

# Owners Manual



**Pediatric Endocrinology Clinic**  
Naval Medical Center Portsmouth

# Owner's Manual For Children With Diabetes

## Tips And Tricks To Help You Get Started

Written by: Linda Gottlick, RN, BSN, CDE

Reviewed by: Christina Cristaldi, DO, Maj, USAF, MC  
Pediatric Endocrinologist

A special thanks to our entire Diabetes Team as well as the awesome NMCP Visual Information Department who made this possible.

# Table Of Contents

	Page
What To Expect During Your Admission . . . . .	1
What Is Diabetes . . . . .	2
Why Did This Happen . . . . .	3
Treatment . . . . .	4
How Do You Know If Your Treatment Plan Is Working . . . . .	5
Your Meter . . . . .	6
What Will I Need To Check My Blood Glucose . . . . .	7
Insulin: Basal/Bolus Therapy . . . . .	8
When To Inject Insulin . . . . .	9
Giving Your Injections . . . . .	10
Insulin Injections With Syringe . . . . .	10
Using Insulin Pens . . . . .	11
Hyperglycemia . . . . .	12
Checking Ketones/Sick Day Management . . . . .	13
Hypoglycemia . . . . .	15
Glucagon . . . . .	17
Exercise . . . . .	18
What Should I Eat . . . . .	19
Follow Up Guidelines . . . . .	22
Resources . . . . .	23
Intensive Diabetes Management Practice Worksheet . . . . .	24
Know/Use Your Numbers . . . . .	25
Blood Glucose Log . . . . .	26
Notes . . . . .	27

# What To Expect During Your Child's Admission:

## NMCP Diabetes Management Team



We are all part of your Diabetes Management Team. We know you and your family are adjusting to lots of new information. While you are here in the hospital we will focus on a few main areas so that you can go home and safely take care of yourself. The Diabetes Team includes your Physicians, Nurses, Diabetes Educator, Dietitians, Social Workers, and a Child Life Specialist. We will talk about lots of new things; be assured that these topics will be addressed many times in the future. Your learning is an on-going process and your understanding will certainly grow. This booklet is meant to use along with the bigger **Pink Panther Book (PPB)**. We will make reference to the **PPB** throughout this guide.



# What Is Diabetes?

Diabetes is a life-long disease which affects the way the body turns sugar into energy.

**Type 1 Diabetes** is usually seen in children and young adults. This condition occurs when the pancreas doesn't make enough insulin. **INSULIN** is a hormone that works like a key to allow glucose (sugar) to move from the blood into the body cells to be used for energy. If there is not enough insulin in the blood, the cells do not get the energy needed from food. Therefore the glucose stays in the blood and becomes higher than normal. This is called **HYPERGLYCEMIA**. When the glucose gets too high in the blood, it spills into the urine. This is why you may have been experiencing **polyuria** (frequent urination) and **polydipsia** (lots of thirst). The loss of glucose through your urine can also cause weight loss and **polyphagia** (lots of hunger) because your body is not getting nourishment/energy from food. Because your body cannot use your food for energy it looks for another source; it can use fat for energy but fat breaks down into ketones. **KETONES** are bad for your body and make you sick. We will talk more about Ketones later.

## Symptoms:

Polyphagia-A lot of hunger

Polydipsia-A lot of thirst

Polyuria-A lot of urine

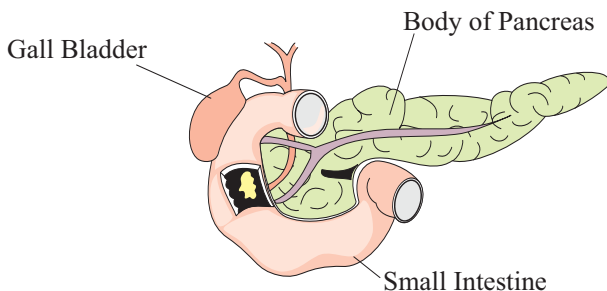
Nocturia-Getting up at night to urinate

Weight Loss

Tired

Moody

## Pancreas



# Why Did This Happen?

Diabetes is not contagious, like a cold. It is not caused from eating too much sugar. **You did not do anything to make this happen.** There are three risk factors that seem important in determining why a person will develop type 1 diabetes.

