Health Professional's Guide to INSULIN PUMP THERAPY

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INTRODUCTION

This guide is a companion tool for the practice of insulin pump therapy. It is designed to assist you in the process of insulin pump initiation, to serve as a resource for the determination of appropriate pump parameters and to provide suggestions for the adjustment of basal and bolus insulin.

Managing a patient on an insulin pump requires the same basic skills as managing a patient on multiple injection therapy. However, since the insulin pump separates the insulin used as background, or basal insulin, from the insulin needed for meal and corrections boluses, insulin can be more exactly matched to the metabolic need.

Insulin pump therapy allows for blood glucose patterns such as those seen in the "dawn phenomenon" to be treated by Programming an additional basal rate: *telling* the pump to deliver more or less insulin for a specified period of time at a particular time of day or night. Meal and correction boluses are determined without having to take into account of long-acting insulin. In addition, the variability in the absorption of long-acting insulin is removed, reducing the subsequent fluctuations in blood glucose values that are experienced in multiple injection therapy.

This guide will walk you through the basic for initiating and fine-tuning insulin pump therapy.

PRESENTING INSULIN PUMP THERAPY TO YOUR PATIENTS

It is our suggestion that you introduce the possibility of using an insulin pump to all of your patients who require insulin therapy. Even patients beginning injection therapy may be a candidate for a pump. Let them know that there are two different methods of taking insulin and describe the differences. Some physicians like to prescribe the pump and others prefer to introduce it as an option. Either way, the patient needs to "buy-in" to the idea of using a pump.

FREQUENTLY ASKED QUESTIONS:

"What Are The Advantages Of Insulin Pump Therapy?"

Discuss all:

- Reduction in blood glucose fluctuations by more exact matching of insulin to individual need. (For example, for the "dawn phenomenon".)
- Reduction in hypoglycemic unawareness.
- Not having to take insulin injections at a prescribed time of day.
- Greater flexibility in meal timing and food choices.

"Will my Diabetes be Better Controlled?"

Probably, because it will be easier to match your insulin to your blood glucose values.

"Is It Surgically Implanted?"

No! The pump is a small beeper-size computer. Insulin is delivered through a Flexible tube attached to a catheter that is placed just beneath you skin, usually in the abdominal area. You change this site every 2-3 days.

"Where Do I Wear The Pump?"

A complete line of cases and accessories are available from the pump manufacturer and there are a number of aftermarket organizations who also manufacture accessories . Many people wear it in their pocket or under their clothes.

"Can I Ever Take The Pump Off?"

The pump easily disconnects. You can take it off for about an hour. If you want to take it off for a longer time, you will need to take insulin injections during the time the pump is off.

"Will I Gain Weight On The Pump?"

With better diabetes control, there may be a tendency to gain weight. However, greater flexibility in timing of meals and food choices with the pump allows you to manage weight easier than on injection therapy.

"Who Will Teach Me How To Use The Pump?"

A certified pump trainer will teach you the technical aspects of the pump and provide you with all the diabetes self-management skills necessary to use the pump. The pump manufacturer also has a 24-Hour Pump Help Line for you to use whenever you have a question.

PRESENTING INSULIN PUMP THERAPY TO YOUR PATIENTS (CON'T.)

ADDITIONALLY:

MANY PEOPLE ARE INITIALLY RESISTANT TO INSULIN THERAPY FOR VERY PERSONAL REASONS.

Issues such as body image or feeling that the pump will be a constant reminder of diabetes may be resolved through frank discussion or through meeting other pump wearers.

NOTE:

It is important to continue to discuss the insulin pump during each office visit. Many patients take a while to agree to use a pump. Suggest that the patient attend a Pump Support Group in your area or have your local Diabetes Nurse Specialist talk with the patient. You may also want to ask another pumper to contact the patient to discuss their experience with the pump.

WHEN YOUR PATIENT CHOOSES THE PUMP

When your patient chooses to begin insulin pump therapy, there are several tasks to complete in order for the patient to acquire the pump, be thoroughly educated on its use and begin using insulin init.

