TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™

PROGRAM FOR CHILDREN WITH DIABETES

PEDIATRIC ENDOCRINOLOGY

Endocrinologist

Chetanbabu Patel, MD
Hector Granados, MD
Krishnaswamy Rao, MD
Robert Christensen, MD
Priti Patel, MD

El Paso Children's HOSPITAL

TABLE OF CONTENTS

DAY ONE **PAGE**

DAY TWO

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

TELEPHONE CALL SYSTEM-(915) 215-5700

I. EMERGENCY CALLS and ROUTINE CALLS (24 hour availability)
ASK FOR DOCTOR ON CALL FOR PEDIATRIC DIABETES/ENDOCRINOLOGY
EMERGENCY CALLS (Please test blood sugar & urine for ketones)

These situations are considered emergencies:
- **Vomiting**
- **Moderate to large urine ketone levels**
- **Extreme error in insulin dose**
- **After the use of Glucagon to treat a severe hypoglycemic event**

II. ROUTINE CALLS (Monday-Friday, 8:30-4:30 p.m.)..... ASK FOR YOUR CASE MANAGER
**Many of our team members work part-time. Please listen carefully to their messages on voice mail. Since we work as a team, your call may be returned by another educator.*

Call your CASE MANAGER for adjustments when you have or your child has
(1) An illness which affects blood sugar levels without ketones
(2) Blood sugars which are trending <80 or >180 for 3+ days
(3) Non-emergency questions (school issues, general questions/concerns)

Nurse Practitioners/Diabetes Educators/Case Managers
_____......_____
_____......_____
_____. ......_____

Registered Dietitians/Diabetes Educators/Case Managers
_____......_____
_____......_____
_____......_____
_____......_____

Registered Nurse /Diabetes Educator /Case Manager
_____ ......_____

Family Support Counselor
_____ ......_____

Physicians (Monday-Friday, 8 a.m.-4:30 p.m.).....(915) 215-5700
Dr. *Chetanbabu Patel, MD*
Hector Granados, MD
Krishnaswamy Rao, MD
Robert Christensen, MD
Priti Patel, MD

III. APPOINTMENT DESK.....**(915) 215-5700**
IV. NEW PRESCRIPTION OR PRESCRIPTION REFILLS.....**Ask for your Case Manager**
V. FAX MACHINE .....**(915) 545-8870**

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

DIABETIC PHONE CALLS

Who Are My Providers?

Case Manager:_____

RN/NP:_____

Physician:_____

EMERGENCY CALLS (24 hour availability).....**(915)-215-5700**
ASK FOR DOCTOR ON CALL FOR PEDIATRIC DIABETES/ENDOCRINOLOGY

What is an Emergency?
Who should I call?

***We want to give families with emergencies the necessary time they deserve so *please do not* call the emergency number for non-urgent concerns.**

Emergency:

"Diabetes Specialist on call"
Emergency # (915)-215-5700
Available 24 hours
Office Hours: 8:00 am - 4:30pm

ONLY IF:

Your child is vomiting or unable to eat and you have already given insulin OR you want to know how much insulin to give.
*Your child will always need some insulin even if they are not eating.
Illness ***with*** MODERATE to LARGE ketones in the urine.
High blood sugars ***with*** MODERATE to LARGE ketones.
Insulin Pump Failure **IF** you are unsure what to do for back up insulin.
After giving Glucagon for a severe low blood sugar.
Extreme error in insulin dose.

Not an emergency:

Ask for Your Case Manager
*Phone numbers available on page 3.
Please do not ask for your case manager for emergencies, ask for the Diabetes Specialist on call. Your case manager may not be available immediately.
Available Monday-Friday 8:00 am-4:30 pm
*Non-urgent calls may be returned within 1-2 business days.

IF:

1. Your child has high blood sugars but ***does not*** have MODERATE to LARGE ketones.
2. You would like to review recent blood sugars, and make dose adjustments.
3. You need school, camp, daycare, or any other standard forms.
4. You have any general Diabetes education questions.

*Please use the appropriate line for Prescription refills: call your case manager
For Appointments: (915)-215-5700
Monday-Friday 8:00 am-4:30 pm

TEXAS TECH UNIVERSITY PROGRAM FOR CHILDREN WITH DIABETES

INTRODUCTION

Welcome to the Texas Tech University Program for Children with Diabetes. The program for you and your child has been developed not only for the diagnosis and initial treatment of diabetes but also for follow-up care and management.

When your child is first diagnosed with diabetes, the program will include:

- initiation of medical treatment and monitoring of blood sugar levels
- training for day to day home management
- diet and exercise information
- information for school personnel and returning to usual activities
- information and counseling concerning the emotional aspects of having diabetes

Following this initial training period, the program includes:

- 24 hour on-call availability of a pediatric diabetes specialist
- regularly scheduled visits with team members with the goal of optimizing diabetes care and adjustment to living with diabetes
- Phone call availability of our diabetes educators, nutritionist and family counselor.

This manual and the materials supplied with it are important tools for managing diabetes. Please use them, as they will greatly increase your chances of providing the best care possible for your child. When you return home, you should keep this manual in an easily accessible place, as you will want to refer to it frequently.

NOTE:
On every visit to the diabetes clinic bring the blood glucose <u>meter</u> and blood testing <u>log book</u>, along with any snacks needed during your appointment time.

Usual Timetable for Visits:

- <u>Diagnosis & Initial Education</u>: 2-3 days either as an outpatient or in the hospital.
- <u>1-2-week follow-up</u>: An appointment in our clinic approximately 1-2 weeks after initial education is completed.
- <u>6-week follow-up</u>: Approximately 4-6 weeks after the 1-2-week follow-up.
- <u>12-week follow-up</u>: Same as 6-week follow-up, approximately 6 weeks after 6-week follow-up.
- <u>Thereafter</u>: We recommend clinic visits every 3 months to carefully follow diabetes control. This is the national standard of care set by the American Diabetes Association.

<u>REMEMBER</u>: You will continue to see your pediatrician for all non-diabetes related health issues.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

WHAT IS DIABETES?

Insulin-Dependent Diabetes (Type 1 Diabetes--juvenile diabetes). In order for the body to function properly, it needs a source of energy. This energy is provided when food is turned into glucose (a type of sugar). In order for the body's cells to use glucose for energy, a sufficient amount of a hormone called **insulin** must be present. **Insulin** is produced by cells in an organ called the pancreas and secreted at the appropriate time and in the appropriate amount to allow the body to use the glucose for energy and still maintain a fairly constant blood sugar level.

Diabetes occurs when the cells in the pancreas do not produce enough insulin. The lack of insulin causes the body's cells to starve and burn stored fat instead of glucose. This results in weight loss, the presence of ketones (a by-product of using fat for energy) in the blood and urine, and elevated blood sugar levels. Elevated blood sugar causes sugar to be spilled into the urine.

The classic symptoms of this type of diabetes include:

- Frequent urination (kidneys try to eliminate sugar)
- Frequent drinking (to replace fluid lost from urination)
- Weight loss (from burning fat instead of glucose) often despite normal or increased appetite
- Fatigue, tiredness, possible nausea, possible behavioral changes.

Non-Insulin-Dependent Diabetes (Type 2 Diabetes--adult onset diabetes). Usually found in adults over 40 and occasionally in teenagers. This type of diabetes is different in that insulin is still produced, but it doesn't work well in helping the body use sugar. Non-insulin dependent diabetes is usually treated by encouraging weight loss with the appropriate diet. In addition, pills that make the insulin more effective or insulin shots may be necessary. Type 2 diabetes causes many of the same symptoms as Type 1 diabetes.

Please note: Type 1 diabetes does not change to type 2 diabetes, nor does the reverse happen.

WHAT CAUSES DIABETES?

No one is yet sure what causes diabetes. However, it is becoming clear that inherited factors may make some people more susceptible to developing diabetes. Although the symptoms (frequent urination and thirst) may appear suddenly over days to weeks, we know that the process which destroys the insulin producing cells began silently months to years earlier. There is a large amount of research being done to help us understand what causes both types of diabetes.

WHY ME?

It is normal to experience a number of feelings when you learn that a member of your family has diabetes. These emotions include confusion, shock, denial, sadness, anger and fear. It is important to remember that these reactions are normal and should be dealt with openly and honestly. It is common for most parents to feel a sense of guilt over their child's diabetes. **Diabetes is no one's fault and nothing could have been done to prevent it.**

Some people fear that it may have been caused by allowing the child to eat too many sweets. **It wasn't.**
Some children may feel that their diabetes is punishment for bad behavior or they may blame their parents. **It isn't.**

It will take time and effort to adjust to this new part of your life. Your diabetes team is here to help you make this adjustment.