- 1) Inherited factors
- 2) Self-allergy
- 3) Environmental damage (virus or chemical)

The only known difference for someone with type 1 diabetes and someone with a healthy pancreas is that your body does not make enough insulin.

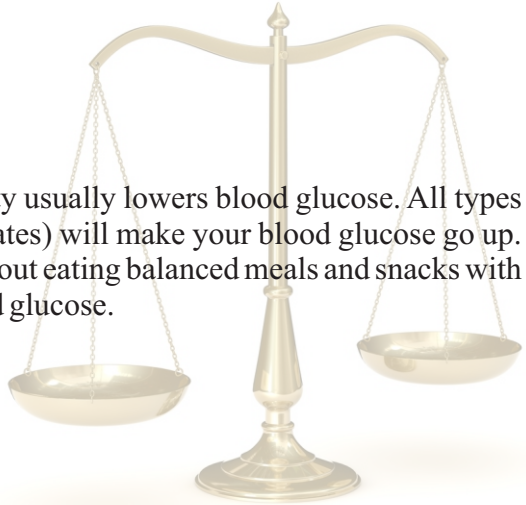


# Treatment

There are 3 main factors that need to be balanced in order for you to manage your diabetes.

**Insulin**  
**Healthy Eating**  
**Physical Activity**

Insulin and physical activity usually lowers blood glucose. All types of food (mostly carbohydrates) will make your blood glucose go up. We are going to talk a lot about eating balanced meals and snacks with the goal of stabilizing blood glucose.



## Goals Of Therapy

A blood glucose (BG) for someone without diabetes will measure between 60-100. Our overall goal is to keep you healthy so naturally we would like your blood glucose to be as close to normal without the risk of a low blood glucose. This range is different for everyone. We may recommend different goals for different times of the day.

It will also be important to avoid the roller coaster ride. It is hard on your body to bounce around with lows and highs. This is another reason you will want to keep your blood glucose as stable as possible.

<b>Age</b>	<b>Fasting</b>	<b>2 Hours After Meals</b>	<b>Bedtime</b>
Below 5	80-180	80-200	Above 120
5-11	80-160	80-180	Above 100
12 and over	80-140	80-180	Above 100

## How Do You Know If Your Treatment Plan Is Working ?

You will know how well you are balancing these factors: Insulin, healthy eating, and physical activity, by frequent blood glucose monitoring. **Pattern Management** is the practice of checking blood glucose (BG), identifying trends needing attention, and modifying treatment whether it may be adjusting insulin, food choices, or physical activity. We ask that you either keep a log sheet, diary, or you can use technology such as an app on your phone or computer. Your meter also has the capability to download blood glucose history.

Recipe for Success: Good record keeping, regular assessment of BG trends, and close communication with the Diabetes Team!



# Your Meter

Your meter is the **Precision Xtra or Freestyle Lite**. You will go home with 2 meters; one for home and one for school. **Always bring your meter to your appointments.** We will download your meter in order to look at the blood glucose history and trends. It is a good idea for you to obtain a USB cord in order to download at home. You will then have information needed to make decisions about your diabetes. Some people would rather use paper logs. At the beginning it is especially helpful to jot down carbohydrate (CHO) count, insulin given, and activity. This will allow you to learn about the many variables that affect your BG.



## When Do I Check Blood Glucose? Why?

**1st thing in the am:** This gives you a good reference point; is my long-acting Lantus the right dose?

**Before meals/snacks:** Allows me to give correction insulin

**Before bed:** For safety. If I am under 100 I should eat a small 15 gram snack (no insulin). Example: Milk, Peanut butter crackers

**12-midnight:** In the beginning this is a good reference point to help determine the most accurate Lantus dose. After a while it will be good to check once a week

**0300:** Like the 12-midnight time frame, this is important in the beginning and then once a week

**2-3 hours after meals:** This value will tell you how well your insulin covered your meal. In the beginning this is very helpful but after a while this can be every now and then

Anytime you feel funny, sick, or **LOW**

# What Will I Need To Check My Blood Glucose?

(PPB p 51)