- Your local Pump Representative will prepare the necessary paperwork to submit to the insurance carrier for reimbursement. They will then be in contact with the patient regarding the required co-payments and other pertinent insurance issues.
- After the pump is approved, the pump will be shipped along with all the necessary pump supplies.
- You may choose to have a certified pump educator assist you in training the patient on the technical aspects of the pump and the necessary diabetes educational skills necessary for insulin pump therapy. For this training, the patient will need an *Insulin Pump Workbook* to guide them through the training process. The workbook comes with a daily blood glucose journal to record ongoing blood glucose data and a bolus calculator to assist the calculation of meal and correction bolus amounts.
- You may also choose to have the pump educator start the patient on insulin in the pump. The pump training nurse will contact you for the necessary information to begin this process. Please fill out the *Physician Orders for Insulin Pump Parameters* and fax them to the nurse. The nurse will then call to co-ordinate the patient's start date. Choose a time when you will be available by phone to work with the patient on insulin adjustments.

ESTIMATES FOR STARTING INSULIN PUMP PARAMETERS

** These have not been verified through scientific studies.*
Physicians must use professional judgement in prescribing proper dosage.

PRE-PUMP TOTAL DAILY DOSE	**WEIGHT in lbs**	**BASAL RATE** *Units per hour*	**MEAL BOLUS** *1 unit bolus for each _____ grams CHO*	**CORRECTION BOLUS** *I unit bolus for each Immol/L over target*
23-28 u	100-109	.4	20	3
29-31 u	110-129	.5	17	2.7
32-35 u	130-139	.5	15	2.5
36-38 u	140-149	.6	14	2.2
39-41 u	150-159	.6	13	2.1
42-44 u	160-169	.7	12	1.9
45-47 u	170-179	.7	11	1.8
48-51 u	170-189	.8	10	1.5
52-54 u	190-199	.8	9	1.5
55-57 u	200-209	.9	9	1.5
58-60 u	210-219	.9	8	1.3
61-63 u	220-229	1.0	8	1.3
64-66 u	230+	1.0	7	1.2

Can be calculated from pre-pump total daily dose or weight. Use lower calculation for starting insulin pump parameters.

BASAL RATE CALCULATION

Pre-pump total daily dose, reduces by 25%, divided by 2, (1/2 for total basal, ½ for total bolus), divided by 24 (hours in the day) = estimated hourly basal rate.

or

0.1 unit per pound of body weight per day divided by 24 hours = estimated hourly basal rate.

MEAL BOLUS CALCULATION (THE 500 RULE)

500 divided by current total daily insulin = 1 unit per ___ grams of carbohydrate

CORRECTION BOLUS CALCULATION (THE 1500 RULE)

1500 divided by current total daily insulin.

MD ORDERS FOR INSULIN PUMP PARAMETERS

Patients Name _____ **Date** _____

BASAL RATE

Most people begin with one basal rate to determine initial basal need.

Basal Rate #1: Start Time _____ Units per Hour: _____

Basal Rate #2: Start Time _____ Units per Hour: _____
Basal Rate #3: Start Time _____ Units per Hour: _____
Basal Rate #4: Start Time _____ Units per Hour: _____

MEAL BOLUS

Carbohydrate Ratio: 1.0 unit of insulin for _____grams of CHO

CORRECTION BOLUS

1.0 unit of insulin will lower BG by approximately _____mmol/L

BLOOD GLUCOSE TARGETS

Before Meals: _____ to _____ (3.9 to 7.8 mmol/L)
2 Hours after Meals: less than _____ (10.4 mmol/L)
Bedtime: greater than _____ (5.6 mmol/L)
Overnight: greater than _____ (5.0 mmol/L)

MD SIGNATURE

WHEN YOUR PATIENT STARTS ON INSULIN

If the pump trainer nurse starts your patient on insulin, your patients will be instructed to call your office with their blood glucose values every three days unless there is a frequent or prolonged hypoglycemia or hyperglycemia, in which case they will be instructed to call you immediately.

