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## Blood Sugar Instability and Gestational Diabetes

Partly adapted from Pomegranate Midwives

### Normalizing Blood Sugar

*What are the benefits of maintaining stable blood sugar levels?*

- Feel better and have more energy
- Minimize nausea
- Minimize strain on internal organs and body chemistry
- Minimize chances of hypertension
- Maintain stable internal body chemistry and prevent candida/yeast growth
- Maintain mineral stores. Sugar is associated with depleting minerals like calcium.
- Grow a smaller baby, have an easier labor, increase your chance of spontaneous vaginal delivery without the need for intervention
- Minimize weight gain without “dieting”
- Return to your pre-pregnancy/ healthy weight easier and more naturally

### How can I promote normal blood sugars?

*Focus on a variety of healthy foods*

As always, eat a variety of wholesome foods: fresh vegetables, fruits, grains, beans, quality dairy and meat (unless you are vegan/vegetarian), as well as unrefined oils and fat.

*Balance your meals*

Foods should be partnered together for taste and enjoyment but also to reduce a glycemic rise. For example, combining carbohydrates with protein (salad and fish, rice and chicken), and fruit with fat (pear with nuts, banana and yogurt). These combinations allow sugars to be released slowly, instead of all at once.

*Eat small frequent meals*

Eat smaller portions more frequently. Take the food you might normally eat in three meals and divide it into six, evenly spaced throughout the day. This can reduce digestive stress, and allow your meal to digest more easily, as well as keeping your blood sugar from having wide fluctuations throughout the day.

*Be active every day*

Developing a daily exercise program is as important as eating well. Being active helps in two ways. First, every time you exercise, you use up blood sugar and keep levels lower for several hours.

Exercising for a few minutes after every meal (even just a ten-minute walk around the block), when your blood sugar levels are elevated, is an excellent practice. Secondly, exercise that builds muscle will create more cells that use up blood sugar, even while you are sleeping.

#### *Eat less processed, more whole and raw*

Eat foods in their natural unprocessed form. For example, whole fruit causes a lower blood sugar rise than fruit juice. Grains cooked until they are mushy cause a greater blood sugar rise than when they are al dente. Processed foods are in a way pre-digested and breakdown much faster than their whole counterparts, thus quickly creating a sugar rise. For example, white rice will digest quicker than brown rice.

#### *Reduce stress*

Reduce stress, which causes blood sugar to rise. Meditate, breathe, do yoga, get a massage, take a bath with lavender & Epsom salts, ask for support, or whatever it takes.

#### *Take a good quality prenatal supplement*

Taking a good quality prenatal supplement helps your body cope with the physiological stress of pregnancy. To help specifically with blood sugar control, choose a prenatal supplement that has about 20mg of zinc and 200 mg of chromium. Both can be toxic in large dosages, so more is not better. B-vitamins and vitamins C and E are also important.

At the same time, it is always better to get your nutrients from whole food, so do not count on your supplement to cover gaps if you are skipping meals or eating fast food.

#### *Eat some Omega-3s every day*

Make sure you get a source of Omega-3 fatty acids every day. These help the insulin in your body work to lower high blood sugar and minimize weight gain. Omega-3 fatty acids are also essential for healthy fetal and infant brain development and for preventing pre-eclampsia and premature births.

Good sources of Omega-3s include:

- A serving of cold-water fatty fish such as salmon, halibut, mackerel, or sardines
- Ground flax seeds
- Flax oil
- fish oil supplements (DHA plus EPA)
- Grass fed meat & dairy

#### *Choose healthy fats*

Choose cold pressed olive oil, coconut oil, ghee or butter over refined vegetable oils. Reduce the amount of harmful fats you eat, such as “vegetable oils” and fried foods. Also avoid trans-fatty

acids and partially hydrogenated fatty acids, which are found in most margarines and commercial crackers, cookies, cereals, and many other processed foods.

### *Choose lower Glycemic Index carbs*

Choose foods with a lower glycemic index [see below]. Only carbohydrate foods raise blood sugar. Protein and fats don't. But please remember that a diet of all proteins and fats is not healthy; you need the fiber and nutrients of carbohydrate foods.

### *Avoid food binges*

Be aware that binging – eating a lot of carbs at once, especially high GI foods like fruit, bread, and pasta – can cause sharp rises in blood sugar. Whenever you have a sugar craving or an urge to binge, think about whether you have eaten enough protein in the last day – maybe you are just hungry for more nutrients. Also consider whether you might be dehydrated, as sugar cravings can be disguising thirst.

### **What about low Glycemic Index foods?**

Some carbohydrate foods cause a significantly higher rise in blood sugar than others do. Predicting which ones will do this is not easy, so you will need to look them up on tables of what is called glycemic index (GI).