**Meter**

**Lancet Device**

**Lancet**

**Clean Hands**

- ⊙ Wash and dry hands; if you are out and about use alcohol pad and always wait for finger to dry
- ⊙ Place a new lancet into lancet device with each use (lancets become dull if not changed)
- ⊙ Hold the fingers below the heart level and “milk” before pricking
- ⊙ Prick any finger around the upper tip
- ⊙ Rotate fingers so one finger does not become overused
- ⊙ Place drop of blood on the strip
- ⊙ Sometimes you will see a BG value that does not seem right; maybe too high or too low. **If this happens do a recheck**



# Basal-Bolus Insulin Therapy

Before insulin was discovered in 1921, there was limited treatment for people with type 1 diabetes. Although Insulin does not cure diabetes it is one of the biggest discoveries in medicine. In the early 1920's Dr Fredrick Banting and Charles Best, a medical student, experimented with dogs. First, they removed the pancreas to see what would happen. Guess what? The dog started to go the bathroom a lot, drank lots of water, and became weak. They also tested his blood glucose and it was high; the dog had developed diabetes. Dr Banting and Charles Best worked with another dog. They removed part of the pancreas and took out some of the substance (now called insulin) found in the pancreas. They then injected this into the dog. Guess what happened? The dog's blood glucose dropped and the dog gained weight and became healthier.

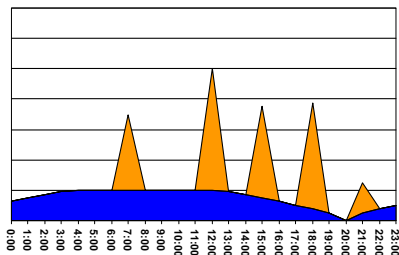


Insulin is needed for 2 reasons. 1) Insulin works like a key allowing glucose in your blood stream to move from the blood into your body's cells and be used for energy. 2) Insulin also turns off the making of sugar in the liver between meals and overnight.

You are on 2 different types of insulin. Your long-acting or **basal** insulin is called Lantus (Glargine). (PPB page 65). Lantus takes the place of the background insulin that a healthy pancreas would secrete throughout the day. We are starting you on a dose based on your weight. This dose will change over time based on your blood glucose trends and growing body. Your initial goal will be to wake up with your BG between 80-120/140 mg/dl. (This is individual and you will find slightly different ranges depending on the source).

Lantus is given once a day and usually will last anywhere from 18-24 hours. It is best to give this injection around the same time of day every day. This basal insulin is given every day even if you are not eating or if you are sick.

The other kind of insulin is Novolog. Novolog is a rapid acting insulin that we refer to as "**bolus**" insulin.(PPB page 66) Novolog starts to work in 10-15 minutes, has its main effect in 40-90 minutes. It is usually all gone in 2-4 hours. We sometimes call Novolog "Correction Insulin" because we give it to bring



down your blood glucose to a target range. Novolog is also given to balance or "cover" all of the grams of CHO that you will be eating.

When we use Lantus and Novolog together we call this **basal-bolus** insulin therapy or **multiple daily dosing**.



# When To Inject Insulin

It is best to give your Novolog shot 10-20 minutes prior to meals (**PPB** page 85). Rapid-acting insulin peaks in about 40-90 minutes whereas blood glucose values peak in about 60 minutes after first bite of food. Therefore, it is very important to get insulin in your body so it will start working before the first bite of food. This is a very good habit to start from the beginning of your diagnosis!!!

Remember our goal in diabetes treatment is to aim for a blood glucose as close to normal as possible (without risk of LOWs) AND to avoid the extreme ups and downs. By giving the insulin before meals we hope to avoid a BIG blood glucose spike after eating. Of course another big factor here is to make sure you are counting CHO accurately. 😊

Structure is another important part of managing diabetes. Therefore, it will work best if you space your meals and insulin with 3 hours in-between.



# Giving Your Injections

Insulin is injected into the fat layer beneath the skin. Best places to give insulin (**PPB** page 77 and 79) are in the buttocks, abdomen, arms, and thighs. Injections should be moved around within these areas in order to avoid swollen or lumpy areas from overuse.

Based on studies, it is best to take a pinch of skin when using most needles (**PPB** page 78 and 83). The exception may be if using the buttock area or the central abdomen if there is enough fat tissue. Also, there is no need to take a pinch of skin if you are using the new very short Nano needles or Mini needles often used with insulin pens.

Check out the picture of the **Pink Panther** on page 79!