Your patients will be using the blood glucose journal provided with their workbook. Initially they will be testing 8 times a day: before and after meals, before bed and overnight.

There are several ways to collect your patients' blood glucose values:

- Your assistant can write the blood glucose values down for your review.
- Your patients can fax the values to you or your assistant.
- Your patients can use a blood glucose meter in which the values can be downloaded by a modem on the patients telephone.

When you receive the blood glucose information, evaluate it as you would any self-management of blood glucose information. Take into account when the blood glucose rises or falls and at what time of day or night.

- If the change occurs before a meal, it can most likely be attributed to the basal rate.
- If the change occurs two to four hours after a meal, it can most likely be attributed to the bolus before that meal. Following are general rules for making adjustments from blood glucose information.

NOTE:

Make small adjustments initially to evaluate your patient's response to the change.

ADJUSTING THE BASAL RATE:

The goal is for the blood glucose to remain within 1.7 mmol/L of the target blood glucose value in the fasting state.

- Change the basal rate by .1 to .2 units per hour over the period of time the blood glucose is too high or too low.
- For example, if the blood glucose rises after 3 AM and drops after 9 AM, raise the basal rate by .1 unit per hour from 3 – 9 AM and evaluate the effect the next night.

WHEN YOUR PATIENT STARTS ON INSULIN (CON'T.)

ADJUSTING THE MEAL BOLUS:

The goal is for the blood glucose to rise not more than 2.8 mmol/L 2 hours after a meal. The meal bolus is based on the insulin to carbohydrate ratio: one unit of insulin to a determined number of grams of carbohydrate.

- Raise or lower the number of grams of carbohydrate covered by one unit of insulin. Make small adjustments: 1 to 2 grams of carbohydrate for each adjustment.
- For example, if the insulin to carbohydrate ratio is 1:15 and the blood glucose two hours after is only lmmol/L above the pre-meal blood glucose, adjust the insulin to carbohydrate to 1:16 or 1:17.

ADJUSTING THE CORRECTION BOLUS:

The goal is for the blood glucose to return to within 1.7 mmol/L of the target blood glucose within 4 hours of giving a correction bolus. The correction bolus is based on the insulin sensitivity factor: the mmol/L one unit of insulin will lower the blood glucose.

- Raise or lower the mmol/L one unit of insulin should drop the blood glucose. Make small adjustments: .3 - .6 mmol/L for each adjustment.
- For example, if the insulin sensitivity factor is 1 unit for every 2.8 mmol/L above target and the blood glucose 4 hours later after giving a correction bolus is ?? mmol/L lower than target, adjust the insulin sensitivity factor to 1 unit for every 3.1 – 3.4 mmol/L.

NOTE:

The goal of adjusting the insulin pump parameters at this stage is to keep your patient from experiencing hyperglycemia or hypoglycemia. In the beginning, it is prudent to set the target blood glucose a little higher than ideal and accept greater fluctuation in blood glucose values than usual. After the patient adjusts to wearing the pump and is comfortable with its use, we will assist you in steps to fine-tune the insulin pump parameters.

WHEN YOUR PATIENT IS READY TO FINE-TUNE THE PUMP PARAMETERS

The next step is fine-tuning the insulin pump parameters. It is a three-part process and may take up to a week for each part.

The three parts are:

- Testing and adjusting the basal rate.
- Testing and adjusting the meal bolus.
- Testing and adjusting the correction bolus.

The three weeks do not need to be consecutive and can be scheduled for the convenience of you and the patient. Be sure to choose times when you will be available by phone to work with the patient on insulin adjustments. You may also choose to schedule office visits to fine-tune the insulin pump parameters.

The *Insulin Pump Workbook* contains detailed instructions for your patients to use when collecting data to fine-tune the insulin pump parameters. These instructions correspond to the *Worksheets for Fine-Tuning Insulin Pump Parameters*. The worksheets give you formulas for making changes in the pump parameters.

