DIABETES IN PREGNANCY:  
THE MIDWIFERY ROLE IN MANAGEMENT

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ABSTRACT

Although the primary focus of midwifery is on uncomplicated pregnancy, all midwives must screen for and, in some cases, comanage the care of women with diabetes mellitus and gestational diabetes. This article will review the types of diabetes, implications for preconceptional and pregnancy care, the changing recommendations relative to diabetes in pregnancy, and the role of the midwife in providing antepartal and intrapartal care for women with diabetes in collaboration with other health care professionals and in accordance with the philosophy and standards of the American College of Nurse-Midwives. A specific case study will highlight the role of the midwife, with an overall focus on medical consultation, collaboration, and referral, as well as client involvement in the planning of care. J Midwifery Womens Health 2000;45:472–80 © 2000 by the American College of Nurse-Midwives.

Although the focus of midwifery* is on the care of essentially healthy women, it is well documented that this care frequently extends to include women with social, medical, or obstetric risk factors (1,2). Questions may arise about exactly what role certified nurse-midwives (CNMs) and certified midwives (CMs)* should assume in more complicated pregnancies. Although there is no single answer that is appropriate to all situations, state laws, documents promulgated by the American College of Nurse-Midwives (ACNM), institutional credentialing/privileging requirements, individual work situations, and working relationships with other health provider colleagues can provide guidance for specific situations. The purpose of this article is to provide background information and explore some issues to guide the midwife* in planning and participating in collaborative care when diabetes complicates pregnancy.

TYPES OF DIABETES

Diabetes is broadly defined as a group of metabolic disorders resulting in hyperglycemia, a consequence of either inadequate insulin production, inadequate insulin secretion, or both. In 1997, the American Diabetes Association (ADA) recommended a change in the way diabetes is classified so that the mechanism of the disease process is the focus rather than the medical therapy used to treat the disease, as had been the case in the past (3). Four categories are defined.

Type 1 diabetes is characterized by autoimmune destruction of the pancreatic β cells, resulting in an inability to produce and secrete insulin. Type 2 diabetes is generally thought of as representing insulin resistance but may include a relative insulin deficiency as well, or it may be a secretory defect combined with insulin resistance. The third category, gestational diabetes mellitus (GDM), is defined as the onset or first recognition of diabetes during pregnancy. The fourth category, “other specific types” of diabetes, is associated with an array of genetic disorders, pancreatic diseases, drug and chemical use, and infections.

DIAGNOSIS OF DIABETES OUTSIDE OF PREGNANCY

Criteria for the diagnosis of diabetes outside of pregnancy have also been recently revised (3). Diabetes can be diagnosed in one of three ways: 1) symptoms of diabetes (polydypsia, polyuria, weight loss, polyphagia, and blurred vision) plus a random (without regard for timing of the previous meal) glucose greater than or equal to 200 mg/dL (11.1 mmol/L), 2) fasting plasma glucose (FPG) greater than or equal to 126 mg/dL (7.0 mmol/L), 3) 2-hour plasma glucose value greater than or equal to 200 mg/dL (11.1 mmol/L) during an oral glucose tolerance test (OGTT). The ADA recommends that, unless there is unequivocal hyperglycemia with acute metabolic decompensation, repeat testing should be done on a different day to confirm the results. The 2-hour 75-g OGTT is no longer recommended for routine use in the clinical setting, in favor of using options 1 or 2. Categories of impaired fasting glucose (IFG) and impaired glucose tolerance (IGT) are described as follows: an FPG greater than or equal to 110 but less than 126 is considered IFG and a 2-hour plasma glucose in an OGTT greater than or equal to 140 but less than 200 mg/dL is defined as IGT. These designations of impaired status are
not disease states but are considered to be risk factors for the development of diabetes and heart disease in the future (3).

