

Riley Hospital for Children

General Diabetes Medical Management Information- Pump Therapy

1. HEALTH CARE SUPERVISION

- All school support staff, including: secretaries, cafeteria staff, custodians and bus drivers should be made aware that the student has diabetes and be able to identify that student. Also, all staff and personnel should be educated in meeting the needs of the student with diabetes and recognize the signs of hypoglycemia (low blood sugar) and hyperglycemia (high blood sugar). All training/education of school staff should be conducted before the student returns to school.
- Information on the student's Personal Medical Management Plan should be included in all substitute teacher plans. These teachers should be made aware that the student has diabetes and be informed of the medical needs and any other pertinent accommodations.

2. TRAINED DIABETES PERSONNEL (TDP)

A TDP should be available **at all times** during school hours, while the student is participating in extracurricular activities, and on field trips when the school nurse is not available. The responsibilities of the TDP include performing or overseeing insulin administration, blood glucose monitoring, ketone checks, and responding to hyperglycemia and hypoglycemia including administering glucagon if needed.

3. BLOOD GLUCOSE MONITORING

- Blood sugar levels should be checked daily before meals (i.e. breakfast and/or lunch), anytime the student feels that their blood sugar may be low, or when the child is feeling ill. The student's Personal Diabetes Medical Management Plan may also indicate other times the student is required to have blood sugar checks.
- Blood glucose monitoring may be done at any location at school, including the school bus.
- The school nurse or TDP should perform glucose monitoring when the student is unable or if the student prefers to be checked by the school nurse or TDP.
- Please make sure parents are aware of all blood sugar values at the end of each week. School nurse and parents should arrange how they will communicate the blood sugar readings.

- Blood Sugar PRE-MEAL Target Ranges:

2-5 years..... 100-200

6-12 years..... 80-180

13 and older 70-150

4. TREATING LOW BLOOD SUGAR

**** NEVER send a student with actual -- or suspected -- low blood sugar anywhere alone.**

- The student should have immediate access to blood glucose monitoring equipment and should be permitted to carry and access 15 grams of a fast-acting carbohydrate snack in the event that he/she feels low. Best practice is to check blood sugar prior to treating with a fast-acting sugar .
- When any staff member believes the student is showing signs of a low blood sugar, the staff member should seek the school nurse, or TDP if the school nurse is not available, for further assistance while making sure an adult stays with the student at all times.
- If the student's blood sugar is less than the low end of their target range or the student is experiencing signs/symptoms of a low blood sugar, he/she should notify the teacher in the classroom immediately. If the student treats any low blood sugar he/she should also notify the teacher in the classroom after 2 treatment(s) if the blood sugar is still low.

TREATING A LOW BLOOD SUGAR

**** NEVER send a student with actual -- or suspected -- low blood sugar anywhere alone.**

<u>Symptoms</u>	<u>Treatment for Conscious Person</u>
• Pale	1) Give 15 grams of a fast acting carb or 1 treatment from below
• Weak	3-4 glucose tablets
• Headache	½ cup fruit juice
• Dizzy	½ cup regular pop
• Sweaty	1 fruit roll-up
• Hungry	5-6 lifesavers
• Irritable	glucose gel placed between cheek and side of gum
• Confusion	
• Restlessness	
• Combativeness	2) Wait 15-20 minutes. Re-test and re-treat until student is within their target range.

If blood sugar is low before meal:

- Treat low blood sugar and get it back into range before allowing student to go to lunch.
- Bolus for food eaten at the meal, do not give a corrective dose after treatment of a low blood sugar.

If seizure or unresponsiveness occurs:

Glucagon

- If the student with diabetes is unconscious or having a seizure, he/she should receive an injection of Glucagon.
- It is suggested that in addition to the school nurse, the TDP should be trained in the administration of glucagon.
- Any staff member who finds the student unconscious or having a seizure should immediately contact the school office. The school nurse or TDP should immediately do the following in the order listed:

