

Diabetes and Pregnancy

NOTE: Also read the following chapter on Hypoglycemia.

"It is better to have absolutely no idea where one is than to believe confidently that one is where one is not."

Cesar Francois Cassini de Thury

8th century French surveyor

The pancreas is an exocrine gland (*i.e.*, it secretes into the gut, not the blood) located between the aorta and vena cava, just beneath and behind the stomach. It contains cells that are responsible for the production of the hormone insulin, which regulates the use of glucose in the body by functioning as the chemical "doorway" that allows it to enter the tissues. Glucose is the most important sugar. Once inside the cells it combines with oxygen to form carbon dioxide and water. The energy released by this process is used for muscular work and for maintaining body temperature.

Many things can work together to create the symptoms defined as "diabetes:"

THESE CONDITIONS:	CAN LEAD TO:	RESULTING IN:	WHICH LEADS TO:
Viruses	Pancreatic damage	Lack of insulin	Diabetic symptoms: -glucose in the urine -excessive thirst -excessive urination -increased appetite -elevated plasma glucose -weight loss
Poor dietary choices			
Diuretics	Insulin inhibition		
Epinephrine (Adrenalin)			
infection	Fever & other reactions	Increased glucose levels	
Epinephrine (Adrenalin)	Breakdown of glycogen		
Estrogen	Counteracts insulin		
Steroids	Formation of glucose from protein & fats		
Obesity	Decreased insulin receptors	Insulin resistance	
Physical activity	Starvation diabetes (decreased carbohydrate tolerance)		
Food deficiency/sugar overload			
Abnormal insulin			

(Katz Rothman, p. 102, 1993)

Diabetes can be simply defined as the result of a weakened or congenitally defective pancreas producing too little, or abnormal insulin. This causes an abnormally high level of glucose in the blood (hyperglycemia). Another common cause of diabetes is insulin resistance. This occurs when cells resist the entry of insulin, which also leaves excess glucose in the bloodstream. (See chapter on Cholesterol.)

The liver is a largely unacknowledged support for the work of the pancreas. When liver function is impaired, the pancreas does not function normally either. There are several factors that may contribute to an abnormally functioning pancreas, the primary one being family history. Genetic (constitutional) weakness can be aggravated by a diet high in refined carbohydrates, processed foods, and alcohol along with smoking, emotional stress, obesity, and lack of exercise.

Excessive amounts of refined carbohydrates place a demand on the pancreas, which overproduces insulin to control the extreme blood sugar variations that occur. The blood sugar rises rapidly upon ingestion of refined carbohydrates and then falls with the insulin surge when the pancreas catches up. This often results in years of chronic hypoglycemia before diabetes develops.

The strain of abuse eventually causes the weakest organs in the system to break down, resulting in disease. When the weakest link is the pancreas, or insulin resistance is produced, diabetes results. Occasionally, a person will be born with such a weak or abnormal pancreas that diabetes begins early in life. But, it usually sets in after years of abusive habits. A healthy, whole-foods diet goes a long way toward preventing such breakdown, even with a family history of problems (keep in mind that food habits also "run in the family"). With or without a family history, a bad diet or obesity plus a bad diet, may predispose a woman to diabetes by stressing her pancreas.

Insulin use during normal pregnancy: In recent years, we have begun to hear more about diabetes and its relationship to pregnancy. Pregnancy is considered a "diabetogenic" state. The placenta produces the hormones lactogen, estrogen and progesterone which counteract the function of insulin. It also makes potent enzymes that destroy insulin. This certainly implies that a somewhat elevated glucose level in pregnancy is normal, allowing extra glucose to circulate in the maternal system for use by the baby and placenta.

