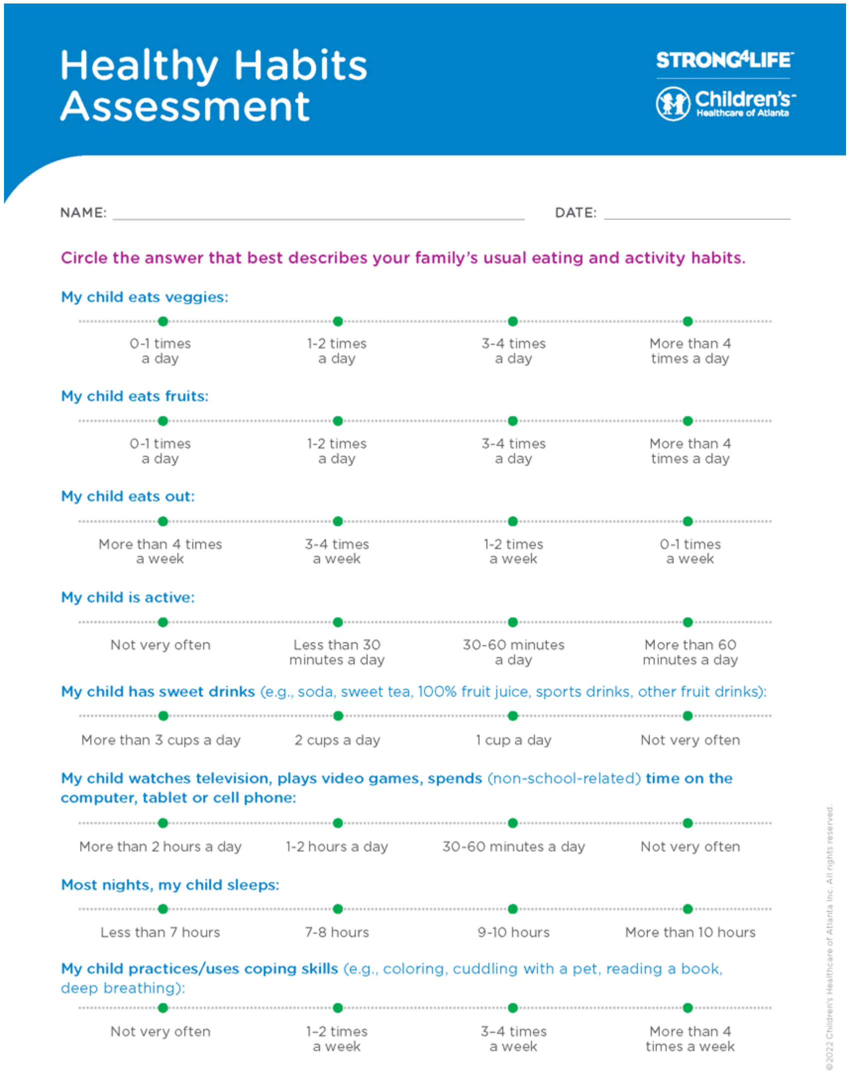
Body Mass Index (BMI) Chart

Red zone
8 years old
103 pounds
4 feet, 3 inches

Green zone
8 years old
60 pounds
4 feet, 3 inches

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).

ILSI Research Foundation, 2007



Healthy Habits Assessment

STRONG4LIFE
Children's Healthcare of Atlanta

NAME: ______________________ DATE: ____________

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

My child eats veggies:

● 0-1 times a day	● 1-2 times a day	● 3-4 times a day	● More than 4 times a day

My child eats fruits:

● 0-1 times a day	● 1-2 times a day	● 3-4 times a day	● More than 4 times a day

My child eats out:

● More than 4 times a week	● 3-4 times a week	● 1-2 times a week	● 0-1 times a week

My child is active:

● Not very often	● Less than 30 minutes a day	● 30-60 minutes a day	● More than 60 minutes a day

My child has sweet drinks (e.g., soda, sweet tea, 100% fruit juice, sports drinks, other fruit drinks):

● More than 3 cups a day	● 2 cups a day	● 1 cup a day	● Not very often

My child watches television, plays video games, spends (non-school-related) **time on the computer, tablet or cell phone:**

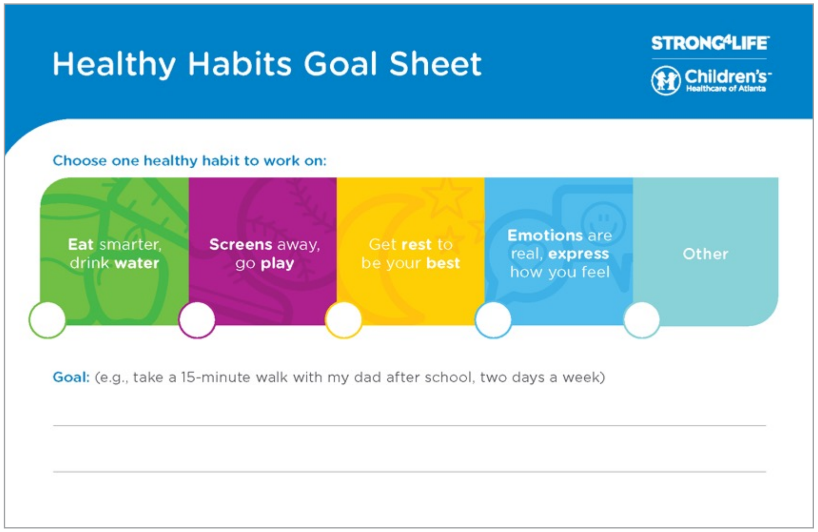
● More than 2 hours a day	● 1-2 hours a day	● 30-60 minutes a day	● Not very often

Most nights, my child sleeps:

● Less than 7 hours	● 7-8 hours	● 9-10 hours	● More than 10 hours

My child practices/uses coping skills (e.g., coloring, cuddling with a pet, reading a book, deep breathing):

● Not very often	● 1-2 times a week	● 3-4 times a week	● More than 4 times a week



Healthy Habits Goal Sheet

STRONG4LIFE
Children's Healthcare of Atlanta

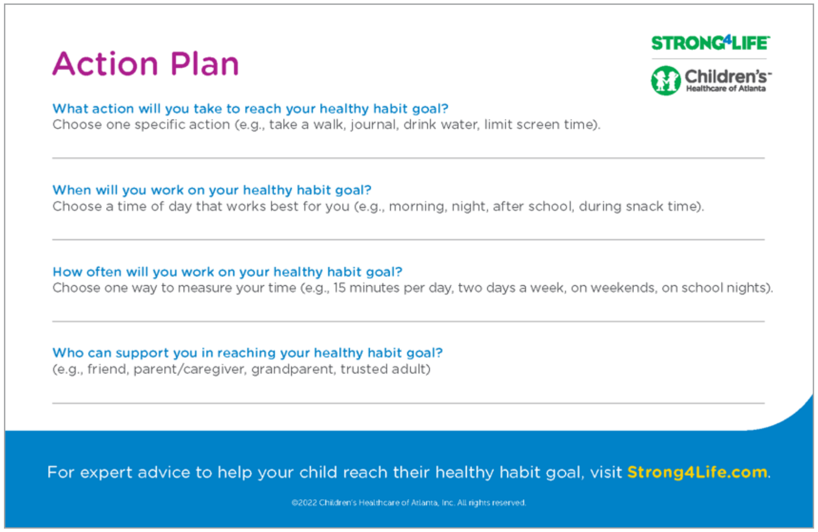
Choose one healthy habit to work on:

- ○ **Eat** smarter, drink **water**
- ○ **Screens** away, go **play**
- ○ Get **rest** to be your **best**
- ○ **Emotions** are real, **express** how you feel
- ○ Other

Goal: (e.g., take a 15-minute walk with my dad after school, two days a week)

____

____



Action Plan

STRONG4LIFE
Children's Healthcare of Atlanta

What action will you take to reach your healthy habit goal?
Choose one specific action (e.g., take a walk, journal, drink water, limit screen time).

____

When will you work on your healthy habit goal?
Choose a time of day that works best for you (e.g., morning, night, after school, during snack time).

____

How often will you work on your healthy habit goal?
Choose one way to measure your time (e.g., 15 minutes per day, two days a week, on weekends, on school nights).

____

Who can support you in reaching your healthy habit goal?
(e.g., friend, parent/caregiver, grandparent, trusted adult)

____

For expert advice to help your child reach their healthy habit goal, visit **Strong4Life.com**.

FITNESSGRAM LETTER TO PARENTS AND CAREGIVERS

[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,

____
[Signature]

______________________________ School Nurse Name	______________________________ PE Teacher Name
______________________________ School Nurse	______________________________ PE Teacher
______________________________ Your School's Name	______________________________ Your School's Name
______________________________ XXX-XXX-XXXX	______________________________ XXX-XXX-XXXX
______________________________ Your Email Address	______________________________ Your Email Address

Section 20:
Epilepsy and Seizures

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 or if they have had one unprovoked seizure and an abnormal electroencephalogram (EEG).

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 (five to 10 seconds) when the student is unresponsive to speech or touch; periods of confusion; head dropping; sudden loss of muscle tone; episodes of rapid blinking or eyes rolling upward; rhythmic twitching of the mouth or face; aimless, dazed behavior, including walking around or repetitive behavior; and involuntary stiffening and/or jerking of an arm or leg. A pattern of behaviors such as these should be reported to the parent(s)/guardian(s).

Important things to observe and document about a seizure:

- Precipitating events
- Student's behavior prior to seizure
- Description of seizure activity 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)

Focal Seizures with Retained Awareness

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 afterward.

Focal Unaware 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 afterward.

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 sublingual, buccal or intravenously is necessary to stop the seizure activity.

Emergency medications may be needed for students 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 the teaching sheet in chapter 11 for information regarding the use of this medication.

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 students involves vagal nerve stimulation (VNS) 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 student with epilepsy. In these students, a magnet the student wears can be used to deliver extra stimulation when the student 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 a seizure action plan for each individual student.

Absence Seizure

- Repeat key parts of the class that may have been missed.
- Note and report all seizures to the parent(s)/guardian(s).

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 the student until seizure ends.
- Ease the student to the floor, cushioning the head.
- Remove dangerous objects from the area.
- Do not restrain the student or put anything into the mouth.
- Loosen clothing and remove eyeglasses.
- Turn the student on their side to allow fluids to escape out the side of the mouth and to keep the airway clear. A choking hazard may not only be vomit, but sometimes a buildup of excess saliva choking.
- Maintain an open airway.
- Ensure the school nurse has rescue medication readily available to avoid any delay in administration if indicated.
- Give rescue medication as ordered if the seizure is prolonged.
- Provide a change of clothes if incontinence occurs.
- Allow the student to rest quietly after the seizure stops.
- Notify the parent(s)/guardian(s).

Focal Aware Seizure

- Comfort and reassure after seizure.
- Maintain the student's safety.

Focal Unaware Seizure

- Ignore automatic behaviors.
- Speak calmly and gently and return the student to their seat if able.
- Do not force a student to do anything because they may act out and could hurt themselves or others.
- Keep the student in the classroom to provide for safety.
- Reorient the student if confused after the seizure.

When to Call 911

- If there is no 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 the seizure has stopped
- As designated by the student's healthcare provider
- If the student turns blue or vomits
- If seizures occur in clusters (back-to-back seizures)
- If severe injury occurs before, during or after the seizure
- If the student is pregnant or has diabetes
- If the 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 the parent(s)/guardian(s) about seizures.
- Monitor breathing during and after a 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 makeup work during school absences.
- Observe for consistent triggers as identified by the student's parent(s)/guardian(s) 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 permission from the student and the parent(s)/guardian(s), so that they understand and can support their friend.

Key points you may want to cover:

- Explain what happened to the student 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
- Epilepsy Programs from the CDC: cdc.gov/epilepsy, cdc.gov/epilepsy/spanish/index.html (Spanish version)
- Education of Kids with Epilepsy: epilepsy.com/info/family_kids_education
- Epilepsy Foundation of America: epilepsy.com
- Epilepsy Foundation of Georgia: epilepsyga.org
- Epilepsy information from KidsHealth: kidshealth.org/en/parents/seizure.html
- My Seizure Event Diary from the Epilepsy Foundation of America: epilepsy.com/sites/default/files/atoms/files/721SED_MySeizureEventDiary_05-2019-B_0.pdf
- Neurosciences Program from Children's Healthcare of Atlanta: choa.org/medical-services/neurosciences
- Patient Information Sheet from the Epilepsy Foundation of America: epilepsy.com/sites/default/files/atoms/files/Seizure-Description-Form-English-Spanish_0.pdf
- Seizure Tracker: seizuretracker.com
- 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 Action Plan (Children's Healthcare of Atlanta)

Section 21:
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 function)
- 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 sickle cell disease is highly variable among individuals. Some patients have more frequent and severe complications than others. It is important to appreciate that some students with sickle cell disease also have asthma, which, if poorly controlled, can increase the risk of sickle cell disease complications.

Signs and symptoms requiring emergency treatment include:

- Fever of 101 degrees Fahrenheit 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 breakdown 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 as 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 transfusions are often necessary to treat severe complications from the disease. Hydroxyurea is a daily oral medication that 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/guardians. 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 frequents 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 students with sickle cell disease, some may require an IEP.

Report symptoms of pain crisis to the school nurse and the parent(s)/guardian(s). If any of these symptoms occur, have the student lie down, or rest and notify the parent(s)/guardian(s) immediately. Know your student, their capabilities and limits. Believe what they tell you about pain. Use a pain scale (Wong-Baker FACES Pain Rating Scale in chapter 2). Parents/guardians are excellent sources of knowledge about their children and should be consulted whenever questions arise about plans or treatments. Keep in mind 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 student. Do not use ice with a suspected orthopedic injury because exposure to cold can precipitate a sickle cell crisis with pain.