The ADA recommends that health care providers consider testing all individuals who are age 45 and older, as well as those who are younger and hypertensive and/or obese. In addition, screening for diabetes should be considered in those individuals who have a first-degree relative with diabetes, belong to a high-risk ethnic population (African American, Hispanic, American Indian, Asian, Pacific Islander), have given birth to an infant weighing more than 9 pounds, and/or have had a previous diagnosis of GDM, a high-density lipoprotein cholesterol of less than or equal to 35 or triglycerides greater than or equal to 250, or IFG or IGT on previous testing (3).

PATHOPHYSIOLOGY OF GDM

Changes in carbohydrate metabolism during normal pregnancy have been referred to as “diabetogenic” and are also described as “facilitated anabolism” and “accelerated starvation” (4,5). Accelerated starvation refers to the more rapid change from carbohydrate to fat utilization after meals during pregnancy and the observed maternal tendency to develop fasting hypoglycemia, particularly overnight. This is thought to be the result of constant fetal demands for glucose; these demands are met by a drain of maternal glucose across the placenta to the fetus (4). Fetal glucose concentrations are 20–40 mg/dL lower than maternal blood glucose levels (6). Facilitated anabolism refers to the tendency toward maternal energy storage as a result of increased maternal insulin secretion in early pregnancy, which may occur as a result of increased estrogen levels. Increases in cortisol and progestin also contribute to fat storage in early pregnancy (4).

Placental production of hormones, including estrogen, progesterone, and human placental lactogen (hPL), continues to rise during the second and third trimesters of pregnancy, resulting in tissue resistance to insulin and decreased glucose tolerance. In addition, hPL is a lipolytic hormone and contributes to fat catabolism in later pregnancy. Cortisol concentrations are increased and contribute to insulin resistance and the resulting higher postprandial blood glucose levels, despite increased insulin secretion. In the third trimester of pregnancy, insulin production may be increased as much as 30% (daily mean) over nonpregnant levels (5).

These metabolic changes begin very early in gestation, with fat storage predominant in the first half of pregnancy and the phenomenon of accelerated starvation predominant in the second half of pregnancy, when fetal growth demands and hormone levels are greatest. The overall result of these physiologic changes is a tendency toward hypoglycemia during fasting beginning in early pregnancy and higher maternal postprandial blood glucose levels during the second half of pregnancy when hormone levels are higher.

Some women are not able to increase their pancreatic insulin production enough to meet the requirements of the increase in postprandial blood glucose during pregnancy and/or develop a greater degree of both peripheral and hepatic insulin resistance (4,7); hyperglycemia results and GDM is diagnosed in approximately 2–3% of women, with higher rates in some ethnic groups (7).

When maternal hyperglycemia remains unchecked, fetal hyperinsulinemia and the storage of excess glucose may result, leading to excess fetal growth and macrosomia; the latter, in turn, increases the risk of both maternal and newborn injury at the time of birth, including newborn asphyxia. Serum amino acid and lipid concentrations are also believed to contribute to macrosomia. In addition, the metabolism of excess fuel supplied to the fetus can reduce fetal oxygen stores, leading to periods of hypoxia; increased adrenal catecholamines; and possibly hypertension, cardiac remodeling, and hypertrophy in the fetus. Stimulation of red blood cell production and increased hematocrit may also occur and increase the risk of newborn hyperbilirubinemia (5,8). Children of mothers with pregestational diabetes or GDM may be at risk for diabetes and obesity later in life (8). The aim of treatment of diabetes in pregnancy is to control maternal blood glucose levels and prevent these serious sequelae.

TESTING FOR DIABETES DURING PREGNANCY

All women should be assessed for their risk of diabetes at the first prenatal visit (9). Women at high risk of developing GDM (marked obesity, history of GDM, strong family history of type 2 diabetes, glucosuria) should be screened using the 1-hour 50-g glucose challenge test (GCT) in the first trimester of pregnancy and again at 24–28 weeks if the initial screening results are normal (9,10). Most women in the United States are of average risk and should be screened at 24–28 weeks’ gestation. Some women at very low risk of GDM may not need to be screened. See Table 1.