One reason for this may well be that the continued demand for glucose and amino acids for fetal growth causes a state of accelerated starvation in the mother. Fat breakdown (lipolysis) occurs faster when a woman is pregnant, reflected in ketonuria when a woman goes without food. As a result of the suppression of insulin, glucose remains available in the mother's bloodstream for longer periods of time so that her baby can use it for growth and to convert to glycogen (stored glucose). (Katz Rothman, p. 102, 1993)

The risks of true diabetes mellitus in pregnancy:

It has been observed that truly diabetic mothers have complicated pregnancies. The risk largely depends on the degree to which maternal glucose levels are inadequately controlled, and the severity of diabetes' affect on other maternal organ systems. The risks of diabetes include:

- *A large, fat, edematous, fragile baby (macrosomic) subject to hypoglycemia due to the rapid postpartum decrease in fetal glucose levels.
- *Prematurity with respiratory distress and other problems.
- *2 to 3 times higher rate of fetal abnormalities than in the non-diabetic population (occurring more frequently the longer the mother has been diabetic or when glucose levels are poorly controlled).
- *Unexplainable intrauterine death – especially after 36 weeks gestation.
- *Higher risk of maternal complications such as toxemia, circulatory, visual, and kidney problems.

It is hard to draw the line, however, where the risks begin (especially regarding toxemia) and the improper medical management of the condition ends. Wrong advice, especially regarding diet and weight restriction, considerably increases the intrinsic risk for both mother and baby. We now need to consider the different severities of diabetes, and how we can deal with them.

Understanding Gestational diabetes:

Gestational diabetes (also called Gestational Carbohydrate Intolerance or Type III diabetes), refers to a transient condition occurring only during pregnancy and is based on blood glucose levels slightly above the norm. (Until 1979, there was one range of normal blood glucose, whether you were pregnant or not.) As we have seen, there can be a physiologic increase in serum glucose levels during pregnancy, which may be reflected in higher-than-normal glucose results in some women.

First, a little background to give some perspective on how gestational diabetes evolved as a clinical entity. Historically, the medical mind associates a large baby with diabetes. When maternal weight gain became less restricted in the 1970s, one outcome was generally larger babies in well nourished, full term moms. The definition of "large" today varies around the country, and, in some areas, may be as small as 8 lb. 5 oz.!

When inklings of a pregnancy-induced diabetes began to surface (from the research outlined below), the diabetic mother/macrosomic baby link was firmly in the back of everyone's mind. The new research into diabetes was grasped as an "explanation" for this trend toward larger babies. Unfortunately, few doctors differentiate between truly macrosomic babies resulting from poor diabetic control and healthy, larger babies resulting from a good maternal diet. (Any midwife working with well-nourished mothers knows there is a big difference!)

Now for some history. In the 1950s, there was much confusion over the definition of diabetes, especially in pregnancy. It was also in the 1950s that the

idea of prediabetes became established, which was suspected to contribute to perinatal mortality.

In 1964, a study by O'Sullivan and Mahan was done on 752 pregnant women in Boston. Fasting, three hour OGTTs (oral glucose tolerance tests) were performed. No dietary history or activity levels were taken into account. They discovered that 40% of those with two values more than three standard deviations above the average later developed diabetes; as did another 16% with two values more than two standard deviations above the average. The latter definition was adopted, as they felt that three deviations missed too many cases.

It is important to note that this preliminary study defined abnormality by the *later appearance of diabetes during the women's lives and not by any existing diabetes*, thus establishing a "prediabetes" risk group. Furthermore, no attempt was made in the initial study to correlate this diagnosis with perinatal outcomes or other pregnancy related problems. Thirdly, today's standards are based on the conversion of whole blood results to plasma levels by increasing the values 15%. This does not account for the increased plasma and red cell volumes that occur during pregnancy!

As usual, the subjects of these studies were not asked the most important question: What has your diet been like during this pregnancy? Without this critical information, how can test results be scientific? Since no dietary information was elicited, we can assume that most of these women had the typical marginal diet to maintain themselves in pregnancy. The average fasting glucose in such a population is bound to be lower than outside of pregnancy; more likely to be lower than her well-nourished friend.

Even with carbohydrate loading to prepare for testing (more on this later), her already low-to-absent glycogen reserves (stored glucose) would not be increased, but merely more adequately supplied due to a generally inadequate diet. After the required 12 hour fast, her reserves could present a low fasting blood sugar and a lower curve throughout the test. Thus gestational diabetes was created.

