Common Chronic Medical Conditions Affecting Children’s Health

NAEYC Standards Chapter Links
- #1 a, b, and c: Promoting child development and learning
- #2 a, b, and c: Building family and community relationships
- #3 a, b, c, and d: Observing, documenting, and assessing to support young children and families
- #4 a, b, and c: Using developmentally effective approaches to connect with children and families
- #5 c: Using content knowledge to build meaningful curriculum
- #6 b: Becoming a professional

Learning Objectives
After studying this chapter, you should be able to:
- Explain why it is important for teachers to have an understanding of common chronic diseases and medical conditions that affect children's health.
- Discuss why some chronic conditions are difficult to identify in children.
- Name and describe the symptoms and management strategies for common medical conditions that children may experience.

Children who have disabilities, medical conditions, and chronic diseases are often present in early childhood and school-age classrooms. This means that teachers must be able to respond to children’s educational, health, and medical needs. Teachers also play an instrumental role in identifying children who may have undiagnosed conditions that require medical evaluation and treatment. Early identification, referral to appropriate professionals, and intervention strategies have proven to be successful in minimizing the negative effects of undiagnosed health conditions on children’s developmental progress (Guralnick, 2004; Nelson, 2000; Ramey & Ramey, 1998) and their ability to learn (Allen & Cowdery, 2009). The purpose of this chapter is to provide brief descriptions of several chronic health conditions and their management strategies, which can help to prepare teachers for these important roles.
Common Chronic Diseases and Medical Conditions

Some chronic conditions and diseases such as sickle cell anemia and diabetes may be difficult to recognize because children may have had them since birth. Other conditions, such as allergies, asthma, and lead poisoning, may present few early symptoms and develop slowly over time so that even the child may not be aware that anything is wrong. This means that from time to time teachers are likely to encounter children who have chronic medical disorders that have not yet been diagnosed (Lieberman et al., 2009; Nelson et al., 2009).

An ideal starting point for teachers to consider is children’s environmental circumstances. These factors may contribute to a child’s health condition and/or serve as barriers to treatment and can include:

- location—living in an urban neighborhood, rural area, or being homeless
- family’s financial situation, which, in turn, may affect dietary quality, living arrangement, and access to medical care
- exposure to environmental pollutants in air or water, such as noise or chemicals
- presence of stress, trauma, or domestic violence
- disruption of the traditional family unit

Teachers can also learn more about children’s chronic diseases and/or medical conditions by accessing information on the Internet or through local libraries. Community health professionals are often willing to answer questions and provide expert guidance. Health consultants may be available to train and work directly with classroom teachers in some early childhood programs. School nurses in public and some private schools provide similar assistance, and are often responsible for administering medications and medical procedures. Additional resources and support may also be available to teachers serving children who have an individualized education plan (IEP).

The remainder of this chapter is devoted to an overview of several common chronic diseases and medical conditions that teachers may encounter in their classrooms. Note that developmental and genetic disabilities have not been included here because they are topics addressed extensively in special education courses and specialized textbooks.

Allergic Diseases

Allergies are the leading cause of chronic disease among young children in the United States and may affect as many as one in every five children (AAFA, 2009a). There is significant concern about the increasing incidence of allergic disease and the number of substances to which children are reacting. Although many allergic disorders can be successfully treated and controlled, it is estimated that more than 50 percent of children with symptoms remain undiagnosed (Nelson et al., 2009). Allergic reactions range in severity from mildly annoying symptoms to those that may severely restrict a child’s activity or even result in unexpected death.

Signs and Symptoms

A substance capable of triggering an allergic reaction is called an allergen. An inherited error in the body’s immune system causes it to overreact to otherwise harmless environmental
substances, such as dust, pollen, foods, chemicals, or medicines (Krauss-Etschmann et al., 2009; Nordling et al., 2008).

Allergic reactions are generally classified according to the body site where contact with the allergen occurs and where symptoms most commonly develop:

- **ingestants**—cause digestive upsets and respiratory problems. Common examples include foods such as milk, citrus fruits, eggs, wheat, chocolate, tree nuts, peanuts, and oral medications.
- **inhalants**—affect the respiratory system causing a runny nose, cough, wheezing, and itchy, watery eyes. Examples include pollens, molds, dust, particulate matter, animal dander, and chemicals, such as perfumes and cleaning products.
- **contactants**—cause skin irritations, rashes, hives, and eczema. Common contactants include soaps, cosmetics, dyes, fibers, latex, medications placed directly on the skin, and some plants, such as poison ivy, poison oak, and grass.
- **injectables**—trigger respiratory, digestive, and/or skin disturbances. Examples of injectables include medications that are injected directly into the body and insect bites, especially those of bees, wasps, hornets, spiders.

Children who have chronic allergies often experience irritability and malaise in addition to the discomfort that accompanies an acute reaction. To understand how allergies affect children on a day-to-day basis, a simple comparison can be made to the generalized fatigue and uneasiness that one feels during the onset of a cold. Certainly, children cannot benefit fully from learning when they are not feeling well. For these reasons, allergic disorders may contribute to children's behavior and learning problems, including disruptive behaviors, hyperactivity, fatigue, general disinterest, irritability, and difficulty concentrating, and should be investigated.

Teachers can be instrumental in recognizing the early signs of children's allergic conditions. Daily observations and anecdotal records may reveal patterns of repetitious symptoms that may otherwise be overlooked (Table 4–1). Common signs and symptoms of allergic disorders include:

- frequent colds and ear infections
- chronic congestion, such as runny nose, cough, or throat clearing; mouth-breathing
- headaches
- frequent nosebleeds
- unexplained stomachaches
- hives, eczema, or other skin rashes
- wheezing or shortness of breath
- intermittent or permanent hearing losses
- reactions to foods or medications

### Table 4–1  Cold or Allergy: How to Tell?

<table>
<thead>
<tr>
<th></th>
<th>Cold</th>
<th>Allergy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time of year</strong></td>
<td>More likely in fall and winter</td>
<td>Depends on what child is allergic to—may be year round or seasonal (fall, spring)</td>
</tr>
<tr>
<td><strong>Nasal drainage</strong></td>
<td>Begins clear; may turn color after 2–3 days</td>
<td>Remains clear</td>
</tr>
<tr>
<td><strong>Fever</strong></td>
<td>Common with infection</td>
<td>No fever</td>
</tr>
<tr>
<td><strong>Cough</strong></td>
<td>May become loose and productive</td>
<td>Usually not productive; nasal drainage irritates throat causing frequent throat clearing and shallow cough</td>
</tr>
<tr>
<td><strong>Itchy eyes</strong></td>
<td>No</td>
<td>Typical</td>
</tr>
<tr>
<td><strong>Muscle aches</strong></td>
<td>May be present during first 1–2 days</td>
<td>None</td>
</tr>
<tr>
<td><strong>Length of illness</strong></td>
<td>7–10 days</td>
<td>May last an entire season or year round</td>
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</table>
Reflective Thoughts

Examine your feelings regarding children with chronic health disorders. Are you more apprehensive about working with these children? Do you consider them to be different in some way from children who don’t have long-term health problems? Do you respond to them differently in the classroom? Do you expect less of these children or are you more likely to be protective? What do you see as your role in helping children adjust to chronic health problems? Why is communication with their families even more important in these situations?