## Giving Insulin Injections With A Single Vial And Syringe

- ⊙ Wash your hands
- ⊙ Clean the top of the bottle with an alcohol pad
- ⊙ Pull back the plunger of the syringe to draw air into the syringe to match the amount of insulin you need to give
- ⊙ Turn the bottle upside down and draw out the correct amount of insulin
- ⊙ Check for air bubbles, remove if present
- ⊙ Make sure site is clean
- ⊙ Lift up the skin with a “gentle pinch”
- ⊙ Touch the needle to the skin and gently push it through the skin
- ⊙ If there is not much fat, a “gentle pinch” should still be used even with the short needles
- ⊙ To insure injection into fat, the “gentle pinch” can continue to be held during the injection
- ⊙ Push the insulin in slowly and steadily
- ⊙ Wait 5-10 seconds to let the insulin spread out
- ⊙ Observe for a drop of insulin (leak-back)
- ⊙ Refer to the **PPB** page 83 for help with your injections

# Insulin Pens

- ⊙ Insulin pens are more convenient and easier to transport; most older kids use these
- ⊙ Both long acting Lantus and rapid acting Novolog are available in pen devices
- ⊙ Both types of insulin come in a box of 5 pens
- ⊙ Each pen holds 300 units
- ⊙ Ideally, insulin should be stored in the refrigerator (**PPB** page 86) and warmed to room temperature prior to giving the shot
- ⊙ Insulin currently in use may be kept at room temperature for 30 days



## Preparing the Insulin Pen

- ⊙ Clean the top of the pen device with alcohol pad before placing the pen needle
- ⊙ With all pens, a 2 unit “air shot” should be done prior to pulling up insulin dose
- ⊙ The injection technique is the same as when using the syringe (**PPB** page 83)

# Hyperglycemia

(High Blood Glucose)

Hyperglycemia can lead to an acute complication called diabetic ketoacidosis (DKA) (**PPB** page 157) . When there is not enough insulin, sugar stays in the blood stream and cannot be used by your body for fuel. Symptoms of hyperglycemia may or may not occur until blood glucose is well above the recommended target blood glucose. Therefore, one of the main reasons to check blood glucose throughout the day is to be able to administer correction insulin.

## Causes of Hyperglycemia:

- ⊙ Not enough insulin
- ⊙ Too much food
- ⊙ Illness
- ⊙ Physical and emotional stressors

## Symptoms of Hyperglycemia:

**The Polys:** Poly is a Greek word meaning “many, much, or a lot”

**Polyphagia:** “A lot” of hunger: Energy from food is not making it into your cells so your body is hungry

**Polydipsia:** “A lot” of thirst: You have a lot of sugar in your blood; once it hits about 180mg/dl it spills over into your kidneys  
It pulls water from your body and then you “wee” it out  
This can cause dehydration and you are very thirsty

**Polyuria:** “A lot” of urine

# Checking Your Ketones

**Ketones** are made by the body when it burns fat for energy. Ketones are usually an early indication that **more** insulin is needed to prevent progressing to a more severe situation called **diabetic ketoacidosis (DKA)**. You should check for ketones anytime you are sick OR for unexplained high blood glucose (greater than 250-300) especially 2 times in a row. You can do this with either urine Ketostix or blood Precision Xtra blood ketone test strips. You will get both products in your bag of supplies from pharmacy.



## How To Do A Urine Test Using A Ketostix

(**PPB** page 32-33 or package insert)

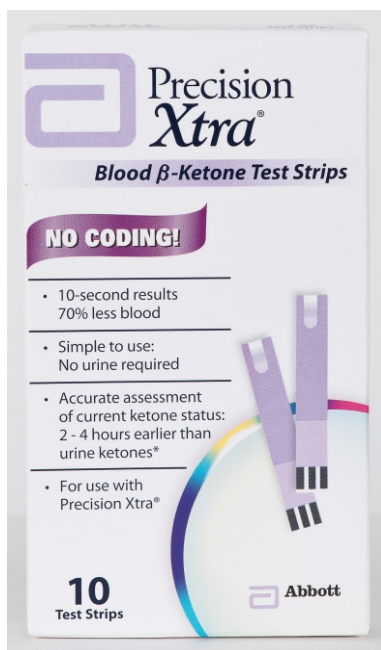
- ⦿ Urinate in a cup
- ⦿ Dip the test strip into the urine-remove immediately
- ⦿ Count 15 seconds
- ⦿ Compare the ketone test area to the ketone color chart
- ⦿ If you see a color change to medium-dark purple **YOU WILL NEED EXTRA INSULIN** and it is important to **DRINK EXTRA FLUIDS**