Preschool and Early Child Care Management (ages 0 to 5)

Young children with sickle cell disease are at higher risk for many serious and life-threatening complications, including serious bacterial infections in the bloodstream, 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 to 5 years should take a prophylactic antibiotic twice a day to reduce the risk of serious infection. Any fever of 101 degrees Fahrenheit 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, bloodwork 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/guardians 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% of children with sickle cell disease, with the highest risk being between ages 2 to 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 EMS for hospital transport.

Young children with sickle cell disease may participate in early care centers, 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

- Sickle cell disease information from Medline Plus: nlm.nih.gov/medlineplus/sicklecellanemia.html
- Information about clinical studies from around the word (search "sickle cell"): clinicaltrials.gov
- Sickle Cell Disease Educational Repository: sicklecelldisease.net
- Sickle Cell Disease Association of America: sicklecelldisease.org
- Sickle Cell Foundation of Georgia: sicklecellga.org
- Understanding the Child With Sickle Cell Disease, A Handbook for School Personnel: scinfo.org/2015/11/04/understanding-sickle-cell-disease-a-handbook-for-school-personnel/
- Sickle Cell Disease from the National Institutes of Health: nhlbi.nih.gov/health-topics/sickle-cell-disease
- Camp New Hope: sicklecellga.org/camp

Section 22:
Skin Rash Resources

Acne

- American Academy of Dermatology: aad.org/public/publications/pamphlets/common_acne.html

Childhood Skin Rashes/Problems

- Seborrheic dermatitis information from FamilyDoctor.org: familydoctor.org/familydoctor/en/diseases-conditions/seborrheic-dermatitis.html
- Index of photos and illustrations: dermatologyinfo.net/english/chapters/index_of_pics.htm
- Common skin rashes slideshow from Mayo Clinic: mayoclinic.com/health/skin-rash/SN00016
- Rash information from Medline Plus: 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
- Pictures of skin rashes from LoveToKnow: skincare.lovetoknow.com/Skin_Rashes
- Symptom Checker from FamilyDoctor.org: familydoctor.org/online/famdocen/home/tools/symptom/545.html
- Common Childhood Skin Disorders from eMedicineHealth.com: emedicinehealth.com/script/main/art.asp?articlekey=90497

Dermatitis

Atopic Dermatitis

- Atopic Dermatitis from the National Institute of Arthritis and Musculoskeletal and Skin Diseases: niams.nih.gov/Health_Info/Atopic_Dermatitis/default.asp

Contact Dermatitis

- Contact Dermatitis from eMedicineHealth.com: emedicinehealth.com/contact_dermatitis/article_em.htm
- Contact Dermatitis from Mayo Clinic: mayoclinic.com/health/contact-dermatitis/DS00985

Dyshidrotic Dermatitis

- Dyshidrosis from Mayo Clinic: mayoclinic.com/health/dyshidrosis/DS00804

Seborrheic Dermatitis

- Seborrheic Dermatitis from the American Academy of Dermatology: aad.org/public/diseases/a-z/seborrheic-dermatitis-overview
- Seborrhoeic dermatitis from Derm Net: dermnetnz.org/dermatitis/seborrhoeic-dermatitis.html
- Seborrheic dermatitis from Mayo Clinic: mayoclinic.com/health/seborrheic-dermatitis/DS00984

Drug Eruption

- Drug Eruption in Adults from SkinSignt.com: skinsight.com/skin-conditions/drug-eruption
- Drug Eruption in Pediatrics from SkinSight.com: skinsight.com/skin-conditions/drug-eruption-pediatric/

Erythema Multiforme

- Erythema Multiforme from Dermatology Info: dermatologyinfo.net/english/chapters/chapter29.htm#221

Herpes

- CDC's treatment guidelines for genital warts: cdc.gov/std/treatment-guidelines/anogenital-warts.htm
- Pictures and Facts About STDs from WebMD: webmd.com/sexual-conditions/ss/slideshow-std-pictures-and-facts

Herpes Zoster

- Shingles (Herpes Zoster) from the CDC: cdc.gov/shingles/index.html

Hookworms

- Hookworms from the Life Tree: parasitecleanse.com/hookworms.htm

Molluscum

- The Society for Pediatric Dermatology: pedsderm.net

Methicillin-Resistant Staphylococcus Aureus (MRSA)

- MRSA from the Georgia Department of Public Health: health.state.ga.us/mrsa
- Staph Infection Resources: staph-infection-resources.com/mrsa-pictures.html

Nevus Sebaceous

- Nevus Sebaceous from Medscape: emedicine.com/DERM/topic296.htm

Psoriasis

- National Psoriasis Foundation: psoriasis.org
- Psoriasis from Mayo Clinic: mayoclinic.com/health/psoriasis/DS00193/DSECTION=treatments-and-drugs
- Psoriasis from Very Well Health: verywellhealth.com/psoriasis-4014661
- Treatment of Psoriasis: An Algorithm-Based Approach for Primary Care Physicians from the American Academy of Family Physicians: pubmed.ncbi.nlm.nih.gov/10695585/

Lyme Disease

- American Lyme Disease Foundation: aldf.com
- Dermatology Information System: dermis.net/dermisroot/en/home/index.htm

Sun Protection

- Sunscreen FAQs from the American Academy of Dermatology: aad.org/media/stats/prevention-and-care/sunscreen-faqs
- Skin Cancer from the CDC: cdc.gov/cancer/skin
- Sun Safety at Schools – What You Can Do from the CDC: cdc.gov/cancer/skin/basic_info/sun-safety.htm

Topical Steroids

- Topical Steroid from DermNet: dermnetnz.org/treatments/topical-steroids.html

Viral Exanthem

- Exanthems from DermNet: dermnetnz.org/viral/exanthem.html

Wounds

- Emergency Wound Care After a Natural Disaster from the CDC: cdc.gov/disasters/woundcare.html
- Wound Care from eMedicineHealth: emedicinehealth.com/wound_care/article_em.htm

Resources

- American Academy of Dermatology: aad.org, aad.org/skin-conditions/dermatology-a-to-z
- Life-Threatening Skin Rashes from eMedicineHealth: emedicinehealth.com/life-threatening_skin_rashes/article_em.htm
- National Eczema Association: nationaleczema.org
- National Eczema Society: eczema.org

Section 23:
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 one in 1,250 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% to 90% 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 students 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 students, within the limits of safety and health, to be independent and to participate in activities with their classmates.

Students 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 student or to perform these procedures if the student is unable to do so themselves. School personnel should be aware of possible pressure sores from braces and wheelchairs, and observe the student for any signs of skin breakdown. The student should also be observed for signs of infection, such as fever, loss of appetite or listlessness, and the parent(s)/guardian(s) 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:

- 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 the parent(s)/guardian(s). 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 pushups. 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. Review this list of latex-containing objects that may be found in schools: spinabifidaassociation.org/wp-content/uploads/latex-in-the-home-and-community-eng.pdf. Some students with spina bifida also have learning disabilities that affect 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 permission from the student and parent(s)/guardian(s).
- Assist with bowel and bladder training program and schedule.

Resources

- Spina Bifida Association: spinabifidaassociation.org
- Spina Bifida Association of Georgia: spinabifidaofgeorgia.org
- Camp Krazy Legs: choa.org/camps/camp-krazy-legs

Section 24:
Individuals with Disabilities Education Act 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 students with disabilities to participate fully in their educational program are safely and appropriately provided (adapted from NASN's Issue Brief: School Nurses and the Individuals With Disabilities Act). The nurse's role with advocacy, planning and provision of needed services for students eligible under the Rehabilitation Act of 1973, Section 504 (www2.ed.gov/about/offices/list/ocr/504faq.html) is also important.

IDEA was enacted in 1975 and amended in 1986, 1990, 1997 and 2004 (sites.ed.gov/idea/). 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, their disabling condition adversely affects educational performance and they require special education, the student may be eligible to receive services under this law. An IEP will then be written after a meeting of a multidisciplinary team of regular and special educators, parents/guardians, other service providers (such as the school nurse, physical therapist, occupational therapist, speech therapist) and, sometimes, the student. Educational goals and short-term, measurable objectives are developed with the participation of the parent(s)/guardian(s) and reviewed annually. Students eligible under IDEA will also be covered legally under Section 504.

Section 504 of the Rehabilitation Act, which was enacted as a civil rights act, eliminates 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 them under Section 504. Students who can be protected under Section 504 (and not necessarily IDEA) may include students with:

- Communicable diseases (e.g., 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 the student's educational experience. The parent(s)/guardian(s) 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

NASN has defined the role of the school nurse as a member of the multidisciplinary educational team to include the following responsibilities:

- Assists in identifying students who may need special educational or health-related services.
- Assesses the student's sensory and physical health status in collaboration with the student, parent(s)/guardian(s) and healthcare providers.
- Develops individualized health and emergency care plans.
- Assists in development of the IEP or 504 plan.
- Assists the parent(s)/guardian(s) and child to identify and utilize community resources.
- Assists the parent(s)/guardian(s) 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, parent(s)/guardian(s) and other team members, and suggests revisions to the plan as needed.

(Adapted from NASN Issue Brief on School Nurses and the Individuals with Disabilities Education Act: nasn.org/nasn-resources/professional-practice-documents/position-statements/ps-ideia)

The school nurse's involvement in this process will vary with each child and their 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.

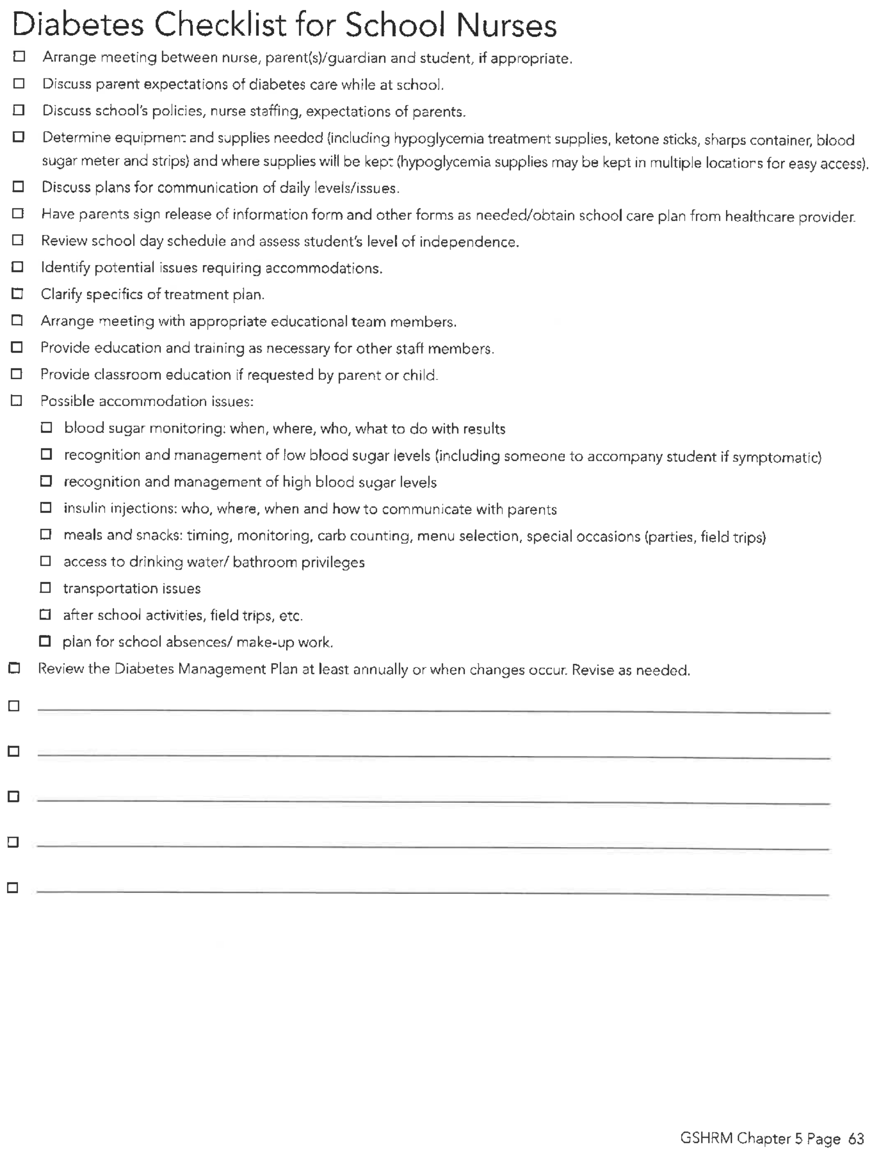
Americans With Disabilities Act Amendment of 2008

S. 3406 was signed by President George W. Bush on Sept. 25, 2008, and took effect on Jan. 1, 2009, which clarifies and broadens the definition of disability and expands the population eligible for protections under the Americans With Disabilities Act (ADA) of 1990. It includes major changes to when impairment is considered a disability. View the bill: govtrack.us/congress/billtext.xpd?bill=s110-3406

Resources

- "Helping Schoolchildren with Chronic Health Conditions: A Practical Guide" by Daniel L. Clay: https://www.amazon.com/Helping-Schoolchildren-Chronic-Health-Conditions-ebook/dp/B002BA533Q/ref=sr_1_1?crid=SV1437ZFHLEH&keywords=Helping+School+Children+with+Chronic+Health+Conditions&qid=1700596815&sprefix=helping+school+children+with+chronic+health+conditions%2Caps%2C138&sr=8-1
- Protecting Students with Disabilities from the U.S. Department of Education's Office of Civil Rights: ed.gov/about/offices/list/ocr/504faq.html
- Sevier County School System Section 504 Plans (examples of program accommodations and adjustments): heartlandaea.org

Section 25:
Chapter 5 Appendix



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.
- ☐ ____
- ☐ ____
- ☐ ____
- ☐ ____
- ☐ ____