Treatment of Seizing or Unconscious Person

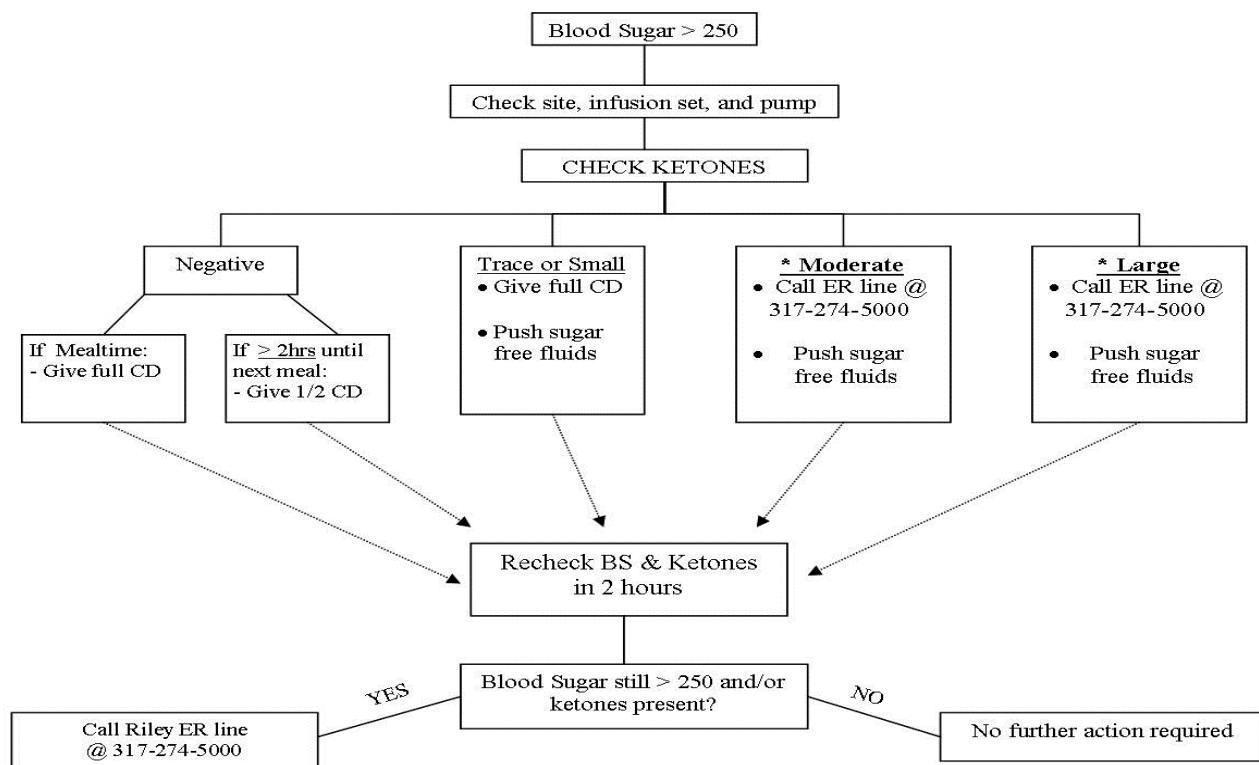
- Administer Glucagon injection per directions and place student on his/her side- See student's Personal Diabetes Medical Management Plan for appropriate dosage of glucagon to administer.
- Contact 911
- Stop insulin pump by disconnecting at pump site or suspend pump
- Test blood sugar every 10 minutes
- If child arouses prior to EMS arriving give sips of regular soda and crackers.
- Notify parents/legal guardian immediately
- DO NOT GIVE LIQUIDS TO DRINK WHILE UNRESPONSIVE

5. TREATING A HIGH BLOOD SUGAR

- Extra activity is not recommended for elevated blood sugars.
- If blood sugar is greater than 250 please check blood or urine for ketones. Please follow instructions listed below regarding ketone management.
- Please allow the student to have a water bottle in class if the student has ketones and/or a blood sugar greater than 250.
- Restroom breaks should not be limited.

For blood sugars over 250 please use the following Hyperglycemia (Pump Emergency Decision Tree) flow chart to manage the increased blood sugar level:

PUMP EMERGENCY DECISION TREE



*** FOR MODERATE OR LARGE KETONES:**

- call Riley ER line at 317-274-5000 and ask for the “Pediatric Diabetes Practitioner on-call”
- Child should NOT participate in exercise related activities
- Encourage child to drink 8-12 oz of sugar free fluids per hour while ketones are present

6. SNACKS AND MEALS

- The parents/guardians should provide snacks each day if needed and should provide a supply of additional snacks to be kept at the school to treat hypoglycemia or for emergency situations.
- The student should have enough time to finish lunch.
- All school personnel should permit a student with diabetes to eat a snack in the classroom or wherever he/she is (including but not limited to classrooms, nurse's office, gym, auditorium, playground, fieldtrips and bus) at times designated and whenever needed to treat hypoglycemia.
- Treatments for low blood sugars should be immediately available to the student at all times in the event of a low blood sugar.