### *High GI foods*

Foods that cause an especially large rise in blood sugar include:

- Any bread, cracker, cookie or pastry made from wheat flour, whether that flour is white or whole wheat. Bread with rye flour as the first ingredient is better, as is bread with a significant proportion of unground grains (such as whole wheat berries or rye berries or cracked wheat), oatmeal, seeds, nuts or barley.
- Most commercial breakfast cereals.
- Potatoes, especially the large baking kind. Small new potatoes, slightly undercooked, are much better.
- Watermelon and tropical fruits, especially overripe ones such as bananas with brown spots on the skin. Many other fruits, including cherries, grapefruit, and dried apricots, especially if not overripe are much better. Greenish bananas are okay.

This doesn't mean that you can never eat these foods again. It would probably be okay to eat small servings of them occasionally (like one slice of bread or one pancake, several times a week), especially when eaten with protein foods or with carbohydrates with a lower glycemic index.

### *Intermediate GI foods*

Rice is an intermediate glycemic index food. Eating it slightly undercooked, rather than mushy, is better. Parboiled and basmati varieties are better than others. Sticky rice, puffed rice cereal, and

rice cakes, however, raise blood sugar a lot. You might try substituting barley sometimes, which takes a long time to cook, but tastes great (even for breakfast), and has a very low GI. You can make enough for several days and then heat up portions in the microwave.

### *Low GI foods*

All watery vegetables (as opposed to starchy ones like potatoes and parsnips) can be eaten in unlimited quantities. Beans are a carbohydrate food (also containing good protein) with a very low GI, so they are also a great option.

Adding fat or protein to your meal will lower the GI index of a higher rated food. For example, a baked potato is a high GI food. When eaten with butter, a salad as a side and a chicken breast, the meal becomes well balanced and wholesome.

<b>Low GI (55 or less)</b>	<b>Medium GI (56-99)</b>	<b>High GI (70 or more)</b>
<i>choose most often</i>	<i>choose more often</i>	<i>choose less often</i>
<b>BREADS:</b>	<b>BREADS:</b>	<b>BREADS:</b>
100% stone ground whole wheat	Whole wheat	White bread
Heavy mixed grain	Pumpernickel/Rye	Kaiser roll
	Pita	Bagel, white
<b>CEREALS:</b>	<b>CEREALS:</b>	<b>CEREALS:</b>
All Bran	Grapenuts	Bran flakes
Bran Buds with Psyllium	Puffed wheat	Corn flakes
Oat bran	Oatmeal	Rice Krispies
	Quick oats	Cheerios
<b>GRAINS:</b>	<b>GRAINS:</b>	
Parboiled or converted rice	Basmati rice	<b>GRAINS:</b>
Barley	Brown rice	Short-grain rice
Bulgar	Couscous	
Pasta/noodles		

OTHER:

Sweet potato

Yam

Lentils

Chickpeas

Kidney beans

Split peas

Soybeans

Baked beans

OTHER:

Potato, new/white

Sweet corn

Popcorn

Stoned Wheat Thins

Rye crisps

Black been soup

Green pea soup

OTHER:

Potato, baking

French fries

Pretzels

Rice cakes

Soda crackers

### **What is Gestational Diabetes?**

Gestational Diabetes is a condition where the sugar (glucose) levels in the blood become high during pregnancy. It is related to the normal change in sugar metabolism during pregnancy that promotes growth of your baby. Sometimes the mechanism that allows this gets out of balance, and blood sugar levels get excessively high. Normally, the high levels of sugar were not present before the pregnancy and they disappear after pregnancy.

Gestational Diabetes is different from Type I diabetes, which is caused by insufficient insulin (a hormone that removes sugar from the bloodstream); and it is different from Type II diabetes which is caused by insulin resistance (mostly related to diet and lifestyle).

The exact cause of gestational diabetes is not clear. What we do know is that pregnancy hormones slow down the action of insulin. This usually starts between 20-24 weeks into the pregnancy. Normally the pancreas is able to make enough insulin to overcome this effect, but sometimes it cannot. This leads to gestational diabetes. Almost fifty percent of pregnant people diagnosed with gestational diabetes will develop Type II diabetes later in life. So, it can be an important 'warning' to make lifestyle/diet changes.

In Canada, the risk of developing gestational diabetes is approximately 4%. Risk factors include: previous gestational diabetes, obesity (BMI >30), previous large baby, family history, pregnant people over 35 years of age, and certain high risk populations (Aboriginal, Asian, Hispanic, African Canadian) but sometimes women develop gestational diabetes when there are no obvious risk factors.