- dark circles beneath the eyes
- mottled tongue
- frequent rubbing, twitching, or picking of the nose
- chronic redness of the throat
- red, itchy eyes; swollen eyelids
- irritability, restlessness, lack of energy or interest

Food Allergies

Fewer than 2 percent of all children have an inherited immune disorder resulting in a true food allergy that is not outgrown (AAFA, 2009b). However, many children experience unpleasant reactions to certain foods that parents commonly refer to as food allergies. This type of response is called a food intolerance or insensitivity and affects an estimated 8 percent of infants and children younger than 4 years of age. Unlike a food allergy, the symptoms of food intolerances are not likely to be life-threatening and may eventually be outgrown (Gupta et al., 2009). Common symptoms of food allergies include:

- hives, skin rashes
- flushed or pale face
- cramps, vomiting, and/or diarrhea
- runny nose, watery eyes, congestion, and/or wheezing
- itching or swelling around the lips, tongue, or mouth
- anxiousness, restlessness
- shock
- difficulty breathing

Symptoms of an allergic reaction can develop within a few minutes or several hours following the ingestion of an offending food. Foods that most commonly trigger allergic reactions are listed in Table 4–2. The Food Allergen Labeling & Consumer Protection Act (2004) requires food

<table>
<thead>
<tr>
<th>Table 4–2  Common Food Allergens</th>
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<tbody>
<tr>
<td>Foods that are most likely to trigger an allergic reaction include:</td>
</tr>
<tr>
<td>• eggs</td>
</tr>
<tr>
<td>• milk and milk products such as cheese and ice cream</td>
</tr>
<tr>
<td>• fish and shellfish</td>
</tr>
<tr>
<td>• peanuts</td>
</tr>
<tr>
<td>• tree nuts, such as almonds, cashews, and pecans</td>
</tr>
<tr>
<td>• wheat and wheat products</td>
</tr>
<tr>
<td>• soybeans</td>
</tr>
</tbody>
</table>

food intolerance – unpleasant reactions to particular foods that do not involve an immune response and are usually outgrown.
manufacturers to clearly indicate on the label if any of these substances are present in a product or if the product has been exposed to any of these ingredients during its preparation.

Because some food allergies can be severe and potentially life-threatening, school administrators and teachers must take steps to safeguard the child’s well-being (Figure 4–1) (Muñoz-Furlong & Weiss, 2009; Young, Muñoz-Furlong, & Sicherer, 2009). They must work closely with the child’s family to develop a plan of action in the event of an allergic reaction. A downloadable food allergy action plan is available in multiple languages from the Food Allergy & Anaphylaxis Network website (www.foodallergy.org) in addition to extensive information about children’s food allergies. A program’s plan should include emergency telephone numbers and directives for actions to be taken in an emergency. All staff members should be familiar with the child’s plan and review it often; this step is especially important for new or substitute teachers. If injectable medications, such as an EpiPen, have been ordered by the child’s physician, teachers should be trained to administer them properly.

Teachers must consider children’s food allergies whenever planning lessons, celebrating holidays or special occasions, or taking field trips. It is also imperative that the cook read food labels carefully and avoid cross-contamination (with other children’s food) when preparing the child’s meals. Any special food items should be labeled with the child’s name and stored away from other foods. A list of children and the foods to which they are allergic should be posted inside the classroom. One teacher should be responsible for monitoring, checking, and serving all foods to children who have known allergies to prevent mistakes from occurring. Everyone should wash their hands carefully following a meal or snack to avoid spreading potential food allergens. Teachers should also spend time educating the other children so they understand why these precautions are necessary and why food items must not be exchanged.

Management

At present, there are no known cures for allergic conditions, only symptomatic control. In some cases, the substances to which a child is allergic may change over time. Although this gives the impression that an allergy has disappeared, it may redevelop at a later time or the child may become allergic to different substances.

Symptoms and complications of allergies are generally less severe and easier to control if they are identified early. Treatment is aimed at limiting a child’s exposure to annoying allergens that, in some cases, involves completely removing the substance(s) from the child’s environment. For example, if a child is allergic to milk, all dairy products should be eliminated from the child’s diet. If the pet dog is the source of a child’s allergies, the dog should be kept outside or at least out of the child’s bedroom and frequent hand washing practiced. In other cases, such as dust or pollen allergies, it may only be feasible to control the amount of exposure. Smoking must always

symptomatic control – treatment that controls symptoms but does not cure the condition.
Chapter 4  Common Chronic Medical Conditions Affecting Children’s Health

be avoided around children with respiratory allergies because it is known to aggravate and intensify their breathing problems (Baena-Cagnani et al., 2009). Left untreated, allergies can lead to more serious health problems, including chronic bronchitis, permanent hearing loss, sinusitis, asthma, and emphysema (Smith et al., 2009).

Antihistamines, decongestants, bronchodilators, and anti-inflammatory nasal sprays are commonly used to treat the symptoms of respiratory allergies. Many children also receive medication through aerosol breathing treatments (Schueepp et al., 2009). Although these medications provide effective control of symptoms, the relief is only temporary. Children taking antihistamines and decongestants often experience drowsiness, difficulty concentrating, and excessive thirst and should, therefore, be supervised closely, especially during outdoor times or when activities involve risk. Some children also experience restlessness or agitation from their medications. These side effects make it particularly difficult for children to pay attention and learn, especially if the medications are prescribed for an extended time. Teachers must observe these children carefully and discuss any concerns about the medication’s effectiveness or side effects with the child’s family. Sometimes a different medication with fewer side effects can be prescribed.

**Caution:** Teachers should always obtain approval from the child’s physician and receive proper training before administering aerosol breathing treatments or any other form of medication therapy.

In some cases, allergy shots (desensitization therapy) are given when other treatments have been unsuccessful in controlling the child’s symptoms. Many children experience some improvement, but the full effect may take 12 to 18 months to achieve.

Most allergic conditions are not considered to be life threatening. However, bee stings, medications, and certain foods can lead to a condition known as anaphylaxis in children who have a severe allergic reaction to these substances (Table 4–3) (Muñoz-Furlong & Weiss, 2009). This life-threatening response requires urgent medical attention because it causes the body to go into shock and the air passages to swell closed.

**Caution:** An ambulance should be called at once if anaphylaxis occurs.

Children who have a history of severe allergic reactions may keep an EpiPen at school. EpiPens are an auto-injecting device that administers a single dose of epinephrine when quickly pressed against the skin (usually the upper thigh) (Figure 4–2) (Stecher et al., 2009). However, this medication provides only temporary relief, so it is essential that emergency medical assistance also be summoned.

The emotional effect that allergies can have on the quality of children’s and families’ lives cannot be overlooked (Meltzer et al., 2009). Families may overprotect children or subject them to frequent

<table>
<thead>
<tr>
<th><strong>Table 4–3  Symptoms of Anaphylaxis</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Life-threatening symptoms can develop suddenly and include:</strong></td>
</tr>
<tr>
<td>• wheezing or difficulty breathing</td>
</tr>
<tr>
<td>• swelling of the lips, tongue, throat, and/or eyelids</td>
</tr>
<tr>
<td>• itching and hives</td>
</tr>
<tr>
<td>• nausea, vomiting, and/or diarrhea</td>
</tr>
<tr>
<td>• anxiety and restlessness</td>
</tr>
<tr>
<td>• blue discoloration around the mouth and nail beds</td>
</tr>
</tbody>
</table>

*anaphylaxis – a severe allergic reaction that may cause difficulty breathing, itching, unconsciousness, and possible death.*
reminders to avoid offending allergens. Some children may also be sensitive about their appearance—frequent sneezing, runny nose, rashes, red and swollen eyes—along with feeling moody, irritable, or even depressed. In other cases, severe allergies may limit a child’s participation in physical activity. Collectively, these feelings can lead to fear, withdrawn behaviors, poor self-esteem, and other maladjustment problems if children’s allergies are not addressed in a positive manner.