7. EXERCISE AND PHYSICAL ACTIVITY

- The student should participate fully in physical education classes and team sports. Physical Education instructors and sports coaches must be able to recognize and assist with the treatment of hypoglycemia.
- The student should NOT participate in physical activity if ketones are moderate or large or if blood sugar is below the student's target range.
- The student's blood glucose meter, treatments for low blood sugars, and water should always be available at the site of all sports practices and games. These supplies should also be readily accessible during gym classes.
- For Physical Education class, a student with diabetes should be given adequate time to have a snack before or after class if needed as stated in their Personal Diabetes Medical Management Plan, without penalty.
- If parent requests, pump may be disconnected for up to 1 hour during gym class or recess.

8. INSULIN AND DIABETES

- A student with Type 1 Diabetes will require daily insulin therapy. There are many different insulin regimens that are utilized.
- Insulin used in an insulin pump is a fast-acting insulin (Novolog, Humalog, or Apidra). Insulin may need to be administered using a vial and *insulin syringe* or insulin pen in the event of a pump failure.
- For children using pump therapy, the appropriate insulin dose can typically be calculated by the pump. The student will need to enter the current blood sugar reading as well as the number of carbohydrates eaten. Most pumps will then do the calculations and the student needs to confirm in order to receive the actual insulin dose.

9. INSTRUCTIONS ON CALCULATING INSULIN DOSES- for a child using an insulin pump, the blood sugar result and number of carbs eaten can be entered into the pump and the pump will calculate the appropriate insulin dose. If there is a pump failure and you need to manually calculate the insulin dose, follow the instructions below.

STEP 1 (Food dose): This calculation is to cover the number of carbs eaten during a meal/snack. It is calculated by taking the total number of grams of carbohydrate eaten divided by a prescribed number.

- **Example of food dose- 1 unit : 10 grams of carb** (prescribed formula)
- If the child eats **45 grams** of carb, divide 45 by **10** to get a dose of **4.5 units**. Write this number down including 2 numbers to the right of the decimal point. **DO NOT ROUND YET.**

STEP 2 (Corrective dose): This calculation is to cover an elevated blood sugar taken immediately before the meal. To calculate the corrective dose, take the blood sugar reading (even if within target range) minus the child's blood sugar target number (prescribed number based on age) and divide by the child's insulin sensitivity factor (also a prescribed number).

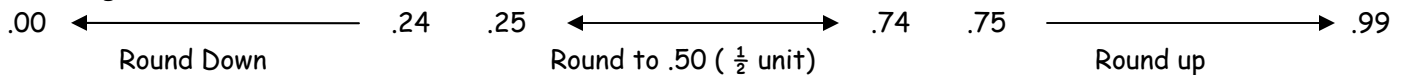
- **Example of corrective dose - Blood sugar – 120 / 20** (prescribed formula)
- if BS is 220, take 220 minus 120 and divide by 20 which = 5 units. Write this number down including 2 numbers to the right of the decimal point. **DO NOT ROUND YET**. If result is a negative number, use "0".

STEP 3 (Calculating final insulin of dose): Once the food dose and the corrective dose have been calculated, **add the calculated FOOD and CORRECTIVE doses together**. This will be your final insulin dose.

- Example from above : 4.5 units (food dose) + 5 units (corrective dose) = **9.5 units**

10. INSTRUCTIONS ON ROUNDING INSULIN DOSES

Rounding Rules:



- If you can only give whole units (some pens only allow whole units)
Anything **0.5 or greater** is rounded up to the next whole unit
Anything **0.4 or less** will round **DOWN** to the next whole unit
- If you can give half units, use the following guide for rounding:
Any result less than or equal to **0.24** is rounded **DOWN** to the nearest whole unit.
Any result between **0.25 and 0.74** is rounded to the nearest **HALF** unit.
Any result greater than or equal to **0.75** is rounded **UP** to the next whole unit.

Examples:

- A total dose of **4.13** would be rounded to **4 units**.
- A total dose of **4.37** would be rounded to **4.5 units**.
- A total dose of **4.78** would be rounded to **5 units**.