Screening

Although screening every pregnant woman for GDM has been recommended in the past (11), selective screening

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Diagnosis

The Fourth International Workshop-Conference on Gestational Diabetes Mellitus, which took place in 1997, resulted in new recommendations for the diagnosis of GDM (9). These recommendations were recently adopted by the ADA (12) and are a change from previous recommendations that endorsed the slightly higher National Diabetes Data Group (NDDG) criteria (11). The new recommendations lower the threshold for each value of the 3-hour 100-g OGTT. See Table 2. The change was recommended because infants of women who are diagnosed with the new criteria appear to be at the same risk of morbidity as those diagnosed with the NDDG criteria (9). If any two values meet or exceed the recommended limits, a diagnosis of GDM is made. The 1994 statement promulgated by the American College of Obstetricians and Gynecologists (ACOG) recommends the NDDG criteria but acknowledges that some clinicians prefer the criteria described in Table 2 (10).

Another option for testing for GDM is to use the 2-hour 75-g OGTT (9). See Table 3. If this option is chosen, the 2-hour test is used alone without the 1-hour 50-g GCT. Two venous plasma values that meet or exceed the values in Table 3 meet the criteria for the diagnosis of GDM (9).

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Screening Strategy for Detecting GDM</th>
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<tbody>
<tr>
<td>Risk assessment for GDM should be ascertained at the first prenatal visit.</td>
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<tr>
<td>Low risk</td>
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<tr>
<td>Blood glucose testing not routinely required if all of the following characteristics are present:</td>
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<tr>
<td>Member of an ethnic group with a low prevalence of GDM</td>
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<tr>
<td>No known diabetes in first-degree relatives</td>
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<tr>
<td>Age &lt;25 y</td>
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<tr>
<td>Weight normal before pregnancy</td>
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<tr>
<td>No history of abnormal glucose metabolism</td>
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<tr>
<td>No history of poor obstetric outcome</td>
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<tr>
<td>Average risk</td>
<td></td>
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<tr>
<td>Perform blood glucose testing at 24–28 weeks using one of the following:</td>
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<tr>
<td>Two-step procedure: 50-g GCT followed by a diagnostic OGTT in those meeting the threshold value in the GCT (see text for details)</td>
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<tr>
<td>One-step procedure: diagnostic OGTT performed on all subjects (see text for details)</td>
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<tr>
<td>High risk</td>
<td></td>
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<tr>
<td>Perform blood glucose testing as soon as feasible, using the procedures described above.</td>
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</tr>
<tr>
<td>If GDM is not diagnosed, blood glucose testing should be repeated at 24–28 wk or at any time a patient has symptoms or signs suggestive of hyperglycemia.</td>
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<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>Diagnosis of GDM with a 100-g Oral Glucose Load</th>
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<tbody>
<tr>
<td>mg/dL</td>
<td>mmol/L</td>
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<tr>
<td>Fasting</td>
<td>95</td>
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<tr>
<td>1 h</td>
<td>180</td>
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<tr>
<td>2 h</td>
<td>155</td>
</tr>
<tr>
<td>3 h</td>
<td>140</td>
</tr>
</tbody>
</table>

Two or more of the venous plasma concentrations must be met or exceeded for a positive diagnosis. The test should be performed in the morning after an overnight fast of at least 8 h but not more than 14 h and after at least 3 days of unrestricted diet (≥150 g carbohydrate per day) and physical activity. The subject should remain seated and should not smoke throughout the test. Cutoff values are those proposed by Carpenter and Coustan (3) for extrapolation of the whole blood glucose values found by O’Sullivan and Mahan (2) to plasma or serum glucose concentrations.


