Introduction

Diabetes is the third most common chronic disease in children below 20 years of age. Characterized by high blood glucose (BG) due to defective insulin production or use, diabetes is estimated to occur in 1 of every 400 children and adolescents. That equates to approximately 208,000 children currently living with diabetes in the United States.

Over time, high BG may contribute to serious health complications, including heart, kidney, eye, and nerve disease. Although there is no cure for diabetes, effective management may delay or prevent long-term complications from occurring and minimize acute problems related to fluctuations in BG levels. Successful management requires parents and caregivers to acquire significant knowledge about diabetes, and perform complex self-care skills on a daily basis. Since children spend many hours at school, collaboration among the family, the child’s healthcare team, and school personnel is essential.

Children with type 1 diabetes require insulin replacement for survival. Insulin may be delivered by syringe, insulin pen, or insulin pump. Studies have shown that, compared to standard injections, insulin pump therapy can provide clinical and lifestyle benefits. Clinical benefits include fewer episodes of low BG, and overall improved glycemic control as measured by HbA1C. Lifestyle benefits include increased flexibility in regard to meal times and food choices, not having to use syringes several times a day, and less disruption to daily schedules. Parents have reported less stress and greater social acceptance. However, insulin pump therapy is not without challenges, especially for children who may be self-conscious about wearing a medical device. Also, insulin pump therapy does not reduce the need for BG testing, which must continue to be done several times a day.

About This Guide

This Guide is intended to provide school nurses and other school personnel with basic information about diabetes, and specific information about insulin pump therapy. We have also included a brief discussion about the legal rights of children with diabetes in the context of public school education, and have provided sample templates that may be used to document all or part of a diabetes care plan at school. In addition to the material provided here, many excellent print and online resources are available for those who want a broader knowledge of diabetes in school-aged children. Appendix 1 contains a list of selected references. Additional information about insulin pump therapy and the use of Animas® insulin pumps is also available online at our website, www.animas.com.

*For detailed information about any specific type or brand of insulin, we recommend you refer to the package insert provided by the manufacturer.
Diabetes Basics

Type 1 diabetes is the most common type of diabetes in children, accounting for approximately 80% of all newly diagnosed children and adolescents. Underlying causes are not fully understood, but genetic and environmental factors are believed to play a role, triggering an autoimmune response that destroys insulin-producing cells in the pancreas. Without sufficient insulin, blood glucose (BG) cannot be used for energy. Profound hyperglycemia results, and is a key finding at the time of diagnosis. Varying degrees of metabolic acidosis may also be present at diagnosis. Without the ability to make their own insulin, people with type 1 diabetes must receive exogenous insulin in order to survive. Since insulin cannot be taken orally (it is destroyed by the digestive process), it is given subcutaneously, either by syringe, insulin pen, or insulin pump. Insulin is a treatment that allows survival, but it is not a cure. To safely manage their child’s type 1 diabetes, families must become highly educated about the disease and master the daily skills needed to maintain adequate BG control. Typically, those skills include how to test and respond to BG levels several times a day, calculate and deliver insulin doses based on the BG level and food intake, manage exercise and sick days to minimize related BG swings, and respond to potentially harmful changes in BG levels. Caring for a child with type 1 diabetes can be a constant challenge, and requires attention 24 hours a day, 7 days a week.

Type 2 diabetes is more common in adults, but may also occur in children, especially if they are overweight. Type 2 diabetes is initially characterized by insulin resistance, and may progress to a state of insulin deficiency over time. Risk factors for type 2 diabetes include being overweight and having a family member with type 2 diabetes. It is more prevalent in certain ethnic populations, as well. Treatment of type 2 diabetes focuses on healthy eating and lifestyle choices, BG monitoring, and sometimes the use of oral diabetes medications or insulin.