It is also important that children not be allowed to use their allergies as a means for gaining attention or special privileges. Instead, adults can help children become more independent and self-confident in coping with their problems. Teachers can often help children make simple adjustments in their daily lifestyles so they can lead normal, healthy lives. Also, parenting classes, individual counseling, and information posted on professional websites can help family members learn how to foster children’s self-esteem and independence. Community clinics and hospitals may also offer special classes to help families and children cope with allergic disease.

Asthma

Asthma is a chronic disease that affects over six million children and is a primary cause of school absenteeism (CDC, 2009a; Lim, Wood & Cheah, 2009). For many young children, asthma is both a chronic and acute respiratory disorder affecting boys twice as often as girls (Lux, Awa, & Walter, 2009). It is a form of allergic response that is most often seen in children who also have other allergic conditions. Like allergies, asthma tends to be an inherited tendency that can become progressively worse without treatment. Children who are overweight or obese are also at increased risk for developing asthma, which can further compromise their health (Ahmad et al., 2009; Tai, Volkmer, & Burton, 2009).

Numerous theories are being investigated to determine why the incidence of asthma is increasing at such an alarming rate. Researchers are looking at multiple factors, including the quality of indoor environments, early infant feeding practices, sanitation standards, and increased air pollution (Liu et al., 2009). Mothers are being encouraged to breastfeed and to withhold solid foods until infants reach 6 months of age to decrease the potential risk of childhood allergies (Meyer, 2009). Women are also being urged to not smoke during pregnancy or to expose infants to second-hand smoke after they are born; infants born to mothers who smoke are more likely to develop asthma later in life (Keil et al., 2009). Recent studies have also found the rate of asthma to be significantly higher among children of minority backgrounds and those living in poverty (Bryant-Stephens, 2009). Acute asthma attacks are thought to be triggered by a number of factors, including:

- airborne allergens, such as pollen, animal dander, dust, molds, perfumes, cleaning chemicals, paint, ozone, cockroaches (Phipatanakul & Gaffin, 2009)
- foods, such as nuts, wheat, milk, eggs
- second-hand cigarette smoke
- respiratory infections, such as colds and bronchitis
- stress (especially anger) and fatigue
- changes in temperature or weather, such as cold, rain, or wind
- vigorous exercise (Lee et al., 2009).
Signs and Symptoms

Acute asthma attacks are characterized by episodes of wheezing, coughing, and difficulty breathing (especially exhalation) that are caused by spasms and swelling in the respiratory tract (bronchial tubes) (Figure 4–3). As mucus collects in the airways, breathing becomes labored, it becomes more difficult to expel air, and the child begins to breathe faster. Many children outgrow acute asthma attacks as the size of their air passageways increases with age.

Management

Asthma treatment is aimed at identifying and removing any substance(s) from the child’s environment that may trigger an attack. In cases where complete removal is not feasible, as with dust or pollen, steps can be taken to limit the child’s exposure. For example, it may be necessary to dust and vacuum a child’s environment daily to address an airborne allergy. Furnace filters should be replaced on a regular basis or an electrostatic air purifier installed to help remove offending particles from the air. Adults should avoid smoking around children and limit the use of chemicals such as cleaning supplies, paints, and fragrances. Some families choose to enroll children who have asthma in smaller-sized early childhood programs because the environment can be monitored more closely and there is less exposure to respiratory infections. Medications, such as anti-inflammatory drugs and bronchodilators, may be administered in the form of an inhaler or aerosol breathing treatment to decrease swelling and open air passages (Stingone & Claudio, 2009).

A meeting should always be arranged with the family when a child with asthma is first enrolled (McWhirter, McCann, & Coleman, 2008). This enables the teacher to better understand the child’s condition—what symptoms the child shows, what substances are likely to trigger an attack, what, when, and how medications are to be administered, and what emergency plan of action is needed (Tables 4–4 and 4–5). This information should be written down, posted where teachers can access it quickly, and reviewed frequently with the child’s family to note any changes.

Table 4–4  Strategies for Managing Children’s Asthma Attacks

<table>
<thead>
<tr>
<th>Strategy</th>
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<tbody>
<tr>
<td>• If you know that certain substances trigger a child’s attack, remove the child from the environment (cold air, fumes).</td>
</tr>
<tr>
<td>• Encourage the child to remain quiet. Do not leave the child alone.</td>
</tr>
<tr>
<td>• Allow the child to assume a position that makes breathing easier; sitting upright is usually preferred.</td>
</tr>
<tr>
<td>• Administer any medications prescribed for the child.</td>
</tr>
<tr>
<td>• Offer small sips of room-temperature liquids (not cold).</td>
</tr>
<tr>
<td>• Contact the child’s family if there is no relief from medications or if the family requests to be notified in the event of an attack.</td>
</tr>
<tr>
<td>• Do not delay calling for emergency medical assistance if the child shows any signs of struggling to breathe, fatigue, anxiety, restlessness, blue discoloration of the nail beds or lips, or loss of consciousness.</td>
</tr>
<tr>
<td>• Record your observations—child’s condition prior to, during, and following an attack, factors that appeared to trigger the attack, medications that were administered, that parents were contacted.</td>
</tr>
<tr>
<td>• Stay calm; this helps to put the child at ease and makes breathing easier.</td>
</tr>
</tbody>
</table>
If weather triggers an attack, children may need to remain indoors on days when there are abrupt temperature changes. However, children should be encouraged to participate in regular activities as much as their condition permits. If asthma attacks are caused by strenuous play, teachers should monitor children’s activity level and encourage them to rest or to play quietly until the symptoms subside. In any event, teachers should always be prepared to respond quickly in the event that a child develops any difficulty breathing. (See Chapter 9.)

Anemia

Anemia is a common blood disorder that develops when too few red blood cells are available to deliver oxygen to the body’s cells. This can be caused by a significant blood loss, decreased production of red blood cells, or their abnormal destruction. Approximately 11 percent of all children under age 5 years experience anemia; however, this rate is greater than 22 percent among black children (CDC, 2008). Many young children are affected by this disorder because of...
insufficient food or unhealthy dietary patterns (Chilton & Rose, 2009; Cogswell et al., 2009). Additional causes include:

- deficient nutrient intake (iron, folic acid, B-12)
- hereditary disorders, such as sickle cell disease
- chronic infections, such as hepatitis and HIV
- some forms of cancer, such as leukemia
- radiation, chemotherapy, and some medications
- chemical exposure, such as lead poisoning

It is important to understand that anemia is not itself a disease but a symptom of some other condition that requires medical attention. In the majority of cases, anemia is a temporary condition caused by nutrient deficiencies in the child’s diet, especially iron intake, and is relatively easy to treat (Eicher-Miller et al., 2009).