<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>Diagnosis of GDM with a 75-g Oral Glucose Load</th>
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<tbody>
<tr>
<td>mg/dL</td>
<td>mmol/L</td>
</tr>
<tr>
<td>Fasting</td>
<td>95</td>
</tr>
<tr>
<td>1 h</td>
<td>180</td>
</tr>
<tr>
<td>2 h</td>
<td>155</td>
</tr>
</tbody>
</table>

Two or more of the venous plasma concentrations must be met or exceeded for a positive diagnosis. The test should be performed in the morning after an overnight fast of at least 8 h but not more than 14 h and after at least 3 days of unrestricted diet (≥150 g carbohydrate per day) and physical activity. The subject should remain seated and should not smoke throughout the test. Cutoff values for the 75-g 2-h OGTT in pregnancy are, of necessity, arbitrary. The lack of definitive data relating such test results to perinatal outcome made it difficult for the panel and the Organizing Committee to arrive at a consensus (see text for detailed discussion).

diagnosis of GDM. Kjos and Buchannan (13) have recommended the two-step approach for women at average risk of GDM and the 2-hour OGTT only for those women at high risk for GDM developing.

Controversies

The use of the revised criteria from the Fourth International Workshop-Conference has been criticized by some as diagnosing more cases of GDM at greater cost, with minimal impact on perinatal outcomes (14). Naylor et al (15) developed a model for a progressive screening approach based on risk status for GDM. They significantly reduced testing of low-risk women while achieving similar GDM detection rates as universal screening programs. However, complicated testing schemes can be difficult to implement in busy practices. Further research and debate among care providers should provide for more complete answers to the question of the most appropriate screening and diagnostic regimens. Individual practitioners will have to examine their practice site, the population they serve, and choose from the recommendations from ADA, ACOG, and others presented in the literature.

PRECONCEPTION CARE

Ideally, all women/couples would come to the health care system for preconception care. In so doing, the care provider and woman/couple are able to work together and establish the desire for pregnancy; review pertinent personal, family, medical, and social history; determine necessary laboratory studies (such as rubella screening); provide immunization for those that are nonimmune; and recommend health promotion measures (such as initiation of folic acid supplementation or genetic counseling) to promote the healthiest pregnancy possible.

Women with risk factors for diabetes mellitus or a history of GDM should be counseled to make appropriate lifestyle changes such as dietary modifications, alterations in physical activity, and weight management before pregnancy. Any well-woman clinic visit for women with diabetes or risk factors for diabetes/GDM should be considered an opportunity for beginning the preconception care process by inquiring about plans for possible pregnancy in the near future. If testing for diabetes is appropriate in the preconception period, recommendations for testing outside of pregnancy would be used.

Women with pregestational (type 1 or type 2 before conception) diabetes must work with their diabetes care team to establish the best control of their blood glucose levels before attempting conception. The health care team members might include a diabetologist, family physician, internist, obstetrician, dietitian, diabetes nurse, social worker, or whichever combination of care providers is needed to provide the best individual care. The goal of preconception care for women with pregestational diabetes is to achieve a level of blood glucose control that will prevent fetal malformations early in pregnancy (16,17). Members of the care team provide information and guidance to the woman desiring pregnancy with the recognition that it is she who must take charge in the effort for a good outcome.

The ADA has published recommendations for a complete preconception care program for women with pre-existing diabetes (16). The treatment plan should address the three components of risk assessment, health promotion, and appropriate interventions. Women should receive education about diabetes and pregnancy and expectations for care, training in self-management of diet and blood glucose testing, counseling by a mental health professional as needed to maximize adherence to a treatment plan, and a carefully constructed plan for medical care, including laboratory analysis, to evaluate current health status.

An initial comprehensive visit should include a complete history, physical examination, and educational evaluation including family members where possible. After the initial visit, monthly visits are recommended with consideration of weekly telephone calls. Components of care are careful planning of meals and physical activity, timing and site of insulin injections, treatment for hypoglycemia, stress reduction, and self-blood glucose monitoring and adjustment of insulin doses. Treatment interventions should be evidence based or derived from the best quality recent research, with the goal of establishing normoglycemia before conception to reduce the risk of miscarriage and congenital malformations. It is recommended that conception be delayed until the FBG is in the 70–100 mg/dL range and postprandial blood glucose is less than 140 at 1 hour or less than 120 mg/dL at 2 hours, and that glycosylated hemoglobin is at least in or close to the upper portion of the normal range (16).