GOALS OF TREATMENT

In a person who does not have diabetes, a small amount of insulin is continuously produced by the beta (b) cells in the pancreas with larger amounts as required after meals in order to keep the blood sugar in the normal range of about 60 to 120 mg/dl. It has now been well established that chronic markedly elevated blood sugar levels play a role in developing long term complications of diabetes. **Thus, one goal of treatment is to try to keep the blood sugar level as close to the normal range as possible.** Today, blood sugar testing done on a regular basis is easy with the use of new technology.

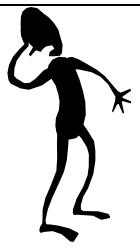
The future looks very encouraging for the person with diabetes. Pumps that allow for a continuous infusion of insulin, are already being used. Computers that will automatically determine blood sugar levels and inject the appropriate amount of insulin (just as the pancreas does in people without diabetes), may be just around the corner.

It is important to understand what factors influence blood sugar. Generally speaking, these include the amount of food eaten, the amount of insulin that is taken, and the overall level of physical activity of your child.

REMEMBER:
Food (especially carbohydrate) raises blood sugar.
Insulin and exercise both lower blood sugar.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

BLOOD SUGAR GOALS FOR TYPE 1 DIABETES

Level of Blood Sugar	This is…	How you feel…
Over 400	**Very High**	 **Lousy Stomach Ache Very Tired**
200 – 400	**High**	 **Tired Low Energy**
<u>Goal</u>: 80-180 70-150 70-140 <u>Goal</u>: 70-140 80-180 100-140	**<u>By AGE</u>: Under 5 years 5 - 11 years 12 years and up <u>By TIME</u>: Before Meals 2 hours after meals At bedtime**	 **Great!**
Less than 70	**Low**	 **Sweaty Shaky Faint**

People without diabetes will usually have blood sugar Between 70 – 120

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

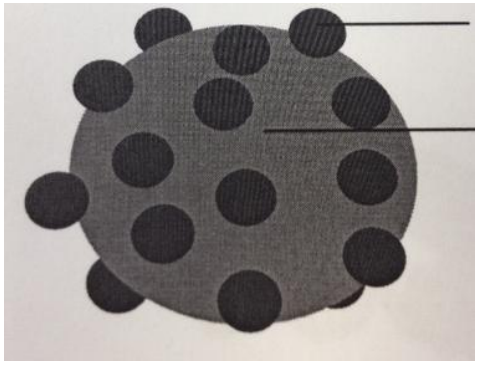
HEMOGLOBIN A1C GOALS FOR TYPE 1 DIABETES

Hemoglobin A1c (HbA1c) is a blood test that tells you the average level of glucose (sugar) in your blood over 2-3 months. It is reported as a percentage and is an important number to know. Your **A1c** tells you about your risk for complications of diabetes.

HbA1c%	eAGmg/dl
5	90
5.5	105
6	120
6.5	135
7	150
7.5	165
8	180
8.5	195
9	210
9.5	225
10	240
10.5	255
11	270
11.5	285
12	300
12.5	315
13	330
13.5	345
14	360

Your HbA1c can also tell you your Estimated Average Glucose (eAG). Your eAG is the average level of glucose in your blood 24 hours a day, 7 days a week, for 2-3 months.

How it works – Sugar sticks to the hemoglobin in the red blood cells. If the HbA1c is too high, it means you have had persistently high blood sugar levels.



Sugar

Hemoglobin Inside Red Blood Cell

Hemoglobin A1C Goals:

1. **<6 years old: <8.5%**
2. **6-12 years old: <8.0%**
3. **13-19 years old: <7.5%**
4. **>19 years old: <7.0%**

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

RISKS & COMPLICATIONS

High blood sugars, and thus high HbA1c levels, can cause damage to all your body organs, especially the eyes, kidneys, nervous system, and blood vessels, which can lead to long term complications.

How do I reach my goal? Keep your daily blood sugars in your target range. You will be able to do that by checking your blood sugar, taking your insulin, coming to regularly scheduled clinic visits, and contacting your diabetes team if blood sugars are trending high or low between visits.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

BLOOD GLUCOSE MONITORING

***Step 1*: Make sure child's hands are washed and free of any food particles/residues.**

***Step 2*: Insert lancet into lancing device.**

***Step 3*: Insert test strip into glucometer. Make sure the blood sample screen appears.**

***Step 4*: Prick finger for blood sample.**
1. Use the sides of the fingers.
2. Rotate fingers with each test.

***Step 5*: Place the end of the test strip to the edge of the blood sample. The test strip must draw some of the sample into strip to read the blood sugar.**

***Step 6*: Record blood sugar in log book.**

Additional Notes: Code the meter with the code listed on each new bottle of test strips. Use control solution with the first strip of every new bottle of test strips. *May vary by meter.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

Hyperglycemia (High Blood Sugar)

DEVELOPS SLOWLY

UNTREATED, LEADS TO

KETOACIDOSIS

WATCH FOR:

* INCREASED THIRST AND URINATION.
* HIGH BLOOD SUGAR WITH LARGE AMOUNTS OF KETONES IN URINE.
* WEAKNESS, ABDOMINAL PAINS, GENERALIZED ACHES.
* LOSS OF APPETITE, NAUSEA, VOMITING.
* HEAVY LABORED BREATHING.

WHAT TO DO:

* CHECK BLOOD SUGAR.
* CHECK URINE FOR KETONES IF BLOOD GLUCOSE IS ABOVE 300 MG/DL OR IF FEELING ILL

  * CALL (915)-215-5700 IF KETONES ARE MODERATE TO LARGE GIVE SUGAR FREE FLUIDS
  * GIVE INSULIN AS PRESCRIBED BY DIABETES TEAM SPECIALIST

*** Never withhold insulin.**

CAUSES:
* TOO LITTLE INSULIN OFR FAILURE TO TAKE INSULIN OR DIABETES MEDICINE

*ILLNESS

*OTHER MAJOR STRESS
* EATING TO MUCH FOOD OR TOO MUCH AT THE WRONG TIME (OVEREATING ALONE WILL NOT CAUSE KETONES)

*INACTIVITY IF USUALLY ACTIVE

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

KETONE TESTING

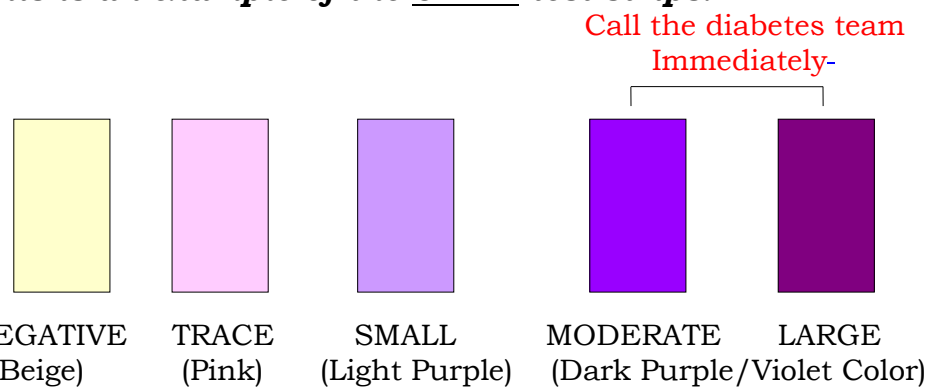
What are Ketones?

Ketones are by-products of the breakdown of fat. The body breaks down fat when glucose is unavailable. Ketones are acids and can cause an upset stomach. When ketones are present, you may need more insulin and you may not feel well.

How to Test for Ketones

Keep ketone testing strips at home and at school. Don't wait until you're sick to buy a bottle of strips. Check the expiration date every six months, as out of date strips may be inaccurate. Results will be negative, trace, small, moderate, or large.

This is an example of the <u>URINE</u> test strips:



<u>BLOOD</u> ketone test results:

<0.6 mmol/L = negative

0.6-1.5 mmol/L =trace/small

>1.5 mmol/L = moderate/large

Call the diabetes team Immediately

<u>Trace Or Small</u> (Pink to light purple) – Drink plenty of sugar free fluids like water! If you're sick with the flu and your urine shows trace or small amounts of ketones, that's not so bad. Even people who don't have diabetes show ketones in their urine when they're sick. **Follow your sick-day plan, which includes drinking plenty of fluids, and test your blood glucose and urine ketones again in three to four hours.**

<u>Moderate Or Large</u> (Darker Purple / violet)
If your urine has moderate or large amounts of ketones, check your blood glucose level and call your doctor immediately. You'll probably need to take extra Humalog or Novolog insulin. **Follow your sick-day plan, which includes drinking plenty of fluids, and test your blood glucose and urine ketones again in three to four hours. <u>Call your doctor immediately if you have not seen improvement in 2-4 hours. 915-215-5700</u>**

<u>Our General Rule</u>: Test for ketones if you have two consecutive blood sugars over 300, or you feel sick (fever, nausea, infection, ESPECIALLY VOMITING – ketones can make you nauseas/vomit).