Treatment Goals and Management Tools

BG levels for people without diabetes usually run between 70–140 mg/dL. The American Diabetes Association has recommended target BG goals for children across all age groups of 90–130 mg/dL before meals, and 90–150 mg/dL overnight. However, these goals should be individualized based on the unique situation of each child. Although it is not possible for BG values to always fall within target range, the goal of treatment is to minimize time spent either below or above the target.

Low BG, or hypoglycemia, is a common risk and side effect of insulin use. It is an urgent medical condition that requires immediate treatment. The child may display difficulty thinking and paying attention, and may become unconscious or have a seizure if left untreated. Symptoms may include hunger, drowsiness, mood swings, sweating, headache, or confusion. Immediate treatment in alignment with the child’s plan of care is required.

High BG, or hyperglycemia, is likely to be experienced by almost all children with diabetes at some point during the school day. Elevations above the target range may be of short duration, or may be more serious. For children using insulin pumps, it is important to follow guidelines specified in the child’s medical management plan to rule out any problem with insulin delivery. Refer to Page 5 and Appendix 2 for more information about high BG and insulin pump therapy.

To successfully manage diabetes at school, it is important to understand three key elements that directly influence BG: medication (insulin), food, and physical activity. Other factors, such as stress, illness, and growth, may also have some impact on BG levels.

Medication

Insulin is the only medication currently used for children with type 1 diabetes. There are many different types of insulin, and many different ways to deliver and dose insulin.* Current insulin regimens often involve the use of long-acting and rapid-acting insulin given by injection, or only rapid-acting insulin if using insulin pump therapy.

- **Long-acting insulin** is typically injected once, sometimes twice, per day and provides basal insulin. Basal insulin is needed to maintain steady blood glucose control between meals and overnight. Long-acting insulin is slowly absorbed and its effect on BG may last approximately 24 hours, depending upon the specific type and brand.

- **Rapid-acting insulin** is used for bolus insulin delivery. It is given to compensate for food, or to lower a high blood glucose (BG). Rapid-acting insulin works more quickly and for a shorter period of time compared to long-acting insulin. After delivery, the onset of action is 15–30 minutes, with a peak effect between 30–90 minutes, and an overall duration of 3–5 hours.

Though life-saving, insulin is not a cure for diabetes. It does not correct or prevent the underlying causes of diabetes, and may also cause hypoglycemia (low BG) when not balanced with food or physical activity.

Food

Food provides three major nutrients from which we get calories: protein, fat, and carbohydrate. Carbohydrate (carb) is the nutrient that raises BG the most and the fastest. In fact, almost all of the carbs we eat are converted to glucose in our bloodstream within approximately 1 to 1 ½ hours. Many foods such as bread, cereals, rice, pasta, fruits, milk, yogurt, starchy vegetables, and sweets contain carb. People with diabetes often learn to “count” the grams of carb in their meal, and then calculate their insulin dose to match or “cover” that amount of carb. This method, called “carb counting,” allows a great deal of flexibility in regard to meal times and food choices. Insulin doses are calculated using an insulin:carbohydrate ratio (I:C ratio), which is expressed as 1 unit: X grams of carb. For example, if your I:C ratio is 1:10, you would take 1 unit of insulin for every 10 grams of carb consumed.

*For detailed information about any specific type or brand of insulin, we recommend you refer to the package insert provided by the manufacturer.
About Insulin Pump Therapy

Compared to standard injection therapy or multiple daily injections, children using insulin pump therapy may achieve improved glycemic control and experience fewer episodes of hypoglycemia, while enjoying greater flexibility regarding meal times and food choices.

Insulin pumps are small, battery-operated, computerized devices that continuously infuse rapid-acting insulin into subcutaneous tissue. Insulin pump therapy replaces the need for multiple daily injections of insulin. Most current insulin pump systems are composed of a durable insulin pump, a cartridge of insulin, and an infusion set. The infusion set delivers the insulin into the subcutaneous tissue via a small flexible cannula or steel needle.

