Childbirth Education for Multiple Pregnancy

Part 1: Prenatal Considerations

Kristen S. Montgomery, PhD, RN

Sabrina Cubera, BA

Christie Belcher

David Patrick

Heather Funderburk

Christa Melton

Michelle Fastenau

ABSTRACT

Women with a multiple pregnancy have unique learning needs in preparing for birth. This paper explores the issues relevant to women with a multiple pregnancy to support a positive birth experience. One of the foundations of childbirth education and nursing care is to provide the individual woman and her family with knowledge regarding the birth process, what to expect, and how to cope with labor and birth. Education also focuses on caring for the newborns after birth and how to manage in the early days at home. However, traditional childbirth education classes, which meet in a series of evenings or Saturdays, may not meet the needs of women with a multiple pregnancy. In addition, because of the differences in care that exist for women with a multiple pregnancy, new paradigms for childbirth education are needed to meet the learning needs of these families. The purpose of this paper is to provide information to the childbirth educator on the differences in care women with a multiple pregnancy can expect and to suggest strategies to meet the childbirth education needs of these families.

Journal of Perinatal Education, 14(2), 26–35, doi: 10.1624/105812405X44709

Keywords: multiple pregnancy, pregnancy care, childbirth education

Lamaze International has created an independent study based on this article. Please visit the Lamaze Web site (www.lamaze.org) for detailed instructions regarding completion and submission of this independent study for Lamaze contact hours.

The number of multiple births in the United States is at an all-time high. Partly due to the increased use and effectiveness of fertility technology to help women become pregnant, the incidence of twin births and higher in the United States has increased

in recent years. Since 1995, the number of multiple births has increased 19% (Elster, 2000). Today, approximately 3% of babies born in the United States are twins, triplets, or more. Ninety-five percent of those multiple births are twins (March of Dimes,

2002). Naturally, 1 in every 83 births produces a set of twins and 1 out of every 6,900 births produces triplets (Elliot, 2003). In the year 2002, 18.9% of all twins born were to mothers between the ages of 45 and 49 years (Martin & Park, 2003). Delayed childbearing is another important factor contributing to the rise in the use of reproductive technologies, which increases the risk of a multiple pregnancy.

Increased risks are associated with a multiple pregnancy and contribute to differences in care for these women. Both the mother and the fetuses are at an increased risk compared to singleton births. Health-care providers, including childbirth educators, need to understand these risks to help educate women and families about what to expect during the course of pregnancy, labor, birth, and potential complications. The purpose of this paper is to provide information to the childbirth educator on the differences in care a woman with a multiple pregnancy needs and to suggest strategies to meet the childbirth education needs of these families.

Multiple gestations do not always result from infertility treatment, although this is the most common cause. Regardless of how conception is achieved, a multiple pregnancy holds greater risks than a singleton pregnancy. Additionally, the risks increase proportionally to the number of fetuses present. Twins carry the smallest amount of additional risk, and pregnancies with five or more fetuses are at the highest risk of maternal and infant morbidity and mortality. Childbirth educators can play a major role in educating women and families about what to expect during birth, including complications. To do this, childbirth educators must themselves understand the full range of conditions that may complicate the labor and birth experience of families with a multiple pregnancy.

DIFFERENCES IN CARE

Women with a multiple pregnancy can expect differences in their prenatal care related to their multiple gestation and higher risk status. These expected differences in care are discussed below in order to provide a comprehensive review/resource for childbirth educators. The Table provides a summary of educational topics for consideration relevant to women with a multiple pregnancy. A concluding section addresses strategies that childbirth educators might find helpful to effectively teach/reach this population.

Increased risks are associated with a multiple pregnancy and contribute to differences in care for these women.

ANTEPARTUM CARE

Additional Needs in a Multiple Pregnancy

Nutrition. Women with a multiple pregnancy need more food, calories, protein, and vitamins and minerals than women with a singleton pregnancy (Somer, 2002). Women who are well nourished and of normal weight should be encouraged to consume 3,000 to 3,500 calories a day for twin gestations, 4,000 calories a day for triplets, and 4,500 or more for quadruplets (Somer, 2002). Iron is particularly important for blood volume expansion to support multiple fetuses and placentas. Any pregnancy results in a measurable increase in blood volume from increases in both plasma volume and red blood cells (Harvey, 1999). A 22% increase occurs as early as 8 weeks, with progressive increases seen until 32–34 weeks. The proportional increase in a multiple pregnancy is directly related to the number of fetuses present (Harvey, 1999).