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

INSULIN TYPE & STORAGE

Insulin Timing

TYPE OF INSULIN	***BEGINS WORKING***	***INSULIN PEAK***	***ALL GONE***	***MAIN EFFECT ON BS***
SHORT ACTING (Clear)				
Regular	½ hour	2 - 4 hours	4 - 8 hours	4-6 hours
Humalog, Novolog, Apidra	10 - 15 min	30 - 60 minutes	4 hours	2-3 hours
LONGER-ACTING				
NPH (Cloudy)	2 - 4 hours	6 - 8 hours	12 - 15 hours	8 hours
Lantus (Glargine) **NOT CLOUDY**	2 – 4 hours	Continuous (no peak)	Up to 24 hours	Continuous
Levemir NOT CLOUDY	1-2 hours	Continuous (small peak)	12-24 hrs	Cont, variable
PRE-MIXED INSULINS (CLOUDY)				
Humalog 75/25 Mix Novolog 70/30 Mix	10-15 min	variable	12 – 15 hours	Variable

Your Insulin Insulin to carb ratio is: breakfast, 1: ___lunch and 1:___ dinner 1:____

**** Lantus, Levemir, and NPH may be given at the same time as any of the short acting insulins****

STORAGE:

1. Keep all insulin in the refrigerator **until it is opened**. Unopened insulin kept under refrigeration is good until the expiration date printed on the label.

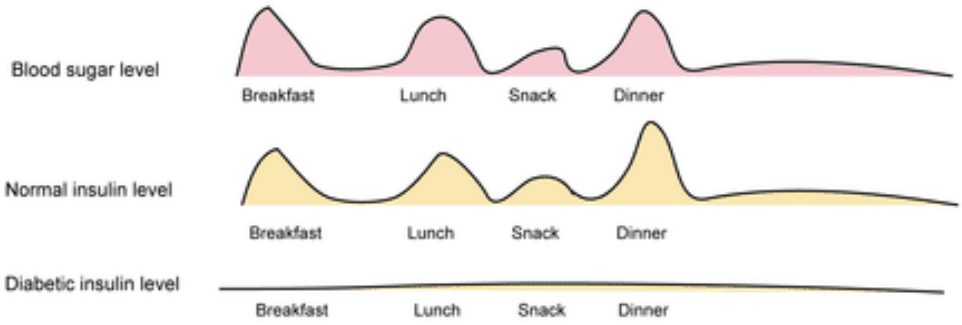
2. Once opened, you may keep insulin at room temperature as long as it does not exceed 86° F or below freezing.

3. Current manufacturer's guidelines recommend that insulin be discarded after 1 month of use.

4. Insulin slowly loses strength over time. If blood sugars are higher than expected, make sure your insulin is not over 1 month old. (There are many other reasons for high blood sugar, so simply replacing the insulin may not solve your high blood sugar issues.)

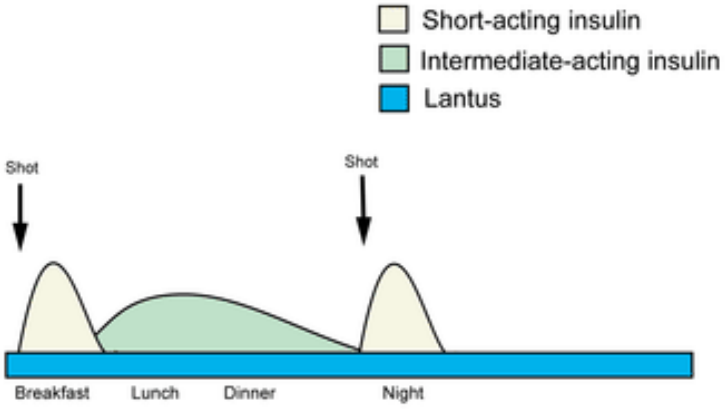
Diabetes and Insulin

Throughout the day your blood sugar level goes up and down like a roller coaster everytime you eat. Your body should make just the right amount of insulin to help turn the food you eat into energy. A person with diabetes does not make insulin and needs to take insulin at the right times to help the body use the sugar for energy.



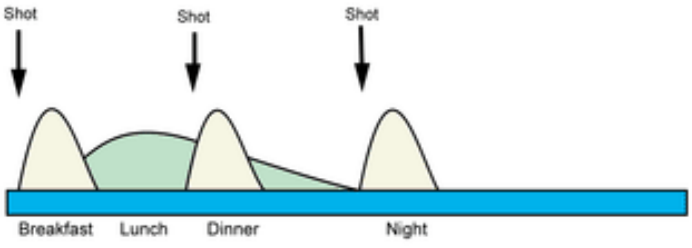
Taking Insulin Twice a Day

You may need to take insulin twice a day. One common way is to take one shot in the morning that contains a mix of a rapid-acting insulin and intermediate-acting insulin. Then, take a rapid-acting insulin shot again at dinner time. Lantus insulin may be taken at any time of day, but it should be taken at the same time each day, such as before dinner.



Taking Insulin Three Times a Day

For even better control, some people take three (or more) shots per day. You can adjust the time of your shots to fit your lifestyle and eating patterns.



TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

HOW TO INJECT INSULIN

4 BODY REGIONS FOR INJECTIONS

1. Arms
2. Abdomen
3. Legs
4. Buttocks

YOU NEED TO USE AT LEAST TWO DIFFERENT BODY REGIONS!
This is called "Site Rotation"

How to Give the Injection:

- ☑ Find a large pinch of skin on one of the four regions. (If the pinch hurts, you are pinching too hard or the pinch is too small.)
- ☑ Inject the needle straight into the top of the pinch.
- ☑ Inject the insulin slow and steady until the plunger is all the way down.
- ☑ Count slowly to four or five and release the pinch.
- ☑ Remove the needle.

INJECTION POINTERS

- Using the same place to inject insulin over and over can damage the tissue under the skin. If you notice a lumpy fat deposit, DO NOT use that site for injections.
- It is normal to occasionally get a small bruise.
- Avoid injecting into a muscle. The insulin will not be absorbed and it will hurt!

DISPOSAL OF SHARP ITEMS (Needles & Lancets):

- ♦ Place used syringes and lancets in a non-transparent, "puncture proof" container such as a liquid detergent or bleach bottle.
- ♦ Dispose of with NON-RECYCLABLE household trash. Do not label the container.
- ♦ Do not throw loose needles into your trash. Do not use a glass container.
- ♦ Do not use a transparent container such as a soda bottle or clear milk carton.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

HYPOGLYCEMIA (Low Blood Sugar) <70

SYMPTOMS MAY BE MILD TO SEVERE
*Develops Suddenly

Watch
* Excessive sweating, faintness, headache.
* Heart pounding, shakiness.
* Impaired vision, hunger.
* Irritable, confusion.
* Not able to wake up.
* Seizure or convulsion.

WHAT TO DO:
* Check blood sugar immediately.
  If **70** or below:
  - Give 4 oz of juice or 4 glucose tabs. Goal is to have 15 gms of rapid acting CHO.
  - Re-check blood sugar in 10-15 minutes.

(Rule of 15 - 15gm CHO / 15 minutes)

* If blood sugar is still **70** or below repeat treatment until above **70**.
* If blood sugar is over **70** but there is no scheduled meal/snack within 30 minutes, give an extra 10-15 grams snack (Ex: Crackers, NOT Juice)

*Do not give fluids if unconscious.
See Moderate to severe hypoglycemia.

CAUSES:
* Unusual amount of exercise * Not eating enough food * Too much insulin *Delayed meal

Key Points about Hypoglycemia:

- ✓ Always have supplies with you to test a blood sugar and treat a low.
- ✓ Be sure that family, friends and school personnel are aware of what to do in case of low blood sugar before it happens.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

HYPOGLYCEMIA

MODERATE

Symptoms:

Same as above plus:

b. aggressive, uncontrollable behavior
c. irritable
d. lethargic, sleepy, confused

Treatment:

- ♦ if person is awake, treat as you would a MILD REACTION with rapid acting carbohydrate.
- ♦ if uncooperative, place GLUCOSE or frosting (CAKE MATE) inside cheek or gum line.