Insulin pumps deliver rapid-acting insulin in two ways—basal and bolus:

About Basal Insulin
- A continuous flow of insulin that is pre-programmed and automatic.
- Basal insulin replaces the need for injections of long-acting insulin.
- The specific dose of basal insulin is expressed as an hourly rate; for example, "0.525 units/hour."
- Several changes to the hourly basal rate may be pre-programmed to occur throughout the day.
- Supports the body’s basic metabolic requirement, and is not strictly dependent upon food intake.

About Bolus Insulin
- Delivered on-demand, as needed throughout the day. Boluses provide additional insulin required for food or to correct a high blood glucose (BG).
- Bolus doses for food are based upon the user’s individual insulin:carbohydrate ratio (I:C ratio). For example, 1:10 refers to needing 1 unit of insulin per every 10 grams of carb eaten.
- Bolus doses for correcting high BG are based on the user’s specific “insulin sensitivity factor” (ISF). The ISF refers to how an individual’s BG level responds to 1 unit of insulin. For example, if the insulin sensitivity factor is 50, it means that 1 unit of rapid-acting insulin can be expected to reduce the BG by 50 mg/dL.
- Bolus settings for I:C ratio and ISF, along with an individual BG target range, are pre-set in the insulin pump and may vary by time of day.

Introduction (cont.)

Activity
Physical activity and exercise are important for everyone, including children with diabetes. However, activity does impact blood glucose (BG), and some adjustments may need to be made. For example, exercise often lowers BG, requiring additional food or a reduction in insulin in order to avoid low BG. However, in some cases, stress hormones released during intense activity may work in the opposite way, increasing the BG. This is another challenge for children living with diabetes, and they and their caregivers need to learn how different types of activities affect them. A plan for exercise should be incorporated into the child’s school plan.

To summarize, three key treatment elements have a direct impact on BG levels:
- Insulin lowers BG
- Food raises BG
- Activity may lower or raise BG
Important Additional Information About Diabetes and Insulin Pump Therapy

- Rapid-acting U100 insulin is currently used in insulin pumps. Onset of action is 15 minutes after injecting, with a peak effect occurring at 30–90 minutes. The duration of action is generally 3–5 hours.
- If insulin cannot be delivered due to a mechanical issue or other problem related to insulin delivery through the insulin pump, the insulin pump user may rapidly develop high BG (hyperglycemia).
- A serious acidotic state, diabetic ketoacidosis (DKA), may develop if replacement insulin is not provided in a timely manner. A backup plan and supplies for delivering insulin via injection, rather than the insulin pump, must be in place. The student’s Diabetes Medical Management Plan should include specific treatment guidelines to address hyperglycemia and to avoid onset of DKA due to lack of insulin.
- Refer to Appendix 2, Troubleshooting Hyperglycemia on Insulin Pump Therapy, for additional information on this important topic.

Hyperglycemia with large ketones is an urgent medical problem and requires immediate attention!

Success at School

Several federal statutes protect the educational rights of children with special needs, such as diabetes. These laws require public schools to provide equal opportunities for education, as well as access to appropriate medical care. The American Diabetes Association, among other groups, recommends a written plan of care for all students with diabetes to ensure that families and school personnel clearly understand their roles and responsibilities. In general, an effective care plan contributes to the student’s immediate safety and long-term health, promotes readiness to learn, and helps minimize disruption in the classroom.

Most schools provide diabetes care according to the student’s Diabetes Medical Management Plan (DMMP). The DMMP is obtained or based upon signed orders from the child’s healthcare team. Information usually includes date of diagnosis, current health status, specific guidelines for insulin administration and use of the insulin pump, BG testing guidelines, how to treat low and high BG, and a back-up plan in case the insulin pump becomes inoperable.

The school nurse may also create an Individual Health Plan (IHP) to define how the DMMP orders are to be carried out, and who will carry them out. The IHP may contain information such as where supplies will be kept, plans for students to have free access to the restroom and water, provision for snacks and meals, supervision during field trips and sports activities, and best ways to communicate with family and their healthcare team.

