

Diabetes

Life Lines



August-September, 2017

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Diabetes - the Medical Perspective

Pros and Cons of Insulin Pumps: Is it for You?

An insulin pump is a small-computerized device about the size of a pager. Much like a cell phone, the pump is battery operated or charged with a cable. The pump has a reservoir that holds insulin. A fine tubing on the underside of the infusion set is inserted into fatty tissue under the skin and held in place by an adhesive. This allows insulin to flow from the pump into the skin. The abdomen, thighs and arms are the most common locations for infusion insertion sites. Every 2-3 days sites must be changed.

The reservoir is filled with the amount of rapid acting insulin needed over a 2-3 day period. The pump is programmed to continuously deliver insulin over a 24- hour period, closely mimicking a healthy pancreas. Your provider, often

working with a certified diabetes educator and/or certified pump trainer, determines the programmed settings.

The pump is programmed to deliver basal and bolus insulin. Basal insulin is the “background” insulin infused in small amounts over a 24-hour period. Bolus insulin is a mealtime insulin, or insulin needed to cover the carbohydrate eaten at meals and snacks.

Like any other technology devices, there is a range of features available with different insulin pumps.

Insulin pumps are not for everyone; however many people with type 1 diabetes and some with type 2, achieve much better control using a pump. There are many factors to consider when deciding whether a pump is right for you. The first step is to discuss whether you meet the criteria with your health care provider. Next, consider the expense of your current diabetes regimen compared to the cost of switching to a pump. Always have a good understanding from your insurance provider what is covered and what is not, including any deductibles. Coverage will vary among insurance

policies. Pumps are usually covered under durable medical equipment. Medicare may pay for pumps and the insulin it uses under durable medical equipment for people that meet certain criteria.

Insulin Pump Advantages

Delivery of insulin is more accurate-fewer sudden highs or lows

More flexibility with eating, meal schedules, and lifestyle

Ability to change bolus doses depending on time of day and activity level

Potential for better diabetes control - lower A1C levels

Less need sticks

Decreased number of hypoglycemic events (low blood sugar)

Better control of early morning blood glucose (dawn phenomenon)

Less hypoglycemic unawareness (no symptoms of low blood glucose)

Less insulin use than with daily injections

Helps with gastroparesis (slowed digestion)

Better control before and during pregnancy

Potential to decrease long-term complications of diabetes

Insulin Pump Disadvantages

Potential diabetic ketoacidosis if insulin delivery is interrupted

Lipohypertrophy (fatty lumps under the skin) caused from inadequate rotation of infusion sites

Infusion site reactions

Having an external device attached 24 hours a day can be challenging

Cost of pump and supplies

Learning curve – must be willing to check blood glucose and count carbohydrates

Requires more initial training and follow-up than insulin injections

Diabetes and Food

Insulin pump users often mention increased flexibility with meals as a major advantage of pump use. This does not mean using an insulin pump is a free pass to eat anything and everything. The flexibility comes from being able to bolus insulin coverage. You can decide when and how much you want to eat.

Carbohydrates have the most effect on blood glucose. Your provider and or diabetes educator will help determine your insulin to carbohydrate ratios. You

will use these to bolus for meals and some snacks, depending on the snack's carb content. They will also help determine insulin sensitivity factors, or correction factors, used to correct blood glucose outside of your target ranges.

What happens when your meal is high in protein, fat and fiber? Think about a sausage, cheese, and vegetable pizza. Blood sugar will take longer to rise because the fat and fiber slow digestion. A standard bolus given with this type of food combination could lead to low blood glucose. A pump has the ability to be programmed to deliver an extended or "square wave" bolus which begins lowering blood glucose about an hour or so after eating. This type of bolus is also helpful for those dealing with gastroparesis, or slow gastric emptying.

Food combinations consisting of high fat and/or protein, paired with simple carbohydrates need a different type bolus also. A dual wave bolus delivers an immediate and extended bolus. This type of bolus would be appropriate after eating a burger on a bun. The immediate insulin would lower the blood glucose affected by the carb in the bun, and the extended bolus takes care of any carb delayed by the fat and protein in the burger.

Pumps can even calculate how long the insulin you bolused will be in your system. This is a safety feature to prevent "insulin stacking." This happens when correction doses are given too frequently. Rapid-acting insulin last 3-4 hours and can "stack-up" when given too often.

Most problems encountered with insulin pumps are user error rather than any type of pump malfunction. Inadequate training, follow-up, and support for the pump user are sometimes the cause of adverse reactions.