PRENATAL CARE

Pregestational Diabetes

Once pregnancy has been achieved for a woman with pregestational diabetes (type 1 or type 2), overall medical management should be coordinated by a physician skilled in the management of diabetes in pregnancy. Management of care during pregnancy will be similar to that initiated in the preconception period, focusing on the management of blood glucose levels so that the healthiest environment for fetal growth and development is made possible. Special care must be taken to prevent or quickly recognize and treat hypoglycemia (most likely to occur after overnight fasting), adjust insulin levels as needed to
respond to the physiologic demands of pregnancy during the fasting and postprandial periods, and provide for fetal and maternal nutrient requirements. Recent reviews give detailed information and parameters for the antenatal care of women with pregestational diabetes (5,6). In general, insulin dosages are reduced in the first trimester to prevent hypoglycemia and gradually increased throughout the remainder of pregnancy as needed (5,6). A plan for continuing dietary and blood glucose monitoring (including glycosylated hemoglobin), increased fetal surveillance (including ultrasonography and fetal heart rate testing), and timing of delivery should be developed among members of the care team, including the client.

Care during the third trimester is aimed at preventing stillbirth, promoting intrauterine fetal growth and oxygenation, and planning the appropriate time for delivery to maximize fetal/neonatal health and minimize maternal morbidity related to birth. Data from continued blood glucose monitoring and fetal surveillance will provide the information for developing this plan. Generally, the optimal time for these women to give birth is 38.5–40 weeks gestation (5).

**Gestational Diabetes**

When a woman is diagnosed with GDM, treatment should commence as soon as possible. This treatment will include nutritional counseling, blood glucose monitoring, recommendations for physical activity, and occasionally, insulin therapy. More frequent prenatal visits, increased fetal surveillance, and consultation with other health professionals may be part of the treatment plan. Specific attention to blood pressure is important because of the association between diabetes in pregnancy and hypertensive disorders (18). The goal of care is to maintain blood glucose in the normal range, promote adequate nutrition to meet maternal and fetal needs, and prevent macrosomia and the risks associated with difficult birth (5,6,9).

Dietary management is the basis of therapy in the antenatal period (5,6,9,19), and approximately 80% of women may be managed with diet alone (6). In general 30–40 kcal/kg/d are recommended, depending on maternal weight status; 25 kcal/kg may be used in some cases for obese women (6,19,20). Recommendations vary from 35–60% of daily intake from complex carbohydrates, 20–25% from protein, and 20–25% from fat (5,6,20). These recommendations will vary somewhat by clinical site and according to individual client blood glucose levels and weight gain requirements. Continuing nutritional assessment and intervention is important (19).

Physical activity recommendations depend on the nutritional counseling and the overall management plan. Exercise is known to increase blood glucose uptake in skeletal muscle, and moderate levels of exercise are believed to be safe in pregnancy. Several studies have suggested that exercise may be helpful in the treatment of GDM, appears to be safe, and may be considered as an adjunct to nutrition therapy in care planning (9,21–23). No standard approach has been recommended. Women should be individually assessed and monitored throughout pregnancy. General guidelines should emphasize the risk of musculoskeletal injuries during pregnancy, the need to avoid exercise in the fasting state, and the importance of maintaining an adequate fluid and calorie intake.

Specific goals of GDM management are to keep fasting blood glucose levels at less than 95–105 mg/dL and postprandial levels at less than 130–140 at 1 hour or less than 120 mg/dL at 2 hours (recommendations vary somewhat by author). When blood glucose levels exceed these limits despite appropriate nutritional intervention and physical activity, the consulting physician should assume responsibility for the evaluation of insulin needs. Self-home blood glucose monitoring is widely used to monitor blood glucose on a daily basis. It is considered to be superior to intermittent monitoring of blood glucose in the clinic setting and has become the standard of care (5,6,9,20). In addition to blood glucose testing, daily fasting urine testing for ketones may be used to determine the presence of night-time fat catabolism, particularly for women in whom carbohydrate restriction is recommended (9).