Harrison's Internal Medicine states that the most accurate screening is done with glucose levels taken after a normal meal. Yet gestational diabetes is screened using a 1, 2, or 3 hour oral glucose tolerance test (OGTT)! Up to 75% of all persons with positive OGTT tests never develop diabetes, making this test accurate only 25% of the time. In addition, over 70% of those who test positive will have normal results when retested.

Further studies in the 1970s attempted to correlate pregnancy outcomes with the abnormal OGTT ranges derived from the original research. The bias for this research was already set, as the connection between established diabetes mellitus and pregnancy loss was well recognized. But, a review of these studies reveals that the rate of fetal loss increases proportionate to the indications for testing (*i.e.*, previous fetal loss, etc.). No correlation is evident when OGTT results are considered separately from these other factors. (Chalmers, *et.al.*, 1989)

In 1979, the National Diabetes Data Group officially redefined what constitutes diabetes in pregnancy. They concluded that the "normal" glucose curve

was lower than that of the non-pregnant population, thereby establishing a new "normal range."

How glucose test results during pregnancy are misunderstood: Now for some physiology: when we take in nourishment, we convert it into glucose, a fuel immediately useable by our bodies. Insulin metabolizes and regulates glucose levels. If we get more fuel than we need immediately, our liver converts some glucose to glycogen and stores it for later use. When we haven't eaten for a while, we begin to draw on this stored glycogen. If we need more glucose than usual (as in pregnancy), we will burn more glucose immediately and store less as glycogen for later. Additionally, a glucose-sparing mechanism exists in pregnancy because of insulin-suppressing placental hormones, which peak around 28 weeks (after which baby will be gaining the most weight and need the most fuel to grow). This is a protection for the mother and baby, but implies pathology to the medical mind.

When a well-nourished woman is tested correctly, her glycogen reserves are boosted by the extra carbohydrate loading required for the test. Thus (although fasting a pregnant woman for 12 hours is not advisable and even dangerous in a marginally nourished woman), she may maintain a more reasonable fasting glucose level. When she is tested, it may be found that her values fall within the currently accepted category of "normal for pregnancy." But, it may be that some women's results will be somewhat higher. *There is nothing wrong with them!* Again, what reflects excellent maternal health is labeled abnormal and high risk because doctors do not recognize the role of adequate nutrition in pregnancy.

Here are the two typical scenarios describing the ways in which this testing backfires on women: During testing, a rapid, sharp rise in insulin may occur in response to the glucose load, causing blood values to fall. Although this really indicates hypoglycemia, when the resulting glucose levels are compared to the new values for pregnancy, it may be seen as normal. Others may have high glucose values because their insulin surge is delayed beyond the time limit of the test. This woman would be labeled diabetic. In both cases, results which actually reflect gestational hypoglycemia are being misdiagnosed.

In clinical practice, gestational diabetes is often missed because it has no symptoms (maybe because it doesn't exist?). In one large study, women with a previous history suggestive of problems had no higher incidence of gestational diabetes than the general population. A National Institute of Health study found that non-pregnant women have blood glucose levels in the gestational diabetic range in the same percentage as pregnant women. (Brewer communication, 1990) Now, isn't that interesting?

Risk factors supposedly related to gestational diabetes: Those considered at risk are women with previous large babies (more than 9 lbs.), unexplained pregnancy losses or an otherwise poor reproductive history, malformed babies, family history of diabetes, obesity, polyhydramnios, glycosuria, those over twenty-five (!), as well as those who exhibit classic diabetic symptoms. These include: increased quantity

of urine, increased thirst, recurrent vaginal yeast infections, slow healing, acetone breath (overripe apple), tendency toward infections, increased appetite, weight loss, and weakness. This can be tricky to establish since some of these are normal responses to pregnancy. Be alert to any symptoms which preexisted the pregnancy.

A careful differential diagnosis must be made when attempting to figure out the reason for previous problems. Babies over 9 lbs. are often seen in well-nourished women, just as tragic reproductive histories are seen in the poorly nourished.

Furthermore, the risks of current management have not been explored. Of course we recognize that weight and calorie restriction are not advisable. But what happens when a woman (and her fetus) take insulin which they do not need?