SEVERE

Symptoms:

- ♦ confusion
- ♦ slurred speech
- ♦ unresponsive
- ♦ convulsion

Treatment:

- Use Glucagon Emergency Kit
- Call 911

Glucagon Emergency Kit

If blood sugar levels get so low that the person passes out or cannot swallow, **glucagon is needed**. Glucagon is a medicine that raises blood sugar. It is taken as a shot, and works the opposite of insulin to raise the blood sugar. Glucagon is not sugar, but it makes your body release sugar in the blood.

DOSE: The proper dose of glucagon is weight dependent.

For children weighing **less than 20 kg** (44 pounds) give **0.5 mg**

For children weighing **more than 20 kg** (44 pounds) give **1.0 mg**

- ❖ Convenient kit design for accessibility at home, camp, work, or school
- ❖ Quick and simple to use in an emergency situation
- ❖ Small, easy-to-carry package – no refrigeration needed.
- ❖ Every person who takes insulin should keep glucagon on hand. If insulin is taken, family, friends, care givers and others should learn to give glucagon.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

DIET

Diet and exercise are extremely important factors in achieving well controlled blood sugar levels. Your dietitian will help you better understand how to plan the appropriate diet for your child.

MEAL PLANNING

•Eat a well-balanced diet.
•Make ½ your plate fruits and vegetables
•Make ¼ your plate grains
•Make ¼ your plate protein
•Include low-fat dairy

• Avoid oversized portions.
• Limit pure sugar foods (candy, soda, fruit juice, etc.).
• Increase fiber intake by eating whole grains and whole fruits & vegetables.
• Keep the day-to-day intake consistent.
• Keep meals and snacks close to the same time each day.

General Guidelines for Food Related Behavior

- Set a good example (What you do, not what you say)
- Set up clear expectations
- Give your child a couple of choices and allow him/her to select a snack.
- Avoid asking, "What do you want?" at meal time (Don't be a short order cook). You can offer limited choices, within reason.
- Don't use food as a reward, use your imagination to think of other rewards.
- Avoid applying pressure to accept new foods.
- Avoid TV during meals. Try to make mealtime an enjoyable family time.
- It is very hard for some children to resist abundant sweets and "junk food" at home. It helps if the entire family tries to eat healthy foods at home.

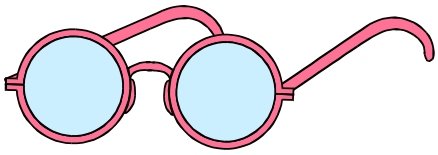
TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE COUNTING

Food is made up of carbohydrates, protein, and fat. Carbohydrates are the portion of food that has the biggest effect on blood sugars. Foods with carbohydrates cause the blood sugar to rise. It is helpful to eat about the same amount of carbohydrates at each meal and snack so that we can expect the blood sugar to rise about the same amount following that meal or snack. That way, insulin can be given in amounts that will best match the rise in blood sugar.

The easiest way to count carbohydrates is to read labels.

LABEL READING



Food labels have a great deal of helpful information. The two most important items to identify on the food label when counting carbohydrates are the "Serving Size" and the "Total Carbohydrates."

According to <u>this</u> label, **one cup** of <u>this</u> food has **25** grams of carbohydrate.

Nutrition Facts
Serving Size 1 cup (30g)
Serving Per Container 19

Amount Per Serving	Cereal	Cereal with ½ cup Skim Milk
Calories	120	160
Calories from Fat	10	15
		% Daily Value**
Total Fat 1.5g*	**2%**	**2%**
Saturated Fat 0g	**0%**	**2%**
Cholesterol 0mg	**0%**	**1%**
Sodium 230mg	**10%**	**12%**
Total Carbohydrate 25g	**8%**	**10%**
Dietary Fiber 1g	**4%**	**4%**
Sugars 9g		
Protein 2g		

"Serving Size" tells us how much of the food makes up one serving. If you eat more than one serving, all the other values increase.

- ✓ *<u>Example:</u>* 2 cups = 2 servings = 25 x 2 = 50 grams of carbohydrate
- ✓ ***<u>NOTE!</u>*** The number of grams next to the serving size is the metric weight of the food **NOT** the number of carbohydrates

"Total Carbohydrate" tells us how many grams of carbohydrate are in one serving. This amount *<u>includes</u>* the "Sugars." It is the total amount of carbohydrate that affects the blood sugar level.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE COUNTING with FIBER and SUGAR ALCOHOLS

Dietary **Fiber** is found in fruits, vegetables, whole grains, and legumes. Fiber is a component of food that passes through our body undigested and unabsorbed – it does not turn to glucose. It may help keep you fuller longer, help keep you regular, and may help reduce disease risk. Since fiber passes through our system undigested and unabsorbed you

**** MAY SUBTRACT THE GRAMS OF FIBER FROM THE TOTAL CARBS IF A SERVING HAS ≥ 3 GRAMS PER SERVING****

Example: ½ cup of this food has 28 grams Carbohydrate and 6 grams Fiber.

28 g Total Carb
\- 6 g Fiber
22 g → Count as 22 g Carb

Some food labels will also include **Sugar Alcohols** – About 50% of sugar alcohols are not absorbed or digested by our body, so if the number of sugar alcohols is ≥ 3 grams per serving you can subtract half of the sugar alcohol grams from the Total Carbohydrates.

Nutrition Facts

Serving Size: 3/4 Cup	
Amount Per Serving	
Calories 90	Calories from Fat 22
	% Daily Value*
Total Fat 2.5 g	**4%**
Saturated Fat	
Trans Fat	
Cholesterol	
Sodium 135 mg	**6%**
Potassium	
Total Carbohydrate 29 g	**10%**
Dietary Fiber 1 g	**4%**
Sugars 0 g	
Sugar Alcohols 24 g	
Protein 1 g	

Example: ¾ cup of this food has 29 grams Carbohydrate and 24 grams Sugar Alcohol.

29 g Carb
\- 12 g Sugar Alcohols (Subtract half of the total)
17 g → Count as 17 g Carb

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE COUNTING

Carbohydrate amounts can be found in a few places:

- Nutrition Facts Label - Look for "Serving Size" and "Total Carbohydrates"
- Online (calorieking.com)
- In this packet
- Phone Apps
    - "Calorie King Calorie Counter" – Food database app that contains carbohydrate amount for over 70,000 foods and includes 260 fast food chains and restaurants.

    - "Carb Counting With Lenny" – This app has fun interactive games which teach basic carbohydrate counting to kids.

    - "Diabetes Buddy Lite" – This app has an extensive food database and can help with carbohydrate counting on almost all foods, including restaurant items. This can also keep track of your blood sugar, medications, activity, food and water intake, as well as weight. Keep all your information in one place that's easy and convenient.

    - "Log Frog" – This app allows you to log blood sugar numbers, medications, carbohydrates or exercise information. Easily customizable, with useful graphing tools. Data can be exported easily to be shared with family or physicians.

    - "Genius Scan" – This app turns your phone into a pocket scanner. You can easily take a photo of something and have it turned into an easy to read pdf or jpeg file. This can be used to photograph log books and email them to family or physicians.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE COUNTING

Your diabetes meal plan would either be a Consistent Carbohydrate Goal OR an Insulin to Carbohydrate Ratio.

F.Y.I. – These are carbohydrate goals. Your Registered Dietitian/Diabetes educator will give you an individualized meal plan and your own carbohydrate goals if needed or you will use Carb Counting (See Below)

- 0-6 months: feed on demand every 3-4 hours
- 6-12 months: ad lib – 3 meals/3 snacks, no juice
- 1-3 years: 25-40 gm/meal, <6 gm snacks between meals and at bedtime
- 4-7 years: 35-50 gm/meal
- 8-12 years: 50-65 gm/meal
- 13-18 years: 65-85 gm/meal

With Carb Counting your Dietitian may suggest that you use an Insulin to Carbohydrate Ratio. An Insulin to Carb Ratio is individualized and provides more flexibility in how many carbohydrates you eat per meal. The ratio will help you give the appropriate amount of insulin for the number of carbohydrates you are eating. For example, if your Insulin:Carb = 1:15, then give 1 unit of insulin for every 15 grams of carbohydrate eaten.

Example: Breakfast -

- 1 egg 0 grams
- 1 slice toast 15 grams
- 1 tbsp. sugar free jelly 5 grams
- 1 tsp butter 0 grams
- 17 grapes 15 grams
- 1 cup low-fat milk 12 grams

Total grams carbohydrates: 47 grams

- Insulin:Carb = 1:15 = 47 grams Carb / 15 = 3 units of insulin
- Insulin:Carb = 1:23 = 47 grams Carb / 23 = 2 units of insulin

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE COUNTING

To help measure your food you can use **measuring cups** or a **food scale**. There are food scales that simply weigh the food, and there are more elaborate ones that include food databases and calculate the amount of carbohydrates based on the food and its weight.

