Information from the American Diabetes Association Regarding Diabetes Management in Children

What Is Diabetes?

Diabetes is 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 blood glucose, which is carried by the blood to cells throughout the body. Insulin, a hormone made in the pancreas, allows blood 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 blood glucose builds up in the blood and is transported to the kidney, where it is eliminated from the body in the urine. Thus, the body loses its main source of fuel even though the blood contains large amounts of blood 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 blood glucose-lowering medications. **Neither insulin nor other medications, however, are cures for diabetes; they only help to manage the disease.**

Taking care of diabetes is important. Over the years, ongoing high blood glucose, also called hyperglycemia, can lead to serious health problems. If not managed effectively, diabetes can affect the blood vessels, eyes, kidneys, nerves, gums, and teeth, making it the leading cause of adult blindness, kidney failure, and non-traumatic lower-limb amputations. Poorly controlled diabetes also increases a person's risk for heart disease and stroke.

Some of these problems can occur in teens and young adults who develop diabetes during childhood. The good news is that research shows these problems can be greatly reduced, delayed, or possibly prevented through intensive treatment that keeps blood glucose levels near normal.

The three main types of diabetes are type 1, type 2, and gestational diabetes.

Type 1 Diabetes

Type 1 diabetes, formerly called juvenile diabetes, is a disease of the immune system, the body's system for fighting infection. In people with type 1 diabetes, the immune system attacks the beta cells (the insulin-

producing cells of the pancreas) and destroys them. Because the pancreas can no longer produce insulin, people with type 1 diabetes must take insulin daily to live.

Type 1 diabetes can occur at any age, but onset of the disease occurs most often in children and young adults. Most cases of diabetes in children under age 10 are type 1 diabetes. In adults, type 1 diabetes accounts for 5 to 10 percent of all cases of diagnosed diabetes.

Symptoms. The symptoms of type 1 diabetes are due to an increase in the level of glucose in the blood and include increased thirst and urination, unexplained weight loss, blurred vision, and feeling tired all the time. These symptoms may be mistaken for severe flu or another rapid-onset illness. If not diagnosed and treated with insulin, the child with type 1 diabetes can lapse into a life-threatening condition known as diabetic ketoacidosis or DKA. Signs of DKA include vomiting; sleepiness; fruity breath; difficulty breathing; and, if untreated, coma and death.

Risk factors. Although scientists have made much progress in predicting who is at risk for type 1 diabetes, they do not yet know what triggers the immune system's attack on the pancreas' beta cells. They believe that type 1 diabetes is due to a combination of genetic and environmental factors that are beyond the individual's control. Researchers are working to identify these factors and to stop the autoimmune process that leads to type 1 diabetes.

Type 2 Diabetes

Type 2 diabetes, formerly called adult-onset diabetes, is the most common form of the disease in adults. People can develop it at any age, even during childhood. A progressive disease, type 2 diabetes usually begins with insulin resistance, a condition in which cells do not use insulin properly. At first, the pancreas keeps up with the added demand by producing more insulin. Over time, however, the pancreas loses its ability to secrete enough insulin in response to meals or to control blood glucose levels overnight or during periods of fasting.

Managing type 2 diabetes requires maintaining a healthy weight and weight loss, if overweight. Lifestyle changes such as making healthy food choices and getting regular physical activity are essential. In addition, people with type 2 diabetes may take insulin and/or other blood glucose-lowering medications to manage their diabetes.

Type 2 diabetes used to be found mainly in overweight or obese adults age 40 or older. Now, as more children and adolescents in the United States have become overweight and inactive, type 2 diabetes is occurring in young people.

Symptoms. Symptoms of type 2 diabetes may be similar to those of type 1 diabetes. A person may feel very tired or thirsty and have to urinate often due to high blood glucose levels. Other symptoms include unexplained weight loss and blurred vision. High blood pressure and elevated blood lipids (cholesterol) are associated with insulin resistance. In addition, physical signs of insulin resistance may appear, such as acanthosis nigricans, a condition in which the skin around the neck, armpits, or groin looks dark, thick, and feels velvety. Often, this condition is mistaken for poor hygiene.

Some children or adolescents (and adults) with type 2 diabetes may have no recognized symptoms when they are diagnosed. For that reason, it is important for the parents/guardians to know the risk factors of type 2 diabetes and to talk to their health care providers about screening children or teens who are at high risk for type 2 diabetes.

Risk factors. The key risk factors for type 2 diabetes in youth include being overweight or obese and having a family member who has type 2 diabetes. In addition, type 2 diabetes is more common in certain racial and ethnic groups such as African Americans, Hispanics/Latinos, American Indians, Alaska Natives, Asian Americans, and Pacific Islanders, including Native Hawaiians. Other risk factors include having a mother who had diabetes during her pregnancy; having high blood pressure, high cholesterol, abnormal lipid levels, polycystic ovary syndrome; and being inactive.

For children and teens at risk, health care professionals can encourage, support, and educate the entire family to make lifestyle changes that may delay—or prevent—the onset of type 2 diabetes. Changes include reaching and maintaining a healthy weight by making healthy food choices and engaging in regular physical activity.

Gestational Diabetes

Diabetes can develop during pregnancy, which is called gestational diabetes, and is caused by the hormones of pregnancy. These hormones can cause insulin resistance or a shortage of insulin. Although gestational diabetes usually goes away after the baby is born, a woman who has had it is at increased risk for developing diabetes later in life. In addition, the offspring of a pregnancy affected by gestational diabetes is at increased risk for obesity and developing type 2 diabetes.

What Is Effective Diabetes Management in Programs?

- Maintaining Optimal Blood Glucose Control
- Assisting the Child with Performing Diabetes Care Tasks
- Designating Trained Nonmedical Personnel

Maintaining Optimal Blood Glucose Control

The goal of effective diabetes management is to keep blood glucose levels within a target range determined by the child's personal diabetes health care team/parent/guardian. Optimal blood glucose control helps to promote normal growth and development and to prevent the immediate dangers of blood glucose levels that are too high or too low. Maintaining blood glucose levels within the target range also can help to optimize the child's ability to learn by avoiding the effects of hypoglycemia and hyperglycemia on cognition, attention, and behavior. In the long term, effective diabetes management helps to prevent or delay the serious complications of diabetes such as heart disease, stroke, blindness, kidney failure, gum disease, nerve disease, and amputations of the foot or leg.

The key to maintaining optimal blood glucose control is to carefully balance food intake, physical activity, insulin, and/or other medication. **As a general rule, food makes blood glucose levels go up. Physical activity, insulin, and diabetes medications make blood glucose levels go down.** Several other factors, such as growth and puberty, physical and emotional stress, illness, or injury, also can affect blood glucose levels.

Managing blood glucose is a constant juggling act—24 hours a day, 7 days a week.

Many children with diabetes check their blood glucose levels throughout the day using a blood glucose meter. Some children also wear a continuous glucose monitor (CGM). When blood glucose levels are too low (hypoglycemia) or too high (hyperglycemia), corrective actions need to be taken.

Low blood glucose levels, which can be life-threatening, present the greatest immediate danger to children with diabetes.