The appropriate timing of birth is also a question in women with GDM. Most authors recommend either inducing labor to facilitate birth between 38 and 40 weeks gestation or increasing fetal surveillance if pregnancy continues beyond 40 weeks (9,20). Hod et al (24) demonstrated significantly reduced macrosomia with strict glycemic control and elective early delivery on the basis of estimated fetal weight. Excessive fetal growth or poor glycemic control are reasons to induce labor or consider cesarean birth before 40 weeks. Elective cesarean delivery has been recommended if the estimated fetal weight is high because of the increased risk of shoulder dystocia in macrosomic infants of diabetic mothers. Specific recommendations of the definition of high fetal weight for women with GDM vary by author but include estimated fetal weight greater than 4,000 g and greater than 4,250 g (20,24).

**INTRAPARTUM CARE**

**Pre-gestational Diabetes**

If labor and a vaginal birth are planned, the goal is to maintain the blood glucose between 80 and 110 mg/dL during labor. Insulin may or may not be required to achieve this goal. If insulin is used, both intravenous
infusion methods or subcutaneous injection regimens may be used (5). The consulting physician will manage blood glucose and insulin levels and make other medical decisions in the plan of care.

Gestational Diabetes

During labor, blood glucose should be maintained between 80 and 120 mg/dL in plasma or 70 and 110 mg/dL if capillary measurements are used (9). Blood glucose levels should be monitored at 1–4 hour intervals. Although insulin is rarely needed during labor for women with GDM, small doses of short-acting insulin may be used if needed (5,6,9).

IMMEDIATE NEWBORN CARE

The most common newborn complication after birth is hypoglycemia which, if uncorrected, may result in seizures. Hypoglycemia in the newborn, defined as less than 35 mg/dL in the term infant (25), may be related to maternal blood glucose control in labor and is correlated with maternal blood glucose control during the 6–12 weeks that preceed the birth. It is more common in infants of women with pregestational than gestational diabetes. If there has been significant maternal hyperglycemia with resultant fetal hyperinsulinemia, hypoglycemia may result after birth and the cessation of maternal glucose supply (5). The newborn must be carefully monitored for at least the first 2 hours after birth. Early feeding and intravenous glucose are therapies commonly used, depending on blood glucose level and symptoms.

Because of the risk of newborn polycythemia and subsequent hyperbilirubinemia, Persson and Hanson (26) recommend immediate cord clamping at the time of birth. Infants must also be monitored for hypocalcemia, hypomagnesemia, polycythemia, and hyperbilirubinemia. These complications are more common in infants of women with pregestational diabetes, and a team approach to monitoring and caring for these infants should be in place.

POSTPARTUM CARE

Pre-gestational Diabetes

The midwifery role in postpartum care is similar to that for women without diabetes. Women with pregestational diabetes should continue to be managed by a physician-directed team with the goal of continued glycemic control, determination of postpartum recovery status, and recommendation of family planning methods. Provision of an appropriate and effective contraceptive is the first step in preconception care for a next possible pregnancy (27). Because of evidence that the incidence of childhood diabetes is lower among those who were breastfed, breastfeeding should be encouraged and supported (5). Breastfeeding may also promote improved glycemic and lipid profiles in women with diabetes (28).

Gestational Diabetes

Women with previous GDM have a 50% risk of developing overt diabetes in the next 10–20 years. Effective contraception is important, because repeat pregnancy may increase the risk of developing diabetes later in life. For women at low risk of sexually transmitted infections, the intrauterine device is a method that does not appear to increase the risk for developing diabetes. In breastfeeding Latino women with previous GDM, the progestin-only mini pill significantly increased the risk of developing diabetes, and it has been recommended that this method be avoided in breastfeeding women. The low-dose combined pill has not been shown to increase the risk of diabetes (29).