NOTE:

This process allows for closer matching of insulin to blood glucose values. Upon completion, the insulin pump parameters should be set for the patient to receive optimal use of the pump.

FINE-TUNING THE OVERNIGHT BASAL RATE WORKSHEET

The goal is for the basal rate to be adjusted so that the blood glucose remains within 1.7 mmol/L of the target blood glucose value without food or bolus insulin.

Adjust the overnight basal rate first. When this basal rate is set correctly, the amount of insulin delivered will compensate for any increase in the early morning blood glucose or "dawn phenomenon".

Your patients will be reporting blood glucose levels collected at the times listed below. To evaluate the background insulin without the effect of other variables, they have been instructed to:

- Perform this test when the blood glucose is within the target pre-meal range.
- Stop the test if the blood glucose values are under or over the parameters set for that time of day and treat the corresponding blood glucose value.
- Eat foods for which the correct bolus can be easily determined. Eliminate high fat foods, as the correct bolus is more difficult to determine since those foods may have an extended effect on blood glucose.
- Not exercise on the day of the test unless it is exercise performed every day.
- Not perform this test during an illness or infection.
- Write down all blood glucose values so that the healthcare provider can evaluate the results of the test.

Use the spaces provided to record the reported blood glucose values and to record the changes you prescribe.

TESTING THE OVERNIGHT BASAL RATE

PATIENTS NAME _____ **DATE** _____

	BLOOD GLUCOSE (mmol/L)			
	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**
PRE-DINNER (6 PM) *Pre-meal target _____ BG within Target?*				
2 HOURS (8 PM) *BG not more than 2.8 mmol/L > dinner BG?*				
BEDTIME (11 PM) *BG within 1.7 mmol/L of target?*				
OVERNIGHT (3 AM) *BG within 1.7 mmol/L of target?*				
B'FAST TIME (7 AM) *BG within 1.7 mmol/L of target?*				
2 Hours (9 AM) *BG within 1.7 mmol/L of target?*				
4 HOURS (11 AM) *BG within 1.7 mmol/L of target?*				
PRE-LUNCH ***Eat Lunch!*** *Lunch bolus + any needed correction.*				

BASAL RATE ADJUSTMENT (units/hour)

CURRENT			**DAY 1**			**DAY 2**			**DAY 3**			**DAY 4**		
From	To	u/hr	From	To	u/hr	From	To	u/hr	From	To	u/hr	From	To	u/hr

Adjust the basal rate for the next night 0.1 to 0.2 units per hour for the period the basal rate is not within 1.7 mmol/L of target BG. After the basal rate has been established, instruct the patient to perform the test one more time to confirm the results.

TESTING THE DAYTIME BASAL RATE

The goal is for the basal rate to be adjusted so that the blood glucose remains within 1.7 mmol/L of the target blood glucose levels without food or bolus insulin.

Adjust the daytime basal rate after the overnight rate has been fine-tuned.

Your patients will be reporting blood glucose values collected at the times listed below. To evaluate the background insulin without he effect of other variables, they have been instructed to:

- Perform this test when the blood glucose is within the target pre-meal range.
- Stop the test if the blood glucose values are under or over the parameters set for that time of day and treat the corresponding blood glucose value.
- Eat foods for which the correct bolus can be easily determined. Eliminate high fat foods, as the correct bolus is more difficult to determine since those foods may have an extended effect on blood glucose.
- Not exercise on the day of the test unless it is exercise performed every day.
- Not perform this test during an illness or infection.
- Write down all blood glucose values so that the healthcare provider can evaluate the results of the test.

Use the spaces provided to record the reported blood glucose values and to record the changes you prescribe.