**Signs and Symptoms**

Excessive fatigue is a classic symptom of anemia and is caused by the lack of oxygen cells are receiving. However, the body is often able to compensate for low oxygen levels in the early stages so that the child may not realize that anything is amiss until the condition progresses. As a result, anemia can sometimes be difficult to identify in young children. Common signs of anemia include:

- excessive, prolonged fatigue or lack of energy
- pale skin color; blue discoloration of nail beds
- irritability
- complaints of feeling cold
- rapid heart beat
- dizziness or headache
- feeling short of breath
- decline in school performance
- difficulty concentrating

It is 10 A.M. and six children are lined up on small plastic chairs in the director’s office at the Wee Care 4 Kids Child Care Center. Steam hisses from clear plastic masks being held by older children over their noses and mouths while a teacher assists those who are still too young to manage the procedure alone. All of these children have one thing in common—asthma. Twice each day, teachers must administer breathing treatments to increasing numbers of young children who suffer from frequent bouts of wheezing. Unfortunately, this scene is not uncommon in many schools today as the reported incidence of childhood asthma continues to soar.

- What is asthma?
- Why are more children than ever experiencing this chronic condition?
- Why does the incidence of asthma appear to be higher among minorities and children living in poverty?
- Should teachers be responsible for administering medical procedures?
- What steps should you take to prevent administering the procedure incorrectly, and thus protect yourself from liability?
Not every child will experience all of these signs and may present others depending on the underlying cause. Diagnosis requires a complete medical examination and blood tests to determine red blood cell count. For this reason, any concern about a child’s health and vitality should be evaluated by a health care professional.

Management

Treatment for anemia is determined by the cause. If the child’s diet is deficient, vitamin supplementation may be prescribed along with modifications in nutrient intake (Black, 2009). If the anemia is due to chronic infection, antibiotics may be prescribed. In extreme cases, blood transfusion, surgery, or bone marrow transplant may be necessary.

It is important that families keep teachers informed about their child’s condition and treatments so that similar adjustments can be made at school. Any dietary requirements should be addressed during meal planning. Children may need to be given additional opportunities to rest during the day or to participate in less physically demanding activities. Because anemia reduces children’s ability to resist infection, frequent hand washing and cleaning practices are important to implement. Teachers should also monitor children’s play more closely, as fatigue, low energy, and lack of concentration may increase their vulnerability to unintentional injury.

Childhood Cancers

Childhood cancers are the leading cause of death from disease among children 1 to 14 years of age with over 100,000 new cases diagnosed each year (U.S. Cancer Statistics Working Group, 2009). Young children (1 to 4 years) have the highest incidence of newly reported cases. Adolescents (15 to 19 years) experience the highest death rate due to leukemia while children (5 to 9 years) have the highest death rate from brain tumors.

The term childhood cancer is used inclusively in reference to a broad range of cancer types. Most often, cancers target areas of children’s bodies that are undergoing rapid growth, such as the circulatory (blood) system, brain, bones, and kidneys. Leukemia (a cancer of the blood and bone marrow that is more common in boys) accounts for more than 30 percent of all childhood cancers, followed by brain and central nervous system tumors (Jemal et al., 2009). Numerous causes, including environmental chemicals, radioactivity, and prenatal conditions, continue to be under investigation but have yielded only limited conclusive evidence to date. Some children appear to be at higher risk for developing cancer, including those who have HIV infections, certain genetic disorders such as Down syndrome, or those who have parents who smoke (Chang, 2009; Linabery et al., 2008).

Signs and Symptoms

Although childhood cancers are relatively rare, families should never hesitate to seek medical consultation if they have concerns. Many symptoms are unique to a specific form of cancer, while others are more general and easily mistaken for common infectious illnesses, such as the flu. Early warning signs can include:

- loss of appetite, unexplained weight loss
- excessive fatigue that doesn’t improve with rest
- painful joints
- unusual bruising, bleeding gums, or small broken blood vessels under the skin
- night sweats or fever
- enlarged glands (in neck, armpits, or groin)
frequent infections
persistent headaches
unexplained cough or difficult breathing
lumps or masses
unusual colored urine
seizures

In most cases, children who present these symptoms will not have cancer. However, if symptoms appear suddenly or if they persist or cause the child unusual discomfort, medical evaluation should be sought. Early diagnosis significantly improves recovery and survival.

Management

Advances in diagnosis and treatment have resulted in dramatic improvements in children's survival rates. Many children are able to return to school after they have completed and recovered from their treatments. However, this transition requires careful planning and coordination between the child's family, doctors, and school personnel (Harris, 2009; Moore et al., 2009). Children may be sensitive about changes in their appearance, such as surgical scars or hair loss resulting from chemotherapy and/or radiation treatments. Weight loss or gain, fatigue, pain, and generalized weakness may make it difficult for children to participate fully in class activities. Extra precautions must be taken to protect children from communicable illnesses and other infectious conditions because their immune systems are often compromised by chemotherapy and radiation therapies. Children's hearing may also be affected by radiation treatments to the head or high doses of antibiotics that have been administered to fight infection.

Children's return to school is an important step in helping them to resume a near normal lifestyle. Peer interactions can also be beneficial for boosting children's morale and self-esteem. However, teachers must work closely with families to better understand the child's limitations and what adjustments may be needed (Gorin & McAuliffe, 2009). If there are medications to be administered, proper forms and signatures must be obtained. In some cases, children may have an Individualized Education Plan (IEP) to assist with additional services and resources.

It is highly likely that teachers will encounter children who have or are recovering from cancer as treatment success rates continue to improve. Teachers can use these opportunities to better understand childhood cancers and, in turn, to help all children learn about these conditions, accept children with differences, and discover ways they can support their peers (Table 4–6). Initially, children may be apprehensive about a classmate whose appearance and/or ability to play may have changed. Preparing children in advance and encouraging them to talk about their concerns can be beneficial.

Table 4–6  Teacher's Checklist: Children with Cancer

- Maintain close communication with the child’s family. Find out how much they want other children to know about their child’s condition.
- Keep children’s emergency contact information located where it is readily accessible; make sure that others know where to find it.
- Determine what, if any, accommodations are needed when the child returns to school, such as dietary modifications, a place to rest, or a change in seating arrangement.
- Review and implement sanitation and hand washing practices.
- Adjust activities and expectations to acknowledge children’s limitations, e.g., short attention span, memory problems, learning difficulties, low energy.
- Secure additional resources and services to help children be successful.
can reduce or even eliminate some of these feelings. The American Cancer Society (www.cancer.org) has created a family-friendly website (Children diagnosed with cancer: Returning to school), designed to inform and assist families in their efforts to cope with this disease. Although the site is geared toward families, teachers will also find much of the information useful.

**Diabetes**

Approximately 25 percent of people diagnosed with diabetes, particularly type 2, are children and data suggest this disease is reaching epidemic proportions, especially as obesity rates continue to climb. At present, roughly 10 percent of children 2 to 5 years of age and 30 percent of children ages 6 through 17 are considered to be overweight (CDC, 2009c). Obesity is considered a major factor that places children at greater risk for developing type 2 diabetes. Additional risk factors include having a family history of the disease, gestational diabetes, and ethnicity (Kaufman, Gallivan, & Warren-Boulton, 2009). Minority groups, particularly Native Americans, Hispanic/Latinos, and African Americans experience diabetes at a rate that is more than twice that of Caucasian populations (CDC, 2009c).

It is important for teachers to be familiar with the signs, symptoms, and treatment of diabetes, as many of these children will be enrolled in their classrooms. Successful management of childhood diabetes requires careful regulation, which is often challenged by children's frequent exposure to respiratory infections and unpredictable growth changes, activity levels, and eating habits (Hockenberry, 2008).