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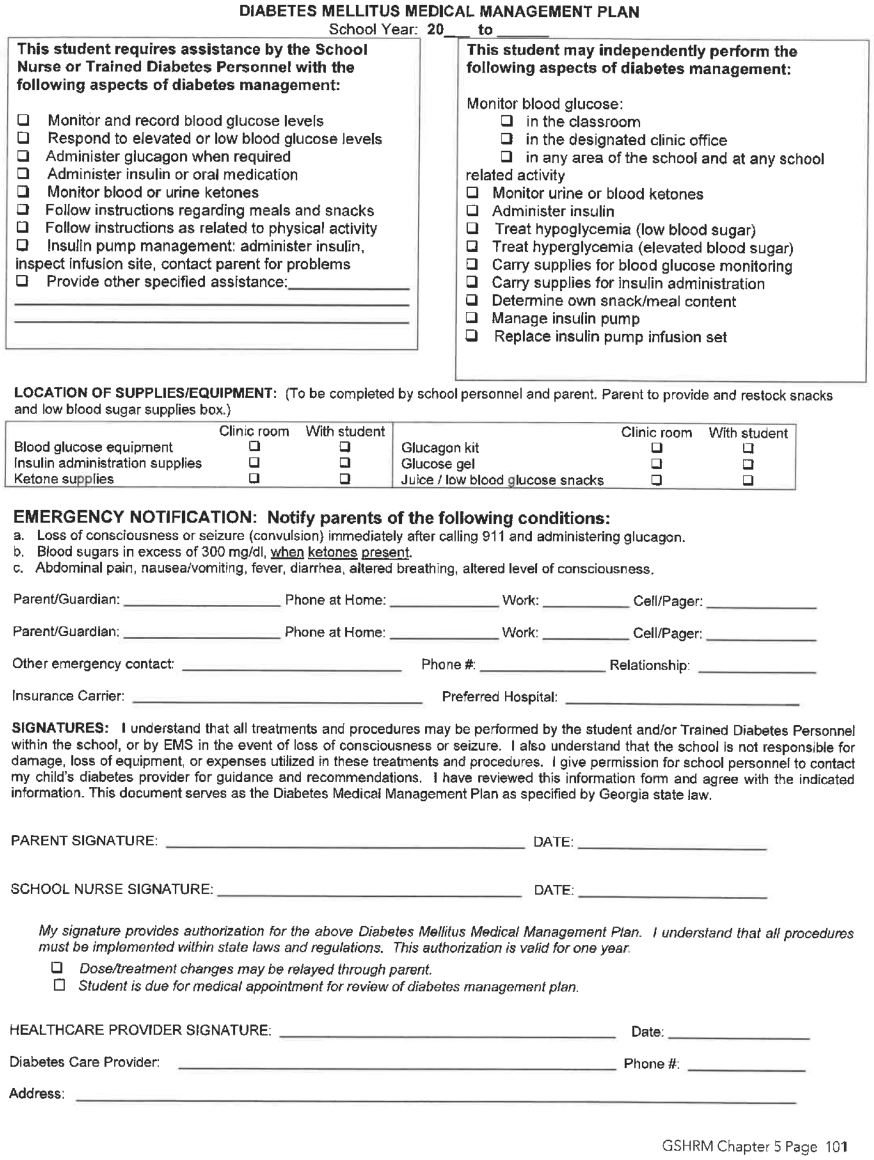
Diabetes Checklist for Teachers

- ☐ 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 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	☐	☐	Glucagon kit	☐	☐
Insulin administration supplies	☐	☐	Glucose gel	☐	☐
Ketone supplies	☐	☐	Juice / low blood glucose snacks	☐	☐

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: ____

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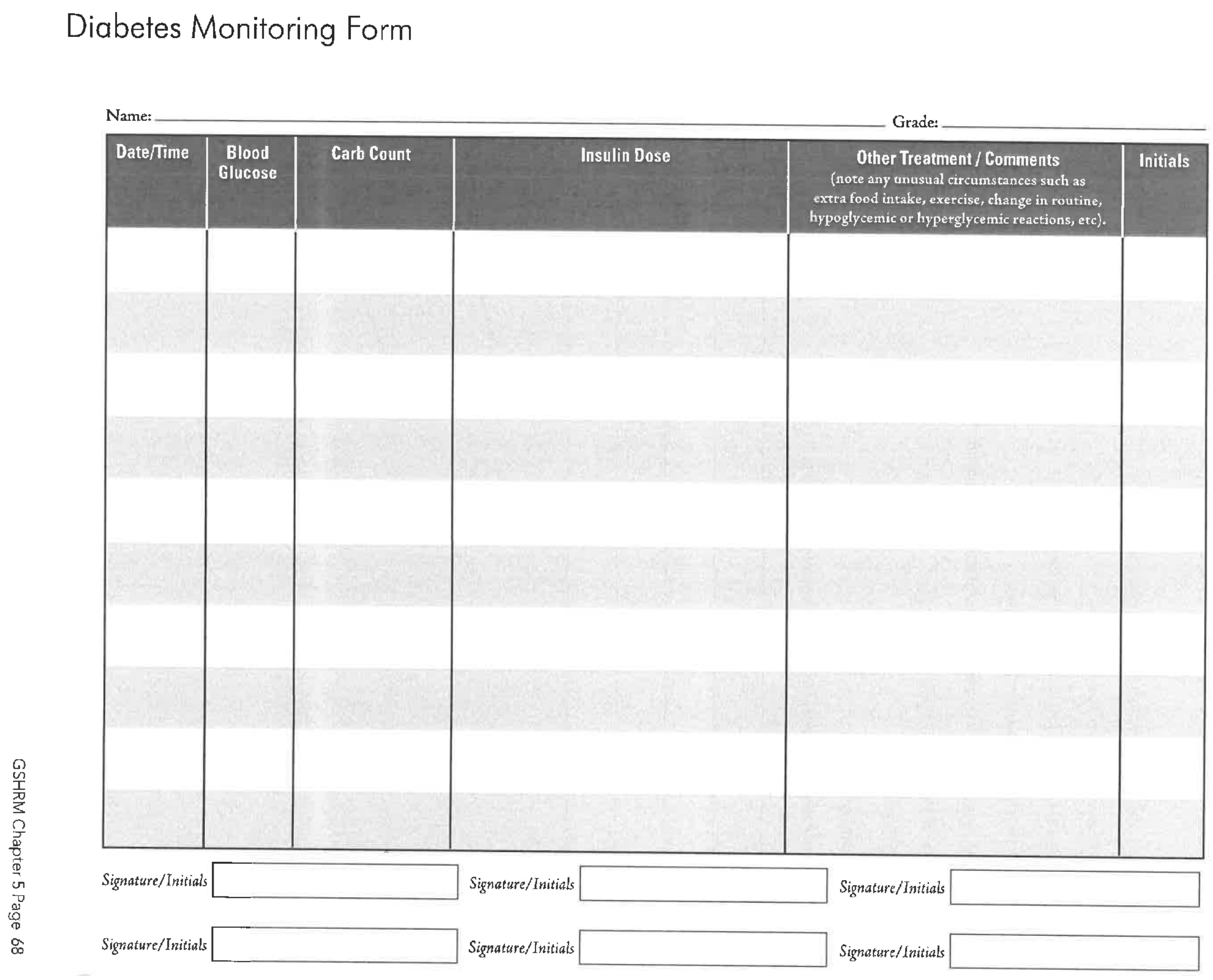

Diabetes Monitoring Form

Name: ______________________ Grade: __________

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

Signature/Initials ______ *Signature/Initials* ______ *Signature/Initials* ______

Signature/Initials ______ *Signature/Initials* ______ *Signature/Initials* ______

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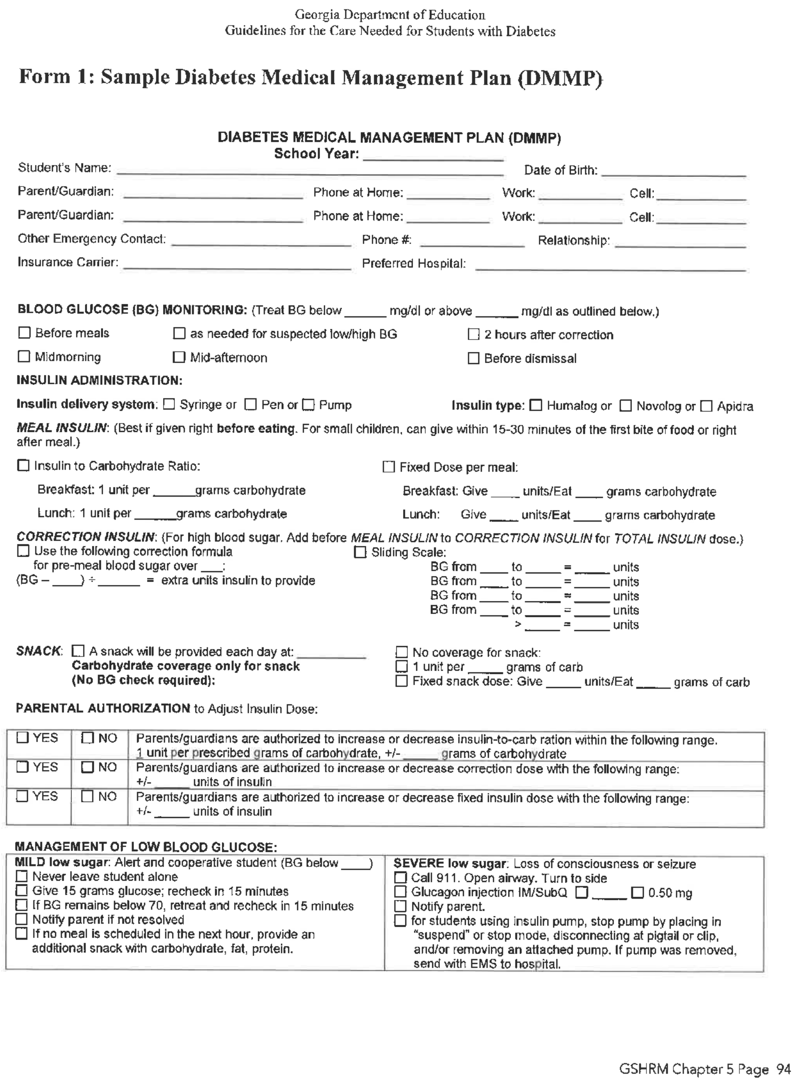


Form 1: Sample Diabetes Medical Management Plan (DMMP)

DIABETES MEDICAL MANAGEMENT PLAN (DMMP)

School Year: ____________

Student's Name: ______________________________ Date of Birth: ____________

Parent/Guardian: ______________ Phone at Home: ________ Work: ________ Cell: ________

Parent/Guardian: ______________ Phone at Home: ________ Work: ________ Cell: ________

Other Emergency Contact: ______________ Phone #: ________ Relationship: ________

Insurance Carrier: ______________ Preferred Hospital: ______________

BLOOD GLUCOSE (BG) MONITORING: (Treat BG below ______ mg/dl or above ______ mg/dl as outlined below.)

☐ Before meals ☐ as needed for suspected low/high BG ☐ 2 hours after correction

☐ Midmorning ☐ Mid-afternoon ☐ Before dismissal

INSULIN ADMINISTRATION:

Insulin delivery system: ☐ Syringe or ☐ Pen or ☐ Pump **Insulin type:** ☐ Humalog or ☐ Novolog or ☐ Apidra

MEAL INSULIN: (Best if given right **before eating**. For small children, can give within 15-30 minutes of the first bite of food or right after meal.)

☐ Insulin to Carbohydrate Ratio:

Breakfast: 1 unit per ______grams carbohydrate

Lunch: 1 unit per ______grams carbohydrate

☐ Fixed Dose per meal:

Breakfast: Give ____ units/Eat ____ grams carbohydrate

Lunch: Give ____ units/Eat ____ grams carbohydrate

CORRECTION INSULIN: (For high blood sugar. Add before *MEAL INSULIN* to *CORRECTION INSULIN* for *TOTAL INSULIN* dose.)