Assisting the Child with Performing Diabetes Care Tasks

Diabetes management is needed 24 hours a day, 7 days a week. Many children will be able to handle all or almost all of their nonemergency diabetes care tasks by themselves. Others, because of age, developmental level, inexperience, or issues with adherence to their diabetes tasks, will need help from non-medical personnel.

All children with diabetes will need help during an emergency, which may happen at any time. Trained nonmedical personnel need to be prepared to assist the child with their diabetes care during programs in which a child with diabetes participates.

Trained nonmedical personnel may assist a child with their diabetes management. Even when trained nonmedical personnel are assigned, she or he may not always be available. In circumstances

where trained nonmedical personnel are absent or unavailable, the YMCA staff will attempt to assist a child with their diabetes care as necessary.

Designating Trained Nonmedical Personnel

Nonmedical personnel can be trained to assist in diabetes care tasks safely. Trained nonmedical personnel may be identified from existing YMCA staff that is willing to serve in this role.

Care tasks performed by trained nonmedical personnel may include blood glucose monitoring, insulin administration (by pen or assistance with a pump) and glucagon administration. In addition to learning how to perform general diabetes care tasks, trained nonmedical personnel should receive child-specific training from the child's parent/caregiver or another trained nonmedical personnel.

Once it has been determined that a child-specific diabetes care task may be delegated, the YMCA Director should be involved in the decision-making process to identify which YMCA staff are most appropriate to be trained. The parent/caregiver develops and implements the training and evaluates the ability of the trained staff member to perform the task. Diabetes care should be carried out, to the best of the YMCA staff member's ability, as specified in the child's health care plans.

How Do You Plan Effective Diabetes Management in the YMCA Program Setting?

- Assemble the Child's Health Care Plans
    - Diabetes Medical Management Plan (Prepared by the Child's Personal Diabetes Health Care Team)
    - Individualized Health Care Plan (Prepared by parent/guardian)
    - Emergency Care Plans for Hypoglycemia and Hyperglycemia (Prepared by the parent/guardian)
- Train nonmedical Personnel

Assemble the Child's Health Care Plans

Health care plans outline how each child's diabetes will be managed. These plans help children, their families, nonmedical personnel, and the child's personal diabetes health care team to know what is expected of each of them. These expectations should be laid out in writing in the following health care plans:

- Diabetes Medical Management Plan (prepared by the child's personal diabetes health care team)
- Individualized Health Care Plan (prepared by the parent/guardian)

- Emergency Care Plans for Hypoglycemia and Hyperglycemia (prepared by the parent/guardian)

Diabetes Medical Management Plan

The Diabetes Medical Management Plan (DMMP)**, prepared by the child's personal diabetes health care team, contains the medical orders tailored for each child.** The child's health care provider should sign this plan. The DMMP is the basis for all of the health care plans designed to help the child manage diabetes effectively at YMCA programs.

The parent/guardian uses the information in the DMMP to develop the child's Individualized Health Care Plan and the Emergency Care Plans for Hypoglycemia and Hyperglycemia.

Information in the DMMP may include:

- Date of diagnosis
- Contact information (parents/guardians and child's physician/health care provider)
- Specific medical orders for checking blood glucose, administering insulin and other medications, and carbohydrate (carb) counting
- Assessment of child's self-care skills for performing diabetes care tasks
- Typical signs, symptoms, and prescribed treatment for hypoglycemia and hyperglycemia
- Assessment of child's self-care skills for performing diabetes care tasks
- Child's diabetes equipment and supplies, including blood glucose meter, insulin delivery devices, glucagon, and continuous glucose monitoring systems (CGM)
- Use of smartphone and/or other monitoring technology
- Meal and snack plan
- Physical activity
- 72-hour disaster, lockdown, or emergency plan

The child's personal diabetes health care team should complete and approve the DMMP before the child attends YMCA programming or immediately after diagnosis. The DMMP should be reviewed and updated regularly or upon a change in the child's prescribed care plan, level of self-management, or YMCA circumstances (e.g., a change in schedule) or at the request of the child or his or her parents/guardians.

Individualized Health Care Plan

The Individualized Health Care Plan (IHP) is developed by the parent/guardian in collaboration with the child's personal diabetes health care team to implement the child's DMMP. The IHP is based on the medical orders in the child's DMMP and incorporates an assessment of the YMCA program

environment as well as child-specific information (e.g., familial, psychosocial, and developmental information).

The parent/guardian uses the information in the DMMP to outline the diabetes management strategies and personnel needed to meet the child's health goals. The parent/guardian reviews the IHP with the child and the YMCA trained nonmedical personnel before it is implemented and establishes a timeline to revisit the plan periodically to evaluate progress toward desired health goals throughout the YMCA program.

Information in the IHP may include:

- Plan for maintaining the child's blood glucose within the target range specified in the DMMP (including strategies for blood glucose monitoring, administering insulin, treating hypoglycemia and hyperglycemia, adhering to the child's meal plan, and participating in physical activity)
- Supplies needed and where they will be kept
- Use of smartphone to log data and/or to notify the parents/guardians of blood glucose levels
- Need for free access to the restroom and water
- Nutritional needs, including provisions for meals and snacks
- Participation in YMCA activities and field trips
- Guidelines for communicating with the family and the child's personal diabetes health care team
- List of trained nonmedical personnel and the diabetes care tasks they will perform
- Plan and timeline for training trained nonmedical personnel
- Timeframe for ongoing review of child outcomes
- Plan for the child to independently manages diabetes at YMCA program
- Maintenance of confidentiality and the child's right to privacy

Emergency Care Plans for Hypoglycemia and Hyperglycemia

The Emergency Care Plans for Hypoglycemia (PDF, 96 KB) and Hyperglycemia (PDF, 97 KB) are based on the medical orders in the child's DMMP. The parent/guardian will coordinate developing these emergency plans and training designated YMCA staff. The plans for individual children summarize how to recognize and treat hypoglycemia and hyperglycemia and what to do in an emergency.

These plans should be distributed to all YMCA staff that has responsibility for assisting children with diabetes throughout the YMCA program.

Train YMCA Nonmedical Personnel

Diabetes management training for YMCA nonmedical personnel is essential to facilitate appropriate care for children with diabetes.

Trained nonmedical personnel can help to ensure that children with diabetes are safe, ready to learn, and able to participate .

The parent/guardian should work with YMCA Director to implement training to willing YMCA staff. This will ensure that at least one trained nonmedical personnel is able to assist the child as necessary.

Diabetes management training should be facilitated by the parent/guardian. Work with the YMCA Director to set up training for willing nonmedical personnel before the child attends programming or when the child is first diagnosed with diabetes.

Three levels of training are needed to keep children with diabetes safe at YMCA program. Training should be designed to include the elements outlined below using standardized training materials.