**Signs and Symptoms**

Type 1 diabetes is a chronic, incurable, and often hereditary condition that occurs when the pancreas fails to produce an adequate amount of the insulin hormone. Type 2 diabetes, often referred to as adult-onset or insulin-resistant diabetes, occurs when the pancreas produces an insufficient amount of insulin or when cells in the body are unable to use the insulin properly. Insulin is necessary for the metabolism of carbohydrates (sugars and starches) and the storage and release of glucose (blood sugar/energy). If insulin is absent or the amount is insufficient, glucose continues to circulate freely in the bloodstream instead of being stored as glycogen in the liver. This condition is known as hyperglycemia, which can lead to serious complications, including coma and death, if it is not treated. The onset of type 1 diabetes in children usually occurs abruptly, and includes early symptoms such as:

- rapid weight loss
- fatigue and/or weakness
- nausea or vomiting
- frequent urination
- dehydration
- excessive thirst and/or hunger
- dry, itchy skin

Symptoms associated with type 2 diabetes are similar, but they tend to develop more slowly and over a longer period of time.
Management

Teachers must be aware of each child’s individualized situation and treatment regimen—whether the child has type 1 or type 2 diabetes, what dietary restrictions the child requires, and what medical treatments (urine testing, insulin injections, medications) must be administered. Children who have type 1 diabetes must be given insulin injections several times each day, have their glucose levels checked, and closely regulate their diet and activity. Although insulin pumps are being used successfully in adults, their use in young children is still relatively limited (Churchill, Ruppe, & Smaldone, 2009). Some children with type 2 diabetes may also require insulin injections, although many are able to regulate their condition through careful dietary management and/or medications to help their bodies utilize glucose. Increasing children’s activity level has also proven effective in reducing the risk of type 2 diabetes and in its management (Bobo et al., 2009; McCall & Raj, 2009). In addition to learning about children’s treatment regimens, teachers must also become familiar with the signs of complications associated with diabetes. For example, a child who receives an insulin dose that is too large or too small will exhibit different symptoms and require quite different emergency care. (See Chapter 9: insulin shock, diabetic coma.)

Arrangements should be made to meet with the families of children who are diabetic before they begin to attend school or an out-of-home program. Families can provide teachers with valuable information about their child’s condition and how to identify changes in behavior and appearance that may signal an impending complication (Tolbert, 2009). Teachers should also be made aware of dietary restrictions and medical procedures so they can be followed carefully while the child is in school. Plans for handling medical emergencies must also be worked out with families ahead of time and reviewed often.

When teachers are familiar with children’s condition and management plans, they are better prepared to respond efficiently and effective to diabetic emergencies (Table 4–7). This can be reassuring

<table>
<thead>
<tr>
<th>Table 4–7 Teacher’s Checklist: Children with Diabetes</th>
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<tbody>
<tr>
<td>• Meet with the family regularly to review the child’s progress and treatment procedures.</td>
</tr>
<tr>
<td>• Be familiar with the symptoms of hypoglycemia (low blood sugar) and hyperglycemia (high blood sugar) and know how to respond.</td>
</tr>
<tr>
<td>• Keep children’s emergency information where it is readily accessible; make sure others also know where to find this information.</td>
</tr>
<tr>
<td>• Post emergency numbers near the telephone.</td>
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<tr>
<td>• Know where emergency medications are stored and learn how to administer them. Also learn how to check children’s blood sugar and train additional staff members to perform these tests.</td>
</tr>
<tr>
<td>• Be mindful of any changes in meal schedules, length of outdoor play, or impromptu field trips that might affect the child’s insulin needs.</td>
</tr>
<tr>
<td>• Review your program’s emergency policies and procedures.</td>
</tr>
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</table>
for families who may be reluctant to leave children in the care of others. Teachers are also in a unique position to help diabetic children accept and manage their condition and to help their peers learn more about diabetes (Grey et al., 2009) (Table 4–8).

**Eczema**

Eczema is a chronic inflammatory skin condition. Early symptoms usually appear in infants and children younger than 5, and affect 10 to 12 percent of all children (Hockenberry, 2008). Eczema often disappears or significantly improves between the ages of 5 and 15 years in approximately 50 percent of affected children.

**Signs and Symptoms**

Eczema is caused by an abnormal immune system response and is commonly associated with allergies, especially to certain foods (e.g., eggs, wheat, and milk) and substances that come in contact with the skin (e.g., wool, soaps, perfumes, disinfectants, and animal dander) (Ker & Hartert, 2009). Often there is strong family history of allergy and similar skin problems.

Reddened patches of irritated skin may initially appear on an infant’s or toddler’s cheeks, forehead, scalp, or neck. Older children may develop dry, itchy, scaly areas on the knees, elbows, wrists, and/or back of hands. Repeated scratching of these areas can lead to open, weeping skin that can become infected. Weather changes can trigger an eczema flare-up or cause it to worsen, especially during summer heat or in winter cold when full-length clothing is likely to be worn. Older children may be reluctant to wear short-sleeved shirts and shorts when warmer weather arrives because they are self-conscious about their appearance.

**Management**

Eczema is not curable, but it can be controlled through a number of preventive measures. Eliminating environmental allergens is always the preferred and first line of defense. However, in some cases these substances may not yet be known or are difficult to eliminate, such as dust or pollen, but steps can be taken to reduce the child’s exposure. Reminding children not to scratch irritated skin and keeping their skin moisturized, especially after bathing or washing, is also helpful.

Avoiding extreme temperature changes can also be effective for controlling symptoms. Keeping children cool in warm weather prevents sweating, which can increase skin irritation. Reducing room temperatures, dressing infants and children in light clothing, and wiping warm areas of their body (creases in neck, elbow, knees, and face) with cool water can improve the child’s comfort. Teachers may also be asked to administer antihistamines or topical cortisone ointments that the child’s doctor has prescribed. Reducing children’s exposure to stress and helping them to develop a healthy self-image are also important strategies for reducing flare-ups.
Excessive Fatigue

Most children enjoy an abundance of energy, stamina, enthusiasm, and curiosity for life. This state can be temporarily disrupted by growth spurts, delayed bedtimes, major family changes, recovery from a recent illness, or participation in too many activities that deprive children of essential sleep or increase the amount of sleep needed.

However, a small number of children experience periods of extreme daytime fatigue and listlessness due to existing health conditions or prolonged sleep disturbances (Gozal & Kheirandish-Gozal, 2009; Hudson et al., 2009). Because sleep is vital to children’s well-being, it has been acknowledged in the Healthy People 2020 initiative.

Signs and Symptoms

Repeated or prolonged daytime fatigue is not considered a normal condition for young children and should be investigated because of its potentially negative effect on growth and development. Excessive or chronic fatigue may be an indication of other serious health problems, including:

- inadequate nutrition
- chronic infection, such as otitis media
- anemia
- sleep apnea
- allergies
- lead poisoning
- hepatitis
- endocrine (hormonal) disorders, such as diabetes, thyroidism
- heart disorders
- anxiety

Management

A thorough assessment of the child’s personal habits and lifestyle may reveal an explanation for the undue fatigue. A complete medical examination may also be necessary to detect any existing health problems. If no specific medical cause can be identified, steps should be taken to improve the child’s general well-being (Table 4–9). Often these measures can be incorporated into daily classroom routines and benefit all children.