Often, families request further accommodations in the form of a Section 504 Plan. Based on the Rehabilitation Act of 1973, a 504 Plan assures that the student is able to fully access all educational activities. Some examples of specific accommodations include: alternative testing dates if experiencing low or high BG during standardized testing or routine school exams, specific self-care actions that the student is allowed to perform independently in class or on campus, and identifies alternate care providers and the scope of their responsibilities if/when a school nurse is not available.

School Nurse/Other School Personnel

The school nurse is in the best position to understand and implement the student’s care plan. However, many other adults in the school have contact with the student and will need to learn to recognize and respond to certain situations that impact the safety and wellbeing of the child. Examples of school personnel who may have a role in caring for the student with diabetes include: teachers, bus drivers, coaches, lunchroom personnel, substitute teachers, front office staff, and administrators.
A Word About Continuous Glucose Monitors

Continuous glucose monitoring (CGM) provides a way to continuously track patterns and changes in glucose levels over time, and may be used in conjunction with standard fingerstick blood glucose (BG) testing.

CGM devices do not directly measure BG; instead, they measure the amount of glucose in interstitial fluid. Interstitial glucose and blood glucose levels do not always match, and most CGM devices have not been approved to completely replace the need for fingerstick blood glucose testing when making treatment decisions.

CGM devices consist of three parts:

- A small sensor, placed into subcutaneous tissue, to measure the interstitial glucose
- A transmitter, attached to the sensor, that wirelessly transmits the readings
- A receiver, where results are received and viewed

Sensors may stay in place for up to 7 days, depending upon the specific type of device being worn. The receiver may be a stand-alone receiving device, or may be integrated with some types of insulin pumps.

The CGM receiver displays trending data and glucose readings, and may be set to sound an alarm or alert if the student's BG level drops too low or rises too high.

If a student wears a CGM device in school, their DMMP will need to include information on how to respond to any alerts or alarms that occur during the school day.

As with insulin pumps, having the parent/guardian train the nurse on how to view and respond to CGM information is important, and should not be overlooked.

Summary

Wearing an insulin pump or a CGM device can be challenging for the student and these technologies are not for everyone. Not all youngsters want to be connected to technical devices and not all children have the support outside of school necessary to be successful with insulin pump therapy or the use of CGM. No matter what method your students use to manage their diabetes, the support and understanding of their school community is vital to their success.
Diabetes Care Plan Templates

While many schools or healthcare providers use their own documents, the following templates may be freely used to develop and record a Diabetes Medical Management Plan (DMMP). They may also be included in an Individual Health Plan (IHP) or Section 504 Plan. Samples of DMMPs, IHPs, and 504 Plans can be viewed or obtained from websites of organizations such as the American Diabetes Association, Juvenile Diabetes Foundation, and others. Many of these resources are listed in Appendix 1 (Selected Resources and References).

The documents on the next few pages include templates for the following content:

- Student Information and Emergency Contacts
- Blood Glucose Monitoring and Management
- Insulin and Glucagon Administration
- Skills Checklist
- Supply List
- 5-Day Insulin Pump Log

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### Diabetes Care Plan: Student Information and Emergency Contacts

<table>
<thead>
<tr>
<th>Student Information</th>
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<td>Name: _______________ DOB: _______ School Year: ______</td>
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<tr>
<td>Name of School: ___________ School Nurse: ___________</td>
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<tr>
<td>Diabetes Healthcare Provider Name: ___________ Telephone: ___________</td>
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### Emergency Contacts: Family and Others

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### Emergency Contacts: Approved Alternate Care Providers if School Nurse Not Available