Talor Digital Nutritional Food Scale, $49.79 at Target, includes a food reference book. Simply look up the food code (example: Spaghetti = 099), put the food on the scale, type in the code, press CHO and the number of carbohydrates will show up on the display.

Eat Smart Digital Nutrition Scale, $69.95 on Amazon.com, includes a database with the nutrition information for approximately 1,000 foods. The scale instantly calculates carbohydrates, calories and 10 other nutrients relative to the food and serving size.

It is important to be accurate when measuring and counting carbs to be sure you give yourself the right amount of insulin.

Eyeballing	**Measuring**
2 slices Multigrain Bread = 30g	2 slices Multigrain Bread = 34g
Peanut Butter = 7g	2 Tbsp. Peanut Butter = 7g
Polander All Fruit Jelly = 10g	1.5 tsp Polander All Fruit Jelly = 15g
1 Apple = 15g	1 Apple (5.5 oz.) = 17g
Big Glass of 1% Milk = 13 g	Glass of 1% Milk (12 oz.)= 19.5g
TOTAL = 75 g	TOTAL = 92.5 g
Insulin: CHO = 1:10	Insulin: CHO = 1:10
7.5 units of insulin	9 units of insulin
Blood Glucose = TOO HIGH!	

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE COUNTING

Cooking From Scratch

When cooking foods that do not have a nutrition facts label, it is important to still calculate the number of carbohydrates. Follow the recipe and count carbohydrates for each item. Then total up the number of carbohydrates and divide by the number of servings you made to tell you how many grams of carbohydrate are in each serving.

Example - Homemade Macaroni and Cheese: 6 servings

8 oz. dry pasta	180 grams carbohydrate
2 cups cheese	0 grams carbohydrate
3 cups milk	36 grams carbohydrate
¼ cup butter	0 grams carbohydrate
2 ½ tbsp. flour	15 grams carbohydrate
Seasonings	0 grams carbohydrate
Total grams:	**231 grams / 6 servings = 38.5 grams per serving**

Calcium and Vitamin D

8 ounces of milk or yogurt = 12 grams of carb

Dairy products are a healthy source of carbohydrates and are part of a well-balanced diet. Calcium is important to keep bones and teeth healthy and strong. Vitamin D, also known as the "Sunshine Vitamin," helps our bodies absorb calcium. These two nutrients work together. The goal for calcium intake is at least 3 servings of dairy products every day, and is especially important in children and teenagers.

Always remember - **"3-A-Day!"**

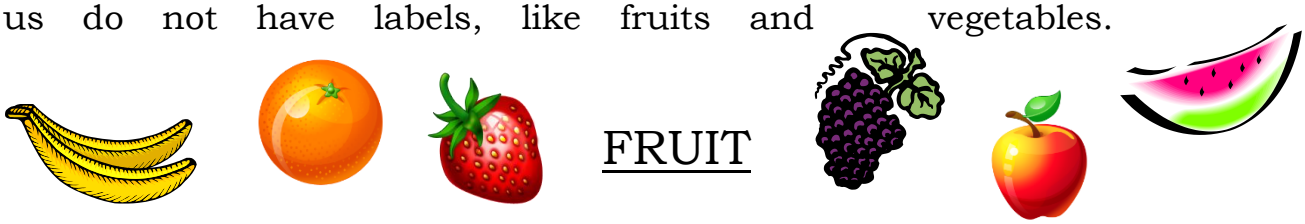
1. **Calcium Food Sources:** dairy products, green leafy vegetables, salmon, sardines
2. **Vitamin D Food Sources:** fortified milk, fortified cereals, fish, cheese, butter, margarine




TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE COUNTING (continued)

However, not all foods have labels. In fact many foods that are very good for us do not have labels, like fruits and vegetables.



FRUIT

Food	Description	Portion	Grams of Carbohydrate	Grams of Fiber
Apple	Small, unpeeled	1 apple (4 oz.)	16	3
	Sauce, Unsweetened	½ cup	14	2
Banana	Small	1 banana (4 oz. with peel)	16	2
Blackberries	Fresh	¾ cup	14	5
Blueberries	Fresh	¾ cup	15	3
Cantaloupe	Fresh	1 cup cubed (11 oz. with rind)	13	1
Cherries	Sweet, Fresh	12 Cherries (3 oz.)	14	2
Grapefruit	Large	½ grapefruit	13	2
Grapes	Small	17 each	15	1
Honeydew	Fresh	1 cup cubed (10 oz. with rind)	16	1
Kiwi	Fresh	1 (3 ½ oz.)	14	3
Orange	Fresh	1 small (6 ½ oz.)	15	3
	Mandarin, canned	¾ cup	18	1
Pineapple	Fresh	¾ cup	14	1
	Canned	½ cup	20	1
Plantain	Cooked	1 cup sliced	48	-
Raisin	Dried	2 Tablespoons	14	1
Strawberries	Fresh	1 ¼ cup whole berries	13	4
Watermelon	Fresh	1 ¼ cup (13 ½ oz. with rind)	15	1

Fruit juice is very high in carbohydrates and is an ideal treatment for low blood sugars. However, most children with diabetes find that they are most satisfied with their meal plan when they limit fruit juice to no more than 4-6 ounces per day. Try drinking water to quench thirst instead of juice.

Each of the following juices has **15** grams of carbohydrate per serving

1/2 Cup	Apple, Cider, Orange, Pineapple
1/3 Cup	Cranberry, Prune, Grape


VEGETABLES


Three to five servings of vegetables are recommended each day. Most vegetables are low in fat, excellent sources of vitamins, and high in fiber. The vegetables listed on this page are very low in carbohydrates and may be eaten as part of meals or as "extra snacks" throughout the day in the portion size indicated.

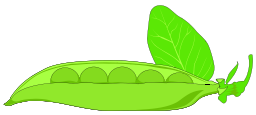
Serving Size: 1 cup Raw or ½ cup Cooked

LOWER CARBOHYDRATE VEGETABLES

Vegetable	Carb. Grams	Fiber Grams
Artichoke	7	3
Artichoke hearts	7	1
Asparagus	3	2
Beans (green, wax, Italian)	3	1
Beets	6	2
Broccoli	5	3
Brussels Sprouts	7	3
Cabbage	3	2
Cauliflower	4	2
Celery	3	1
Cucumber	4	1
Eggplant	3	1
Green onions or scallions	7	3
Greens (collard, mustard	3	1

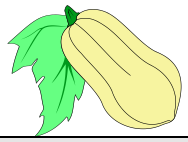
Vegetable	Carb. Grams	Fiber Grams
Leeks	4	-
Mushrooms	4	1
Okra	7	3
Onions	10	2
Peppers (all varieties)	5	2
Radishes	4	2
Salad Greens	2	1
Sauerkraut	5	3
Spinach	4	2
Summer squash	5	2
Turnip	4	2
Water Chestnuts	9	2
Watercress	0	0
Zucchini	4	1

- Remember, three to five servings of vegetables are recommended each day. To meet this goal, try including vegetables with lunch, dinner, and snacks.

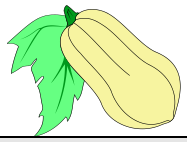


MEDIUM CARBOHYDRATE VEGETABLES

Vegetable	Description	Portion	Grams of Carb	Grams of Fiber
Carrots	Canned	½ cup	4	1
	Fresh, cooked	½ cup	8	3
	Raw	1 cup	11	3
Pea Pods	Fresh, cooked	½ cup	6	2
	Raw	1 cup	11	4
Tomato	Raw	1 cup	8	2
Tomato Sauce		½ cup	9	2

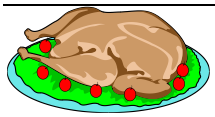


HIGH CARBOHYDRATE VEGETABLES



Food	Description	Portion	Grams of Carbohydrate	Grams of Fiber
Acorn Squash	Cooked	1 cup	22	1
Baked Beans	Cooked	1/3 cup	17	4
Butternut Squash	Cooked	1 cup	22	7
Corn	Cooked	½ cup	17	2
Corn on the cob	Cooked	1 medium (5 oz.)	19	2
Peas	Cooked	½ cup	11	4
Plantain	Cooked	1 cup sliced	48	4
Potato	Baked or Boiled	1 small (3 oz.)	22	2
	Mashed	½ cup	16	2
Pumpkin	Cooked	1 cup	22	7
Sweet Potato	Cooked	½ cup	22	3
Yams	Cooked	½ cup	19	2

- **Remember, three to five servings of vegetables are recommended each day. To meet this goal, try including vegetables with lunch, dinner, and snacks.**

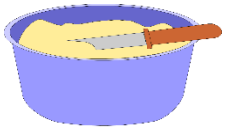


Protein

Meat does not have carbohydrates naturally and can be included in a meal plan with minimal effects on blood sugar levels. The only time meat would have carbohydrates, is if a source of carbohydrate was added in the preparation or cooking process. For instance, adding bread crumbs or flour to a piece of chicken would add carbohydrates, but the meat alone does not have any.