Level 1. Diabetes Overview and How to Recognize and Respond to an Emergency Situation

Level 1 training should cover:

- An overview of diabetes
- How to recognize and respond to hypoglycemia and hyperglycemia
- Whom to contact for help in an emergency

Level 2. Diabetes Basics and What to Do in an Emergency Situation

Level 2 training builds on Level 1 and is designed for YMCA nonmedical personnel who have responsibility for assisting the child with diabetes throughout the day

Level 2 training should cover:

- Content from Level 1 with specific instructions for what to do in case of an emergency
- Roles and responsibilities of individual staff members
- Expanded overview of diabetes (types of diabetes, the role of blood glucose monitoring, and the importance of balancing insulin/medication with physical activity and nutrition and how it is done)
- Procedures and brief overview of the operation of devices (or equipment) commonly used by children with diabetes
- Impact of hypoglycemia or hyperglycemia on behavior, learning, and other activities
- The child's Individualized Health Care Plan
- The child's Emergency Care Plans for Hypoglycemia and Hyperglycemia
- How to activate Emergency Medical Services in case of a diabetes emergency
- Tips and planning needed for YMCA program

- What to do during an emergency (e.g., lockdown or evacuation)

Level 3. General and Child-Specific Diabetes Care Tasks

Level 3 training is for one or more YMCA staff members designated as trained nonmedical personnel who will assist the child with diabetes care tasks. Level 3 training should be provided by the parent/guardian or trained nonmedical personnel who was trained by that parent/guardian.

Level 3 training should cover:

- All the information from Level 1 and Level 2 training
- General training on diabetes care tasks specified in the child's DMMP:
    - Blood glucose monitoring
    - Insulin administration
    - Glucagon administration
- Child-specific training, when addressing each diabetes care task, includes:
    - Clear identification and understanding of the task as outlined in the child's DMMP
    - Each child's symptoms and treatment for hypoglycemia and hyperglycemia
    - Step-by-step instructions on how to perform the task using the child's equipment and supplies
    - Clear parameters on when to perform the task, when not to do so, and when to ask for help from a health care professional
- How to document that all care tasks performed

How To Help Children Implement Effective Diabetes Management

- Check Blood Glucose Levels
- Plan for Disposal of Sharp Objects and Materials That Come in Contact with Blood
- Recognize and Treat Hypoglycemia (Low Blood Glucose)
- Recognize and Treat Hyperglycemia (High Blood Glucose)
- Administer Insulin and/or Other Diabetes Medication
- Plan for Disasters and Emergencies
- Follow an Individualized Meal Plan
- Promote Regular Physical Activity
- Help to Maintain a Healthy Weight
- Plan for Special Events/Field Trips
- Deal with Emotional and Social Issues
- Understand Why Diabetes Self-Management Is Important

Diabetes management involves checking blood glucose levels throughout the day, following an individualized meal plan, getting regular physical activity, and administering insulin and/or blood glucose-lowering medications. These actions are taken to help maintain blood glucose levels in the target range and to prevent hypoglycemia or hyperglycemia. **Children with diabetes must provide their supplies and equipment for immediate treatment of high and low blood glucose levels at all times**.

Additional elements of effective diabetes management in YMCA program include: planning for appropriate disposal of sharp objects and materials that come in contact with blood; planning for disasters, emergencies, and lockdowns; planning for field trips; and dealing with the emotional and social aspects of living with diabetes.

Check Blood Glucose Levels

One of the most important diabetes management tasks is to check (or monitor) blood glucose levels throughout the day using a blood glucose meter or a continuous glucose monitor (CGM). Children who use a CGM also use a blood glucose meter to verify CGM readings.

Blood Glucose Meter

A blood glucose meter is a small portable machine used to check blood glucose levels. Before using the blood glucose meter, wash and dry hands and the test site. Insert the test strip into the meter. Using a lancet (a small needle inserted in a spring-loaded device), perform a finger stick by pricking the side of the fingertip. Apply a drop of blood to the test strip. The meter then gives the blood glucose level as a number on its digital display.

Heat and humidity may affect blood glucose metes and test strips and may reduce the accuracy of blood glucose readings. This is especially important when blood glucose is checked outside. Consult the manufacturer’s instructions regarding the operation and storage environment for the child’s blood glucose meter.

Continuous Glucose Monitor

Some children use a continuous glucose monitor (CGM), a device that measures glucose levels and trends throughout the day. The CGM works through a sensor inserted under the skin that measures interstitial glucose levels (the glucose found in the fluid between cells) at regular intervals and sends the current equivalent blood glucose level wirelessly to a monitor. The monitor may be part of the insulin pump or a separate device, which may include a smartphone that is carried or worn by the child in a pocket, a backpack, or a purse.

The CGM sets off an alarm when blood glucose levels are too high or too low, or when they are increasing or decreasing at a rapid rate. Never ignore a CGM alarm. Appropriate action should be taken in accordance with the child's Diabetes Medical Management Plan (DMMP).

Some CGMs can transmit data remotely to multiple devices at the same time via smartphone technology. The child's health care providers, as well as the parents/guardians can have access to the CGM data and alarms in real time at locations remote from the child.

At this time, treatment decisions and diabetes care plan adjustments should not be based solely on CGM results. The sensor's glucose levels should be confirmed with a blood glucose meter whenever the reading suggests insulin needs to be given or hypoglycemia needs to be treated. The CGM is a useful tool for identifying trends and can enhance the ability of the child's personal diabetes health care team to make needed adjustments to the child's diabetes care plan. Refer to the manufacturer's instructions on how to use the child's device.

Checking Blood Glucose During YMCA Program

Some children may maintain a record of blood glucose results in their blood glucose meter or through other monitoring technology such as a smartphone or a logbook.

Blood glucose levels may need to be checked before and after eating snacks and meals, before and after physical activity, or when there are symptoms of hypoglycemia or hyperglycemia. In some children, symptoms may be subtle; blood glucose levels should be checked whenever symptoms are suspected.

Some children can check their own blood glucose levels. Other children need supervision or assistance from trained nonmedical personnel.

All children, even those who can independently check their blood glucose, may need assistance when experiencing low blood glucose levels.

Children must be able to check their blood glucose levels and respond to levels that are too high or too low as quickly as possible. If recommended by the child's personal diabetes health care team, **it is medically preferable to permit children to check blood glucose levels and respond to the results wherever they happen to be**. When in doubt, taking immediate action is important to prevent hypoglycemia.

Advantages of Checking Blood Glucose Levels Any Time and Any Place
• The child can confirm a low blood glucose level immediately. As a result, the child is less likely to experience a seizure or a coma. • The child is safer when he or she does not have to go to a designated place and does not have

to delay treatment for low or high blood glucose levels.
- The child spends less time out of YMCA activities.
- The child gains independence in diabetes management when the blood glucose meter is easily accessible and monitoring can be conducted as needed.
- The child can achieve better blood glucose control to prevent onset of severe symptoms of high and low blood glucose levels and decrease the risk of long-term complications of diabetes.
- When the child can check at any time and in any place, blood glucose monitoring is handled as a normal part of the day.

Plan for Disposal of Sharp Objects and Materials That Come Into Contact With Blood

Checking blood glucose does not present a danger to other children or staff members when there is a plan for proper disposal of lancets and other materials that come into contact with blood. YMCA staff should agree on the plan, which should be consistent with standard precautions and local waste disposal laws.

Sharp objects (sharps) such as lancets and needles may be disposed of in a heavy-duty plastic or metal container with a tight-fitting lid that may be kept in the child's personal container. Some children may leave the lancet in their lancet device and bring it home for disposal. These arrangements should be agreed upon in advance. Used blood glucose test strips and other materials may be discarded in the regular trash. Check with the local health department about health and safety requirements in your area.