☐ Use the following correction formula
for pre-meal blood sugar over ___:
(BG – ____) ÷ ______ = extra units insulin to provide

☐ Sliding Scale:
BG from ____ to _____ = _____ units
BG from ____ to _____ = _____ units
BG from ____ to _____ = _____ units
BG from ____ to _____ = _____ units
> _____ = _____ units

SNACK: ☐ A snack will be provided each day at: __________
Carbohydrate coverage only for snack
(No BG check required):

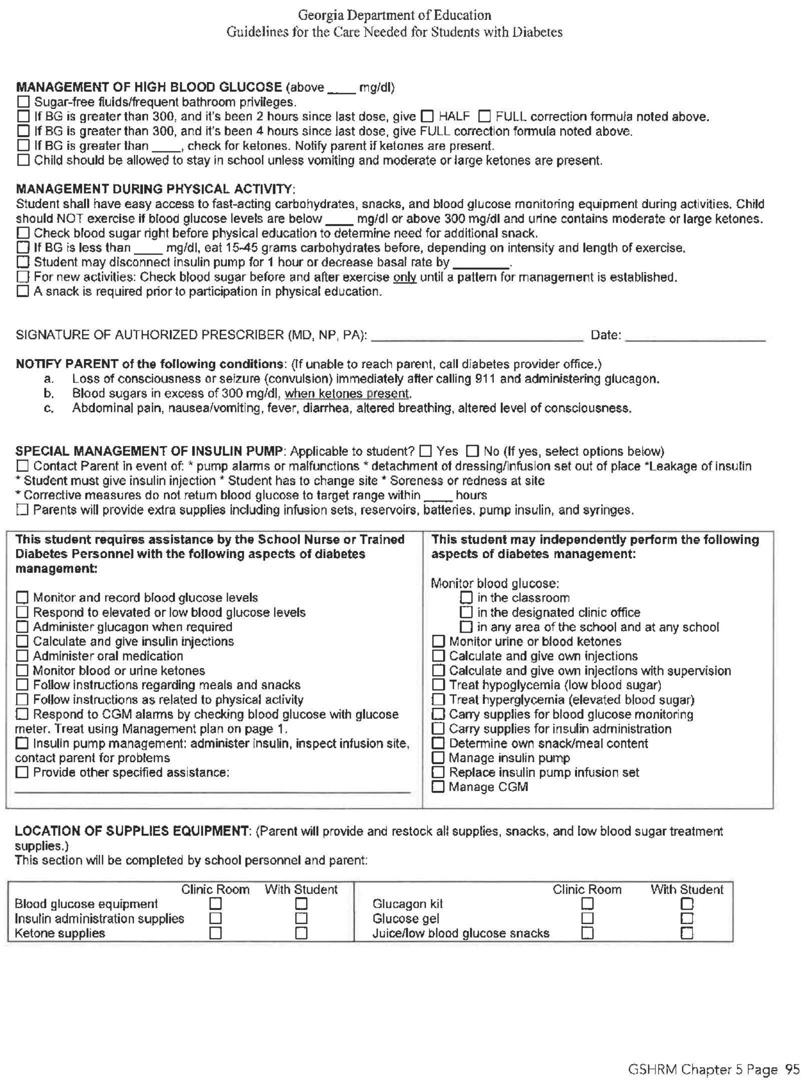
☐ No coverage for snack:
☐ 1 unit per _____ grams of carb
☐ Fixed snack dose: Give _____ units/Eat _____ grams of carb

PARENTAL AUTHORIZATION to Adjust Insulin Dose:

☐ YES	☐ NO	Parents/guardians are authorized to increase or decrease insulin-to-carb ration within the following range. 1 unit per prescribed grams of carbohydrate, +/- _____ grams of carbohydrate
☐ YES	☐ NO	Parents/guardians are authorized to increase or decrease correction dose with the following range: +/- _____ units of insulin
☐ YES	☐ NO	Parents/guardians are authorized to increase or decrease fixed insulin dose with the following range: +/- _____ units of insulin

MANAGEMENT OF LOW BLOOD GLUCOSE:

MILD low sugar: Alert and cooperative student (BG below ____) ☐ Never leave student alone ☐ Give 15 grams glucose; recheck in 15 minutes ☐ If BG remains below 70, retreat and recheck in 15 minutes ☐ Notify parent if not resolved ☐ If no meal is scheduled in the next hour, provide an additional snack with carbohydrate, fat, protein.	**SEVERE low sugar**: Loss of consciousness or seizure ☐ Call 911. Open airway. Turn to side ☐ Glucagon injection IM/SubQ ☐ _____ ☐ 0.50 mg ☐ Notify parent. ☐ for students using insulin pump, stop pump by placing in "suspend" or stop mode, disconnecting at pigtail or clip, and/or removing an attached pump. If pump was removed, send with EMS to hospital.



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: ______________

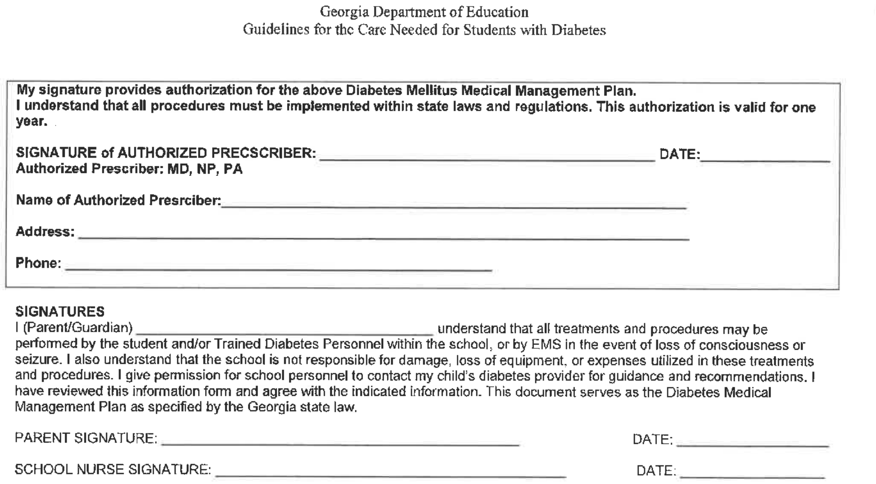
NOTIFY PARENT of the following conditions: (If unable to reach parent, call diabetes provider office.)
a. Loss of consciousness or seizure (convulsion) immediately after calling 911 and administering glucagon.
b. Blood sugars in excess of 300 mg/dl, when ketones present.
c. Abdominal pain, nausea/vomiting, 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.

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 ☐ Calculate and give insulin injections ☐ Administer oral medication ☐ Monitor blood or urine ketones ☐ Follow instructions regarding meals and snacks ☐ Follow instructions as related to physical activity ☐ Respond to CGM alarms by checking blood glucose with glucose meter. Treat using Management plan on page 1. ☐ 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 ☐ Monitor urine or blood ketones ☐ Calculate and give own injections ☐ Calculate and give own injections with supervision ☐ 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 ☐ Manage CGM

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	☐	☐	Glucagon kit	☐	☐
Insulin administration supplies	☐	☐	Glucose gel	☐	☐
Ketone supplies	☐	☐	Juice/low blood glucose snacks	☐	☐



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 PRECSCRIBER: ______________________________ **DATE:**__________
Authorized Prescriber: MD, NP, PA

Name of Authorized Presrciber:______________________________

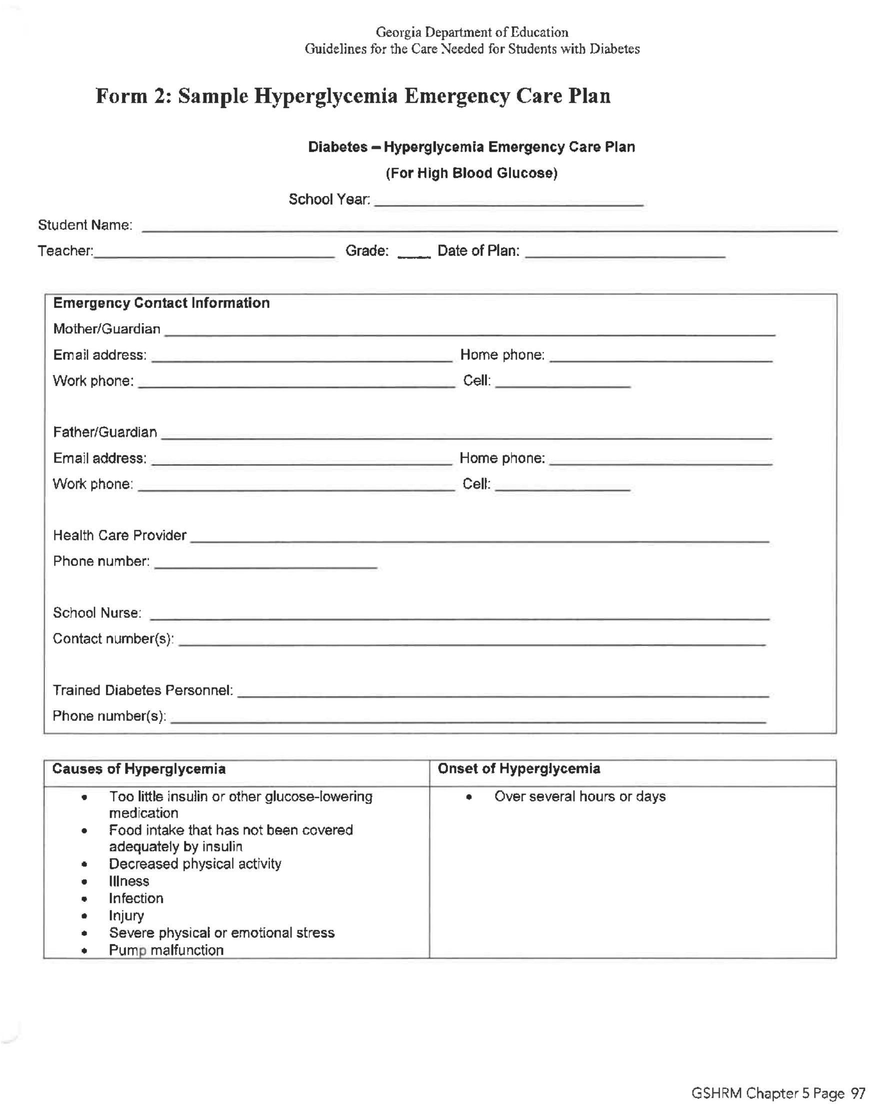
Address: ______________________________

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: ______________

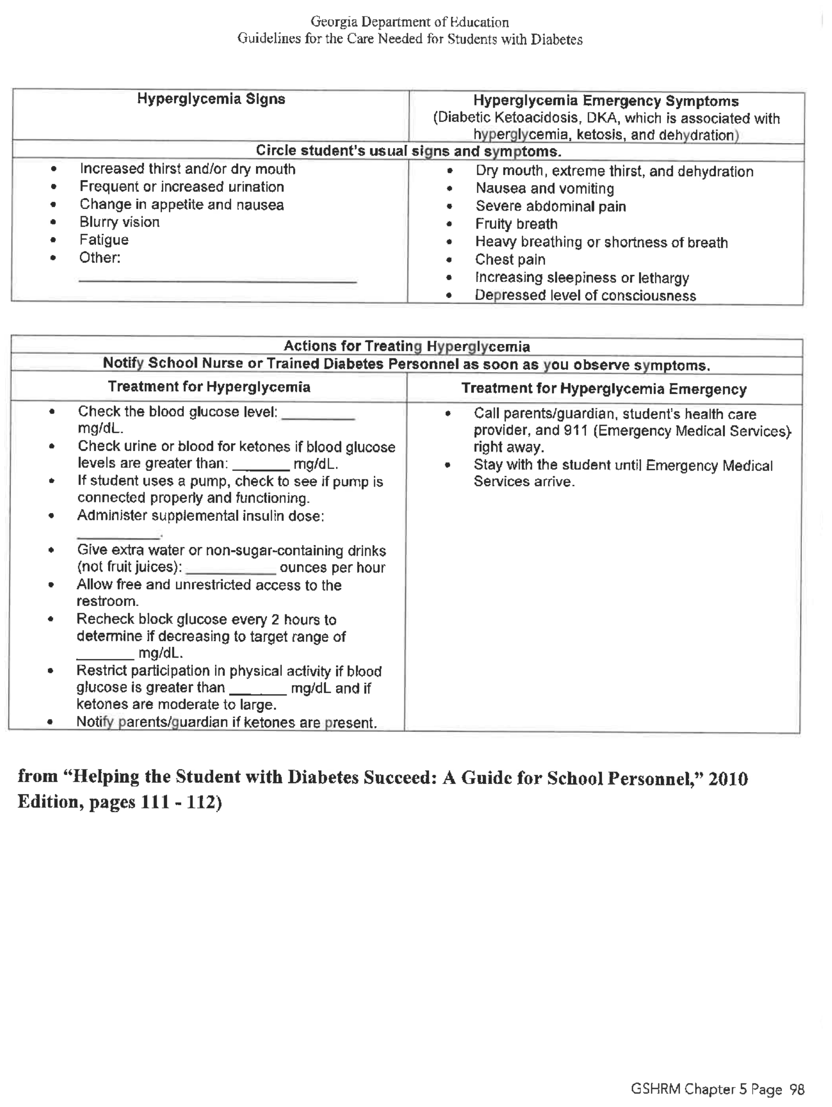
Father/Guardian ______________________________
Email address: ______________________ Home phone: ______________________
Work phone: ______________________ Cell: ______________

Health Care Provider ______________________________
Phone number: ______________________

School Nurse: ______________________________
Contact number(s): ______________________________

Trained Diabetes Personnel: ______________________________
Phone number(s): ______________________________

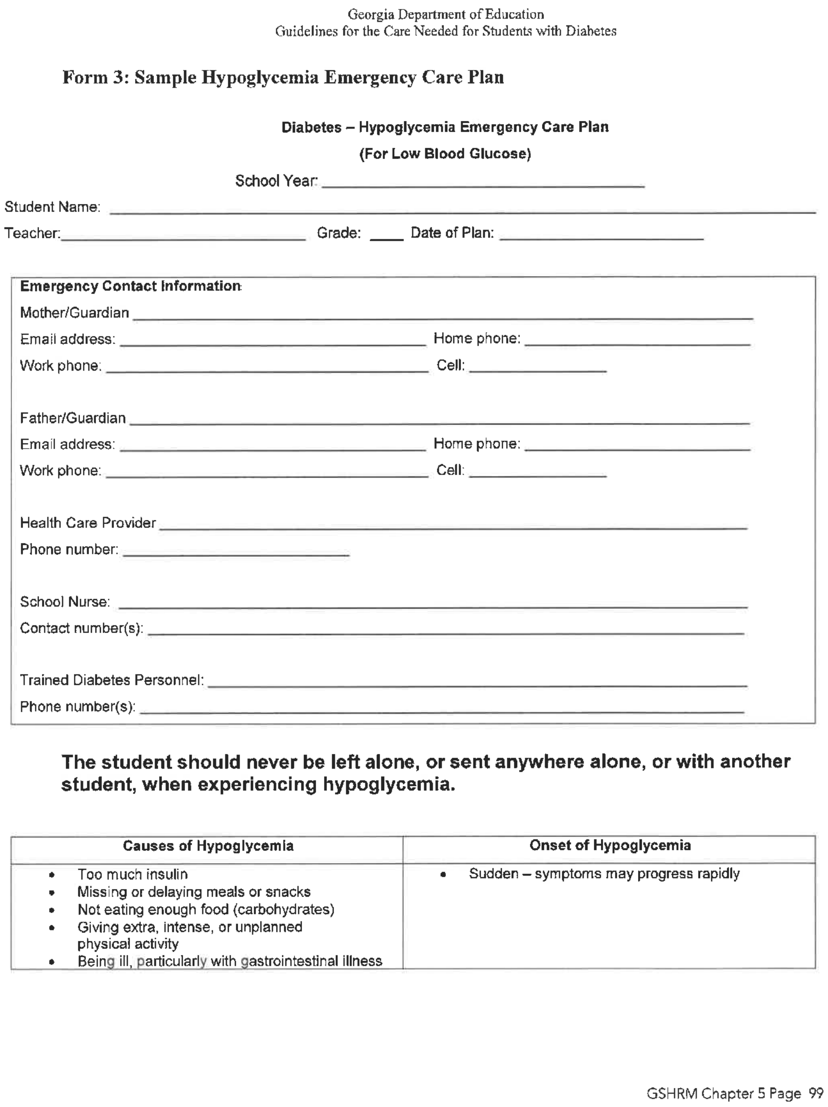
Causes of Hyperglycemia	Onset of Hyperglycemia
• Too little insulin or other glucose-lowering medication • Food intake that has not been covered adequately by insulin • Decreased physical activity • Illness • Infection • Injury • Severe physical or emotional stress • Pump malfunction	• Over several hours or days