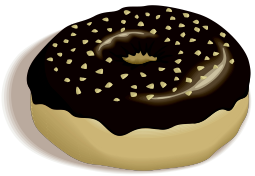
Eggs, cheese, and nuts have zero to minimal carbohydrates and are a great source of protein.

Beef	Fish
Cheese	Game
Eggs	Lamb
Deli Meat	Pork
Nuts	Poultry



Fat

Although fat is an important component of our diets, it is important to avoid eating a diet that is high in fat, particularly saturated fat. Fat alone has a minimal effect on blood sugar levels. Once you are comfortable practicing carbohydrate counting, your dietitian will help you understand the importance of eating a low fat diet and show you how to make “heart healthy” food choices for the entire family.



Sweets & Dessert-Type Items

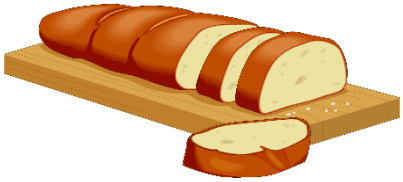
Dessert-type items can be worked into a diabetes meal plan on occasion. However, these foods are frequently high in fat and provide minimal amounts of vitamins and minerals. When these foods are eaten on a regular basis, they take the place of more nutritious foods and may result in dental cavities, poor nutritional status, and excessive weight gain.

PASTA SECRETS

Most pasta boxes indicate that one serving is equal to 2 ounces of dry pasta. Since most of us prefer to eat pasta *cooked*, calculating one serving of cooked pasta can be tricky. The yield of cooked pasta can vary depending on the shape of the noodle, so you may find the conversion guide below helpful.

Noodle Type	1 Serving Uncooked	Cooked Portion	Grams Carb.
Spaghetti	2 ounces	1 cup	40-45
Elbows	2 ounces or ½ cup	1 cup	40-45
Egg Noodles	2 ounces or 1 1/3 cup	1 ½ cups	40-45

*****Be sure to read the label on your pasta box because each shape and brand vary*****



BREAD & BAGELS

1 ounce = 15 grams of carbohydrate

Determining the amount of carbohydrate in homemade breads and deli bagels can be difficult. If you eat these items on a regular basis, you may choose to purchase a small food scale so that you can most accurately determine their carbohydrate content.

FLOUR GUIDE

Flour Type	Portion Size	Carbohydrate
Wheat Flour	1 cup	95 grams
	1 Tablespoon	6 grams
Potato Flour	1 cup	144 grams
	1 Tablespoon	9 grams
Brown Rice Flour	1 cup	121 grams
	1 Tablespoon	8 grams
White Rice Flour	1 cup	127 grams
	1 Tablespoon	8 grams

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

CARBOHYDRATE GUIDE FOR SCHOOL MEALS

All schools have access to the foods that are being served. If your child gets school lunch be sure to work with the school nurse and/or food service director for accurate carbohydrate counting materials.

Federally funded school lunch programs are required to meet certain nutritional requirements. While meals are intended to be well balanced over the course of a week, individual meals may NOT be consistent in carbohydrates. For this reason it is important to review the school menu to ensure that each meal falls within recommended carbohydrate goals.

Low Carb SNACK GUIDE

Hungry for a snack but don't want to take a shot? Try **one** of these low carb snacks (5 g carb or less). Remember…if you eat 2 or 3 of these snack together, it adds up to 10-15 g carb, and then a shot may be necessary.

- ¼ cup mixed nuts (almonds, peanuts, pistachios, walnuts)
- ¼ cup seeds (sunflower, pumpkin)
- 1 oz low-fat cheese (any soft or hard) with 2-3 baby carrots
- 1 slice lean cold cuts (turkey, low-fat ham) rolled up in a leaf of lettuce (optional: add mustard or a pickle)
- ½ hardboiled egg (or just egg white) with light mayo
- ½ cup raw vegetables (baby carrots, celery, peppers, cucumber) with ½ cup cottage cheese, low-fat ranch or sour cream dip
- ½ cup low-fat cottage cheese or sour cream with 2-3 sliced strawberries
- ½ cup tuna, egg, or chicken salad with light mayo (instead of bread us a leaf of lettuce)
- 1 cup salad mix (mixed greens + raw veggies) with oil & vinegar
- 3-4 celery sticks with 1 Tbsp. NATURAL peanut butter (SMUCKERS) or cream cheese
- 1 serving sugar free Jell-O with lite whipped cream
- 1 Dannon Light'n Fit CARB CONTROL Smoothie (4g of carbs)
- 1 Dannon Light'n Fit CARB CONTROL Yogurt (3g of carbs)
- 1 Sugar Free Popsicle
- ½ cup ricotta cheese with cinnamon, vanilla extract, 4-5 nuts, Splenda
- 3-4 pickles or 5-6 olives with 1 oz low-fat cheese
- ¼ cup edamame (soybeans)

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

MEAL PLAN

Meal Plan For: _____

Date:_____

BREAKFAST

Time: _____ _____ **grams of carbohydrate**

SNACK

Time: _____ _____ **grams of carbohydrate**

LUNCH

Time: _____ _____ **grams of carbohydrate**

SNACK

Time: _____ _____ **grams of carbohydrate**

DINNER

Time: _____ _____ **grams of carbohydrate**

SNACK

Time: _____ _____ **grams of carbohydrate**

_____

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

SICK DAY MANAGEMENT

As you have learned, there are many factors that affect blood sugar levels. Illness is one of those factors.

The following is a list of the critical things to remember concerning sick day management:

1. When your child gets sick, your first job is to get the information you need:
   - ✓ What are current blood sugars?
   - ✓ Are ketones in the urine? Please test with every void.
   - ✓ Is there a fever? How high?
   - ✓ Is there any vomiting, nausea or diarrhea?
   - ✓
2. **Some insulin must be given even if your child is unable to eat.** Sometimes, illness raises the blood sugar. At other times, the blood sugar may be low because of a decrease in food intake. Call the diabetes team or the doctor on call **(915)-215-5700** if you have any questions regarding the dose your child should get when he/she is ill.

3. Do not leave your child at home alone.
   - Have your child rest, keep warm--
   - It is OK to take medicines and pain relievers appropriate for all children to relieve a fever or headache.
   - Phone the pediatric diabetes doctor on call at **(915)-215-5700** if your child is ill and:
     1. your child shows moderate to large ketones in the urine
     2. your child has vomited more than two times and cannot keep anything down
     3. your child has difficulty breathing or is having to breathe very deeply
     4. you need help in adjusting insulin dose

SICK DAY MANAGEMENT

During sick days it can be challenging to keep your child's blood sugar in range. Typically, blood sugar increases when your child is ill. It is always important to remember four things when your child is ill:

1. **Your child will need insulin:** dose of insulin will depend on his/her blood sugar.
2. **Your child may need carbohydrates** (juice, regular soda, Gatorade, regular popsicles)- if he/she is not eating/vomiting **AND** blood sugar is less than 100
3. **Check blood sugar every 2 to 3 hours**
4. **Check urine or blood for ketones with any illness**

No vomiting with Negative ketones	**No vomiting with trace to small ketones**
• Check blood sugar every 2 to 3 hours • Check ketones every 4 hours • Child may need correction with meals and every 2 hours if blood sugar is more than 250	• Check blood sugar every 2 hours • Check ketones every 4 hours • Increase intake of non-carbohydrate fluids - as tolerated • Child may need correction with meals and every 2 hours if blood sugar is more than 150 • If your child's condition is getting worse, ketones are increasing, blood sugar is increasing or vomiting – call your diabetes doctor

Vomiting with trace to small ketones	**No vomiting or Vomiting with moderate to large ketones**
• Check blood sugar every 2 hours • Check ketones every 4 hours • If unable to keep food down, give fluids **with** carbohydrates. It is important to keep your child hydrated. • If your child's condition is getting worse, persistent vomiting, ketones are increasing, blood sugar is increasing or unable to keep blood sugar above 70 – **Call your diabetes doctor or go to the Emergency Room**	• If ketones are present, this is an emergency. • For Moderate Ketones: **Add 10% more Insulin to your usual correction:** Multiply your correction dose by 1.1 • For Large ketones: **Add 20% more Insulin to your usual correction:** Multiply your correction dose by 1.2 • If no improvement in 4 hours: **Call Diabetes Doctor at 915-215-5700 or go to the Emergency Room**

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

EXERCISE

Regular exercise is an important part of a program to develop a healthy life style. At the same time, a regular exercise program helps to control blood sugar levels. It does this in the following ways:

•Exercise helps burn excess sugar. Insulin is more effective during periods of exercise.