Recognize and Treat Hypoglycemia (Low Blood Glucose)

Hypoglycemia, also called "low blood glucose" or "low blood sugar," is a serious condition associated with diabetes that can happen very suddenly and requires immediate treatment. Hypoglycemia can impair a child's cognitive abilities and adversely affect academic performance. Hypoglycemia can affect attention, mood, and ability to follow directions and therefore can be mistaken for misbehavior.

Hypoglycemia occurs when a child's blood glucose level falls too low, usually as a result of too much insulin, missing or delaying meals or snacks, not eating enough food (carbohydrates), or participating in extra, intense, or unplanned physical activity. For most children, a blood glucose level of 70 mg/dL or less is considered hypoglycemia. Low blood glucose levels are more likely to occur before lunch, at the end of the school day, during or after physical education classes, or in the event of unanticipated physical activities. Hypoglycemia may occur due to illness, particularly gastrointestinal illness, or it may occur for no obvious reason.

Hypoglycemia occurs when a child's blood glucose level falls too low, usually as a result of:
• Too much insulin • Missing or delaying meals or snacks • Not eating enough food (carbohydrates) • Getting extra, intense, or unplanned physical activity • Being ill, particularly with gastrointestinal illness

Hypoglycemia usually can be treated easily and effectively. If it is not treated promptly, however, hypoglycemia can lead to loss of consciousness and seizures and can be life threatening.

Hypoglycemia, which is not always preventable, is the greatest immediate danger to children with diabetes.

Early recognition of hypoglycemia symptoms and prompt treatment in accordance with the child's DMMP are necessary to prevent the onset of severe symptoms that may place the child in danger. **This information, contained in the child's Emergency Care Plans for Hypoglycemia and Hyperglycemia, should be provided to all YMCA trained nonmedical personnel who have responsibility for assisting the child with diabetes during the day.**

Not all children, especially young children, will recognize hypoglycemia symptoms with every episode.

Usually, the first signs of hypoglycemia are due to the body releasing adrenaline and other hormones/compounds that cause sweating, shakiness, hunger, pallor, light-headedness, weakness, and headache. As hypoglycemia progresses and there is insufficient blood glucose for the brain to function normally, it can lead to changes in behavior, lethargy, progressive weakness, confusion, unconsciousness, seizures, and, if prolonged, even death.

Hypoglycemia Symptoms	
Mild to Moderate	**Severe**
• Shakiness/jitteriness • Sweating • Hunger • Pallor • Headache • Blurry vision • Sleepiness • Dizziness • Lightheadedness	• Inability to eat or drink • Loss of consciousness • Unresponsiveness • Seizure activity or convulsions (jerking movements)

• Confusion • Disorientation • Irritability or nervousness • Argumentativeness • Combativeness> • Changed personality • Changed behavior • Inability to concentrate • Weakness • Lethargy	

Some children and adolescents may have "hypoglycemia unawareness." In other words, they do not experience early physical warning signs such as shaking, jitteriness, or sweating, and the only clue that their blood glucose levels are low is sudden behavior change. Even children who usually recognize when their blood glucose is low may sometimes have a sudden “low” without the initial symptoms. Although symptoms of hypoglycemia may vary from child to child, each child will tend to have the same symptoms each time hypoglycemia occurs.

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

As soon as the child exhibits symptoms of low blood glucose, treat the situation as a hypoglycemic emergency as outlined in the child’s Emergency Care Plan for Hypoglycemia. Immediately contact the trained nonmedical personnel who will check the child’s blood glucose level and do their best to treat the child for hypoglycemia. If the trained nonmedical personnel are not available, or if the blood glucose level cannot be checked, treat the child for hypoglycemia as outlined in the Emergency Care Plan for Hypoglycemia. Symptoms will progress if not treated immediately. **When in doubt, always treat for hypoglycemia.**

Treatment for Mild to Moderate Hypoglycemia

The following checklist provides a generally accepted approach for the treatment of mild to moderate hypoglycemia. Each child’s specific hypoglycemia treatment plan is provided in the child’s DMMP.

Checklist for Treatment of Mild to Moderate Hypoglycemia Symptoms
• As soon as symptoms are observed, notify the trained nonmedical personnel. Check the child’s blood glucose level to determine if it is low. • If the blood glucose level is below the level in the Emergency Care Plan for Hypoglycemia

(usually 70–80 mg/dL), or if the child has symptoms, give the child a quick-acting glucose product equal to 15 grams of carbohydrate (or the amount specified in the emergency care plan) such as:
    - 4 glucose tablets or 1 tube of glucose gel or
    - 4 ounces of fruit juice (not low-calorie or reduced-sugar) or
    - 4–6 ounces (half a can) of soda (not low-calorie or reduced-sugar)
- Wait 15 minutes
- Recheck the blood glucose level.
- Repeat the steps above if the blood glucose level is below the level indicated in the Emergency Care Plan for Hypoglycemia.
- Contact the child's parents/guardians as indicated in the Emergency Care Plan for Hypoglycemia.
- Once blood glucose returns to normal, as designated in the child's Emergency Care Plan for Hypoglycemia, check the blood glucose level 1 hour later. If needed, provide an additional source of carbohydrate (e.g. whole grain crackers, graham crackers, granola bar, yogurt, fruit) if a meal or a snack is not planned.

Treatment for Severe Hypoglycemia

Severe hypoglycemia is rare at YMCA program and generally can be prevented with prompt treatment of mild to moderate symptoms of low blood glucose. When hypoglycemia symptoms are severe, the trained nonmedical personnel must be notified and should respond immediately.

Symptoms of severe hypoglycemia may include: inability to eat food or drink fluids, unconsciousness, unresponsiveness, and seizure activity or convulsions (jerking movements). At this point, YMCA staff should never attempt to give the child food or a drink or to put anything in the mouth, because it could cause choking.

Severe hypoglycemia is treated by administering glucagon by injection. Glucagon is a hormone that raises blood glucose levels by causing the release of glycogen (a form of stored carbohydrate) from the liver. Glucagon is given by trained nonmedical personnel. Although it may cause nausea and vomiting when the child regains consciousness, **glucagon is a potentially life-saving treatment that cannot harm a child**.

The trained nonmedical personnel must know where the child’s glucagon emergency kit is stored, have access to it at all times, and be familiar with the glucagon instructions before an emergency arises.

Checklist for Treatment of Severe Hypoglycemia

- Position the child on his or her side to prevent choking.
- Contact trained nonmedical personnel immediately.
- Do not attempt to give anything by mouth.
- The trained nonmedical personnel should administer glucagon, as indicated in the child's Emergency Care Plan for Hypoglycemia.*

- Call 911 (Emergency Medical Services).
- Call the child's parents/guardians.
- Stay with the child until Emergency Medical Services arrive.

*If administration of glucagon is not authorized by the child's Diabetes Medical Management Plan or Emergency Care Plan for Hypoglycemia, or if it is not available, staff should call 911 immediately.