Small ketones=15  
Moderate=40  
Large=80  
Extra Large=160

# How To Do A Blood Test For Ketones Using The Precision Xtra Meter (PPB page 33 or package insert)

Blood ketone strips give you the ketone level at that minute. In contrast, the urine level may be hours behind.

- ⦿ Wash and dry hands
- ⦿ Open strip and place into meter
- ⦿ Place a drop of blood onto the white target area at the end of the strip
- ⦿ The result is then displayed on the meter in 10 seconds



## How To Interpret Results:

Less than 0.6=Normal

0.6-1.0=Slightly elevated - Drink extra fluids, no change to insulin dose

1.0-3.0=Serious - Call the Diabetes Team for help

We will help you figure how much more insulin you need and tell you to drink extra fluids

**EMERGENCY PAGER: 757-988-5283**

# Hypoglycemia

(Low Blood Glucose) (PPB page 37)

Hypoglycemia is a blood glucose meter reading under 70mg/dl. Low blood glucose can come on quickly and must be treated. Early treatment helps prevent a more severe reaction such as seizure or loss of consciousness.

## Causes of Low Blood Glucose: (PPB page 38)

- ⊙ Exercise
- ⊙ Too much insulin
- ⊙ Illness (especially gastrointestinal)

## Common symptoms of hypoglycemia:

- ⊙ Shaky
- ⊙ Sweaty
- ⊙ Weakness
- ⊙ Hungry
- ⊙ Confusion
- ⊙ Cranky, moody, tearful
- ⊙ Tired, less active or playful





# How To Treat Hypoglycemia:

(PPB page 41-47)

General rule is to **GIVE FAST ACTING SUGAR IN SOME FORM AS SOON AS POSSIBLE**. People with diabetes should always have some type of rapid acting sugar with them. Small juice boxes or glucose tabs are 2 examples to always have on hand.

## RULE OF 15: (PPB page 41)

Some people feel an overwhelming need to eat everything and then they have the opposite problem: Hyperglycemia. That's why we recommend the **Rule of 15**.

- ⊙ Treat LOW blood glucose with 15 grams of CHO
- ⊙ Most glucose tabs are 4-5 grams per tablet, so you will have to eat 3-4 tabs
- ⊙ Repeat BG check 15-20 min later; if still under 70 treat with another 15 grams
- ⊙ Once your BG is back up above 70 then you can eat and use your normal insulin to CHO ratio



# Glucagon Emergency Kit

(PPB page 45-47 or package insert)

If you become unconscious or can't talk due to hypoglycemia then it is not safe to put anything in your mouth. The Glucagon Emergency kit is for use with severe hypoglycemia.

Glucagon is a hormone made in the pancreas, like insulin. Glucagon has the opposite effect of insulin and raises the blood glucose level. Glucagon injections are rarely needed but you should always **be prepared**. You will find 2-3 kits in your bag of supplies; one for home, school, and your to-go-bag. Everyone that helps take care of you should know how to use this kit. This means your parents, grandparents, babysitters, nurse, or coach. There is a good app that may work on your phone that explains how to use the Glucagon kit.

- ⊙ Keep your Glucagon kit in a convenient and known place
- ⊙ You will have to put the liquid into the glucagon vial
- ⊙ Swirl gently to mix
- ⊙ Draw up the dose as indicated
  - ⊙ Child under 50 lbs (2-5 years old) will get half dose (0.5 ml)
  - ⊙ Child over 50 lbs (over 5-6 years old) will get entire dose (1.0 ml)
- ⊙ Give injection into large leg muscle; you can give this through PJ's or pants
- ⊙ Turn child on side; sometimes Glucagon will induce vomiting
- ⊙ Call 911
- ⊙ Blood glucose should start to rise in about 10-15 min; once this happens give sips of juice, or sugary fluids
- ⊙ **Always notify your Diabetes Team**



# Exercise

(PPB page 131)

Exercise should be a normal part of life for everyone. Exercise or activity such as shopping or attending Busch Gardens is part of everyday life that will lower your blood glucose. Many of our patients here at the Naval Hospital are involved in sports. Exercise/activity helps you in several ways. It usually is beneficial to your overall blood glucose control by lowering blood glucose and improving insulin sensitivity. Exercise also helps maintain weight, helps your circulation and heart, and best of all it's fun!! As you learn and read about diabetes you will discover that there are many famous athletes who have diabetes.