Postpartum blood glucose testing must be performed at approximately 6–12 weeks postpartum. Women are then reclassified as previous GDM, IFG, IGT, type 1 or type 2 diabetes. Postpartum testing may be done by fasting blood glucose or a 2-hour 75-g OGTT. The 2-hour test is used more commonly during the postpartum period. Because of the high incidence of development of type 2 diabetes in women with previous GDM, annual testing is recommended (9). The postpartum visit provides an opportunity to counsel women about modifying their diet and physical activity, with the aim of achieving a healthy body mass index; this may prevent or delay the development of type 2 diabetes and its sequelae (30).

IMPLICATIONS FOR MIDWIFERY PRACTICE

Midwifery practice is guided by Standards for the Practice of Nurse-Midwifery, which states that “Nurse-midwifery care is based upon knowledge, skills, and judgements which are reflected in written policies/guidelines” (31). Practice guidelines should address the role, if any, of midwives in the care of nonpregnant women with diabetes, women with diabetes considering pregnancy, pregnant women with pre-gestational and gestational diabetes, postpartum follow-up of women who have had diabetes in pregnancy, and care of their newborns. Ideally, guidelines would address the role of midwives in these care situations, as well as routes for collaborative management and referral (32).

Primary Care

Midwives have been defined as primary care providers (33), because they provide essential features of primary
Pre-gestational Diabetes

Although midwives are not prepared to independently manage pregnancy for women with type 1 or type 2 diabetes, there may be a role in counseling and conducting some aspects of prenatal and intrapartum care as part of an interdisciplinary team. In clinical settings in which midwives are involved in the care of women with pre-gestational diabetes, the role and a process for collaborative management should be clearly outlined in the practice guidelines (31,32).

Gestational Diabetes

All midwives should have a process for the screening and diagnosis of GDM. Midwives involved in the care of women with GDM should describe the parameters of care and a mechanism for collaborative management in their practice guidelines (31,32). In addition to medical consultation, these guidelines should include consultation with other health professionals, including nutritionists, diabetes nurses, mental health professionals, and others. There are a variety of possibilities for midwifery management of women with GDM. Some midwifery practices develop parameters to independently manage these pregnancies as long as blood glucose levels remain within normal limits with dietary therapy; others include consultation with an obstetrician or family physician on the diagnosis of GDM and collaborative management for the remainder of the pregnancy, in accordance with written practice guidelines.

However, if blood glucose levels do not remain within the normal range, it is imperative that a physician experienced in managing insulin therapy direct those aspects of pregnancy care. Again, the mechanism for continued midwifery involvement in the care should be described in practice guidelines and could follow a number of different patterns. A woman with GDM might be referred out of the midwifery practice to physician care in some settings. The midwife could continue to manage normal aspects of prenatal and intrapartum care, with an obstetrician or perinatal/maternal-fetal medicine specialist managing the insulin therapy and other related decisions about fetal surveillance and plans for the timing of labor and birth. Another scenario is midwifery management of normal aspects of prenatal care and an obstetrician or family physician jointly managing insulin therapy with an internist or endocrinologist.

The most important determinations to make in the development of practice guidelines is what team of practitioners in what combination of roles will provide the highest quality, cost-effective care that is satisfactory and culturally appropriate for women with diabetes. There is no one formula that will work in every setting. Each midwife’s education and experience, state laws, institutional guidelines, and each health professional practicing within their scope of practice will guide the development of patterns of care.