Glucagon Emergency Kit

The parents/guardians should supply the YMCA with a glucagon emergency kit if prescribed. The kit usually contains a bottle (vial) of glucagon in powder form and a pre-filled syringe with special liquid; the two ingredients should only be mixed just before a glucagon injection is given. The glucagon emergency kit may be stored at room temperature. The trained nonmedical personnel should also be aware of the expiration date on the kit and notify the child's parents/guardians when a new kit is needed.

Recognize and Treat Hyperglycemia (High Blood Glucose)

Hyperglycemia means blood glucose levels are above the target range, as specified in the child's DMMP. Almost all children with diabetes will experience blood glucose levels above their target range at times throughout the day. For many children, these elevations in blood glucose will be only minimally above the target range (less than 250 mg/dL) and are short in duration. Other children may experience daily spikes of blood glucose levels that are high (in excess of 250 mg/dL) and of longer duration.

Hyperglycemia does not usually result in a medical emergency. Hyperglycemia may be caused by too little insulin or other blood glucose-lowering medications, a malfunction in the insulin pump or infusion set, food intake that has not been covered adequately by insulin or other blood glucose-lowering medications, or decreased physical activity. Other causes include: illness, infection, injury, or severe physical or emotional stress. Onset of hyperglycemia may occur over several hours or days.

Symptoms of hyperglycemia include: increased thirst, dry mouth, frequent or increased urination, change in appetite, blurry vision, and fatigue. In the short term, hyperglycemia can impair cognitive abilities and adversely affect academic performance. **In the long term, moderately high blood glucose levels can increase risk for serious complications such as heart disease, stroke, blindness, kidney failure, nerve disease, gum disease, and amputations**.

Hyperglycemia Symptoms

- Thirst
- Dry mouth
- Frequent or increased urination
- Change in appetite

- Blurry vision
- Fatigue

Hyperglycemia needs to be recognized and treated in accordance with the child's DMMP. Information in the DMMP should be used to develop the child's Emergency Care Plan for Hyperglycemia. **All YMCA nonmedical personnel who have responsibility in assisting the child with diabetes care should receive** a copy of the Emergency Care Plan for Hyperglycemia and be prepared to recognize and respond to the signs and symptoms of hyperglycemia.

Hyperglycemia Treatment

As soon as symptoms of hyperglycemia are suspected, notify the trained nonmedical personnel. Treatment of hyperglycemia begins with checking the child's blood glucose level to determine if it is above the target range. When checking blood glucose at a time not specified in the DMMP, treatment decisions should take into account the time and amount of the child's last carbohydrate intake or insulin dose.

Ketones and Diabetic Ketoacidosis

While hyperglycemia does not usually result in a medical emergency, the following situations may lead to a breakdown of fat, causing ketones to form along with the hyperglycemia:

- Significant or prolonged insulin deficiency from failure to take any insulin or the correct amount of insulin
- An insulin pump or infusion set malfunction causing an interruption in insulin delivery
- Physical or emotional stress that increases the release of hormones, that work against the action of insulin
- Infection or illness, particularly with diarrhea and/or vomiting

Ketones are usually associated with high blood glucose levels but also may occur when a child is ill and blood glucose levels fall below the child's target range. At first, ketones will be cleared by the kidneys into the urine, but as their production increases, they build up in the bloodstream causing diabetic ketoacidosis (DKA), a medical emergency.

Diabetic ketoacidosis develops over hours to days and is associated with hyperglycemia, a buildup of ketones (ketosis) in the blood, and dehydration. As a result of these conditions, the classic signs of diabetic ketoacidosis include: severe abdominal pain; nausea and vomiting; fruity breath, heavy

breathing, or shortness of breath; chest pain; increasing sleepiness or lethargy; and depressed level of consciousness. As soon as these symptoms are observed, the trained nonmedical personnel should call 911, the parents/guardians, and the child's health care provider. Stay with the child until Emergency Medical Services arrive.

Checklist for Treatment of Hyperglycemia

Refer to the child's DMMP for specific instructions.

- Check the blood glucose level to determine if it is high.
- Administer supplemental insulin dose in accordance with the child's Emergency Care Plan for Hyperglycemia. (If child uses an insulin pump, see instructions below.)
- Give extra water or non-sugar-containing drinks (as needed).
- Allow free and unrestricted access to the restroom and to liquids, as high blood glucose levels can cause increased urination and may lead to dehydration if the child cannot replace the fluids.
- Recheck blood glucose every 2 hours to determine if it is decreasing to target range.
- Restrict participation in physical activity as specified in the DMMP. However, if the child is not nauseous or vomiting and moderate to large ketones are not present, light physical activity might help to lower the blood glucose level.
- Notify parents/guardians as specified in the DMMP.

For Children Using an Insulin Pump

- If child uses a pump, check to see if pump is connected properly and functioning by giving a correction bolusExternal Link Disclaimer through the pump and checking blood glucose level 1 hour later.
- If moderate or large ketones are present, change pump site and treat ketones with an injection of insulin by syringe or insulin pen.
- For infusion site failure: Insert new infusion set and/or replace reservoir, or give insulin by syringe or insulin pen.
- For suspected pump failure: Suspend or remove pump and give insulin by syringe or insulin pen.

Administer Insulin

Children with type 1 diabetes—and many children with type 2 diabetes—need to administer insulin at regular times during the day. Children may need to take insulin to cover meals and/or snacks and may need additional or corrective dosages of insulin to treat hyperglycemia as specified in the DMMP. It is medically preferable that the child be allowed to self-administer insulin in the room or wherever they happen to be.

The DMMP, which will be different for each child, specifies the dosage, delivery system, and schedule for insulin administration. The Individualized Health Care Plan (IHP), based on the DMMP, should specify administration of prescribed insulin and under what circumstances.

Some children who need insulin during the day are able to administer it on their own; others will need supervision/assistance in administering their insulin. The trained nonmedical personnel should assist with insulin administration in accordance with the child's health care plan.

Types of Insulin

Today, new types of insulin and new delivery systems help keep blood glucose levels within the target range. These options, however, require more frequent blood glucose monitoring and more assistance for the child with diabetes.

Insulin has three characteristics:

- **Onset** is the length of time before insulin reaches the bloodstream and begins lowering blood glucose levels.
- **Peak** is the time at which insulin is at its maximum strength in terms of lowering blood glucose levels.
- **Duration** is the number of hours during which insulin continues to lower blood glucose levels.

Insulin is classified in four types by how it works:

- **Rapid-acting** begins to work about 15 minutes after injection, peaks in about 1 hour, and continues to work for 2 to 4 hours.
- **Short-acting** usually reaches the bloodstream within 30 minutes after injection, peaks anywhere from 2 to 3 hours after injection, and is effective for approximately 3 to 6 hours.
- **Intermediate-acting** generally reaches the bloodstream about 2 to 4 hours after injection, peaks 4 to 12 hours later, and is effective for about 12 to 18 hours.
- **Long-acting** reaches the bloodstream several hours after injection and tends to lower glucose levels fairly evenly over a 24-hour period.

Types of Insulin Plans

Insulin therapy plans are tailored to the individual child's insulin needs as well as the child's health literacy and numeracy (i.e., ability to understand the prescribed plan). Two common plans are the basal/bolus insulin plan and the fixed dose insulin therapy plan.