The immediate effect of exercise is likely due to muscles "burning" extra sugar during exercise. There is however, also a prolonged effect of exercise on glucose levels. We call this delayed hypoglycemia.

Delayed hypoglycemia may occur 3-12 hours after exercise. You will learn how your body reacts to exercise and activity. There are some basic recommendations you should read about so that you can be safe while having fun; whether you are at Water Country, playing football, shopping all day, or running a race!

## Suggestions for Exercising Safely

- ⊙ Always be well hydrated; drink plenty of water especially in hot weather
- ⊙ Check your BG before exercise, during and after
- ⊙ Try to have your BG between 120-150 (PPB says 180)
- ⊙ Have rapid acting sugar with you (Glucose tabs, sports drinks)
- ⊙ Have snacks too; you may find you will have the best energy and BG if you eat 15-30 gram snack hourly depending on level of activity
- ⊙ Think about reducing the insulin dose with the meal prior to exercise
- ⊙ Do not exercise if ketones are present
- ⊙ Make sure your friends and your coach know how to help you
- ⊙ Wear a Diabetes Medical Alert ID
- ⊙ Have fun!

# What Should I Eat???

An ideal diet for someone with diabetes is really just a healthy diet from which all people would benefit (PPB p 97). Here we will review some general nutrition and then specific guidelines that will help you manage your blood glucose.

Your diet consists of 3 basic nutrients; carbohydrates (CHO), protein, and fat. Carbohydrates will influence your blood glucose the most; producing an increase in BG within 1-2 hours. You will begin to notice that certain foods affect your blood glucose more than others. Your dietitian, nurse educators, and doctors will help you learn how to count CHO with the goal of making the best food choice and balancing insulin and all ingested CHO at each meal and snack. This is a major key to diabetes management.

## What are examples of CHO?

Fruits, vegetables, milk, yogurt, rice, cereals, bread and other grains all have CHO and give you important nutrients such as vitamins, minerals, and fiber. These CHO-containing foods will give you energy to help you grow and play. You also need CHO for your brain to develop and learn. Though they don't offer as many nutrients, snack foods such as crackers, chips, and popcorn are also CHO. Sweets including cake, candy, cookies, and ice cream (even “sugar-free”), also contain CHO. Using the Calorie King CHO counting book or an app on your phone will help you find the CHO count. Many people find using a food scale and measuring cups helpful when counting CHO. This is especially important when eating those high glycemic foods such as cereal, pasta, or rice. Learning to read the nutrition fact label will also be very important. (PPB page 107).





# Balance And Variety

We recommend a “balanced” diet for all people. All foods provide different nutrients necessary for growth and health. Therefore, it is important to include a variety of fruits, veggies, protein, and fat. Your plate should have all the colors of the rainbow! Food choices will affect your blood glucose differently. For example, foods high in fat or protein might make your blood glucose high 2, 4, or 6 hours later. Just because a food may not have many CHO, such as cheese, steak, or eggs, does not mean you can freely eat it without taking insulin. Your body will slowly change protein into sugar.

## Examples of some free foods are:

- 1 Mozzarella cheese sticks
- 1 Lunch meat roll-up
- 1 Beef jerky
- Raw veggies
- 1 Hard boiled egg
- Handful of nuts
- Sugar-free jello/popsicles

## Sugar Substitutes

Many foods are now available which contain sweeteners that either do not raise the blood glucose or may cause less of an increase in your blood glucose. (PPB page 104-106)



## How Many Carbohydrates??

Table 4

### Approximate Carb Amounts by Age\*

	< 5 years old	5-12 years old	Teens - Adults
Males	30 to 45 grams of carb at each meal	45 to 60 grams of carb at each meal	60 to 75+ grams of carb at each meal
Females	30 to 45 grams of carb at each meal	45 to 60 grams of carb at each meal	45 to 75 grams of carb at each meal

Snacks, if needed, are usually 15 to 30 grams of carb.