•Exercise helps people feel better. Many people feel better when they exercise regularly. They also tend not to tire as easily.

•Exercise tends to keep the body in shape and at the appropriate weight.

•Exercise helps keep cholesterol and other blood fats normal.

Because exercise lowers the blood sugar, it is important that you and your child adjust both the amount of food and insulin required to the level of exercise. The following are basic suggestions for safe enjoyable exercise:

- Wear a medical ID bracelet or necklace.

- Exercise with a friend who knows about low blood sugar insulin reactions.

- Snack before and possibly during heavy exercise. **A general rule of thumb is 15 gms. of carbohydrate extra for every 30 minutes of heavy exercise.**

- Check blood sugars before and after exercise to learn the best insulin adjustment for the activity.

- Always carry rapid-acting carbohydrates (Glucose Tabs, juice box)

- Try to inject insulin in a non-exercising site.

- **Don't exercise if moderate to large ketones are present in the urine.** The presence of ketones indicates the need for additional insulin. The ketones may increase if exercise is done at this time.

- Make sure coaches and teachers know about low blood sugar reactions.

- Drink plenty of water, especially in hot weather.

- **Have fun!**

TEXAS TECH UNIVERSITY PROGRAM FOR CHILDREN WITH DIABETES

PHYSICAL ACTIVITY AND DIABETES MANAGEMENT FOR CHILDREN FREQUENTLY ASKED QUESTIONS

1. How will physical activity affect my child's blood sugar?

-Physical activity and general play, for example playing at the playground with friends, playing tag, catch, or riding a bike, will usually lower a child's blood sugar.
-The sugar moves from the blood, and into the muscles, where it can be used for energy.
-Some activities (for example sprinting or weight lifiting) may raise the blood sugar first and lower it later, due to adrenaline, or "stress hormones".

2. Should I let my child be active?

Absolutely! General activity is good for building endurance, muscle strength and cardiovascular ("heart") fitness. Plus, it's fun, and may improve mood. We recommend less than 2 hours a day of total combined screen time (TV, computer, video games, cell phones) and at least one hour of physical activity per day.

3. How will I know if my child is having a low blood sugar ("hypoglycemia")?

-Parents often worry about low blood sugars. For infants, toddlers and preschoolers, it may be more difficult to tell if your child is "low".
-Some signs of low blood sugar include "crankiness", falling asleep, temper tantrums, hunger, general fussiness, or "unusual behavior". Of course, these things can happen withOUT low blood sugar, so when in doubt, it's best to test the blood sugar.
-The same symptoms may apply to school age children, but they may be more aware, and able to tell, when they are "low".

4. How can I prevent low blood sugars?

-If your child has received insulin, and then not finished a meal or snack, be alert that they may have a low blood sugar. When in doubt, test.
-Before activity, give a 10 to 15 gram carbohydrate snack (5 to 10 grams for infants), with NO insulin.
-Test before, during and after activity, if you are concerned. If the blood sugar is in the high 100s before activity, your child may not need an extra snack.
-In some instances, you may need to lower the insulin at the meal prior to the exercise.

5. What are the best "carbs" to use?

-The best "carbs" would be 4 ounces of gatorade, small juice boxes, or a piece of fruit.
-The sugars from these carbs are available immediately to be used for energy.
-For longer periods of exercise, you may choose a snack which mixes a little protein or fat, such as a granola bar, or half a peanut butter and jelly sandwich, or small apple with PB or cheese.

6. Are there any activities or situations which may be more likely to cause low blood sugars?

-Certain activities- like trampolines and swimming may burn a lot of calories, and cause lows more quickly. Because of safety issues, ALWAYS test the blood sugar before these activities.
-"Active" birthday parties (such as "Chucky Cheese") may also burn a lot of calories.
-Children can usually have a small slice of cake at these parties without insulin, and have fairly good blood sugars later.

7. Looking for "trends" in blood sugars is helpful.

-Different activities usually effect the blood sugar in different ways, but it is not possible to always predict exactly how your child will respond. As time goes on, you will become familiar with the different effects of various activities. For example, if you notice that every time your child goes swimming after dinner, the blood sugar is low in the middle of the night, or in the morning, you can either give a snack (carb and protein, eg. cold cereal with milk) at bedtime, or lower the lantus dose at bedtime.

8. What about sports and school age children?

-In general, younger children playing sports in a recreational setting (eg. baseball, basketball, football, soccer in "rec" leagues) can test their blood sugar before activity, and have an extra 15 gram snack. For high levels of activity, lasting more than an hour, test after an hour, and give additional snacks as needed. You may also want to test at the end of the activity.
-Some activities, for example playing outfield in baseball, may not be very active, and NOT need any additional snacks.

9. What are the suggested blood sugar goals before exercise?

-30 minutes: above 150 may not require carbs, Less than 150- 4 ounces of juice or 15 carbs
-30 to 120 minutes: 80 to 150- 8 oz sport drink, plus fruit; Over 150- half a sandwich
-2 to 4 hours: 80 to 150- fruit, whole sandwich; Over 150- whole sandwich
You may also lower the pre meal LOG-insulin up to 50%, or lower the Lantus, if there is all day exercise (such as hiking, boogey boarding or biking for several hours straight)
-Ask your health care provider to review these options with you.

MEDICAL IDENTIFICATION BRACELETS

We recommend purchasing a medical ID bracelet for your child so that emergency responders can quickly identify a problem with your child when you are not available. Medical ID bracelets can prevent harmful medical errors and speed assessment and treatment. There are a variety of options available in fun, kid-friendly styles. Please see separate brochure for ideas.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

DIABETES RESOURCES

There are foundations and associations for the purpose of helping people with diabetes.

The JDRF (Juvenile Diabetes Research Foundation) is primarily devoted to finding a cure for Type 1 diabetes. This foundation provides a generous "Bag of Hope" to all families of children with newly-diagnosed diabetes. This is a free service and is provided by donations. It has diabetes-related supplies, books and Rufus, the stuffed bear with diabetes.

* To obtain your free "Bag of Hope" or get general information: You may contact the JDRF www.jdrf.org

The ADA (American Diabetes Association) is devoted to helping all people with diabetes, either Type 1 or Type 2. This association provides a generous "Wizdom Kit" for all kids newly-diagnosed with diabetes. This free kit contains diabetes-related supplies, books and other toys.
* To obtain your free "Wizdom Kit" or get general information:
You may contact the ADA at 1-800- DIABETES 1-800-842-6323 (select option #6 for the kit) or www.diabetes.org/wizdom.

RECOMMENDED WEB SITES:

Children with Diabetes	**www.childrenwith diabetes.com**
American Assoc. of Diabetes Educators	**www.aadenet.org**
Diabetes Monitor	**www.diabetesmonitor.com**
Insulin Pumpers	**www.insulin-pumpers.org**
Kids with Diabetes	**www.kidswithdiabetes.org**
National Diabetes Info	**www.niddk.nih.gov/health/diabetes/ndc.httm**
The Foundation of Diabetes Research	**www.diabetenj.org/links.html**
Diabetes Interview	**www.diabetesinterview.com**
Diabetes Mall	**www.diabetesnet.com**
Carbohydrate Amounts in Food	**www.calorieking.com**

DIABETES CAMPS:
There are excellent camps available to those children wanting to meet other children with diabetes and **have fun** at the same time! These two camps work primarily with girls or boys during the summer, but both camps offer co-ed and family-oriented programs throughout the year. Speak to your Doctor for options available for you

TEXAS TECH UNIVERSITY PROGRAM FOR CHILDREN WITH DIABETES

SUPPORT FOR CHILDREN & THEIR FAMILIES

A diagnosis of diabetes may represent a crisis for children and parents who need to accept the diagnosis and its implications and manage their individual feelings about it. We know that living with diabetes makes life more stressful, so children and parents are bound to feel frustrated, scared, and angry from time to time. When stressed, it is helpful to find a way to release your feelings and to problem-solve constructively. Groups can provide an excellent format for expression and mutual support!

- **"Super Saturday"** is a half-day program (9am-12:30pm) for children 4-8 or 8-12 years of age who have Type I diabetes. The program is designed to give children with diabetes the opportunity to share similar experiences in a fun and relaxed atmosphere. The program includes planned activities, games, discussion, and a group lunch. Super Saturday is held at El Paso Children's four times each year, and registration is required. Please ask your case manager or Doctor for more information.