Testing for diabetes in pregnancy:

In testing for gestational diabetes, urine checks are unreliable because so many women will show glucosuria and be fine. This occurs due to the higher filtration rate with which the kidneys must cope as a result of increased blood volume. (See section on glucose in the chapter on Urine Analysis for more information.) Therefore, it has become routine to do oral glucose tolerance tests (OGTTs) between the 24th and 28th week of pregnancy, chosen because placental hormone production peaks at about that point.

If the diet is good and there are no classic diabetic symptoms; tests are not needed and are best avoided. Once a woman is "branded" a gestational diabetic, mainstream medicine can make her life miserable. Dietary corrections can eliminate undue stress on the pancreas even if there is a family history of diabetes.

The allopathic approach to screening for gestational diabetes: In many areas, women are routinely screened for gestational diabetes before a decision is made regarding their need for a fasting OGTT. When a woman arrives for a prenatal visit, she is given a 50 gram dose of glucose solution and her blood sugar is tested one hour later. This is often done without regard to her dietary intake prior to the test and with no preliminary preparation. If the result exceeds 120 mg., she is scheduled for an OGTT. One does not have to examine this procedure very hard to detect major flaws in its use. Starvation diabetes is the likely result of this procedure!! Some practitioners don't bother with this and go straight to the OGTT as a screening tool.

Two-hour Postprandial Capillary Whole Blood test: If indicated, or the doctor insists, the two hour Postprandial Whole Blood test is the best screening format, as recommended in Harrison's Internal Medicine. This requires a 12 hour fast if a fasting specimen is to be drawn prior to the test meal. Since a fasting blood sugar is frequently the most informative of any tests, I highly recommend a fasting specimen if you are really trying to trouble shoot a possible problem. If no fasting

draw is planned, fasting is not strictly necessary, although the diet should be well balanced without any "sugar binges" the three days prior to the test.

Testing proceeds first thing in the morning with a fasting blood specimen, as indicated. A high complex carbohydrate breakfast follows, such as: whole grain pancakes with butter and natural syrup, sausage (eggs or tempeh can be substituted), and a large glass of juice, or similar meal. (The meal recommended by the doctor or lab may include high levels of refined carbohydrates such as candy bars and soda!) It is also considered acceptable in allopathic circles to have a woman drink a concentrated glucose solution and then test two hours later, although this defeats the purpose of trying to do a truly physiological challenge (since most women don't drink concentrated glucose!).

Two hours after eating another blood sample is taken and the glucose level determined. During this interval, the woman should engage in some moderate exercise, such as walking. Results are obtained from a finger prick sample and look like this:

FASTING LEVEL	2-HOUR POSTPRANDIAL LEVEL
≤120 mg./dl.	≤140 mg./dl. (results between 140 to 180 mg./dl. indicate the need for further tests)

If results are borderline, or in the 140 to 180 mg./dl. range, be sure to get an accurate history of the days before the test, including diet and exercise, anxiety levels (which causes adrenalin release that blocks insulin), or illness. If adverse factors might have influenced results, wait a few days and redo the test.

Hemoglobin A_{1C} test/Glycosylated hemoglobin/Glycohemoglobin (G-Hb)/Diabetic Control Index: The Hemoglobin A_{1C} is an alternative glucose test that doesn't require fasting. It measures glucose levels over the prior 120 days (the life span of the red blood cell). It is not altered by recent dietary intake, exercise, or emotional stress. This might be the test of choice in the presence of any of the conditions that alter test results.

A_{1C} is a component of the hemoglobin that absorbs glucose, and a high percentage may indicate a high blood sugar level. Normal values range from 4% to 7% of the total hemoglobin concentration. Results of 8% or greater before 20 weeks suggest previously undetected Type II diabetes and are associated with an increased rate of birth defects. No "normals" have been established for pregnancy beyond 20 weeks, but the usual range can be applied as is the case with all other glucose tests during pregnancy.