Hyperglycemia Signs	Hyperglycemia Emergency Symptoms (Diabetic Ketoacidosis, DKA, which is associated with hyperglycemia, ketosis, and dehydration)
Circle student's usual signs and symptoms.	
• Increased thirst and/or dry mouth • Frequent or increased urination • Change in appetite and nausea • Blurry vision • Fatigue • Other: ______________________	• 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**
• 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 block 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.	• 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)



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

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: ____

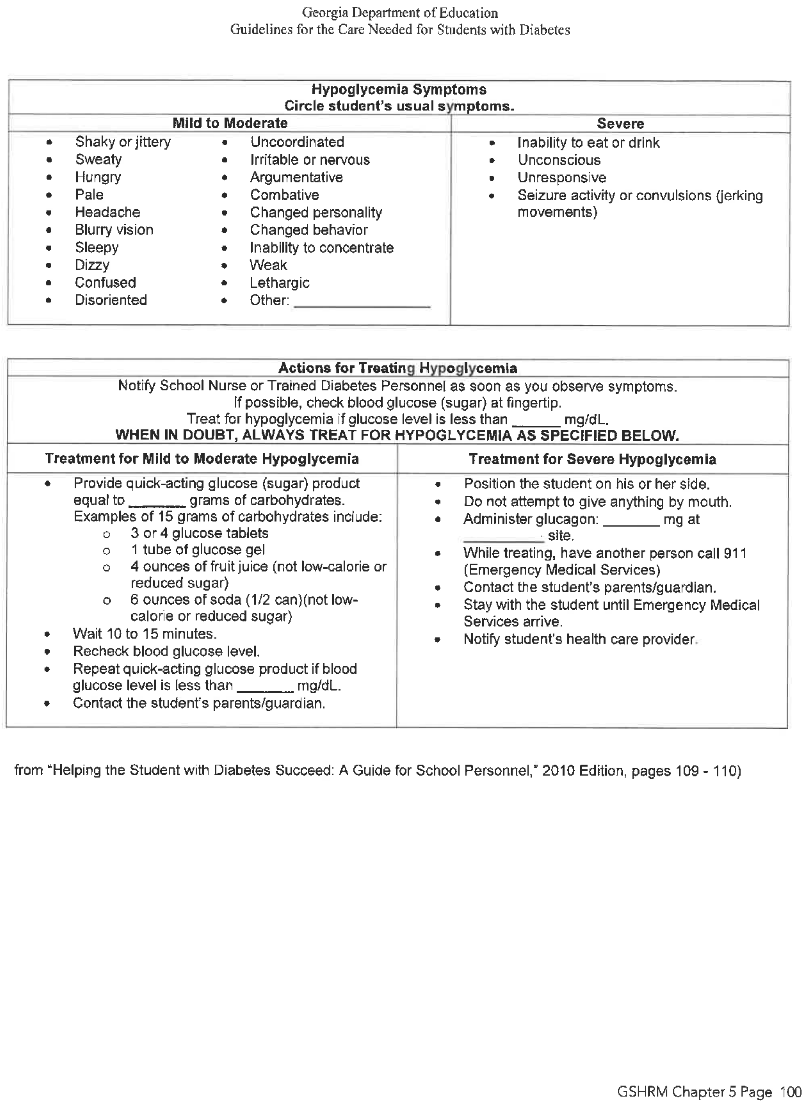
Contact number(s): ____

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
• 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	• 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.

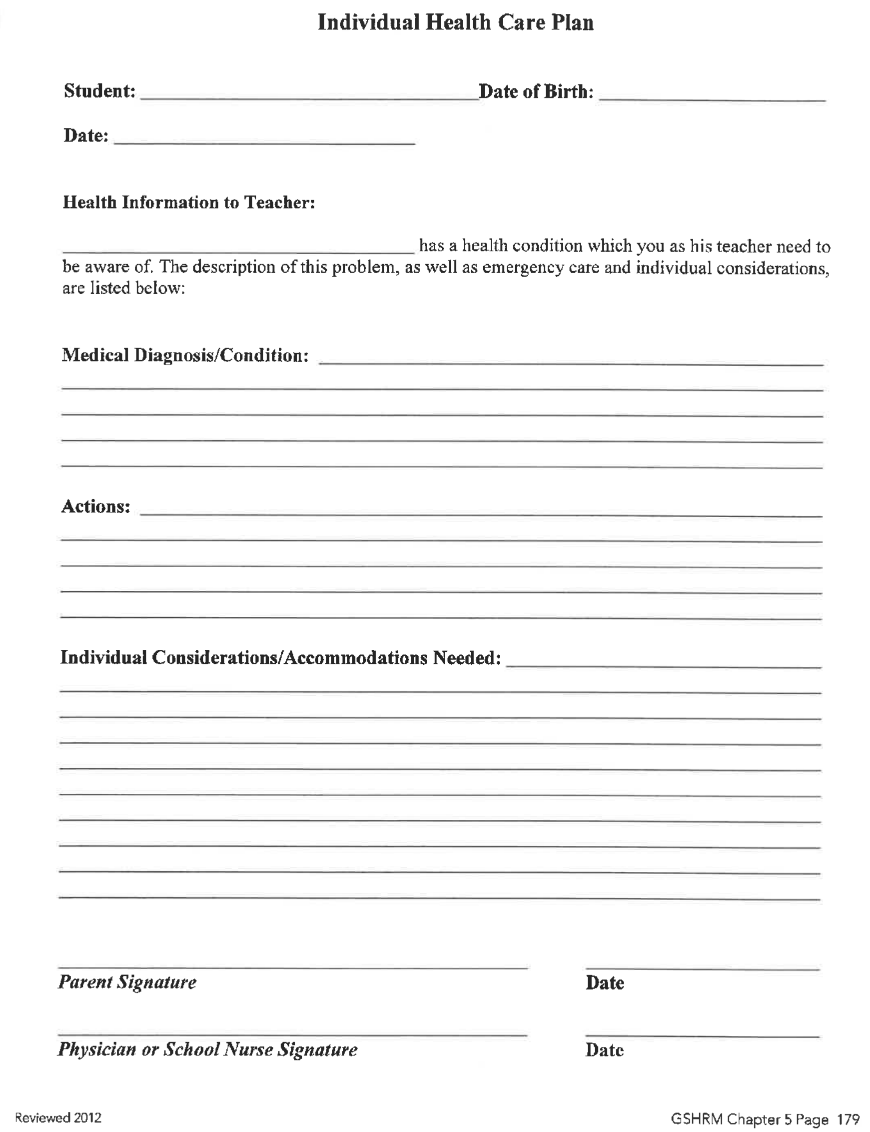
Mild to Moderate		Severe
• Shaky or jittery • Sweaty • Hungry • Pale • Headache • Blurry vision • Sleepy • Dizzy • Confused • Disoriented	• Uncoordinated • Irritable or nervous • Argumentative • Combative • Changed personality • Changed behavior • Inability to concentrate • Weak • Lethargic • Other: ____________	• 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
• Provide quick-acting glucose (sugar) product equal to _______ grams of carbohydrates. Examples of 15 grams of carbohydrates include: ○ 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.	• 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)



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: ______________________________

____

____

____

____

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____ ____________________

Parent Signature **Date**

____ ____________________

Physician or School Nurse Signature **Date**

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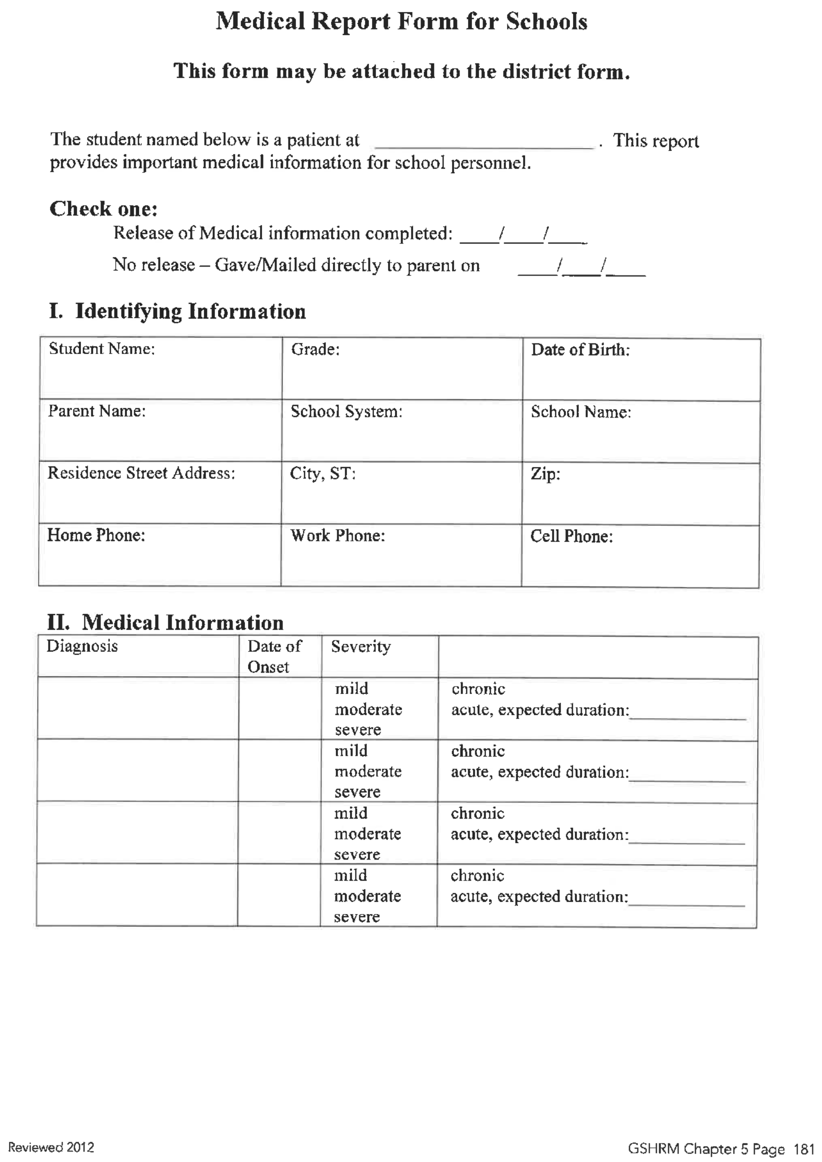

Medical Report Form for Schools

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:____________

Reviewed 2012

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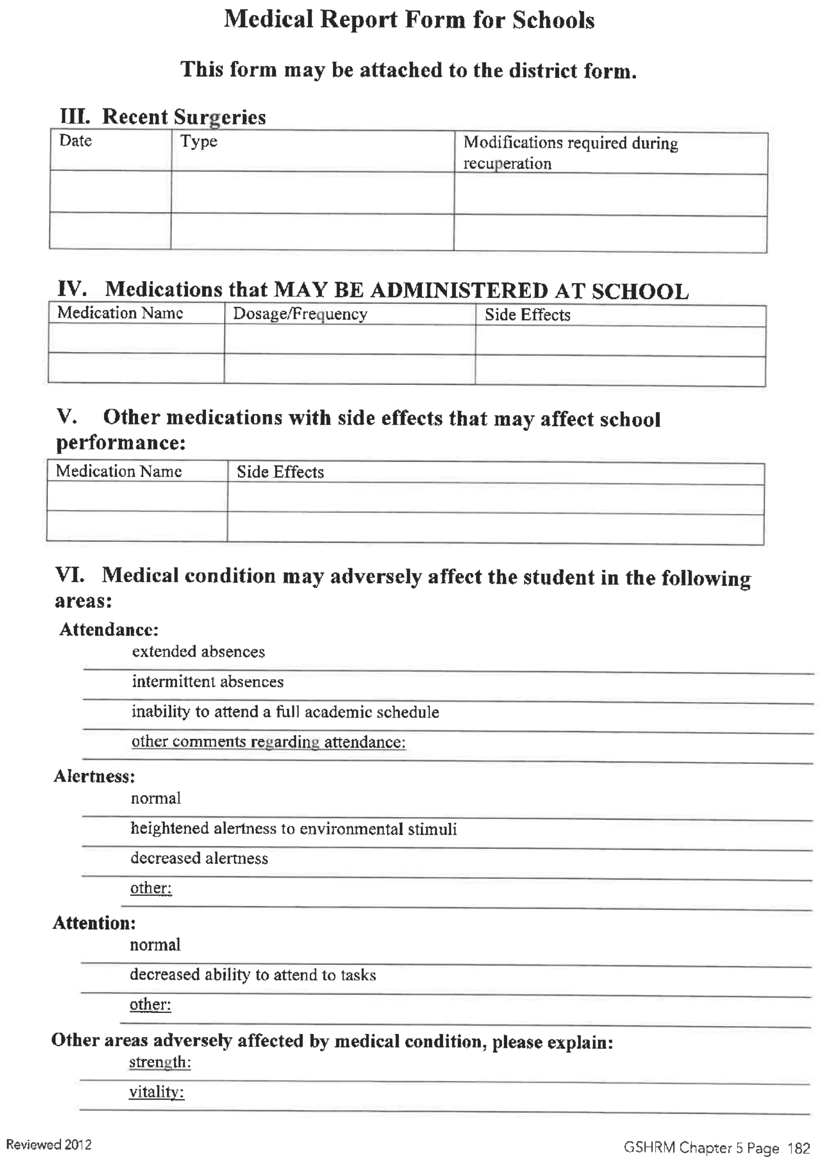