Talk to your RD or healthcare professional to help you decide on the amount of carb that is right for your child at each meal and snack.

\*Source: Evert, A., Gerken, S. Children with diabetes: birth to adolescence. *On the Cutting Edge*. Summer 2006. Vol. 27, No. 4, 4-8.

# Structure And Planning

A little structure goes a long way while you are managing your diabetes!! Planning ahead too! For example eating your meals and snacks about the same time every day will help. Counting your CHO as you prepare your meal so you can give your insulin injection before sitting down to the table will help for sure. We talked about this before but check out page 85 in the **PPB**; it is best to give your shot 10- 20 minutes prior to meals (if the blood glucose is greater than 80). Blood glucose levels peak about 60 minutes after the first bite of food. On the other hand, insulin peaks in about 40-90 minutes after you give your injection. Thus, it is best to get insulin in your body so it will start working and be there as your blood glucose starts to rise.



## Principles Of Food Management

1. Eat a balanced meal/snack: includes lean protein, whole grains/fiber, and low fat condiments
2. Limit fast food or processed foods, such as convenience foods packaged in boxes, cellophane
3. Eat more fruits and veggies
4. Choose calorie-free drinks OR milk (non-flavored)
5. Limit simple sugars such as candy, cookies, cakes
6. You can enjoy a sweet treat but in moderation
7. When having a sweet treat; it is best to have it with a meal
8. Eat meals and snacks about the same time each day; try to space your meals/snacks by at least 3 hours
9. Count CHO accurately: use food scales, measuring cups, CHO counting book, calculator
10. See your dietitian annually –bring 3 day food log (**PPB** p109)
11. Avoid over treating LOWs - USE RULE OF 15

# Follow Up

The Diabetes Team here at NMCP is here to help your family with this transition.

Recommendations for follow up:

- ⊙ When you first go home contact the Diabetes Team daily in order to review blood glucose trends
- ⊙ When you are stable or comfortable (after 3-5 days) then we would like to hear from you once a week at the minimum; e-mail Linda @ [linda.gottlick@med.navy.mil](mailto:linda.gottlick@med.navy.mil)
- ⊙ At some point you will get really good at this so then we ask that you stay in touch with blood glucose logs once a month OR anytime you may have questions or concerns
- ⊙ Your first follow up visit in our Outpatient Clinic will be in 1-2 weeks after discharge
- ⊙ Standards of medical care for people with diabetes include quarterly follow up (PPB page 215)

When Should I Page The Physician On Call??



**757-988-5283**

- ⊙ You are sick with ketones
- ⊙ You forgot to give an insulin dose
- ⊙ You have repeated low blood glucose
- ⊙ You have experienced a severe LOW blood glucose requiring Glucagon



# Resources:

**Pink Panther Book** [www.pinkpanther.com](http://www.pinkpanther.com)

Calorie King CHO Counting Book [www.calorieking.com](http://www.calorieking.com)

HopePaige (Medical Alert ID's) [www.hopepaige.com](http://www.hopepaige.com)

Juvenile Diabetes Research Foundation (JDRF) [www.jdrf.org](http://www.jdrf.org)

American Diabetes Association [www.diabetes.org](http://www.diabetes.org)

Children With Diabetes [www.childrenwithdiabetes.com](http://www.childrenwithdiabetes.com)

Log Sheet (available in PDF format)

Calculation Sheet (available in PDF format)

# Intensive Diabetes Management Practice Worksheet

(MDI = Multiple Daily Injections)

## Insulin for High Blood Glucose and Food Coverage (Rapid-acting Bolus Insulin)

1. **Correction factor** (given in addition to food bolus when blood sugar is high):

Give 1 unit of Novolog® to decrease blood sugar by \_\_\_\_\_ points.

Target/Goal blood sugar is \_\_\_\_\_ mg/dl.