TESTING THE DAYTIME BASAL RATE

PATIENTS NAME _____ **DATE** _____

	BLOOD GLUCOSE (mmol/L)			
	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**
PRE-B'FAST (7 AM) *Pre-meal target _____ BG within Target?*				
2 HOURS (9 AM)) *BG not more than 2.8 mmol/L > dinner BG?*				
LUNCHTIME (Noon) *BG within 1.7 mmol/L of target?*				
2 HOURS (2 PM) *BG within 1.7 mmol/L of target?*				
4 HOURS (4 PM) *BG within 1.7 mmol/L of target?*				
6 HOURS (6 PM) *BG within 1.7 mmol/L of target?*				
DINNERTIME ***Eat Dinner!*** *Dinner bolus + any needed correction.*				

BASAL RATE ADJUSTMENT (units/hour)

CURRENT			**DAY 1**			**DAY 2**			**DAY 3**			**DAY 4**		
From	To	u/hr	From	To	u/hr	From	To	u/hr	From	To	u/hr	From	To	u/hr

Adjust the basal rate for the next day 0.1 to 0.2 units per hour for the period the basal rate is not within 1.7 mmol/L of target BG. After the basal rate has been established, instruct the patient to perform the test one more time to confirm the results.

FINE-TUNING THE EVENING BASAL RATE WORKSHEET

The goal is for the basal rate to be adjusted so that the blood glucose remains within 1.7 mmol/L of the target blood glucose levels without food or bolus insulin.

Adjust the evening basal rate after the daytime rate has been fine-tuned.

Your patients will be reporting blood glucose values collected at the times listed below. To evaluate the background insulin without he effect of other variables, they have been instructed to:

- Perform this test when the blood glucose is within the target pre-meal range.
- Stop the test if the blood glucose values are under or over the parameters set for that time of day and treat the corresponding blood glucose value.
- Eat foods for which the correct bolus can be easily determined. Eliminate high fat foods, as the correct bolus is more difficult to determine since those foods may have an extended effect on blood glucose.
- Not exercise on the day of the test unless it is exercise performed every day.
- Not perform this test during an illness or infection.
- Write down all blood glucose values so that the healthcare provider can evaluate the results of the test.

Use the spaces provided to record the reported blood glucose values and to record the changes you prescribe.

TESTING THE EVENING BASAL RATE

PATIENTS NAME _____ **DATE** _____

	BLOOD GLUCOSE (mmol/L)			
	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**
PRE-LUNCH (2PM) *Pre-meal target _____ BG within target?*				
2 HOURS (4 PM)) *BG not more than 2.8 mmol/L > dinner BG?*				
DINNERTIME (6 PM) ***No Dinner!*** *BG within 1.7 mmol/L of target?*				
2 HOURS (8 PM) *BG within 1.7 mmol/L of target?*				
4 HOURS (10 PM) *BG within 1.7 mmol/L of target?*				
6 HOURS (Midnight) *BG within 1.7 mmol/L of target?*				
BEDTIME ***If want, eat snack!*** *Snack bolus + any needed correction.*				

BASAL RATE ADJUSTMENT (units/hour)

CURRENT			**DAY 1**			**DAY 2**			**DAY 3**			**DAY 4**		
From	To	u/hr	From	To	u/hr	From	To	u/hr	From	To	u/hr	From	To	u/hr

Adjust the basal rate for the next evening 0.1 to 0.2 units per hour for the period the basal rate is not within 1.7 mmol/L of target BG. After the basal rate has been established, instruct the patient to perform the test one more time to confirm the results.

FINE-TUNING THE MEAL BOLUS WORKSHEET

The goal is for blood glucose to rise not more than 2.8 mmol/L 2 hours after the meal and to return to within 1.7 mmol/L of the pre-meal blood glucose 4 hours after the meal.

Your patients will be reporting blood glucose values collected at the times listed below. To evaluate the meal bolus without the effect of other variables, they have been instructed to:

- Perform the test when the blood glucose before a meal is within the target range.
- Eat similar for which the correct bolus can be easily determined. Eliminate high fat foods, as the correct bolus is more difficult to determine since those foods may have an extended effect on blood glucose.
- Count the carbohydrates in the meal and use the prescribed insulin to carbohydrate ratio to determine the meal bolus.
- Not exercise on the day of the test unless it is exercise performed every day.
- Not perform this test during an illness or infection.
- Write down all blood glucose values so that the healthcare provider can evaluate the results of the test.