Medical Report Form for Schools

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:

Reviewed 2012

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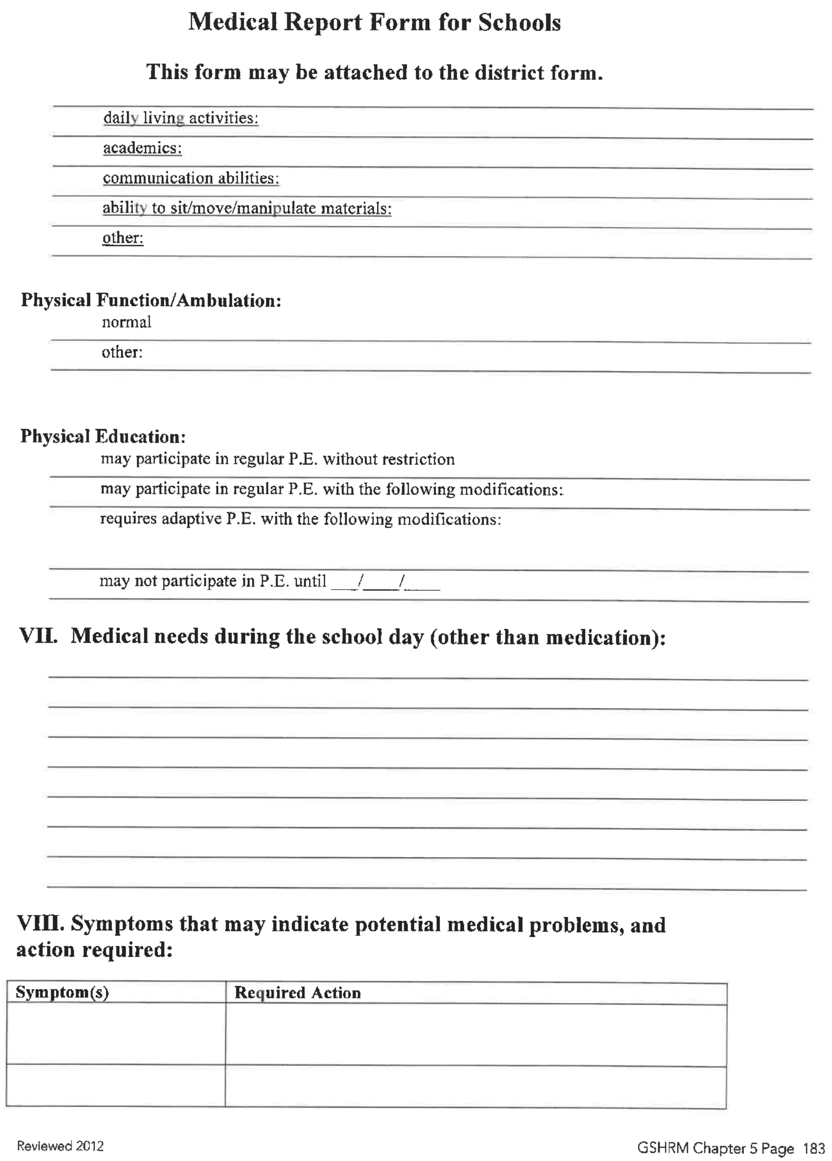


Medical Report Form for Schools

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 ___/____/____

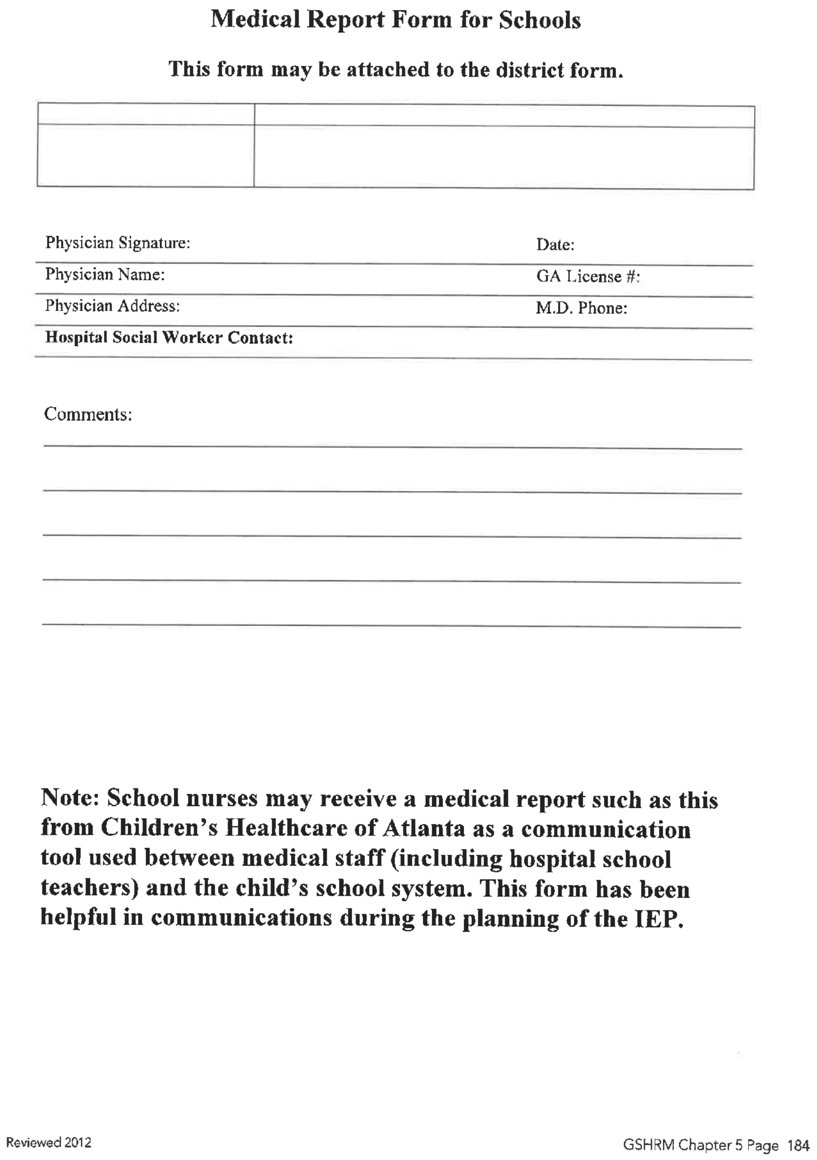
VII. Medical needs during the school day (other than medication):

VIII. Symptoms that may indicate potential medical problems, and action required:

Symptom(s)	Required Action

Reviewed 2012

GSHRM Chapter 5 Page 183



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.

Reviewed 2012

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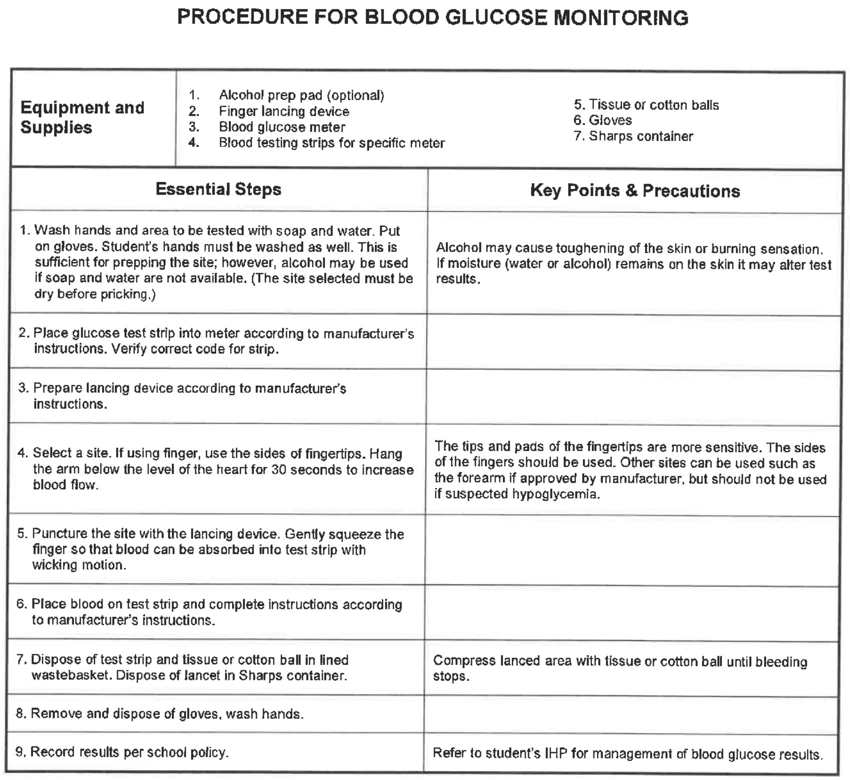
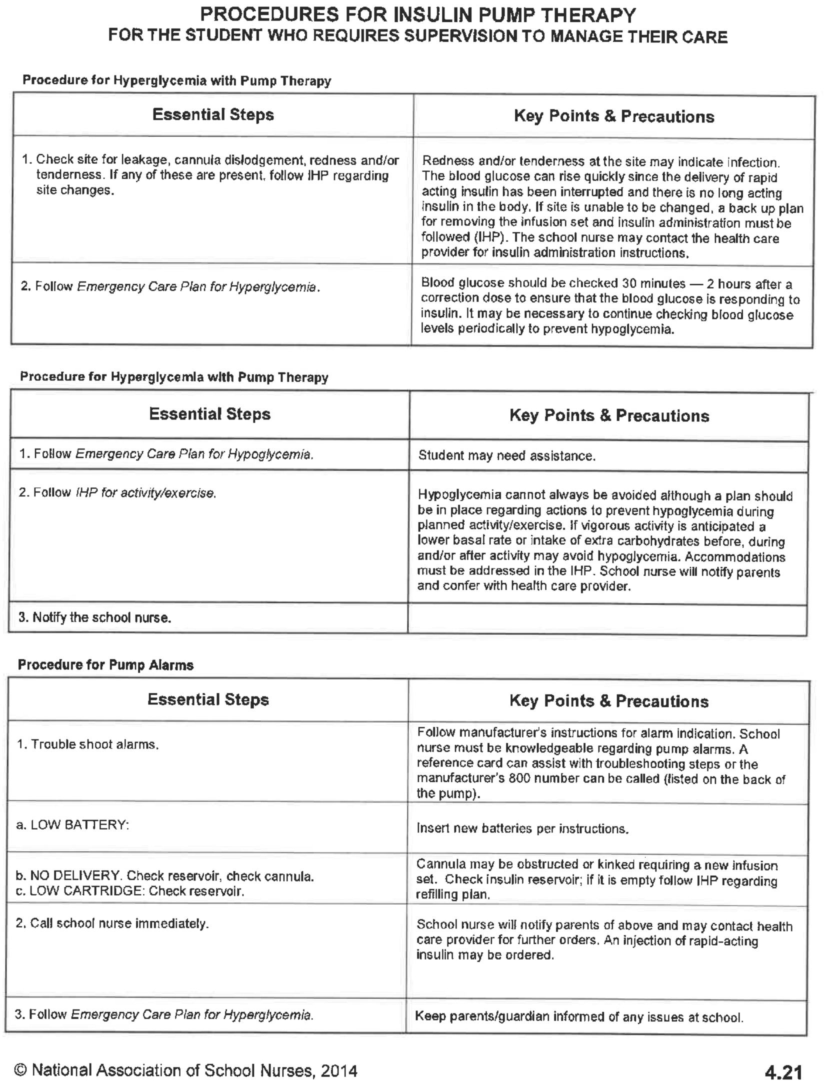


PROCEDURE FOR BLOOD GLUCOSE MONITORING

Equipment and Supplies	1. Alcohol prep pad (optional) 2. Finger lancing device 3. Blood glucose meter 4. Blood testing strips for specific meter	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