### **How does gestational diabetes affect the pregnancy?**

Recent research has shown that for every increase in blood sugar levels there is a corresponding risk of poor health outcomes. The primary risk of gestational diabetes is growing

a large baby (on a population level “large” is defined as more than nine pounds, or four kilograms). This occurs because of excess calories from the high sugar in the pregnant person’s blood. If you grow a baby that is larger than you might have without gestational diabetes, then you are at increased risk of having a difficult labour or birth. The possibilities include induction, forceps delivery, shoulder dystocia (an obstetrical emergency where the shoulder is stuck under the pubic bone), postpartum hemorrhage and/or cesarean section (with the associated health risks to the pregnant person). Pregnant people with gestational diabetes are also more likely to develop blood pressure disorders in pregnancy including pre-eclampsia (a serious auto-immune disorder of the placenta). In addition, babies born to people with gestational diabetes can develop hypoglycaemia (low blood sugars when born) which can affect the brain if not treated.

### **How can pregnant people try to prevent gestational diabetes?**

Eating a well-balanced diet of foods with a low glycemic index (food that converts slowly to sugar in the blood) is helpful. A diet centering around whole grains, vegetables, and protein is best. White flour products, sugar, and juices should be avoided as much as possible. Regular moderate exercise, a healthy weight gain and managing stress in pregnancy is the most effective way to prevent the development of gestational diabetes.

### **How can we test for gestational diabetes?**

#### *Screening*

In the clinic: At every prenatal appointment, your caregiver will palpate your growing belly, as well as measure your uterine size (symphysis-fundal height) after you reach 20 weeks. This alone can give feedback on whether your baby feels or measures larger than average. After 20 weeks gestational age, you will be asked to do a urine dipstick for glucose. If you frequently spill glucose, then further testing would be warranted.

At the lab: There is a blood test specifically for gestational diabetes that is offered between 24- and 28-weeks gestation, although it can be done at any time in pregnancy. Two to three hours after your last meal you drink 50g of glucose – much like a very sweet, flat, orange soda – and then have your blood drawn 60 minutes later. If the lab values come back higher than 7.8mmol/l, then the next step is the diagnostic test.

#### *Diagnostic test (oral glucose tolerance test)*

This is similar to the screening test in that it consists of drinking glucose and having your blood drawn. The difference is that this test involves drinking twice as much sugar, 100 grams, after an overnight fast. Your blood is drawn just before, and then one, two and three hours after drinking the glucose. Diagnosis of gestational diabetes is made if two or more of the four results are higher than normal.

### *Are there drawbacks to testing?*

Some pregnant people find that consuming the sugar causes them to be nauseous or even vomit. There may also be concerns about the effect on the baby of fasting and then sugar loading. It may help to make your last meal one of high-quality protein such as eggs, beans or lentils to aid in stabilizing the blood sugars.

Gestational diabetes is said to occur in 2-3% of pregnant people, but testing is not considered very reliable. Of the people who test positive, 70% will have babies weighing less than 9 pounds even with no treatment. Also, the majority of babies weighing more than 9 pounds are born to people with normal blood sugars. Research has shown that pregnant people with diagnosed gestational diabetes – whether or not they receive treatment – have an increased risk of cesarean section without any demonstrated improvement in outcome for the pregnant person or the baby.

Of note: if you pass the test, this does not mean that you are free to eat lots of sugar and forget about good nutrition! Even if you are not diabetic, you can still grow an overly large baby by eating a diet full of refined sugars and highly processed food.

### **If I have gestational diabetes, what kind of treatment will I need?**

Treatment of gestational diabetes in pregnancy includes: a visit to the diabetic nurse and dietician; regular blood glucose monitoring; a special diet; and regular exercise. Sometimes ultrasounds are performed to assess the fetal growth. New research has been shown that good control of blood sugar levels among pregnant people with gestational diabetes has resulted in lower numbers of large babies, shoulder dystocia and c-sections. Very rarely insulin injections will be required, which would be ordered by a specialist. After the baby is born the baby may need to be tested for blood sugar levels. These will normally stabilize within a day of delivery. Parents are encouraged to breastfeed, and their blood glucose levels will be tested again at 6 weeks postpartum.

### **Key Points**

- Increased blood glucose levels in pregnancy is a normal, physiological process designed to feed the baby. However, as the levels rise there can be increased health risks for both the pregnant person and the baby.
- A pregnant person can try to prevent gestational diabetes by eating a healthy well-balanced diet of low glycemic index foods, exercising regularly and attempting to reduce stress in their life.
- A glucose tolerance test is the most accurate way to determine whether gestational diabetes has developed.
- If a pregnant person declines blood sugar testing, considering the risks and benefits, close monitoring of the growth of the baby, weight gain and monitoring for glucose in the urine will be done.
- If a pregnant person is found to have gestational diabetes, referrals to the dietician, diabetic nurse and obstetrician are made.