<table>
<thead>
<tr>
<th>School Nurse has trained the individuals listed below to perform specific skills, as documented by Training Date</th>
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</thead>
<tbody>
<tr>
<td>Supervise/test blood glucose (Blood glucose)</td>
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<tr>
<td>Supervise/give insulin by pump or injection</td>
</tr>
<tr>
<td>Supervise ketone testing</td>
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<tr>
<td>Treat hypoglycemia</td>
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<tr>
<td>Give glucagon</td>
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</tbody>
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<thead>
<tr>
<th>Name:</th>
<th>Location in school:</th>
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<td>Training date: ____</td>
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<td>Training date: ____</td>
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<td>Training date: ____</td>
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**Diabetes Care Plan: Blood Glucose Monitoring and Management - Page 1**

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<thead>
<tr>
<th>Student:</th>
<th>School Year:</th>
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</table>

**Target blood glucose (BG) range at school:**
- 90–150 mg/dL based on ADA recommendations or:
- [mg/dL] test times are checked off below:
  - [ ] Before lunch
  - [ ] Before sports or PE class
  - [ ] Before boarding school bus or driving a car
  - [ ] As needed if symptoms of low or high BG
  - [ ] As needed if symptoms of illness
  - [ ] 0–2 hours after giving a correction bolus
  - [ ] Other:

**Treat mild hypoglycemia, BG=50–70 mg/dL or:**
- Give 15 grams of fast-acting carbohydrate by mouth immediately, such as:
  - 3–4 glucose tablets
  - 4 oz juice
  - 6 oz skim milk
  - 6 oz regular soda
  - Other snacks provided by parent/guardian
- Recheck BG every 15 minutes and repeat treatment as needed until BG >70 mg/dL or [ ] mg/dL.
- Do not leave child unattended.

**Treat moderate hypoglycemia, BG<50 mg/dL or:**
- Give 20 grams of fast-acting carbohydrate by mouth immediately.
- Recheck BG and repeat treatment every 15 minutes until BG >70 mg/dL or [ ] mg/dL.
- Do not leave child unattended.

**Treat severe hypoglycemia: unconscious or seizing, unable to swallow or cooperate**
- Authorized diabetes care provider: immediately administer glucagon injection (1 mg/cc) according to instructions.
- Position child on side to prevent aspiration in case of nausea/vomiting.
- Call 9-1-1 or other local emergency service number, and then call parent/guardian.
- Give nothing by mouth until student is awake and able to cooperate/swallow.
- Do not leave child unless it is unavoidable in order to get help.

**Treat hyperglycemia BG >250 mg/dL or:**
- General guidelines for hyperglycemia on insulin pump:
  - Check ketones using blood or urine ketone strips provided by parent/guardian and follow guidelines below based on ketone results.
  - Encourage drinking of water or other calorie-free fluids, 8 oz every hour if ketones are present, until resolution of situation.
  - Allow free access to bathroom and water; do not withhold normal food/meals.
  - Inspect pump and tubing for signs of problems, such as disconnected infusion set or pump alarm or message on screen. Call parent/guardian as needed for guidance.
- Administer correction bolus via pump and recheck BG and ketones in 1–2 hours.
  - If ketones remain negative, may give an additional bolus via pump if necessary.
  - If BG is still not improving after two correction doses, may require insulin by injection. Contact parent/guardian.

**Treat hyperglycemia with negative ketones:**
- Notify parent. This is a medically urgent situation, do not delay treatment.
  - Do not give bolus by insulin pump.
  - Change infusion set and cartridge if possible.
  - Child will need insulin throughout the day, so if new infusion set is not available, contact parent/guardian or healthcare provider for specific orders regarding insulin replacement throughout the school day.