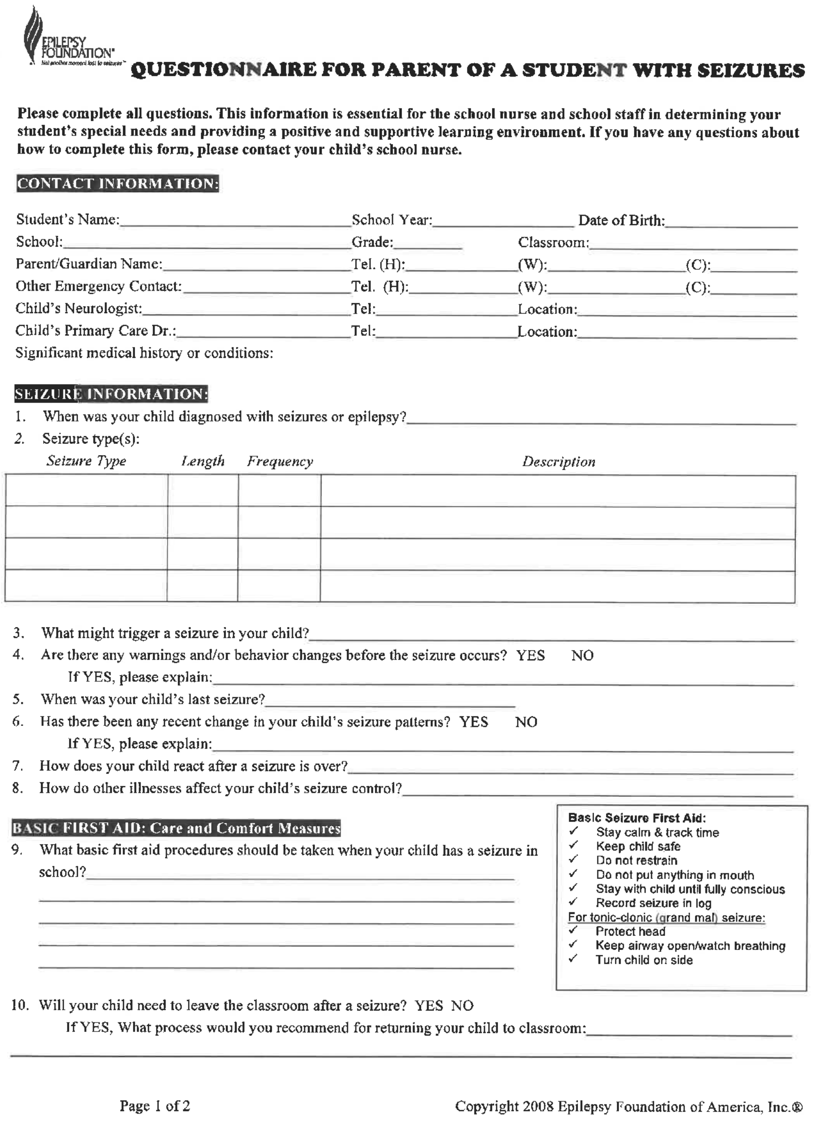
Essential Steps	Key Points & Precautions
1. Check site for leakage, cannula dislodgement, redness and/or tenderness. If any of these are present, follow IHP regarding site changes.	Redness and/or tenderness at the site may indicate infection. The blood glucose can rise quickly since the delivery of rapid 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 *Emergency Care Plan for Hyperglycemia*.	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 *Emergency Care Plan for Hypoglycemia*.	Student may need assistance.
2. Follow *IHP for activity/exercise*.	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 *Emergency Care Plan for Hyperglycemia*.	Keep parents/guardian informed of any issues at school.



EPILEPSY FOUNDATION®

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):

Seizure Type	*Length*	*Frequency*	*Description*

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

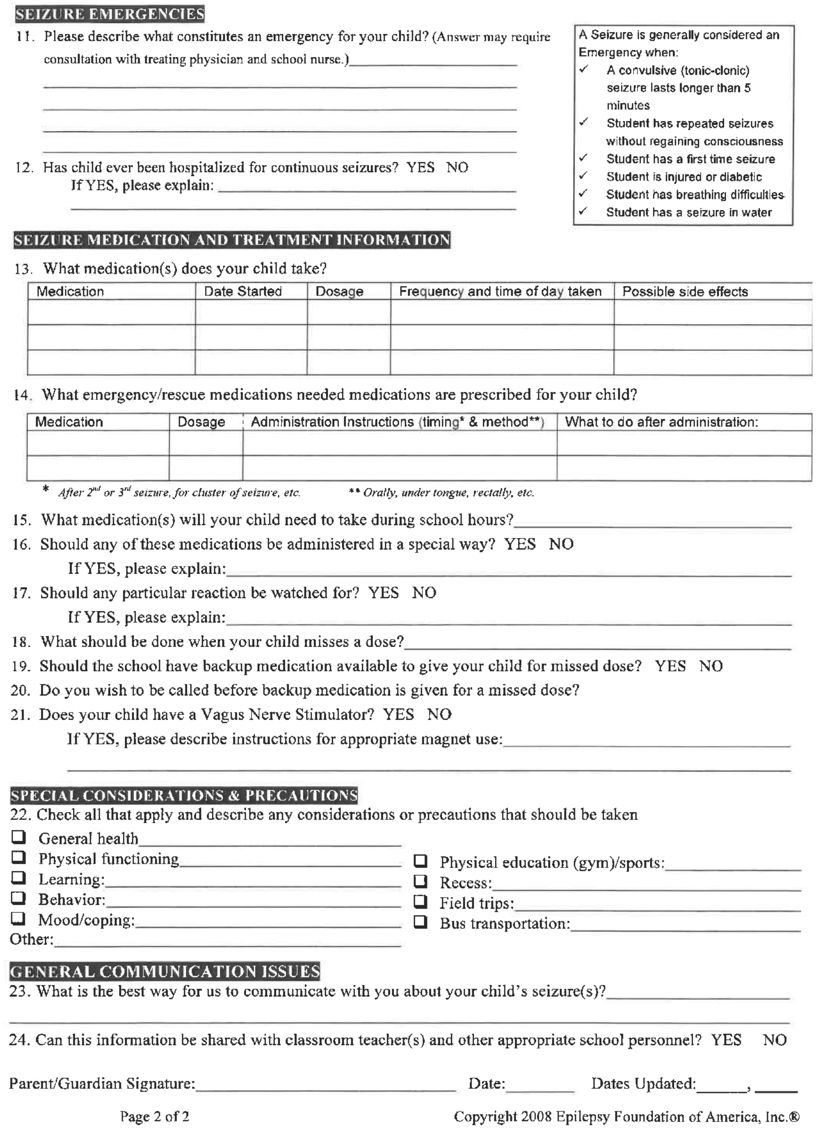
9. What basic first aid procedures should be taken when your child has a seizure in school?____

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:____

Page 1 of 2



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:____, ____

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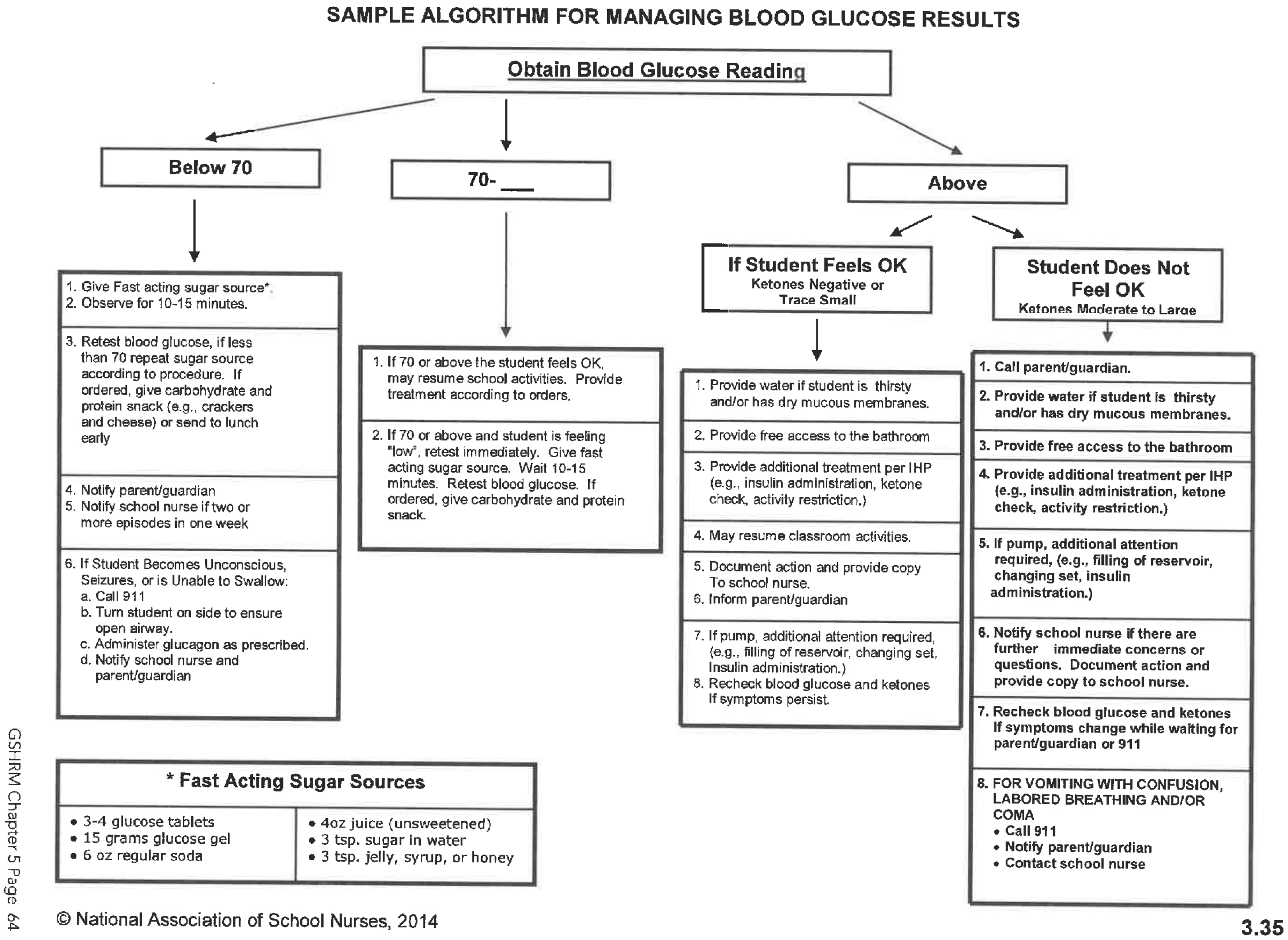

SAMPLE ALGORITHM FOR MANAGING BLOOD GLUCOSE RESULTS

Obtain Blood Glucose Reading

Below 70

1. Give Fast acting sugar source*.
2. Observe for 10-15 minutes.
3. Retest blood glucose, if less than 70 repeat sugar source according to procedure. If ordered, give carbohydrate and protein snack (e.g., crackers and cheese) or send to lunch early
4. Notify parent/guardian
5. Notify school nurse if two or more episodes in one week
6. If Student Becomes Unconscious, Seizures, or is Unable to Swallow:
   a. Call 911
   b. Turn student on side to ensure open airway.
   c. Administer glucagon as prescribed.
   d. Notify school nurse and parent/guardian

70- ___

1. If 70 or above the student feels OK, may resume school activities. Provide treatment according to orders.
2. If 70 or above and student is feeling "low", retest immediately. Give fast acting sugar source. Wait 10-15 minutes. Retest blood glucose. If ordered, give carbohydrate and protein snack.

Above

If Student Feels OK
Ketones Negative or Trace Small

1. Provide water if student is thirsty and/or has dry mucous membranes.
2. Provide free access to the bathroom
3. Provide additional treatment per IHP (e.g., insulin administration, ketone check, activity restriction.)
4. May resume classroom activities.
5. Document action and provide copy To school nurse.
6. Inform parent/guardian
7. If pump, additional attention required, (e.g., filling of reservoir, changing set, Insulin administration.)
8. Recheck blood glucose and ketones If symptoms persist.

Student Does Not Feel OK
Ketones Moderate to Large

1. **Call parent/guardian.**
2. **Provide water if student is thirsty and/or has dry mucous membranes.**
3. **Provide free access to the bathroom**
4. **Provide additional treatment per IHP (e.g., insulin administration, ketone check, activity restriction.)**
5. **If pump, additional attention required, (e.g., filling of reservoir, changing set, insulin administration.)**
6. **Notify school nurse if there are further immediate concerns or questions. Document action and provide copy to school nurse.**
7. **Recheck blood glucose and ketones If symptoms change while waiting for parent/guardian or 911**
8. **FOR VOMITING WITH CONFUSION, LABORED BREATHING AND/OR COMA**
   - **Call 911**
   - **Notify parent/guardian**
   - **Contact school nurse**

* Fast Acting Sugar Sources	
• 3-4 glucose tablets • 15 grams glucose gel • 6 oz regular soda	• 4oz juice (unsweetened) • 3 tsp. sugar in water • 3 tsp. jelly, syrup, or honey

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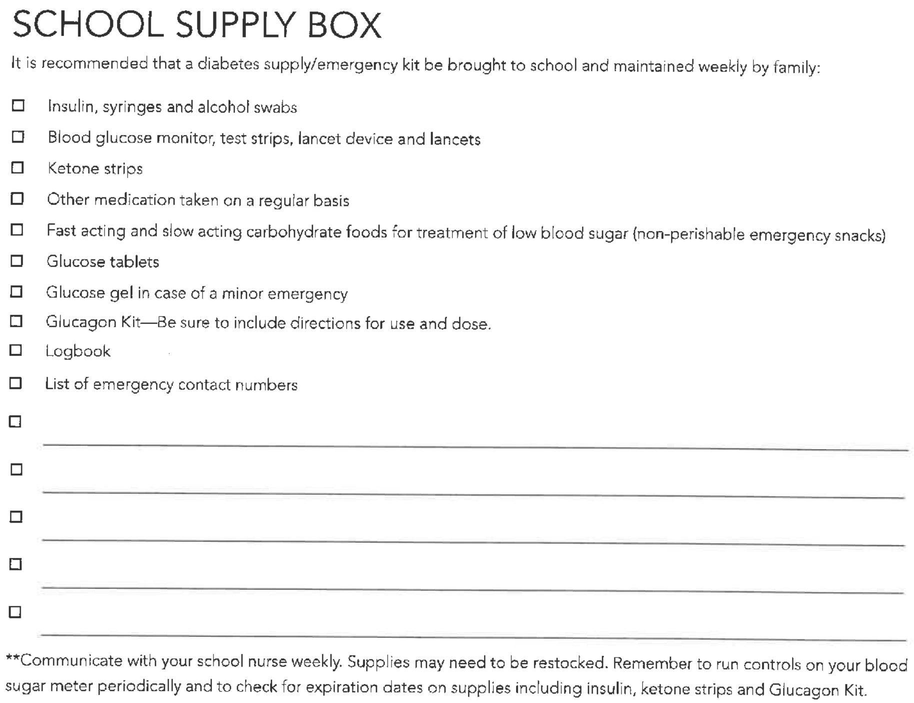
3.35