Use the spaces provided to record the reported blood glucose values and to record the changes you prescribe.

TESTING THE MEAL BOLUS

PATIENT'S NAME _____ **DATE** _____

	BLOOD GLUCOSE (mmol/L)			
	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**
PRE_MEAL *Insulin/CHO ratio=* *1 unit ____grams CHO* *Pre-meal target =* *_____mmol/L* *Carbohydrates =____grams* *Meal bolus = _____ units*				
2 HOURS POST MEAL *Not more than 2.8 mmol/L > pre-meal BG?*				
3 HOURS POST MEAL *BG decreasing?*				
4 HOURS POST MEAL *BG within 1.7 mmol/L of Pre-meal?*				
	MEAL BOLUS CALCULATION			
	DAY 1	**DAY 2**	**DAY 2**	**DAY 4**
PRE-MEAL				
2 HOUR BG				
IS THE 2 HOUR BG *Not more than 2.8 mmol/L > pre-meal.*	**YES** ☐ **NO** ☐	**YES** ☐ **NO** ☐	**YES** ☐ **NO** ☐	**YES** ☐ **NO** ☐
IF NO, NEW INSULIN TO CARBOHYDRATE RATIO *1 unit of insulin for every _____ grams of COH*	**1 unit/ _____ grams of CHO**	**1 unit/ _____ grams of CHO**	**1 unit/ _____ grams of CHO**	**1 unit/ _____ grams of CHO**

Repeat the test until you have determined your patient's best insulin to carbohydrate ratio. After the meal bolus has been established, instruct the patient to perform the test one more time to confirm the results.

Note: *The insulin to carbohydrate ratio should be the same all day unless the basal rates vary considerably at different times of the day. If they do vary considerably, it is prudent to do the above test at these times of day to determine the insulin to carbohydrate ratio for that time of day, especially in the early morning hours to detect the dawn phenomenon.*

FINE-TUNING THE CORRECTION BOLUS WORKSHEET

The goal is to determine the number of mmol/L one unit of insulin will lower the patient's blood glucose.

Your patients will be reporting blood glucose values collected at the times listed below. To evaluate the correction bolus without the effect of other variables, they have been instructed to:

- Perform the test when no bolus has been given for the last 4 hours and no meal is planned for the next 4 hours.
- Use the insulin sensitivity factor prescribed by the physician.
- Not exercise on the day of the test unless it is exercise performed every day.
- Not perform this test during illness or infection.
- Write down all blood glucose values so that the healthcare provider can evaluate the results of the test.

Use the spaces provided to record the reported blood glucose values and to record the changes you prescribe.

TESTING THE CORRECTION BOLUS

PATIENT'S NAME _____ **DATE** _____

	BLOOD GLUCOSE (mmol/L)			
	DAY 1	**DAY 2**	**DAY 3**	**DAY 4**
BEGINNING *Insulin sensitivity factor =* *1 unit / ____ mmol/L* *Target = _____mmol/L* *Correction Bolus = ___units*				
1 HOUR *BG decreasing?*				
2 HOUR *BG decreasing?*				
3 HOUR *BG decreasing?*				
4 HOUR *Within 1.7 mmol/L of target BG?*				
	MEAL BOLUS CALCULATION			
	DAY 1	**DAY 2**	**DAY 2**	**DAY 4**
TARGET BG				
4 HOUR BG				
IS THE 4 HOUR BG *Within 1.7 mmol/L of target blood glucose.*	**YES** ☐ **NO** ☐	**YES** ☐ **NO** ☐	**YES** ☐ **NO** ☐	**YES** ☐ **NO** ☐
IF NO, NEW INSULIN SENSITIVITY FACTOR *1 unit of insulin for every _____ mmol/L over target BG*	**1 unit/ _____ mmol/L**	**1 unit/ _____ mmol/L**	**1 unit/ _____ mmol/L**	**1 unit/ _____ mmol/L**

Repeat the test until you have determined your patient's best insulin sensitivity factor. After the correction bolus has been established, instruct the patient to perform the test one more time to confirm the results.