**Actions for sports/PE class participation:**
- If BG is still not improving after two correction doses, may require insulin by injection. Contact parent/guardian.
- If BG is above 250 mg/dL or [ ] mg/dL without ketones, child may participate in sports/PE class. Give correction insulin bolus as indicated:
  - Give half the calculated correction bolus. OR
  - Do not give any correction bolus.
- Other snacks provided by parent/guardian:
  - As needed if symptoms of illness
  - As needed if symptoms of low or high BG
  - As needed if symptoms of physical or cognitive problem

**Actions for extracurricular activities off campus:**
- School nurse or other Authorized Diabetes Care Provider (ADCP) must be present on campus during PE class and after-school sports.
- BG must be at least [ ] mg/dL before child participates in physical activities.
- If BG is below target, treat with carbohydrate until BG is within range.
- If student is ill, parent/guardian should pick up child from school.
- If student stays in school, recheck blood glucose (BG) and ketones prior to boarding school bus.
- If ketones are small to large with elevated BG, parent/guardian must be notified and child should not board the bus.

**Other snacks provided by parent/guardian:**
- As needed if symptoms of illness
- As needed if symptoms of low or high BG
- As needed if symptoms of physical or cognitive problem

This information is provided for educational purposes only and is not intended to replace your healthcare provider’s diabetes treatment plan. Only specific, signed orders from the child’s medical care provider should be used when administering treatment.

(Continued on next page)
**Diabetes Care Plan: Insulin and Glucagon Administration**

**DIABETES CARE PLAN: Authorization for Insulin and Glucagon Administration**

<table>
<thead>
<tr>
<th>STUDENT:</th>
<th>School Year:</th>
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<tbody>
<tr>
<td>Type of Insulin in Pump:</td>
<td>Type of Infusion Set:</td>
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</tbody>
</table>

**INSULIN BY INSULIN PUMP:** Calculate and deliver dose using insulin pump programs. Insulin pump is programmed to calculate dose based on the following settings:

<table>
<thead>
<tr>
<th>Basal Rates</th>
<th>Insulin:Carbohydrate Ratio</th>
<th>Insulin Sensitivity Factor</th>
<th>Blood Glucose Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (Units/hour)</td>
<td>Time</td>
<td>1 Unit:____ grams</td>
<td>Time</td>
</tr>
</tbody>
</table>

**INSULIN BY INJECTION IN CASE OF PUMP MALFUNCTION:**

Rapid-acting insulin should be given by syringe or insulin pen at meals, snacks, and to correct high blood glucose (BG). Use the following guidelines:

- For food/snacks, give 1 unit insulin per ____ grams of carbohydrate
- For BG correction:
  - Give correction before lunch if BG is > ____ mg/dL
  - To calculate dose, use formula below:
    
    \[
    \text{BG - Target BG} \times \text{ISF} = \text{units of rapid-acting insulin to be given in addition to insulin given for food}
    \]
- Do not give BG correction dose more often than every 4 hours or ____

**GLUCAGON ADMINISTRATION INFORMATION:**

"Follow glucagon administration guidelines specified in Diabetes Care Plan: Blood Glucose Testing and Management"**

Glucagon 1 mg intramuscular will be administered in case of severe hypoglycemia by authorized staff who have been appropriately trained:

- Name: Location or phone ext: ____
- Name: Location or phone ext: ____
- Name: Location or phone ext: ____

HEALTHCARE PROVIDER NAME: ____

TELEPHONE: ____

HEALTHCARE PROVIDER SIGNATURE: ____

DATE: ____

This information is provided for educational purposes only and is not intended to replace your healthcare provider’s diabetes treatment plan. Only specific, signed orders from the child’s medical care provider should be used when administering treatment.

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**Diabetes Care Plan: Skills Checklist and Supply List**

<table>
<thead>
<tr>
<th>Student:</th>
<th>School Year:</th>
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**Checklist of Activity/Skill to Be Performed:**

- Routine blood glucose (BG) monitoring:
  - Student still needs to see nurse at least once a day to verify glucose status, OR
  - Student does not need to check in with nurse