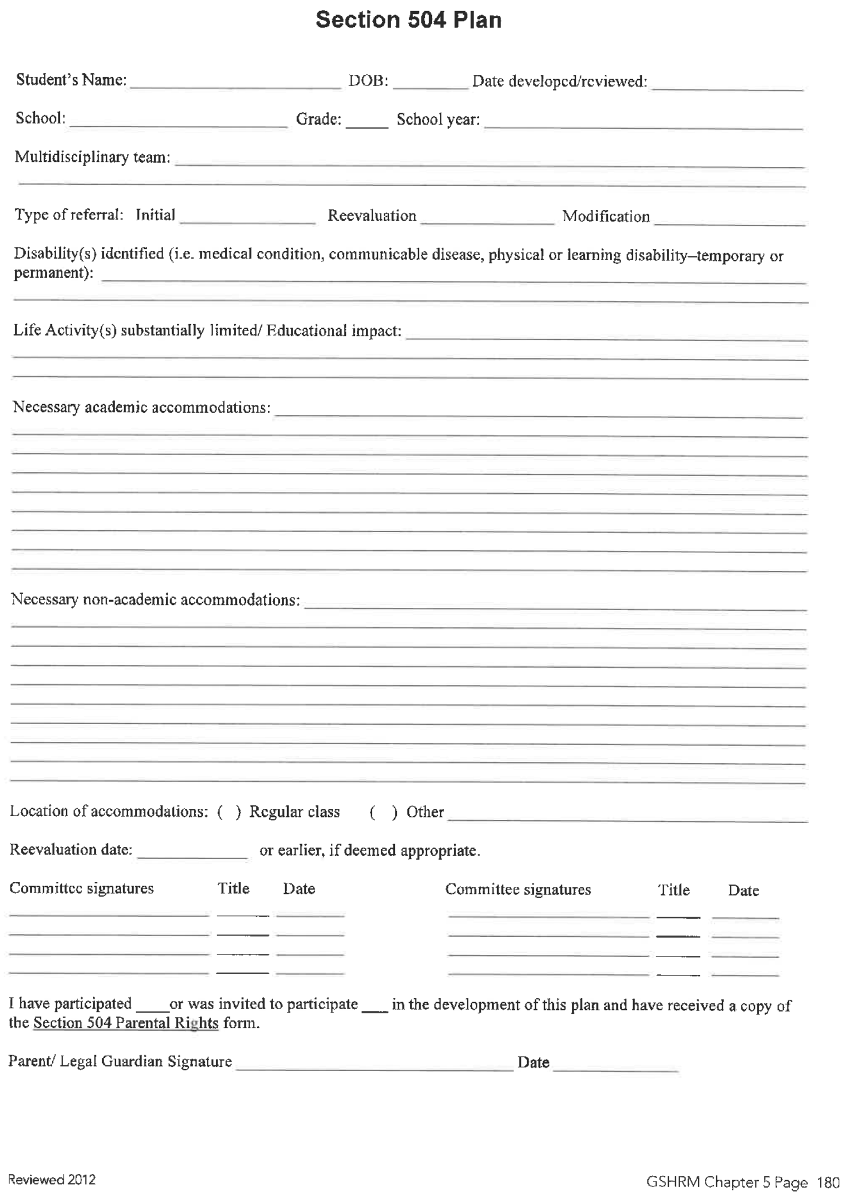


SCHOOL SUPPLY BOX

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
- ☐ ____________________
- ☐ ____________________
- ☐ ____________________
- ☐ ____________________
- ☐ ____________________

**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.



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 ______________

Reviewed 2012

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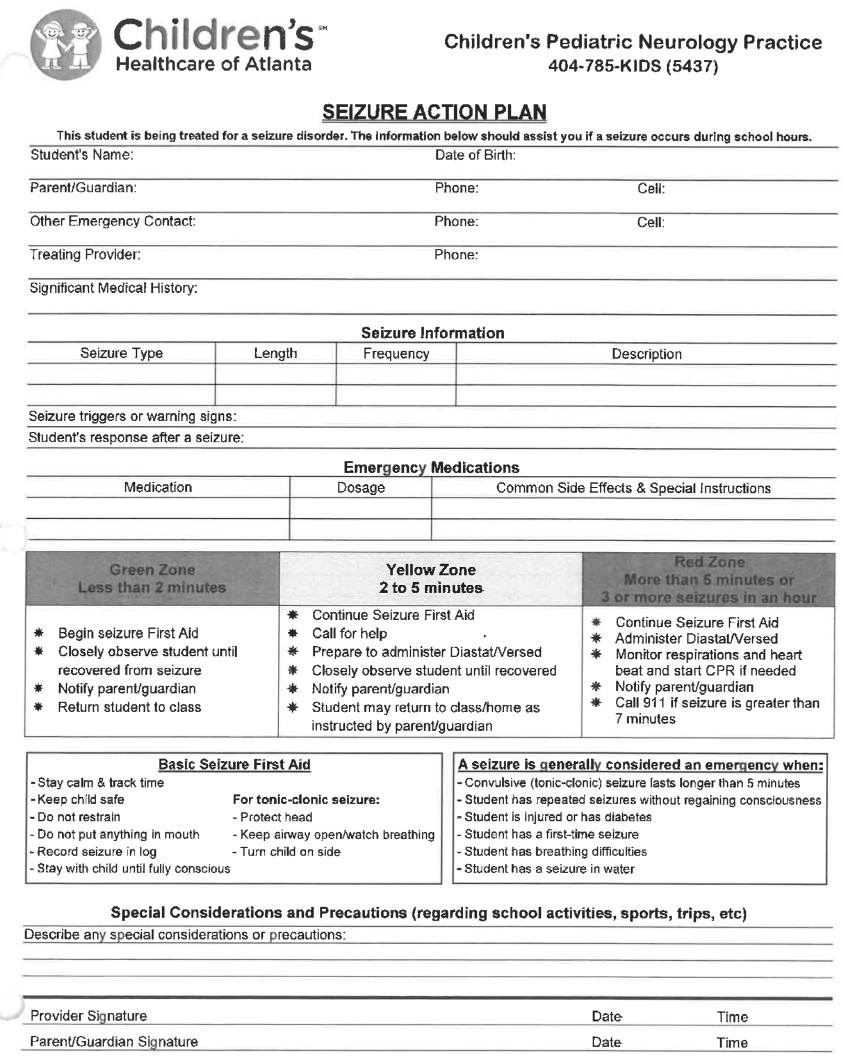


Children's Healthcare of Atlanta

Children's Pediatric Neurology Practice
404-785-KIDS (5437)

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
✱ Begin seizure First Aid ✱ Closely observe student until recovered from seizure ✱ Notify parent/guardian ✱ Return student to class	✱ 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	✱ 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

- 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

For tonic-clonic seizure:

- 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

Children's Healthcare of Atlanta

Práctica de Neurología
Pediátrica de Children's
404-785-KIDS (5437)

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
✱ 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	✱ 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	✱ 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

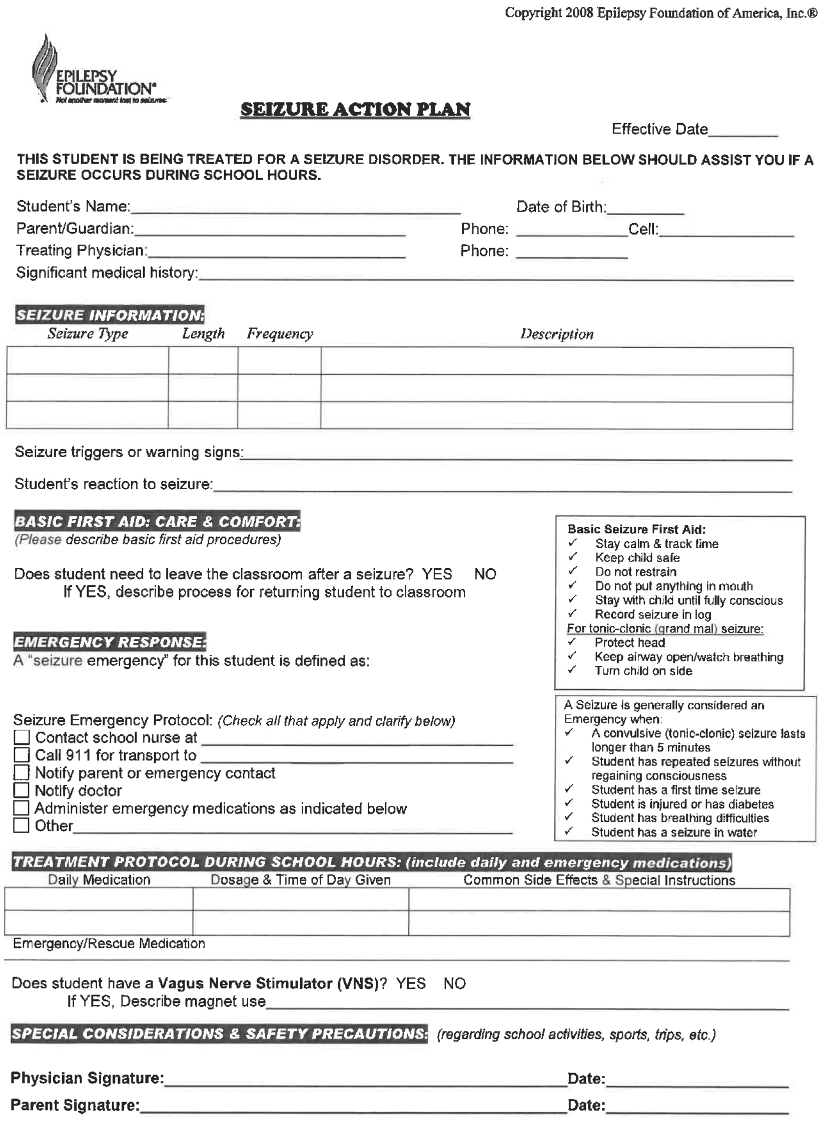
- Mantener la calma y tener en cuenta el tiempo trascurrido
- Mantener seguro al niño
- No sujetarlo
- No ponerle nada en la boca
- Registrar la convulsión en el registro
- Quedarse con el niño hasta que esté completamente consciente

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



EPILEPSY FOUNDATION®
Not another moment lost to seizures.

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:

Seizure Type	*Length*	*Frequency*	*Description*

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

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______________________________________

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

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

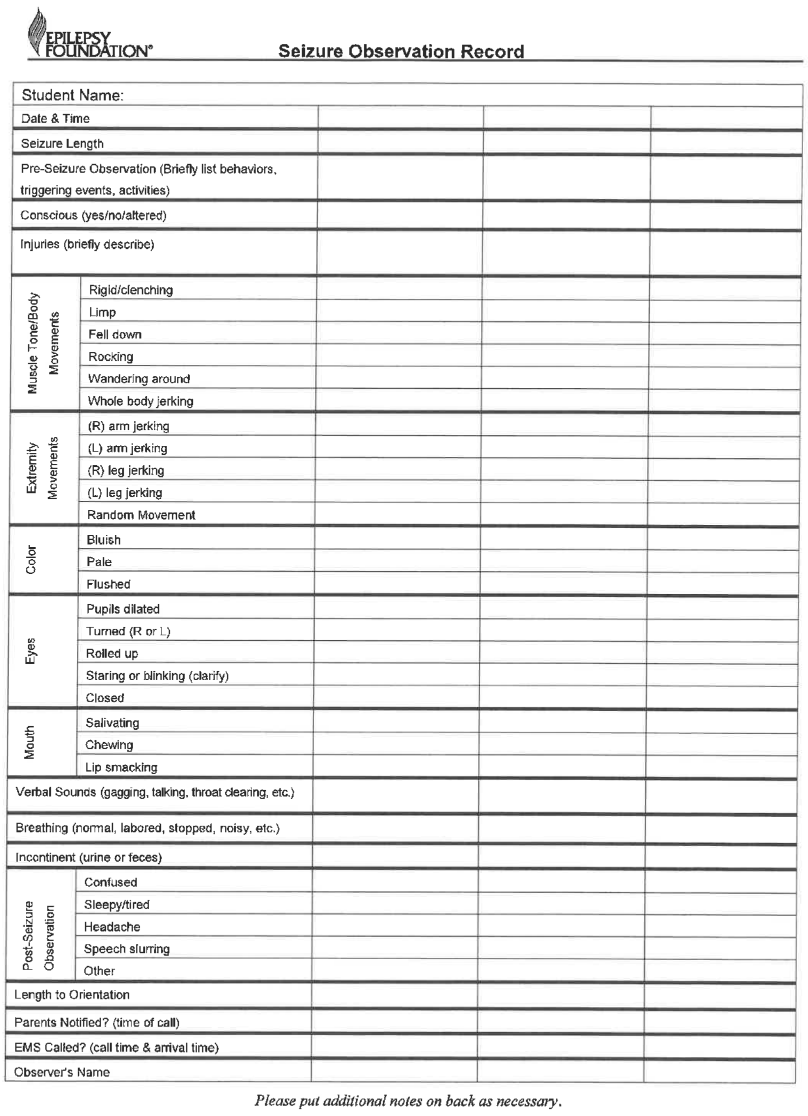
Emergency/Rescue Medication____

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:**____________



EPILEPSY FOUNDATION®

Seizure Observation Record

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.