Mainstream medicine does not consider this test to be a valid screen for gestational diabetes because a high percentage of women diagnosed as having gestational diabetes via an OGTT will have a normal A_{1C}. One study (McFarland, *et.al.*, 1984) saw no difference in A_{1C} results among 41 women with normal OGTTs and 12 with positive OGTTs for "gestational diabetes." Other studies have

had similar results. Instead of concluding that something was wrong with using the OGTT as a screening test, they stuck firmly to the conviction that something was wrong with the women that the A_{1C} wasn't detecting. As far as I'm concerned this adds more fuel to the argument that gestational diabetes doesn't exist as defined.

The Oral Glucose Tolerance test (OGTT): The concept of prediabetes evolved in the 1940s and '50s based on the premise that glucose pathology exists long before insulin dependency develops. The glucose tolerance test became the means to diagnosis, since it was felt to detect a defect in glucose metabolism which was only apparent after a glucose challenge. The GTT was developed in two forms: oral and intravenous.

The intravenous test skips the unpredictable step of glucose uptake in the gastrointestinal track and gives reproducible results. However, it is unphysiologic since we don't ordinarily take in food via a venous route. In addition, the values derived are difficult to apply clinically, since each person's body has a unique relationship to glucose metabolism (remember, many being tested have no symptoms). Finally, an IV test is a hassle to administer. For all these reasons, it is not widely used.

The oral GTT, while not plagued with any of the above problems, suffers from lack of reproducibility. Up to 75% of all asymptomatic persons with positive OGTT tests never develop diabetes, making this test only accurate 25% of the time. In addition, over 70% of those who test positive will have normal results when the test is repeated.

In spite of the major flaws with the test itself, one, two, and three hour oral glucose tolerance tests (OGTT) are all used to screen for diabetes in pregnancy. The actual criteria, timing of the test, and the amount of glucose used varies across the country.

Preparing for Oral Glucose Tolerance tests: All OGTT tests require a 12 hour fast, during which water is permitted. For three days before the test, the woman should eat extra complex carbohydrates (150 gms. daily of whole grains, beans, vegetable starches like potatoes, squash, etc.) to fortify her glycogen reserves. This prepares the body to tolerate the concentrated glucose load required for the test. Many practitioners assume that women are getting large amounts of carbohydrates and do not mention this necessary prerequisite to an accurate test. If carbohydrate loading isn't done properly, the test results are invalid and usually reflect starvation diabetes. Women should also eliminate all refined carbohydrates and processed foods for at least a week before the test. If they don't, a poor diet combined with carbohydrate loading may cause the results to be sky high! Try to eliminate any other conditions that may alter results as well.

Women should walk for at least 15 minutes before the fasting level is drawn and for 45 minutes between each sample after they ingest the Glucola.

Testing glucose levels yourself: You will routinely do *in vitro* urine checks for glucose throughout prenatal care. If a positive glucose reading results, have the mother change her diet, as already described, and come back to recheck the urine in two days (or have her check at home and call in the results). This time she should urinate first thing in the morning and half an hour later urinate a second time, collecting a sample from the second specimen. Either you or she can check to see if glucose is present. Many authorities feel this method most accurately screens for problems.

If glucose and ketones appear simultaneously, this may be due to a high sugar diet and infrequent dietary intake, but it is more concerning. Have the mother carefully monitor glucose and ketones and eat every 2 hours throughout the day. If ketones and glucose remain positive, more tests are in order. Ketonuria can result from true diabetes. Inadequate insulin levels leave the body unable to utilize glucose, and fat is being metabolized instead. This explains how an uncontrolled diabetic can be ravenously hungry and still lose weight.

If a blood test is necessary, you may approximate the lab results yourself by using Visidex blood dip-sticks for glucose at a prenatal visit. This is the most accurate dip-stick test that does not require a machine to assure results. Read directions carefully and store strips exactly as recommended. They are very sensitive and cannot be relied upon for accurate results beyond the date on the bottle. These strips are a great way to screen women or to recheck after dietary changes have been made. When performing the test, do not squeeze the finger before you prick, as this will falsely lower the blood sugar by introducing excess plasma into your sample.

If you can afford it, get a glucosometer. This is a portable gadget that very accurately checks glucose levels. These are often available at a discounted price from your local American Diabetes Association (found in the white pages). The retail price is coming down all the time. It is nice to have for monitoring borderline situations, doing your own screening, and when you suspect babies are hypoglycemic.