- **"A Lifestyle and Coping Program"** is a training and support program for adolescents with diabetes. Adolescents meet for 1 ½ hours each week for six weeks to receive skills-based training from professionals and support from their peers. The program uses a cognitive-behavioral model to help teenagers better understand stress and its effect on their emotional health, expand their coping responses, learn problem-solving skills, and communicate more effectively with family and friends. This program is held at different times each year, and registration is required. Please ask your case manager or Doctor for more information.

- **"The El Paso Education Group for Parents of Children with Type 1 Diabetes"** is a support program sponsored by The Juvenile Diabetes Research Foundation. Please ask your case manager or Doctor for more information.

- **The Clinical Social Worker for the Diabetes Clinic at Texas Tech University Health Science Center** is also available to meet with children and families to:
    - Help manage critical issues at diagnosis.
    - Facilitate positive self-care attitudes, coping behaviors, and motivation.
    - Educate and problem-solve at different developmental stages.
    - Assist families with communication, conflict, and sibling issues.
    - Intervene and provide support for social, emotional, or behavioral problems.
    - Help locate concrete resources (financial, housing, insurance concerns).

    Please ask your case manager or Doctor for more information

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

ADDITIONAL READING LIST

Diabetes Book Resources:

Here is a list of books available to further your knowledge, skill and comfort level with the management of diabetes.

- Beaser, Richard S., MD with Joan V.C. Hill, RD, CDE. A Program for Managing your Treatment: The Joslin Guide to Diabetes. New York: Simon & Shuster, 1995.

- Betschart, Jean, MN, RN, CDE and Susan Thom, RD, LD, CDE. In Control: A Guide for Teens with Diabetes. New York: John Wiley & Sons, Inc. 1995.

- Betschart, Jean, MN, RN, CDE. It's Time to Learn About Diabetes. A Workbook on Diabetes for Children. Minnesota: Chronimed Publishing, 1991.

- Brackenridge, Betty Page, MS, RD, CDE and Richard O. Dolinar, MD. Diabetes 101. A Pure and Simple Guide for People Who Use Insulin. New York: John Wiley & Sons, Inc., 1998.

- Brackenridge, Betty Page, MS, RD, CDE & Richard R. Rubin, PhD, CDE. Sweet Kids: How to Balance Diabetes Control & Good Nutrition with Family Peace. Virginia: American Diabetes Association, Inc., 1996.

- Brand-Miller, Jennie, PhD, Kaye Foster-Powell, Thomas M.S. Wolever and Healther Gilbertson. The Glucose Revoluation Pocket Guide to Chidlren with Type 1 Diabetes. New York: Marlowe & Company, 2001.

- Feste, Catherine. Medications on Diabetes. Virginia: American Diabetes Association, Inc., 1999.

- Finsand, Mary Jane. The Diabetic Chocolate Cookbook. New York: Sterling Publishing Co, Inc. 1984.

- Gehling, Eve, Med, RD, CDE. The Family & Friends Guide to Diabetes. Everything you Need to Know. New York: John Wiley & Sons, Inc., 2000.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

ADDITIONAL READING LIST (continued...)

- Goldmann, David R., MD and David Horowitz, MD. American College of Physicians: Home Medical Guide to Diabetes. New York: Dorling Kindersley, 2000.

- Guthrie, Diane W. RN, PhD, and Richard Guthrie, MD. The Diabetes Sourcebook, Today's Methods and Ways to Give Yourself the Best Care. 4th Edition. Los Angeles: Lowell House, 1999.

- Johnson, Robert W., Sale Johnson, Casey Johnson and Susan Kleinman. Managing Your Child's Diabetes. New York: MasterMedia Limited, 1994.

- Loring, Gloria. The Kids, Food and Diabetes Family Cookbook. California: Gloria Loring for the Juvenile Diabetes Foundation International, 1991.

- Loy, Spike Nasmyth and Bo Nasmyth Loy. Getting a Grip on Diabetes: Quick Tips and Techniques for Kids and Teens. Virginia: American Diabetes Association, 2000.

- McAuliffe, Alicia. Growing up with Diabetes. What Children Want their Parents to Know. New York: John Wiley & Sons, Inc., 1998.

- Rubin, Alan L. Diabetes for Dummies. New York: IDG Books Worldwide, 1999.

- Schneider, Clara G. MS, RD, LD. The Diabetics Brand Name Food Exchange Handbook. Philadelphia: The Running Press, 1991.

- Welch, Christine B., Managing Editor. The Take Charge Guide to Type 1 Diabetes. Virginia: American Diabetes Association, 1994.

- Wysocki, Tim PhD. The Ten Keys to Helping Your Child Grow up with Diabetes. Virginia. American Diabetes Association, 1997.

TEXAS TECH UNIVERSITY PROGRAM
FOR CHILDREN WITH DIABETES

DIABETES AT SCHOOL

ALL CHILDREN WITH DIABETES CAN PARTICIPATE FULLY--ACADEMICALLY, PHYSICALLY AND SOCIALLY IN ALL SCHOOL ACTIVITIES. Diabetes, however, requires planning. Ideally, parents should take the lead in educating the school staff about the special needs of their child. Below is some important information for any adult who is responsible for a child with diabetes anytime during the day.

What is Diabetes?

Diabetes is a disease that interferes with the way the body uses energy. Ordinarily, the body converts food to glucose (sugar). Then, with the help of a hormone called insulin, glucose is used for energy. When a child develops Insulin-Dependent (Type 1) Diabetes, it is because the pancreas has stopped making insulin, causing glucose to build up in the blood. Daily insulin injections are required to keep the child with diabetes healthy.

Treatment must be consistent

A goal of treatment for any child with diabetes is to keep the blood glucose levels as close to normal as possible. This is accomplished with a regular daily routine of well-balanced meals, insulin injections and exercise.

Schools have legal duties

All children are entitled to "participate fully and without discrimination" in school programs, according to Section 504 of the Federal Rehabilitation Act of 1973. This means that children with diabetes should not be separated from peers any more than is necessary. Schools must provide health services that are needed by the child to attend school. For instance, the administration of medication and testing of blood or urine glucose and ketones are procedures prescribed by a physician which a qualified school nurse or other trained person may be asked to do on occasion.

Hypoglycemia

Also known as low blood sugar or insulin reaction, hypoglycemia occurs when the blood-glucose level has dropped below normal. It is the most common medical emergency for a child with diabetes. Symptoms come on rapidly and can include any of the following: irritability, confusion, shakiness, sleepiness, sweating, dizziness, crying or personality changes. Children are taught to recognize these symptoms, but some children may not recognize symptoms in time to treat. Therefore, teachers, coaches and other school personnel must be able to recognize and treat insulin reactions.

DIABETES AT SCHOOL (continued)

Treatment for Hypoglycemia

THE CHILD NEEDS TO EAT OR DRINK SOMETHING WITH SUGAR. Sugar or food containing sugar, should be kept in the classroom so that reactions can be treated quickly. Examples include: One small can of juice, 4-6 ounces of milk, or prepared glucose tablets. Candy is usually not recommended but can be used in a pinch. The child should recover after 15 or 20 minutes. Talk to the parents about their child's specific symptoms and treatments. If you are not certain whether a child is having a reaction remember: When in doubt, treat.

Hyperglycemia

In children with diabetes the blood sugar may fluctuate from normal (80-150) to elevated (300-400) without symptoms. Persistently elevated blood sugars (over 400) may cause symptoms including increased thirst, urination, weight loss, and fatigue (These are the classic signs of undiagnosed diabetes). Teachers should be alert to children who are making more trips to the bathroom or asking for water. Parents should be notified if the child has moderate to large ketones in the urine.

Ketoacidosis

A potentially life-threatening condition that occurs rarely in a child with well controlled diabetes. If a child begins to appear ill with abdominal pains, dry flushed skin, nausea, fruity smelling breath, or heavy, labored breathing, please test blood sugars and/or ketone levels and call parents if appropriate.

Testing

Children may test blood glucose during the day as part of their treatment regimen. Also, a child may ask to test blood glucose if he or she thinks blood sugar is dropping. **DO NOT SEND THE CHILD OUT OF THE CLASSROOM ALONE IF YOU ARE CONCERNED ABOUT LOW BLOOD SUGAR.**

Exercise

Exercise is part of the diabetes regimen. Notify parents of any changes in the child's typical day. Gym teachers need to watch for symptoms of low blood sugar, as do teachers who have the child in a class after gym or just before lunch.

School Forms

Our programs will supply any needed physician forms to treat diabetes at school. Please call us at (915) 215-5700 if these forms are not current or need to be changed in any way.