If considering an insulin pump you should first have an in-depth discussion with your health care provider to determine if you are even a candidate. Next, meet with a diabetes educator who is preferably a certified pump trainer to discuss your lifestyle, diabetes history, and different pump options. Ask about training, ongoing support, and what is expected of you as a new pump user.

Being well informed will increase the odds of a successful transition from multiple daily injections to pump therapy.

Recipes to Try

Spinach Lasagna

8 servings

Ingredients

2 teaspoons olive oil or canola oil
2 garlic cloves minced
1 can (8-ounce) “no salt added” tomato sauce
1 can (16-ounce) diced tomatoes
¼ teaspoon pepper
½ teaspoon oregano
2 teaspoons olive oil or canola oil
¼ cup chopped onions
1 package (10-ounce) fresh spinach, washed, stemmed, and chopped or 1 package (10-ounce) frozen chopped, spinach, thawed and squeezed to remove excess liquid
1 box (8-ounce) uncooked lasagna noodles
12 ounces 1% fat cottage cheese or 12 ounces reduced-fat ricotta cheese
8 ounces shredded part-skim mozzarella cheese
¼ cup grated Parmesan cheese
Cooking spray



Directions

1. Preheat oven to 375°. Lightly coat baking dish with cooking spray.
2. In large saucepan over low heat, sauté garlic in two teaspoons olive oil over low heat for one minute. Do not let garlic brown. Add tomato sauce and tomatoes, pepper and oregano. Simmer gently over low heat, uncovered, while preparing other ingredients.
3. In large skillet over low heat, sauté onions in remaining two teaspoons olive oil, stirring constantly, until onions are transparent but not brown. Add chopped spinach, stirring constantly.
4. Layer uncooked lasagna noodles, sauce, spinach mixture, cottage cheese, and mozzarella in baking pan. Repeat, using all ingredients, ending with a layer of sauce. Sprinkle top with Parmesan cheese.
5. Cover baking dish tightly with foil. Bake for one hour at 375° or until lasagna noodles are cooked. (If noodles are cooked before assembling lasagna, bake uncovered and reduce baking time to 25 minutes.)

This and other recipes available at
<http://urbanext.illinois.edu/diabetesrecipes/intro.cfm>

Nutrition Facts per serving

Calories	237	Fat	9 grams
Protein	19 grams	Calories from fat	81
Carbohydrate	30 grams	Cholesterol	21 mg
Fiber	2 gram	Sodium	746 mg

Coleslaw

6 – 1 cup servings

Ingredients

6 medium tomatoes
1/4 cup chopped cilantro (coriander)
3 Tbsp. vinegar
1/2 Tbsp. olive oil
1 garlic clove, minced
1/4 tsp. brown sugar
1/4 tsp. mustard (Dijon mustard is best)
Freshly ground black pepper



Directions

1. At least 2 hours in advance wash, core, and slice tomatoes. Arrange on serving dish.
2. Sprinkle sliced tomatoes with chopped cilantro. (If preferred, chopped fresh parsley can be used instead of cilantro.)
3. Combine vinegar, olive oil, garlic, brown sugar, and mustard in small jar and shake well. Pour over tomatoes. Cover and chill.
4. Season with pepper just before serving.

Nutrition facts per serving

Calories	47	Fat	2 grams
Protein	1 gram	Calories from fat	15
Carbohydrate	7 grams	Cholesterol	0 mg
Fiber	1 gram	Sodium	10 mg

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Sample Menu

BREAKFAST	Amount/ Portion
Whole wheat pancakes	3 - 4" pancakes
Scrambled egg	1 medium
Lite syrup	2 tablespoons
Soft tub margarine	2 teaspoons
Fresh blueberries	$\frac{3}{4}$ cup whole berries
Skim milk	$\frac{1}{2}$ cup
510 Calories; 71 Grams Carbohydrates; 4.5 Carbohydrate Choices	
LUNCH	
Tuna and White Bean Salad †	1 serving
Beef Barley Soup†	1 serving
Whole wheat crackers	6 crackers
Fresh Pear	1 small
596 Calories; 66 Grams Carbohydrates; 4.5 Carbohydrate Choices	
DINNER	
Spinach Lasagna†	1 serving
Marinated Tomatoes†	1 serving
Tossed Salad	1 cup
Italian dressing	2 tablespoons
Fresh Peach	1 small
Skim milk	1 cup
585 Calories; 75 Grams Carbohydrates; 5 Carbohydrate Choices	
Total: 1691 Calories; 212 Grams Carbohydrates; 14 Carbohydrate Choices	

† Recipes from *Recipes for Diabetes* at
<http://urbanext.illinois.edu/diabetesrecipes/>
 or this newsletter