Table 4–9  Strategies for Improving Excessive Fatigue in Children

| • Help children develop healthy dietary habits. |
| • Encourage children to participate in moderate exercise, such as walking, swimming, playing ball, or riding bikes. |
| • Provide opportunities for improved sleep, e.g., earlier bedtimes, short daytime naps, a quiet sleeping area away from activity. |
| • Arrange for alternating periods of active play and quiet times (e.g., reading a book, playing quietly with a favorite toy, listening to music). |
| • Reduce environmental stress. |
| • Help children build effective coping skills. |

sleep apnea – temporary interruptions or stoppages in breathing during sleep.
endocrine – refers to glands within the body that produce and secrete substances called hormones directly into the bloodstream.
Lead poisoning continues to be a public health concern despite a continued decline in the numbers of children affected. Aggressive campaigns, legislation, and abatement programs have been successful in eliminating many common sources of lead contamination. However, the CDC estimates that approximately 250,000 U.S. children between 1 and 5 years of age have blood lead levels in excess of safety recommendations despite these efforts (CDC, 2009b).

The incidence of lead poisoning is generally higher among children living in poverty and inner city areas, although it is not limited exclusively to these populations. Many older houses and furniture pieces still contain lead-based paints, which legislation banned in 1978. Loose paint chips and paint dust released during house renovations can be inhaled or ingested when children put dirty hands into their mouths. Furthermore, many of these children also consume unhealthy diets that are high in fats and low in calcium and iron, which increase lead absorption (Raymond et al., 2009). Inexpensive test kits can be obtained from local hardware stores to determine if lead-based paint is present on surfaces.

Caution: Use care when purchasing used toys and furniture at garage sales, on the Internet, or from second-hand stores, as some of these items may contain lead-based paints.

Signs and Symptoms

Young children are especially vulnerable to lead poisoning. They frequently put toys and hands in their mouths, their bodies absorb lead more readily, and their brain and nervous systems are especially sensitive to lead’s harmful effects (Hornung, Lanphear, & Dietrich, 2009). Lead accumulates in the child’s bones, brain, tissues, and kidneys with repeated exposure, and is not eliminated.

Children’s nervous systems (including the brain) are especially vulnerable to the effects of lead poisoning.
Children with elevated levels of lead present a range of symptoms, including:

- irritability
- loss of appetite and nausea
- headaches
- unexplained abdominal pain, muscle aches
- constipation
- listlessness
- learning problems, short attention span, easily distracted, mental retardation
- behavior problems, aggression, impulsivity

Children younger than 6 years of age who live in low-income residential areas and who consume a nutrient-deficient diet are at greatest risk for developing lead poisoning.

**Management**

Research has demonstrated that elevated levels of lead can lower a child’s IQ by as much as 4 to 5 percent (Hornung, Lanphear, & Dietrich, 2009). Efforts to eliminate high blood lead concentrations in children continue to be a priority in the Healthy People 2020 initiative. The Centers for Disease Control and Prevention (CDC) now recommend that all children, especially those at risk (including children who have immigrated to the United States), be screened for lead poisoning between 6 months and 6 years of age (Wengrovitz & Brown, 2009). However, teachers who have concerns about a child’s physical complaints, behavior, or learning problems and believe there may be a risk of lead poisoning should encourage families to have their child tested.

Prevention of lead poisoning requires that environmental sources be located and removed. Early identification of children and their siblings who may also be affected by this condition is essential for halting further contamination, initiating treatment, and limiting lead’s harmful effects on development. Children should be encouraged to practice frequent hand washing and to keep their hands and objects out of their mouths. Children who have elevated blood lead levels may be treated with special medications and dietary modifications that increase their iron, calcium, and vitamin C intake (Gracia & Snodgrass, 2007). Unfortunately, there is little evidence to date suggesting that educational interventions can reverse or offer any improvement in children’s behavior and/or learning problems if lead has already had damaging effects. Thus, public awareness and community education continue to be the most effective measures for combating this preventable condition.

**Table 4–10  Common Sources of Environmental Lead**

- old lead-based house paint (prior to 1978), including dust from remodeling projects
- soil contaminated by leaded gasoline emissions and old paint chips
- plastic mini blinds (manufactured before 1996, not made in the United States)
- contaminated drinking water (from lead solder in old water pipes)
- imported dishware and crystal
- folk remedies and medications
- imported toys and, metallic trinkets; some Mexican candies (CDC, 2009b)
- lead shot and fishing weights
- second-hand toys and furniture manufactured before 1978
- areas around lead smelters and mining operations
- working with or around motor vehicle batteries
Seizure Disorders

Many children in school settings experience seizures. An estimated 325,000 children under age 18 have been diagnosed with epilepsy (Epilepsy Foundation, 2009). Each year, an additional 120,000 children experience their first seizure, with more than half of these associated with high fever (febrile seizures). For some adults, the terms seizures, convulsions, or epilepsy cause feelings of considerable apprehension and/or fear. However, prior knowledge and planning can alleviate these feelings and enable teachers to respond with skill and confidence when caring for children who experience seizure disorders (Table 4–11).

Seizures are caused by a rush of abnormal electrical impulses in the brain that trigger involuntary or uncontrolable movements in various parts of the body. The intensity and location of this activity varies with the type of seizure. For example, some seizures result in only momentary attention lapses or interruptions of thought, while others may last several minutes and cause vigorous, spasmodic contractions involving the entire body. Temporary loss of consciousness, frothing, and loss of bowel and bladder control may also accompany some seizure types.

In many cases, a specific cause is never identified, although seizure disorders are more common in some families. Children who have certain developmental disabilities and genetic syndromes are also at higher risk for developing seizures. Other conditions known to initiate seizure activity in young children include:

- fevers that are high or rise rapidly (especially in infants)
- brain damage
- infections that affect the central nervous system, such as meningitis or encephalitis
- tumors
- head injuries
- lead, mercury, and carbon monoxide poisoning
- hypoglycemia (low blood sugar)
- medication reactions

Table 4–11 Strategies for Helping Children Who Have a Seizure Disorder

1. Be aware of any children with a seizure disorder in the classroom. Find out what the child’s seizures are like, if medication is taken to control the seizures, and whether or not the child is limited in any way by the disorder.
2. Know emergency response measures. Develop guidelines for staff members to follow in the event that a child has a seizure; review the guidelines often.
3. Use the presence of a child with a seizure disorder as a learning opportunity for other children. Provide simple explanations about what seizures are; encourage children to ask questions and to express their feelings. Help children learn to accept others who have special conditions.
4. Gain a better understanding of epilepsy and seizure disorders. Read books and articles, view films, and talk with health professionals and families.
5. Obtain and read the following books and pamphlets written for children. Share them with children in the classroom.

seizures – a temporary interruption of consciousness sometimes accompanied by convulsive movements.
Signs and Symptoms

Seizures are generally classified according to the pattern of symptoms a child presents, with the most common types being:

- febrile
- absence (previously known as petit mal)
- partial seizures (previously called focal)
- generalized or tonic-clonic (formerly called grand mal)

Approximately 3 to 5 percent of infants and children between the ages of 6 months and 5 years experience febrile seizures, with the majority of incidences occurring between 6 to 12 months of age (National Institute of Neurological Disorders & Stroke, 2009). Febrile seizures are thought to be triggered by a high fever, and may cause a child to lose consciousness and experience involuntary jerking movements involving the entire body (Gordon et al., 2009). The child's seizures typically end once the fever subsides and, thus, are not thought to be serious or to result in any permanent damage.

Teachers may be the first to notice the subtle, abnormal behaviors exhibited by children with absence seizures (Hughes, 2009). This type of seizure is characterized by momentary lapses of attention that may be observed as:

- repeated incidences of daydreaming
- staring off into space
- a blank appearance
- brief fluttering of the eyes
- temporary interruption of speech or activity
- twitching or dropping of objects

Absence seizures occur most commonly in children 4 to 10 years of age and cause a brief loss of consciousness that lasts between 10 to 20 seconds (Sadleir et al., 2008). Children may abruptly stop an activity and resume it almost as quickly once the seizure subsides. They also are unlikely to recall what has occurred. Teachers should report their observations to the family so they can consult with the child’s physician unless the condition has already been diagnosed.