If you plan to administer a glucose challenge test (such as an OGTT) yourself, it is important to remember that test standards are based on the ingestion of a specific type of sugar, namely pure glucose, and that ranges-of-normal pertain to different blood components (*i.e.*, whole blood, plasma etc.). A postprandial is most accurately assessed after a meal, whereas an OGTT is most accurate after a glucose load.

Although some very sweet juices (such as orange juice) in the right quantity may contain the same amount of carbohydrates as Glucola; the sugars in the juice are more complex and will break down and absorb differently. One cannot be substituted for the other.

If you feel you must do a OGTT, only plain (uncaffeinated) glucola should be used. It can be purchased through pharmacies that specialize in surgical supplies, or your lab may supply you. (Of course, if you are merely trying to pacify a doctor with the test, if s/he will agree to the use of juice and foods to

make up the glucose load you are much less likely to get a starvation diabetes reaction: go for it!)

Conditions which skew glucose test results: A poor or inadequate diet or improper test preparation can cause a hypoglycemic result, diagnosis of which may be confused by temporarily high values after the glucose load. When the pancreas is presented with a glucose load it is not used to handling, insulin is not produced in sufficient quantities fast enough to compensate, causing glucose levels to be elevated (a pseudo-diabetes). This decreased carbohydrate tolerance is known as *starvation diabetes*. When the pancreas finally catches up to the glucose overload and insulin surges, blood sugar drops. This is called the *rebound effect*. When the drop occurs varies among individuals, (which is why a 5 or 6 hour OGTT is used to diagnose hypoglycemia.)

Although this is not a true diabetes but a shock reaction to the excess sugar given for the test, it can cause test results to appear temporarily high. The client with a diet low in refined carbohydrates, who has not been instructed to carbohydrate load, is at high risk for having a starvation diabetes reaction.

A variety of other factors can alter test results and cause inaccurate results. Viral infections or a poor diet, for instance, can stress or damage the pancreas. Hypothyroidism, by slowing intestinal absorption, can cause glucose test results to be abnormally low. Even high doses of vitamin C can cause false negative results.

Certain drugs can change results. With some, testing can be dangerous if done concurrently. Diuretics inhibit insulin production. Steroids (cortisone, prednisone, or similar hormones) cause the formation of more glucose from protein and fats and cause the liver to release all its glycogen at once. Drugs containing aspirin, oral contraceptives, or diphenylhydantoin (an anti-epileptic drug), are all problematic.

Other interfering factors include infections causing fever. Adrenalin, released when we are anxious, not only inhibits insulin production but breaks down glycogen as it prepares the body to deal with the emergency, thus raising the blood sugar. Obese women may have decreased insulin receptors (meaning insulin does not work as efficiently in their systems). Lack of exercise and poor diet both contribute to a decreased carbohydrate tolerance and may result in starvation diabetes. Smoking and coffee also raise the glucose level. Caffeine causes the liver to release all its stored glycogen and convert it to glucose, flooding the system even more. (Note that some glucola preparations contain caffeine. A plain glucola should be used instead.)

The time of day the testing is done can be significant, since some people have abnormal glucose tests in the morning and normal levels if tested at noon or later during the day.

Any factors that influence test results should be investigated and discontinued for a minimum of three days before testing, whenever possible.

When test results are questionable: Correct the problems by eliminating any aggravating causes, including all refined and concentrated sugars (even juices), and recheck in five days. Results will probably be just fine. If still positive or if your first results were way out of line, you will need a more specific test; either an OGTT or a Hemoglobin A_{1c}. Because of the inaccuracy of oral tests, never use only one result for diagnosis unless the reading is way off the scale. Even then, more tests are in order to determine how to deal with the condition.

When test results are positive: Assuming all necessary prerequisites for accurate testing have been followed, if two or more test results are borderline (according to non-pregnant standards), the woman should be treated as a diet controlled diabetic and follow the dietary recommendations given later in this chapter. Careful monitoring, a proper diet, and regular exercise to burn extra glucose, bring many women to term without problems. Have the woman check her blood glucose first thing in the morning (fasting) and two hours after meals. If monitoring does not show a positive change, insulin may be necessary. If results are extremely high, see the section on Type I diabetes which follows later in this chapter.