Basal/Bolus Insulin Plan (Adjustable Insulin Therapy)

Most children with type 1 diabetes use a basal/bolus insulin plan. This type of insulin plan, sometimes referred to as adjustable insulin therapy, reproduces or mimics the way a normally functioning pancreas produces insulin.

A coordinated combination of different types of insulin is used to achieve target blood glucose levels at meals, snacks, during periods of physical activity, and through the night.

- **Basal insulin is long-acting or intermediate-acting insulin** delivered once or twice a day. This type of insulin is used to control blood glucose levels overnight and between meals.
- **Bolus insulin refers to a dose of rapid-acting or short-acting insulin** that is given to cover the carbohydrate in a meal or snack and to lower blood glucose levels that are above target.

Children using a basal/bolus insulin plan require multiple injections during the school day, or they receive their insulin through a programmable insulin pump.

Fixed Dose Insulin Therapy

Other children may take the same doses of insulin each day with rapid-acting, short-acting, intermediate-acting, or long-acting insulin. This type of plan is sometimes referred to as fixed dose insulin therapy.

Insulin Storage

The shelf life of insulin after opening varies according to the type of insulin, the type of container (vial or pen cartridge), and how insulin is administered (through a syringe, a pen, or a pump). Review the product storage instructions on the manufacturer's package insert and check the expiration date.

In general, most opened vials of insulin may be left at room temperature (below 86 degrees Fahrenheit) for 30 days and then discarded. Most opened disposable pens or pen cartridges may be left at room temperature for less than 30 days, depending on the type of insulin and the type of pen or cartridge. Unopened vials or pen cartridges should be stored in a refrigerator. They may be used until their expiration date and then must be discarded.

Insulin Delivery

The three most common ways to administer insulin are with a syringe, an insulin pen, or an insulin pump. The manufacturers of insulin, insulin syringes, insulin pens, and insulin pumps have websites where people can learn more about these products.

1. **Insulin syringes**, available in several sizes, make it easy to draw up the proper dosage. Shorter, smaller needles make injections easy and relatively painless.
2. An **insulin pen** holds a cartridge of insulin. Insulin pens are convenient and appropriate when children need a single type of insulin. During the YMCA program, pens are used most often with rapid-acting insulin to cover a meal or to treat a high blood glucose level.

   Generally, a user will follow these steps:
   - Screw the needle onto the tip of the pen just before use.
   - Dial the pen to 2 units
     - Hold the pen upright and press the button on the pen to discard the air and fill the needle with insulin. Repeat if needed until a drop of insulin appears.
   - Dial the pen to the prescribed dose and inject the insulin.
   - Remove the pen needle and dispose of it in a sharps container.
3. An **insulin pump** is a computerized device that is programmed to deliver small, steady doses of insulin throughout the day; additional doses are given to cover food intake and to lower high blood glucose levels. Most pumps now receive blood glucose values directly from the meter, but if not, the child must enter the blood glucose value as well, in order for the pump to calculate the bolus dose.

Rapid-acting insulin is used in the insulin pump. Children using the insulin pump will not be taking any long-acting insulin. Therefore, a pump malfunction or extended disconnection from the pump (longer than 2 hours) increases the child's risk of developing DKA more quickly. The parents/guardians should provide the YMCA with a backup supply of syringes and rapid-acting insulin or insulin pens in the event of a pump failure. Keep supplies in a secure location.

There are several types of insulin pumps. YMCA personnel should be trained on each child's pump by the parent/guardian or a professional that the parent/guardian assigns.

- **Some pumps look like a pager**, and children usually wear it on their waistband, belt, or in their pocket. The pump holds a reservoir of insulin attached to an infusion set that leaves a very small needle or plastic cannula (a tiny, flexible plastic tube) under the skin. Infusion sets are started with a guide needle, then the cannula is left in place and taped with dressing, and the needle is removed. The cannula usually is changed every 2 or 3 days or when blood glucose levels remain above the target range or ketones are present. Routine site changes are a responsibility of the family and generally are done at home.
- **Other pumps look like a pod or patch.** These pumps are attached directly to the skin, and a guide needle inserts the cannula under the skin automatically. The child usually wears the pod on his or her abdomen, buttocks, leg, or arm. The pod contains the insulin (there is no tubing). The

pod-type pump is controlled by a small hand-held computer device that is kept nearby. This type of insulin pump needs to be changed every 2 to 3 days.

Some pumps have the data from continuous blood glucose monitoring displayed on the pump screen. In some pumps, technology has been developed to allow communication between the pump and the CGM, enabling the insulin pump to rely on CGM information to reduce or stop insulin delivery if a low glucose level is anticipated. Some of the newer CGM have transmitters that display blood glucose values on tablets, smartphones, and computers.

If a child uses a CGM, verify a low blood glucose level with a finger stick. Treat the child for hypoglycemia, if needed, as prescribed in the child's DMMP.

Trained nonmedical personnel who assist with the child's diabetes care tasks should be knowledgeable about and trained in using and operating each child's insulin delivery system.

Why Do Many Children and Families Prefer Insulin Pump Therapy?

- Users are freed from multiple daily insulin injections.
- The pump delivers insulin in a way that is similar to what the body does naturally.
- Users may achieve improved blood glucose control.
- Basal insulin delivery can be fine-tuned to the user's needs, allowing for adjustments for the differences in insulin sensitivity that change over the course of 24 hours.
- The pump uses frequent pulses of rapid-acting insulin, allowing for more consistent action on blood glucose than with intermediate- or long-acting insulin.
- Users may be able to participate in unplanned physical activity without eating extra food.
- The pump is durable and contains many child safeguards.
- The pump can be preprogrammed with insulin-to-carbohydrate ratiosExternal Link Disclaimer and blood glucose correction factors.
- When additional insulin, called a bolus, is needed to balance the carbohydrates in a meal or snack, or when blood glucose levels are high, the pump calculates the bolus dosage after the child enters the number of grams of carbohydrates to be eaten.
- Innovations in pump and sensor technologies are allowing for automation of insulin delivery by the pump.

Plan for Disasters, Lockdowns, or Emergencies

The parents/guardian must provide an emergency supply kit for use in the event of natural disasters or emergencies when children need to stay at the YMCA program. This kit should contain enough supplies for at least 72 hours to carry out the medical orders in the DMMP.

Disaster, Lockdown, or Emergency Supply Kit for 72 Hours

- Blood glucose meter, testing strips, lancets, and batteries for the meter
- Urine and/or blood ketone test strips and meter (only if staff are trained to use this)

- Insulin, syringes, and/or insulin pens and supplies
- Insulin pump supplies
- Other medications
- Antiseptic wipes or wet wipes
- Quick-acting source of glucose
- Water sufficient for 72 hours
- Carbohydrate-containing snacks, such as whole grain crackers and dried fruit
- Hypoglycemia treatment supplies (enough for three episodes): quick-acting glucose and carbohydrate snacks
- Glucagon emergency kit

Follow an Individualized Meal Plan

Current nutrition recommendations for children with diabetes are designed to provide maximum flexibility to meet each child's nutritional needsExternal Link Disclaimer, appetite, eating habits, and schedules. Insulin regimens are then individualized to fit each child's lifestyle. The child's diabetes care plan, as set out in the DMMP and IHP, must be followed to avoid hypoglycemia or hyperglycemia.