CASE STUDY

CS is a 36-year-old married, Hispanic American woman, G2, P1001, who is seen for GDM screening at 26 weeks gestation. Her first pregnancy and the current pregnancy, to date, have been uncomplicated. At the first prenatal visit, her BMI was 25 and considered within normal limits. Weight gain, thus far, has been 14 pounds. The 1-hour 50-g GCT result was 152; the 3-hour 100-g OGTT results were: fasting, 92; 1-hour, 190; 2-hour, 163; 3-hour, 136. Because of the two abnormal values, at 1 and 2 hours, the diagnosis of GDM was made. The midwife saw CS a few days later in the clinic and provided a comprehensive education session about the diagnosis, implications for care for her and her unborn child during the pregnancy, implications for labor and birth, newborn risk of hypoglycemia, the need for postpartum testing and risk for developing overt diabetes in the future. Referrals were made for appointments that same week with a nutritionist for dietary planning and to a diabetes nurse for education about home blood glucose testing. The consulting obstetrician was notified of the diagnosis, and the chart was jointly reviewed by the physician and midwife.

The midwife continued to see CS for prenatal visits. After nutritional counseling and education about self-blood glucose monitoring, CS brought in a weekly diary showing her daily fasting and 2-hour postmeal blood glucose levels, as well as daily fasting urine ketone testing. All fasting blood glucose levels were 93 mg/dL or lower and all 2-hour postprandial blood glucose levels were less than 120 mg/dL, for the first week of testing. Morning urine ketone tests were negative. The second week, three 2-hour post-lunch blood glucose values were greater than 120 mg/dL. The midwife consulted with the
obstetrician, and CS was referred to the endocrinologist for evaluation. A follow-up telephone consultation with the nutritionist was also arranged. The third week, all fasting and 2-hour postmeal blood glucose levels were normal again. The client had been advised by the endocrinologist to increase her physical activity by walking daily, and the nutritionist had advised some dietary adjustments in carbohydrate and protein distribution throughout the day.

Blood glucose levels remained normal for the last several weeks of pregnancy. Maternal weight gain averaged 0.5 to 1 pound per week. Estimates of fetal weight by fundal height measurements and abdominal palpation were appropriate for gestational age and not suggestive of developing macrosomia. There was no evidence of preeclampsia or other hypertensive disorders of pregnancy. CS began spontaneous labor at 40 weeks' gestation and gave birth to a 7 pound 15 ounce female after a 6-hour labor. The obstetric consultant was notified of CS's admission to the labor unit, but management of labor and birth was provided by the midwife because all parameters of maternal and fetal status remained within normal limits. Because blood glucose levels after the diagnosis of GDM were controlled by diet and physical activity, blood glucose testing was not done during labor. CS was assisted to begin breastfeeding shortly after the birth. The newborn was tested for hypoglycemia at 30 minutes, 1 hour, and 2 hours after birth, and her blood glucose levels remained normal.

CS returned to see the midwife for a postpartum visit at 6 weeks. A 2-hour 75-g OGTT was ordered at that time. The midwife again counseled CS about the risk of diabetes in the future. She recommended a healthy diet, regular physical exercise, and a slow, gradual return to prepregnant weight consistent with the nutritional requirements of breastfeeding. The intrauterine device had been previously selected by CS as her family planning method because of her low risk for sexually transmitted infections. It was placed without difficulty, and she was given instructions and precautions. CS was instructed to follow-up with the midwife in 1-year for her annual well-woman examination, including testing for diabetes. The 2-hour OGTT postpartum values were normal.

SUMMARY

When diabetes complicates pregnancy, there is additional risk to the mother and fetus/newborn. Women with diabetes during pregnancy must be monitored carefully and provided with education and support to promote optimum glycemic control and prevent complications. There is a role for midwives in the care of women with diabetes in pregnancy, particularly GDM. Because of a projected increase in the number of individuals with diabetes in the future (35), midwives need to be aware of current screening recommendations for diabetes in both pregnant and nonpregnant women. Midwifery practice guidelines should address the care of women at risk for diabetes, as well as collaborative management and referral to other care providers for women who develop diabetes. Much of the care provided to women regarding the risk of diabetes in the future will center around health promotion, disease prevention, health education, and empowerment of women as partners in their own health care, all hallmarks of midwifery care (34).

REFERENCES