Partial seizures, the most common form of seizure disorder, are characterized by involuntary movements that range from momentary muscle weakness to unusual behaviors such as lip smacking, arm waving, or hysterical laughter, to convulsive tremors affecting the entire body. The child may or may not lose consciousness during the seizure and may have no recall of the event when it is over.

Rhythmic, jerky movements involving the entire body are characteristic of generalized or tonic-clonic seizures. Some children experience an aura or warning immediately before a seizure begins. This warning may be in the form of a specific sound, smell, taste, sensation, or visual cue. Sudden rigidity or stiffness (tonic phase) is followed by a loss of consciousness and uncontrollable muscular contractions or tremors (clonic phase). When the seizure ends, children may awaken briefly, appear confused, and complain of a headache or dizziness before falling asleep from exhaustion, but they will not remember the event.

Management

Most seizures can be controlled with medication. It is vital that children take their medications every day, even after seizures are under control. Children may initially experience undesirable side effects to these drugs, such as drowsiness, nausea, and dizziness, but the problems tend to disappear with time. Children should be monitored closely by their physician to ensure that prescribed
medications and dosages continue to be effective in controlling seizure activity and do not interfere with learning.

Whenever a child experiences a seizure, families should be notified. If the nature of the seizures changes, or if they begin to recur after having been under control, families should be encouraged to consult the child’s physician. Teachers should also complete a brief, written report documenting their observations during the seizure and place it into the child’s permanent health file (Table 4–12). This information may also be useful to the child’s physician for diagnosing a seizure disorder and evaluating current medical treatments.

Teachers play an important role in facilitating the inclusion of children with seizure disorders in classrooms (Frueh, 2008). By arranging safe environments and mastering emergency response techniques (see Chapter 9), teachers can support children’s full involvement in all activities. Teachers can build children’s confidence and self-esteem by helping them to accept and to cope with their seizure disorder. They can also use the opportunity to teach all children about seizures and to encourage healthy attitudes toward people who may experience them. A teacher’s own reactions and displays of genuine acceptance go a long way in teaching children understanding and respect for anyone with special health conditions.

**Sickle Cell Disease**

Sickle cell disease is an inherited disorder that interferes with the red blood cells’ ability to carry oxygen (Hockenberry, 2008). Approximately 1 in every 600 African-American infants and 1 in every 1,200 Hispanic-American infants will be born with this genetic disorder (American Heart Association, 2008). Individuals of Mediterranean, Middle Eastern, and Latin American descent also have the sickle cell gene. Approximately 10 percent of African Americans have the trait for sickle cell disease but do not necessarily develop the disorder; these people are called carriers. When both parents have the sickle cell trait, some of their children may be born with the actual disease, while others may be carriers.

**Signs and Symptoms**

The abnormal formation of red blood cells in sickle cell anemia causes chronic health problems for the child (American Heart Association, 2008). Red blood cells develop in the shape of a comma or sickle rather than their characteristic round shape (Figure 4–3). As a result, blood flow slows throughout the body and occasionally becomes obstructed. Symptoms of the disease do not usually appear until sometime after the child’s first birthday.

Clumping of deformed blood cells results in periods of acute illness called crisis. A crisis can be triggered by infection, injury, strenuous exercise, dehydration, exposure to temperature extremes
(hot or cold) or, in some cases, for no known reason. Symptoms of a sickle cell crisis include fever, swelling of the hands or feet, severe abdominal and leg pain, vomiting, and ulcers (sores) on the arms and legs. Children are usually hospitalized during a crisis, but they may be free of acute symptoms between flare-ups. Children who have sickle cell disease are also at high risk for having a stroke, which is characterized by muscle weakness, difficulty speaking, and/or seizures (Roberts et al., 2009). In addition, chronic infection and anemia may cause children to be small for their age, irritable, fatigued, and at risk for cognitive delays (Mitchell et al., 2009). They are also more susceptible to infections, a fact that families should consider when placing young children in group care.

Management

At present there is no known cure for sickle cell disease. Genetic counseling can assist prospective parents who are carriers in determining their probability of having a child with this condition. Hospitals in many states are beginning to screen newborns for the disease before they are sent home. Early diagnosis and medical intervention can help to lessen the frequency and severity of crises and also reduce mortality. Several new drugs are being tested for use with children but final approval has not yet been granted. Children may be given daily antibiotics to reduce the risk of infections, which are a common cause of death. Studies have also shown that frequent blood transfusions may be helpful in preventing acute crises (Wahl & Quirolo, 2009).

Children who have sickle cell disease are living longer today as the result of improved diagnosis and treatments. Although children may appear to be perfectly normal between acute episodes, they often experience a high rate of absenteeism due to flare-ups, infections, and respiratory illnesses, which can interfere with their developmental and academic progress (Schwartz, Radcliffe, & Barakat, 2009). Illness and pain may also disrupt children's intake of essential dietary nutrients. When teachers understand this disease and its effects on children's health, they can work collaboratively with families to help children cope with the condition and continue to progress in school (Table 4–13).

Table 4–13  Teacher's Checklist: Children with Sickle Cell Disease

- Meet with the family regularly to review the child's progress and treatment procedures.
- Be familiar with the symptoms of acute complications, such as fever, pain, difficulty breathing, or signs of a stroke (muscle weakness, difficulty speaking, and/or seizures).
- Keep children's emergency information in a place where it is readily accessible; make sure that others know where to find this information.
- Post emergency telephone numbers near the telephone.
- Collaborate with the child's family and provide learning materials that can be used at home.
- Maintain strict sanitation procedures (e.g., hand washing, sanitizing of surfaces and materials) in the classroom to protect children from unnecessary infections.
- Monitor the child's physical activity and provide frequent rest periods to avoid fatigue.
- Protect the child from temperature extremes (heat or cold); arrange for the child to stay indoors when conditions are not favorable.
- Encourage children to eat a healthful diet and drink adequate fluids. (Allow them to use the restroom whenever necessary.)
- Review your program's emergency policies and procedures.
Focus On Families  Protecting Children from West Nile Virus

The West Nile virus is transmitted to humans through the bite of an infected mosquito. Although the number of identified cases remains relatively low, the infection continues to spread. Few people who are bitten will actually develop symptoms of the disease, which include fever, headache, body aches, skin rash, and swollen lymph glands. Some victims experience chronic health problems that persist beyond the acute infection. For these reasons, preventive steps should be taken to protect children against this infectious disease.

- Eliminate sources of standing water in bird baths, plants, fountains, tire swings, buckets, and wading pools.
- Keep children indoors during early-morning hours, or at dusk when mosquitoes are more active.
- Dress children in light-colored, protective clothing, such as a long-sleeved shirt, long pants, and hat.
- Apply insect repellent containing no more than 10 percent DEET sparingly to exposed skin or clothing. Do not apply around the eyes, nose, or mouth, and wash hands carefully when you are finished. Be sure to wash the repellent off when children come indoors. Do not use DEET repellents on children younger than 2 years or if you are pregnant.
- Install or repair screens on doors and windows.
- Keep grass cut short and eliminate areas of overgrown vegetation.
- Contact a physician if your child develops any early signs of the West Nile virus.