2. **FOOD Bolus:** (Insulin:CHO Ratio) Give 1 unit Novolog® insulin for every \_\_\_\_\_ grams Carbohydrate eaten at all meals and snacks.

$$\frac{\text{Blood Sugar} - \boxed{\text{(Target BG)}}}{\boxed{\text{(Correction Factor)}}} = \text{\# of additional units to correct a high blood sugar}$$

### Example:

What is your BG?	242 mg/dl
Total Carbs	65 gms
Correction Factor	50 (1 unit lowers BG 50 mg/dl)
Insulin:Carb Ratio	15 (1 unit for every 15 gms Carb)
Target BG	120 mg/dl

### HIGH BG:

$$\frac{242 \text{ (BG)} - 120 \text{ (target BG)}}{50 \text{ (Correction Factor)}} = \underline{2.44} \text{ of additional units to correct a high blood sugar}$$

### FOOD:

$$\frac{\text{Total Carbs for meal} = 65 \text{ gms}}{\text{Insulin:Carb Ratio} = 15} = \underline{4.33} \text{ units for meal}$$

### DOSE:

$$\begin{array}{r} 2.44 \\ + 4.33 \\ \hline 6.77 \end{array} \quad \text{Rounds to: } \underline{7 \text{ units}}$$

Round to nearest whole or half unit

## Know Use Your Numbers:

What is your BG? \_\_\_\_\_ mg/dl

Total Carbs (CHO) \_\_\_\_\_ gms

Your Correction Factor \_\_\_\_\_ (1 unit lowers BG \_\_\_\_\_ mg/dl)

Your Insulin:CHO Ratio \_\_\_\_\_ (1 unit for every \_\_\_\_\_ gms CHO)

Your Target BG \_\_\_\_\_ mg/dl

## HIGH BG:

$$\boxed{\text{_____ (BG)}} - \boxed{\text{_____ (target BG)}}$$

$\boxed{\text{_____ (Correction Factor)}}$

**= \_\_\_\_\_ of additional units  
to correct a high blood sugar**

## FOOD:

Total CHO for meal =  $\boxed{\text{_____ gms}}$

**= \_\_\_\_\_ units for meal**

Insulin:CHO Ratio  $\boxed{\text{_____}}$

## DOSE:

$$\frac{\text{_____ units}}{\text{(BG coverage)}} + \frac{\text{_____ units}}{\text{(Food coverage)}} = \text{_____ units}$$

**Round up or down: if 3.5 or greater give 4units. If 3.4 or less give 3 units.**

**Round to: \_\_\_\_\_ units**

## Notes:

NMCP  
Pediatric Endocrinology Clinic 620 John Paul Jones Circle  
Portsmouth, VA 23708

NMCP Pediatric Endocrinology Clinic Blood Glucose Log	
ATTN: Linda Gottlick, RN, CDE <a href="mailto:linda.gottlick@med.navy.mil">linda.gottlick@med.navy.mil</a> 757-953-2666	

NAME:  
 Lantus:  
 Target:  
 Insulin to CHO ratio:  
 Sensitivity Factor:  
 Please note time and blood glucose. Midnight  
 and 0300 BG check once a week©

Date:	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Bedtime	12 Mid	0300
Blood Sugar									
Insulin Dose									
Grams Carb									
Phys. Activity									

Date:	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Bedtime	12 Mid	0300
Blood Sugar									
Insulin Dose									
Grams Carb									
Phys. Activity									

Date:	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Bedtime	12 Mid	0300
Blood Sugar									
Insulin Dose									
Grams Carb									
Phys. Activity									

Date:	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Bedtime	12 Mid	0300
Blood Sugar									
Insulin Dose									
Grams Carb									
Phys. Activity									

Date:	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Bedtime	12 Mid	0300
Blood Sugar									
Insulin Dose									
Grams Carb									
Phys. Activity									

Date:	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Bedtime	12 Mid	0300
Blood Sugar									
Insulin Dose									
Grams Carb									
Phys. Activity									

Date:	Breakfast	Snack	Lunch	Snack	Dinner	Snack	Bedtime	12 Mid	0300
Blood Sugar									
Insulin Dose									
Grams Carb									
Phys. Activity									

# Notes

The page contains two sets of horizontal lines for writing. The first set, located in the upper half, consists of 10 lines and is set against a background of soft, blended orange and pink watercolor washes. The second set, located in the lower half, also consists of 10 lines and is set against a background of soft, blended green and blue watercolor washes. The lines are evenly spaced and extend across most of the page width.

[illegible]