The nutritional needs of children with diabetes do not differ from the needs of children without diabetes. All children need a variety of healthy foods to maintain normal growth and development. The meal plan recommended for children with diabetes is usually healthy for everyone. The major difference is that the timing, amount, and content of the food that children with diabetes eat, especially the carbohydrates (or carbs), are carefully matched to balance the action of the insulin and/or other diabetes medications that they take.

Although there usually are no forbidden foods for people with diabetes, children are advised to avoid "liquid carbs" such as sugar-containing soda and juices (including 100 percent fruit juice) and regular pancake syrup. The "liquid carbs" raise blood glucose rapidly, contain large amounts of carbs in small volumes, are hard to balance with insulin, and provide little or no nutrition. (Sugar-containing drinks are used, however, in treating hypoglycemia.)

Many children with type 2 diabetes follow a meal plan designed to help them achieve a healthy weight. These children may be prescribed a calorie target for the day as well as consistent carb amounts to aim for at each meal and snack to help manage their weight and blood glucose. Ensuring that healthy foods such as whole grains, low-fat protein and dairy, and fruits and vegetables are available is critical to their diabetes management.

Carbohydrate Counting and Identifying the Carb Content in Foods and Beverages

Carbohydrate (carb) counting is the most popular meal planning approach for children and youth. This approach involves identifying and calculating the number of grams of carbohydrate the child eats and drinks in a meal or snack. Sources of carbs include: starches (breads, crackers, cereal, pasta, rice), fruits and vegetables, dried beans and peas, milk, yogurt, and sweets.

The U.S. Department of Agriculture (USDA) maintains a "National Nutrient DatabaseExternal Link Disclaimer" containing nutrient information on well over 8,000 foods and beverages. The Food and Drug Administration (FDA) requires "Nutrition FactsExternal Link Disclaimer" labels on packages for most prepared foods such as breads, cereals, canned and frozen foods, snacks, desserts, drinks, etc. These labels include the carbohydrate content as well as other nutrient values for each serving in the package.

Meal Planning Approaches

Most children with diabetes have an individualized meal plan using a method of carbohydrate counting. The meal plan takes into account the child's nutritional needs, insulin plan, oral medications, and physical activity level.

There are two methods of meal planning using carb counting: (1) following a consistent carb intake meal plan and (2) adjusting insulin for changing carb intake. This information will be provided in the child's DMMP.

Method 1—Following a Consistent Carb Intake Meal Plan. Children who follow a consistent carb meal plan aim for a set amount of carb grams at each meal and snack and do not adjust their mealtime insulin for the amount of carb intake (e.g., 60 grams of carbs at each lunch). The child's parent/guardian determines the amount of carbs that is right for each child at each meal. This method of meal planning is often used by children who take an intermediate-acting insulin in the morning or children who receive a preset amount of rapid- or short-acting insulin at lunch.

Children who follow a consistent carb meal plan need to maintain consistency in the timing and content of meals and snacks. The child should eat lunch at the same time each day. Snacks often are necessary to achieve a balance with the peak times of insulin action and with physical activity.

Method 2—Adjusting Insulin for Changing Carb Intake. Children who use multiple daily injections or an insulin pump usually use this method of meal planning. This method requires adjusting insulin doses to cover the amount of carbs the child will consume by using an **insulin-to-carb ratio and an insulin correction factor (sometimes called an insulin sensitivity factor).** These factors are individualized for

each child and specified in the DMMP. This method gives the child with diabetes more flexibility with eating and requires a good understanding of the child's insulin therapy and carb counting.

Other Dietary-Related Medical Conditions

A small percentage of children with diabetes may have other medical conditions that require dietary restrictions. **For example, some children with type 1 diabetes may have celiac disease**. They should not eat any food products that contain gluten or that have been prepared in a gluten-contaminated environment. Gluten is found in many grains, including wheat, rye, and barley, which are found in many pastas, cereals, and processed foods. These dietary restrictions should be outlined in the child's DMMP. YMCA staff will also need to be made aware of a child's need for gluten-free products.

Some children with type 2 diabetes may need to limit fat for control of weight and/or lipids. Still others may need to limit salt intake to help manage high blood pressure.

Promote Regular Physical Activity

Physical activity is a critical element of effective diabetes management. Everyone can benefit from regular physical activity, but it is even more important for children with diabetes. In addition to maintaining cardiovascular fitness and managing weight, physical activity can help lower blood glucose levels.

Children with diabetes should participate fully in physical education classes and team or individual sports. To maintain blood glucose levels within the target range during extra physical activity, children will need to adjust their insulin and food intake. To prevent hypoglycemia, they also may need to check their blood glucose levels more frequently before, during, and after engaging in physical activity. The child's DMMP should specify when physical activity should be restricted because the blood glucose level is either too high or too low or if ketones are present. The child's Emergency Care Plan for Hypoglycemia, a quick-acting source of glucose, and the child's blood glucose meter should always be available, along with plenty of water.

Children using pager-type insulin pumps may disconnect from the pump for sports activities; the pod-type pump remains attached. If children keep the pump on, they may set a temporary reduced insulin delivery rate or suspend use of insulin while they are playing. YMCA personnel should provide the child with a safe location for storing the pump when the child does not wear it. The child's DMMP and IHP should include specific instructions for pump use during physical activity.

Help to Maintain a Healthy Weight

Maintaining a healthy weight is very important for children with diabetes to help manage blood glucose levels and to establish habits for managing their weight as they grow older. Healthy habits include being active every day and choosing healthy foods for meals and snacks.

More children and adolescents in the U.S. are either overweight or obese than ever before. This excess weight is placing more children at risk for type 2 diabetes. Parents/guardians can help all children reach and maintain a healthy weight by encouraging them to make healthful lifestyle choices while they are young.

Tips for Helping Children Reach and Maintain a Healthy Weight

- **Be active every day for at least 60 minutes**. Children do not have to join a gym or be on a sports team to stay active. Dancing, riding a bike, walking the dog, or doing any physical activity they enjoy for at least 60 minutes a day will work. Activity can be broken up into three 20-minute sessions or whatever works for the child.
- **Limit play time in front of the computer, tablet, smartphone, and TV** to 2 hours per day.
- **Limit portion sizes of foods high in fat, sugar, and salt**. Instead of eating a large serving of French fries, children can order a small serving or share a large serving with friends. Try measuring snacks in small portions instead of grazing.
- **Cut some calories**. Some healthy ways to cut calories include drinking water instead of sweetened fruit drinks, soda, or sports drinks and eating fruit instead of chips or candy. Encourage children to read food labels or download an app to learn about the number of calories, carbs, and fat in the foods and beverages they consume.
- **Eat a healthy breakfast**. Eating a healthy breakfast will help children stay focused during the day and help manage their blood glucose.
- **Lose weight slowly.** No more than 1 or 2 pounds of weight loss per month is recommended, because children are still growing. Losing weight slowly may help children keep it off.

Plan for Special Events and Field Trips

Meeting the needs of children with diabetes requires advance planning for special events such as parties and field trips. The YMCA staff can assist in the planning by sharing YMCA schedules in advance.