Classroom Corner  Teacher Activities

Everyone Is Special  (PreK-2, National Health Education Standard 1.2.2)

Concept: People may be different, but everyone is special.

Learning Objectives

- Children will learn that people are more alike than different.
- Children will learn why it is important to show others respect.

Supplies: unbreakable mirror; sheets of white paper; crayons or markers; shoebox and magazine pictures of children (different ethnicities and abilities); ball of string or yarn

Learning Activities

- Read and discuss any of the following books about children who have special qualities:
  - *That's What Friends Do* by K. Cave (general)
  - *Someone Special, Just Like You* by Tricia Brown (general disabilities)
  - *Be Quiet, Marina!* by Kristen De Bear (cerebral palsy, Down syndrome)
  - *Listen for the Bus: David's Story* by P. McMahon (vision and hearing impaired)
  - *It's Okay to Be Different* by T. Parr (general)
  - *Russ and the Firehouse* by J. E. Rikert (Down syndrome)
  - *A Book of Friends* by D. Ross (diversity)
  - *Andy and His Yellow Frisbee* by M. Thompson (autism)
  - *Susan Laughs* by Jeanne Willis (wheelchair)
**Summary**

Many children in group care settings and schools experience a range of chronic diseases and medical conditions.

- Teachers play an important role in early detection, referral, and management of children's health needs in the classroom.

Chronic diseases and medical conditions discussed in this chapter include:

- **Allergies:** are caused by an abnormal response to substances called allergens. Symptoms can include nasal congestion, headaches, eczema, rashes, asthma, and behavioral changes. Treatment is aimed at identifying offending substances and controlling symptoms.
- **Asthma:** involves an allergic response and is becoming increasingly more common for unknown reasons. Management is based on avoiding triggers (such as smoke, chemicals, infection) and administering medications during acute episodes.
- **Anemia:** occurs when there are too few red blood cells or they are unable to carry adequate oxygen to body cells. Treatment involves identifying and treating the underlying cause; infection, unhealthy diet, disease.
- **Childhood cancers:** are relatively uncommon. Symptoms and treatment vary according to the type of cancer involved; leukemia is the most common form experienced by children.
Diabetes: is caused by an inadequate amount or lack of the hormone insulin. Early symptoms include weight loss, frequent urination, fatigue, and excessive thirst. Treatment includes daily insulin injections and careful regulation of diet and activity.

Eczema: is an inflammatory skin condition commonly seen in children who have allergies; it is sometimes outgrown. Treatment is aimed at limiting exposure to offending substances and reducing skin irritation.

Excessive fatigue: is not common among children, but can be caused by chronic infection, unhealthy diet, anemia, lead poisoning, and other serious conditions. Treatment is directed at eliminating the cause.

Lead poisoning: continues to be a public health issue. Caused by ingestion of lead from contaminated items. (See Table 4–10.) Elevated blood lead levels can result in impaired cognitive abilities, headaches, loss of appetite, fatigue, and behavior problems. Treatment is aimed at eliminating the source, correcting dietary deficiencies, and administering medication if needed.

Seizure disorders: caused by abnormal electrical activity in the brain. Symptoms depend on the type of seizure and range from brief inattention to convulsive movements involving the entire body. Medication is usually prescribed to control seizure activity.

Sickle cell disease: a genetic disease that affects certain ethnic groups; abnormally shaped red blood cells are unable to carry adequate oxygen to cells. Treatment involves avoiding infection and stress; blood transfusions may also be needed.

Terms to Know

- food intolerance p. 87
- symptomatic control p. 88
- anaphylaxis p. 89
- gestational diabetes p. 96
- hormone p. 96
- hyperglycemia p. 96
- dehydration p. 96
- endocrine p. 99
- seizures p. 102
- sleep apnea p. 99

Chapter Review

A. By Yourself:

1. Define the following terms:
   a. chronic
   b. anaphylaxis
   c. allergen
   d. insulin
   e. hyperglycemia
   f. sleep apnea

2. Explain why some chronic health conditions may be difficult to recognize.

3. Describe the ways in which febrile, absence, partial, and tonic-clonic seizures differ.

4. What are the early warning signs of diabetes? What resources are available in your community to help teachers improve their understanding of this condition and also learn how to administer injections?

5. Explain how you can determine if a child’s symptoms are due to a cold or an allergy.

B. As a Group:

1. Divide into small groups. Each group should develop a case study to illustrate one of the chronic health conditions described in this chapter. The case study should include a description of the condition—its...
Chapter 4  Common Chronic Medical Conditions Affecting Children’s Health

Application Activities

1. Locate and read at least eight children’s books written about several of the chronic diseases and medical conditions discussed in this chapter.

2. Develop an emergency response plan for a child who has a seizure disorder and discuss how it would be implemented in the classroom.

3. Discuss why the incidence of childhood allergies and asthma appears to be increasing.

4. Explain how a child’s environment may contribute to the development and progression of chronic health conditions.

5. Discuss what teachers can do to support a child who has recently undergone cancer treatment and is ready to return to school.

Case Study

Read the case study and answer the questions that follow.

Mr. Lui arranged to take his first grade class on a field trip to a nearby nature park after they had spent several weeks learning about small mammals living in the wild. The day was warm and sunny, and the children were bubbling with excitement as they completed a short hike around the beaver ponds. As they headed back to the picnic shelter for lunch, one of the children who had run ahead let out a sudden shriek and fell to the ground. The teacher quickly ran to the child and observed that she was unconscious and her arms and legs were jerking violently. Mr. Lui sent one of the other children to get the park ranger, calmed the rest of the children down, and then used his cell phone to call 911 for emergency medical assistance. Within minutes, the seizure ended and the child regained consciousness. When the paramedics arrived, they checked the child over carefully and were satisfied that she required no additional treatment at the time. Mr. Lui contacted the child’s family and learned that her doctor had recently prescribed a new seizure medication.

1. What type of seizure was this child probably experiencing?
2. What indication did the child give of a preceding aura?
3. What signs, in addition to the jerky movements, might you expect to observe during and immediately following this type of seizure?
4. Should Mr. Lui have called for emergency assistance? Would you expect his response to be different if he had known that the child was being treated for a seizure disorder?
5. What steps should Mr. Lui take when the child’s seizure ends?
6. How can Mr. Lui turn this event into a learning experience for the other children?
4. Conduct an online search and compile a list of sources that could potentially expose children to lead poisoning.

5. Go to the website Bubliboo (http://www.bubliboo.com) and click through each of the sections on childhood asthma. If you were a child, would you find the site attractive? Based on what you have learned in this chapter, is the information accurate and presented in a way that children would understand?

**Helpful Web Resources**

- Asthma and Allergy Foundation of America [http://www.aafa.org](http://www.aafa.org)
- American Cancer Society [http://www.cancer.org](http://www.cancer.org)
- American Lung Association [http://www.lungusa.org](http://www.lungusa.org)
- Canadian Pediatric Society [http://www.cps.ca](http://www.cps.ca)
- Centers for Disease Control and Prevention [http://www.cdc.gov](http://www.cdc.gov)
- Center for Health and Health Care in Schools [http://www.healthinschools.org](http://www.healthinschools.org)
- Indian Health Service [http://www.ihs.gov](http://www.ihs.gov)
- KidsHealth–Nemours Center for Children's Health Media [http://www.kidshealth.org](http://www.kidshealth.org)
- National Childhood Cancer Foundation [http://www.curesearch.org](http://www.curesearch.org)

**References**


Promoting Children’s Health: Healthy Lifestyles and Health Concerns