11. TESTS AND CLASSROOM WORK

- Blood sugar levels above or below the student's target range may affect cognitive abilities and attention levels
- The student should be permitted, if necessary, to check blood sugar levels before or during ANY class or standardized test. If his/her sugar level is extremely elevated, low, or dropping quickly, he/she should be able to take the test at a later time or date without penalty.
- Teachers should inform the student and his/her parents of any assignments missed while in the nurse's office. He/She should be given a reasonable amount of time to complete any such assignment without penalty.
- If the student is affected by high or low blood glucose levels or needs to take breaks to use the water fountain or restroom, check blood glucose, or to treat hypoglycemia or hyperglycemia, the student should be permitted to have extra time to finish classroom work without penalty.

12. FIELD TRIPS AND EXTRACURRICULAR ACTIVITIES

- It is the parent's responsibility to notify the school of the student's participation in all extracurricular activities.
- The student should be permitted to participate in all field trips and extracurricular activities (such as sports, clubs, and enrichment programs) without restriction and with all of the accommodations and modifications, including necessary supervision by identified school personnel, set out in these guidelines.
- Please notify parents of any planned field trip as early as possible. Some information that the parent will need to know includes:
 - Date, Time (return and departure), Destination
 - Planned meals: What and When
 - Planned activity level (i.e., hiking on a wilderness trail vs. going to see a movie)
- The student's diabetes supplies such as blood glucose monitor, fast acting sugar sources for treatment of low blood sugars, glucagon emergency kit, and snacks should accompany the student on all fieldtrips and extracurricular activities on or away from the school premises.
- A school nurse or TDP should be available at the site of all extracurricular activities or field trips that take place both on and away from the school premises unless his/her parent is able and wishes to attend. The student's parent/guardian should not be required to accompany the student on field trips or any other school activity in order for the student to participate.

13. DAILY INSTRUCTIONS

- The school nurse or TDP should notify the parent/guardian in advance of a change in planned activities such as exercise, playground time, field trips, parties, or lunch schedule so that the lunch, snack plan, and insulin dosage can be adjusted accordingly.
- A companion should accompany the student if he/she needs to go to the nurse's office when not feeling well. Staff should notify the school nurse or TDP that the student is not feeling well and is on his/her way to the Clinic.
- The school should notify the parent immediately if the student needs to remain after school. A snack may need to be given.

14. PARENTS' RESPONSIBILITIES

- It is the parents' responsibility to alert the school nurse if their child has been experiencing blood glucose results at home that are atypical.
- Parents should notify the school nurse if there are any medical treatment changes. The parents should educate the school nurse on any new treatment supplies or situations. Orders for medication changes will come from the health care provider.
- Medical supplies should be kept in the Clinic and/or the classroom. It is the parents' responsibility to make sure that these supplies are adequate in quantity and not expired. These include:
 - 1) Insulin
 - 2) Blood Glucose Meter
 - 3) Test Strips
 - 4) Control Solution
 - 5) Extra Batteries for Pump and Meter
 - 6) Lancet Device
 - 7) Lancets
 - 8) Ketone Strips (blood or urine)
 - 9) Glucagon emergency kit

- 10) Low Blood Sugar Treatments
- 11) Snacks
- 12) Cake Decorator Gel/ Glucose Gel
- 13) Water bottle
- 14) Syringes (for use in the event of pump failure)
- 15) Extra vial of rapid-acting insulin (for use in the event of pump failure)- Novolog, Humalog, or Apidra
- 16) Extra infusion sets and supplies necessary for re-insertion

15. CONTACT INFORMATION FOR THE RILEY DIABETES TEAM

- Please call Riley Diabetes Team emergency line if student: has moderate or large ketones, is vomiting or is ill, has forgotten a dose of insulin, you are unsure of correct insulin dose, low blood sugars not responding to treatments, or any urgent need.

Emergency Line:

Call 317-274-5000 and ask for the “Pediatric Diabetes Practitioner on call”

- Riley Diabetes Fax # 317-948-2760.
- For routine questions, those that do not require immediate attention, please call the student’s Nurse Practitioner which is listed on their Personalized Diabetes Medical Management Plan.
- Remember, technical support for the pump is available at the “1-800” number listed on the back of each insulin pump

16. ADDITIONAL PUMP RESOURCES:

Animas Corporation
One Touch Ping
877-937-7867
www.animascorp.com

Insulet Corporation
Omnipod
800-591-3455
www.myomnipod.com

Disetronic Medical Systems, Inc.
AccuChek Spirit
317-753-4033
www.disetronic-usa.com

Medtronic Minimed
Paradigm
866-948-6633
www.minimed.com