Although there usually are no forbidden foods in a meal plan for children with diabetes, YMCA parties could include foods high in carbohydrates and fats. Serving more nutritious snacks will be healthier for all children and will encourage good eating habits. The parents/guardians should decide whether the child with diabetes should be served the same food as other children or food provided by the

parents/guardians. If possible, give the parents/guardians advance notice about parties so they can incorporate special foods in the child's meal plan or adjust the insulin dosage.

Children often view field trips among the most interesting and exciting activities. Children with diabetes will be allowed to have these experiences with the help of the parent/guardian in properly planning for the field trip needs. **It is not unusual to invite the parents/guardians to chaperone field trips.**

The trained nonmedical personnel should accompany the child with diabetes on field trips. They should ensure that all of the child's snacks and supplies for checking blood glucose, administering insulin, and treating hypoglycemia are packed and taken on the trip. Diabetes management strategies for field trips should be included in the child's health care plan. The plan for care during field trips should be carefully noted in the child's health care plan.

Deal with Emotional and Social Issues

Children with diabetes must not only deal with the usual developmental issues of growing up but also with learning to manage this complex chronic disease. **Diabetes affects every facet of life, complicating the task of mastering normal developmental challenges.**

For the most part, children with diabetes do not want to be singled out or made to feel different from their peers. **Diabetes care tasks, however, can set them apart and make them feel angry or resentful about having diabetes**. Depression is being recognized as quite common among children and teens and even more so in those with diabetes.

Children react differently to having diabetes. They may be accepting, resentful, open to discussing it, or attempt to hide it. Often, the same child will experience all of these feelings over time. YMCA staff should be aware of the child's feelings about having diabetes and identify ways to ensure the child is treated the same way as others.

Sometimes, children feel pressured to please their care providers but cannot always comply with their requests. To appease their parents/guardians, children may report fictitious blood glucose levels and/or ketone results. Others use their diabetes to assert their independence and control and do not comply with their diabetes care plan.

Still other children may be afraid or embarrassed by the potential for hypoglycemia and do not take all their insulin to avoid a low blood glucose. If this is a concern, the parents/guardians can check the information in the memory of the blood glucose meter or the insulin pump for problems or inconsistencies.

Children with diabetes are at risk for developing eating disorders, and YMCA staff should be aware of this. Some children, particularly females, may omit insulin as a quick way to lose weight, putting them at

risk for hyperglycemia and ketoacidosis. Binge eating and bulimia are also seen in children with diabetes. If there are concerns that a child may have an eating disorder, notify the YMCA director or the parents/guardians.

Diabetes can be a focal point for conflict within families. It is important to minimize diabetes-specific family conflict to promote optimal health and quality of life outcomes. **The child's trained nonmedical personnel must be made aware of emotional and behavioral issues.**

One of the biggest challenges for children with diabetes is gradually becoming more independent from their parents/guardians. Yet diabetes may compromise independence, because the parents/guardians are concerned about their child's ability to perform self-care tasks and take responsibility for their diabetes. The parents/guardians, who are ultimately responsible for their child's well-being, may be reluctant to allow normal independence in children or teens who have not been able to take care of themselves properly. This parental concern can lead to increasing struggles with dependence, oppositional behavior, and rebellion.

Current research suggests, however, that when parents/guardians provide support and stay involved with their teen's diabetes management tasks throughout adolescence, children achieve better health outcomes. Teamwork or "interdependence" between the parents/guardians and their child is an effective strategy.

To deal with psychosocial aspects of diabetes in children, there are many resources available. When problems are observed, YMCA staff may need to refer the family to a counselor experienced in working with families living with diabetes.

Understand Why Diabetes Self-Management is Important

Diabetes care depends upon self-management. The child's competence and capability for performing diabetes-related care tasks should be specified in the Diabetes Medical Management Plan (DMMP) and then applied to the YMCA setting, as outlined in the child's Individualized Health Care Plan. Although children should receive assistance with and supervision of their diabetes care when needed, it is equally important to enable children to take on the responsibility of diabetes self-management with ongoing guidance and support from the parents/guardians or trained nonmedical personnel. The age for transfer of responsibility from caregiver to child varies from child to child and from task to task, because children develop and mature at different rates.

Children' abilities to participate in self-care also depend upon their willingness to do so. It is medically preferable that children be permitted to perform diabetes care tasks in the room where YMCA programming is taking place.

Although the ages at which children are able to perform diabetes care tasks are highly individualized and differ for each child, their ability and levels of self-care generally occur as follows:

- **Toddlers and preschool-aged children** are unable to perform diabetes care tasks independently and will need an adult to provide all aspects of diabetes care. Many of these young children will have difficulty recognizing hypoglycemia, so it is important that the caregiver be able to recognize and provide prompt treatment. Children in this age range, however, usually can determine which finger to prick, choose an injection site, and are generally cooperative.
- **Some elementary school-aged children** are able to perform their own blood glucose monitoring, but most will require supervision. Older elementary school-aged children are beginning to self-administer insulin with supervision but may not yet have the cognitive capacity to adjust insulin doses based on blood glucose readings. Understanding the complex interactions among insulin, nutrition, and physical activity on blood glucose levels may not develop until early adolescence. Unless children have hypoglycemic unawareness (inability to tell when their blood glucose level is low), most should be able to let an adult know when they are experiencing hypoglycemia; however, this can depend on the distractions that are occurring in the environment and the child's overall level of well-being.
- **Middle- and high school-aged children** should be able to perform self-care tasks depending upon the length of time since diagnosis and level of maturity, but they always will need help when experiencing hypoglycemia. As older children mature, they should be encouraged and empowered to perform diabetes care tasks on their own.

Ultimately, each person with diabetes becomes responsible for all aspects of self-care, including blood glucose monitoring and insulin administration. Regardless of their level of self-management, however, all children with diabetes may require assistance when blood glucose levels are out of the target range. Regardless of their age, there are times when all children who have diabetes need someone else to help them with their diabetes care tasks. Learning to ask for support and help is an important element of learning self-advocacy as a person living with diabetes.

How to Use the Tools for Effective Diabetes Management

- The parents/guardians should give the sample Diabetes Medical Management Plan (DMMP) to the child's personal diabetes health care team as a resource for preparing the medical orders.
- The child's personal diabetes health care team should fill out the plan, sign it, review it with the parents/guardians and the child, and return it to the YMCA director before the child with diabetes

returns attends the YMCA program or right after diagnosis. Parent/guardian should go over the DMMP in detail with YMCA director and YMCA trained nonmedical personnel.

- The child's personal diabetes health care team should review and update the DMMP regularly; upon a change in the child's prescribed care regimen, level of self-management, or YMCA circumstances (e.g., a change in schedule); or at the request of the child or parents/guardians.
- The parent/guardian should prepare the Individualized Health Care Plan (IHP) based on the medical orders in the DMMP and review it with the YMCA staff and the child.
- The Emergency Care Plans for Hypoglycemia and Hyperglycemia should be copied and distributed to all YMCA trained nonmedical personnel who have responsibility for assisting the child with diabetes during the day. Consider laminating these plans for use.
- During all levels of training, information in the Emergency Care Plans for Hypoglycemia and Hyperglycemia, how to respond, and whom to contact for help in an emergency should be reviewed with YMCA staff.