- Supplies Required at School
  - Student-held
  - Kept in Health Office

| Glucose meter, strips, and lancing device |
| Skin prep supplies (alcohol/IV prep, etc) |
| Glucose tabs or other fast-acting carbohydrate snack |
| Glucagon emergency kit |
| Ketone strips for urine OR meter/kit for checking blood ketones |
| User manual for insulin pump |
| Extra pump or meter supplies: Batteries, Infusion sets, Pump insulin cartridge |
| Required for backup plan in case of insulin pump malfunction: Insulin syringes and vial of rapid-acting insulin OR Insulin pen and pen needles |

Other: ____

This information is provided for educational purposes only and is not intended to replace your healthcare provider’s diabetes treatment plan. Only specific, signed orders from the child’s medical care provider should be used when administering treatment.
### 5-Day School Insulin Pump Record

**Date Range:**

**Student Name:**

**DOB:**

**School Nurse:**

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<th>6AM</th>
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**Recorded By**

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### Appendix 1: Selected References and Resources

#### For School Nurses and School Personnel
- The American Diabetes Association (ADA): www.diabetes.org
- Juvenile Diabetes Research Foundation: www.jdrf.org
- National Association of School Nurses: www.nasn.org
- The Center for Disease Control (Fact sheets, statistics and publications): www.cdc.gov/diabetes
- Animas Corporation: www.animas.com

#### For Families and Children

**Books:**
- Lara Takes Charge: Helping Kids Understand Diabetes, by Rocky Lang and Sally Huss
- Taking Diabetes to School, by Kim Gosselin
- Even Superheroes Get Diabetes, by Sue Ganz-Schmitt
- Raising Teens with Diabetes: A Survival Guide for Parents, by Moira McCarthy
- Understanding Diabetes: A handbook for people who are living with diabetes, 12th Edition, H Peter Chase, MD & David M Maas, MD, PhD

**Websites:**
- www.childrenwithdiabetes.org
- www.Kidsrumping.com
- www.jdrf.org: Website for the Juvenile Diabetes Research Foundation, contains many resources including the JDRF School Advisory Toolkit for Families.

#### Books About Insulin Pump Therapy
- Smart Pumping, Harold Wolpert MD
- Understanding Insulin Pumps and Continuous Glucose Monitors, 2nd Edition, H Peter Chase, MD
Selected References and Resources (cont.)

Clothing and Accessories for Insulin Pump Users
www.Pumpwearinc.com
www.laurenhope.com
www.fifty50pharmacy.com/kidscorner
www.lifetag.com
www.diabete-ezy.com

Animas does not control the content of the websites listed and is not responsible for information provided. Always consult your healthcare provider for information specific to your or your child’s needs.

Appendix 2: Tips for Troubleshooting Hyperglycemia on Insulin Pump Therapy

Always disconnect the pump from the student before troubleshooting to avoid inadvertent insulin delivery!

Check the Site and Tubing
- Is the end of the infusion set still adhering to body?
- Is the cannula obviously dislodged or kinked?
- Is there redness at the site?
- Is there discomfort at the site?
- Is there blood on/at the site?
- Is there air in the tubing?
- Is the tubing connected to the cartridge?

Check the Cartridge
- Is the tubing connected tightly to the cartridge?
- Do you see insulin leaking at the connection site between tubing and cartridge?
- Is the cartridge empty?

Check the Insulin Pump
- Is the time on the pump screen correct?
- Is there an alarm or warning message on the screen?
  (Call parent or pump manufacturer Customer Technical Support for assistance as needed).
- In History: Bolus: check for date/time of last bolus.

Check the Insulin:
- Is it cloudy or clumped?
- Was the insulin exposed to extreme temperatures (freezing or direct sunlight)?

Follow Medical Care Plan to Administer Correction Bolus if No Obvious Mechanical Issues are Present:
- Adhere to child’s medical and diabetes care plans.
- Contact parent/guardian/healthcare provider as needed to resolve issues or clarify care plan.

NOTE: Any combination of redness, pain, fever, discomfort or heat at the site may indicate local site infection. Call parent/guardian so child may receive medical attention.