Note: *The insulin to carbohydrate ratio should be the same all day unless the basal rates vary considerably at different times of the day. If they do vary considerably, it is prudent to do the above test at these times of day to determine the insulin to carbohydrate ratio for that time of day, especially in the early morning hours to detect the dawn phenomenon.*

TROUBLESHOOTING FOR INSULIN PUMP PATIENTS

Most diabetes-related concerns have the same origin no matter what the therapy. However, there are some additional trouble-shooting items specific to insulin pump therapy.

Most pump-related issues can be referred to the 24 Hour Pump Help Line number listed on the back of the patient's pump. Instruct your patient to call the help line for any of the following:

- A technical issue, for example, not remembering how to set a basal rate.
- Setting a temporary basal rate for exercise.
- Dealing with skin irritation from the infusion set or tape.
- Wearing he pump or concealing the pump under clothing.
- Concern that the pump may not be working properly.

Some pump-related issues may need hands-on attention. Refer the patient to the pump trainer nurse for any of the following:

- Inserting an infusion set.
- Setting-up the pump with insulin.
- Assistance with any aspect of the patient workbook.

The following pump-related issues must be considered when evaluating fluctuations in blood glucose:

- A partial clog or leak in the infusion set or reservoir can cause hyperglycemia.

Instruct the patient to change the infusion set and reservoir when hyperglycemia is not corrected by a correction bolus through the pump.

- The insulin in the pump may degrade over time, even if it has not expired.

Instruct the patient to change the infusion set and reservoir every 2 to 3 days.

- DKA may occur quicker with pump therapy due to no residual long-acting insulin.

Thoroughly instruct the patient on your DKA protocol and make sure they have all necessary prescriptions and supplies.

- The basal rates may be improperly set and should be checked when unexplained hyperglycemia or hypoglycemia is present.

Refer your patient to the 24 Hour Pump Help Line number on the back of their pump for assistance in reviewing the basal rate.

FOLLOW-UP FOR INSULIN PUMP PATIENTS

New pump patients may feel that they now have all the tools they need to successfully manage their diabetes independently. It is important to impress on your patients the need for quarterly follow-up while empowering them to self-manage.

We suggest that you go over the tests you will need to run quarterly and yearly

Encourage your patients to inform you of any changes they experience in their diabetes or other health-related issues.

Most of all remind your patients that you are their best resource for continued individual health care.

RECOMMENDED PATIENT FOLLOW-UP

EVERYDAY:

- Check blood glucose 4-6 times a day and always before bed.
- Test before driving and have a fast-acting carbohydrate with you when you drive.
- If your blood glucose is above 14 mg/dl 2 times in a row, take an injection and change the infusion set.

EVERY MONTH:

- Review DKA prevention guidelines.
- Check 3 AM glucose at least once during the month.
- Check 2-hour post-meal blood glucose for all meals on a given day.

EVERY THREE MONTHS:

- Visit your healthcare provider, even if you feel well and your blood glucose values are within target range.
- Review your blood glucose log and insulin pump settings with your healthcare provider.
- Make sure you have an HbA1c test done.

LABORATORY TESTS:

- Test HbA1c four or more times a year.
- Cholesterol, HDL, LDL, triglyceride yearly.
- Microalbuminuria yearly.

EVERY VISIT:

- BP check.
- Foot inspection.
- Review goals for blood glucose, meal plan and exercise.

ANNUALLY:

- Dilated eye exam by a qualified ophthalmologist.
- Annual flu shot.
- Regular dental visits.
- Nerve function tests.
- EKG test over age 35.
- Prostate exam for men, breast exam for women.
- Diabetes education review.
- Replace Glucagon kit (with new prescription from physician).