A tea made of String Bean skins (1 cup 3 times daily), will provide inulin, a precursor to insulin. Jerusalem Artichokes, thinly peeled and sauted, are another excellent source. Cucumbers are very nourishing to the pancreas. Liver, either fresh or desiccated in capsules can reduce or even eliminate the need for insulin. The B vitamins are very important as well.

Doctors may not agree with the therapies outlined in this section. The client can refer her skeptical physician to Gail Brewers' book, The VIP Pregnancy Book. If they are still uncooperative, look for another doctor with a different perspective.

When a woman has already been diagnosed as gestationally diabetic:

A woman may come to you that has been told she is a gestational diabetic, either now or in a previous pregnancy. You need to know her previous history, basic diet, what tests were done, how she prepared for the tests (Did she carbohydrate load for three days before a GTT? With what foods?), test results, and the ranges of normal used. You will probably find she is not diabetic at all. If any factors may have produced a false positive result, make necessary dietary changes and retest using the 2-hour postprandial. If previous results were obviously misinterpreted, ignore them!

If previous pregnancies have been diagnosed as gestationally diabetic, resulting problems must be seen in the light of the medical advice and diet recommended at the time. The cause of problems may have been due more to the advice than to "hidden" diabetes. More than one story has come to me of perfectly healthy women with well-grown fetuses who were diagnosed as gestationally diabetic, only to go downhill from prescribed calorie and weight restrictions and deliver scrawny infants.

In unclear situations, the best way to find out what is really going on is to perform testing before conception (whenever possible). That way, you have a real idea of what the sugar levels are without the influence of pregnancy. Start with a 2 hour postprandial test.

If the diet has not been good, remember that it is often a lifetime of hypoglycemia that precedes the onset of adult diabetes and you have a relatively young woman before you! Gestational hypoglycemia is common and requires diligent dietary management to prevent problems. As explained in the following chapter, hypoglycemia can cause test results to be temporarily high. A woman may be labeled diabetic by an unthinking care provider, when treating her as a diabetic (especially with insulin) is most dangerous to her and her baby.

I have seen this form of misdiagnosis by practitioners unwilling to look beyond the technicalities of test results. In one case, an abnormally high result was followed an hour later by a reading of 55 mg./dl., clearly a hypoglycemic reaction. But, because one result was high, the doctor wanted to put her on insulin! Not only is this a misdiagnosis, but by medicine's own definition, two values must deviate from normal to qualify as diagnostic. Yet that criteria is often ignored, which demonstrates how the medical mentality can be fragmented in its viewpoint. Another woman was not told to fast, ate fruit for breakfast and was then tested with a three hour OGGT, glucola and all. Of course, she was diagnosed as gestationally diabetic too. We must intelligently evaluate the whole picture to avoid harmful advice and therapy. Such blatant medical negligence is inexcusable.

The newborn and gestational diabetes: The primary risk to the baby of a mother with elevated blood glucose is hypoglycemia once the baby is not dependent upon its mother's glucose supply. If present, hypoglycemia will eventually lead to tremors, respiratory distress, listlessness, abnormal cry, feeding difficulties and convulsions if it is not corrected. Many midwives feel confident that they can tell if a baby is hypoglycemic by watching them after birth. Besides, early and frequent nursing will balance out and prevent any possible hypoglycemia, making glucose checks a moot point. Of course, for that to happen, the baby and mother must not be separated!!!

If a baby is born in the hospital or under the care of practitioners who believe that gestational diabetes exists as defined, they will be concerned if the mother has had a "positive" OGTT during her pregnancy or if the baby weighs more than they consider to be within a normal range (in some places over 8 lbs, 5 oz.!) This will lead to the baby being placed in neonatal intensive care for observation and hourly heel sticks to determine blood glucose levels for 12 hours. Others require half-hourly heel sticks, increasing to three hour intervals for 12 hours. Others want only to do three one hour heel sticks and will cancel the last two if the first is normal.