TABLE
Summary of Educational Topics to Consider for Women with a Multiple Pregnancy

Antepartum Educational Topics for Consideration
<p>Additional needs during a multiple pregnancy</p> <ul style="list-style-type: none"> • Nutrition • Weight gain <p>Monitoring for potential complications</p> <ul style="list-style-type: none"> • Bed rest • Vaginal bleeding/Spontaneous abortion • Incompetent cervix • Placental abruption • Placenta previa • Cord prolapse • Iron deficiency anemia • Intrauterine growth restriction • Preterm labor/birth • Preeclampsia • Gestational diabetes • Low birth weight • Decreased uteroplacental perfusion • Twin-to-twin transfusion syndrome <p>Fetal monitoring for multiple fetuses</p> <ul style="list-style-type: none"> • Electronic fetal monitoring • Biophysical profile • Doppler ultrasound • Kick counts • Ultrasound • Combination methods

In more recent reports, bed rest has been shown to contribute to additional complications during the perinatal period, including poor maternal weight gain and lower birth weights.

The vast majority of pregnant women in the United States are prescribed a prenatal vitamin. Because of the increased physiological demands and the additional nutrients required by multiple fetuses, women with a multiple pregnancy almost always need to supplement their diet with a multivitamin (Somer, 2002). Women can achieve the recommended higher calorie diets by eating more of the same types of healthy food and by eating often (Somer, 2002). Women should also be encouraged to drink plenty of water.

Weight Gain. Weight gain during pregnancy comes from the fetus, increased maternal blood volume, uterine size, amniotic fluid, the placenta, colostrum, and fat storage. Somer (2002) recommends that women of normal weight should gain approximately 35–45 pounds for twin gestations. Weight gain is increased and generally occurs earlier and more rapidly in women with a multiple pregnancy. Some women report weight gains as early as 8 weeks. Women considered underweight should gain 1 pound each week through 20 weeks gestation and 1–2 1/2 pounds per week for the remainder of the pregnancy. Inadequate weight gain early in pregnancy is associated with complications even if compensatory weight is gained later. Ideal weight gains for triplets and higher-order pregnancies have not been well researched. However, anecdotal evidence indicates that a 36-pound gain by week 26 is associated with higher birth weights and optimal outcomes in triplet gestation (Somer, 2002).

Monitoring for Potential Risks and Complications

Women pregnant with multiple fetuses are at an increased risk for numerous problems during the antepartum period. Multiple gestations account for 10–12% of fetal deaths. Death can be caused by abnormal fetal or placental development, cord compression, or other accidents (Martin, 2002a, 2002b). Although not all multiple births have complications, women should be familiar with the warning signs of problems. Below is a discussion of the most common complications of a multiple pregnancy, the expected medical management, and the implications for the childbirth educator and childbearing family.

Bed rest. Women pregnant with multiple fetuses are commonly placed on bed rest at some point during their pregnancy. However, the efficacy of bed rest for preventing complications is questionable at best and, in more recent reports, bed rest has been shown to contribute to additional complications during the perinatal period, including poor maternal weight gain and lower birth weights (Maloni, Alexander, Schluchter, Shah, & Park, 2004). In Maloni and colleagues' (2004) study of 141 women with singleton pregnancies and placed on bed rest, lower birth weights were seen across all gestational ages. The authors hypothesized that maternal weight loss related to bed rest is associated with intra-uterine growth restriction.

While Maloni and colleagues' (2004) sample only included singleton pregnancies, the effects of bed rest would likely be similar or perhaps pronounced in a multiple pregnancy. A Cochrane Database Systematic Review reports that no evidence supports bed rest for singleton pregnancies as being beneficial and suggests clinicians should not routinely place women on bed rest to prevent preterm birth (Sosa, Althabe, Belizan, & Bergel, 2004). Sosa and colleagues (2004) also note that bed rest contributes to significant costs to health-care systems. Research regarding bed rest for multiple gestation is lacking.

In their advocacy role, childbirth educators working in settings where bed rest is used routinely might consider distributing these studies to their care-provider colleagues. Simultaneously, they must recognize that not every mother assigned to bed rest is placed there as a routine.

Vaginal bleeding. Vaginal bleeding during pregnancy can be normal soon after conception or may result from a threatened spontaneous abortion, an incompetent cervix, or placenta previa. Each of these is reviewed below. Women should be taught to report any bleeding to their health-care provider in order to determine a cause.

Spontaneous abortion. According to Luke and Eberlein (1999), one common complication of multiple pregnancy is early vaginal bleeding. Some women experience bleeding within the first week to 10 days after conception. During this time, the fertilized eggs implant in the lining of the uterus. Such bleeding is most often normal. In some cases, women may mistake this bleeding for a menstrual

period. Because women who are expecting multiples have more than one embryo implanting, they may experience heavier early bleeding. A more serious complication is the occurrence of bleeding in the later months of pregnancy, which can signal a spontaneous abortion. With multiple gestations, an increased risk of spontaneous abortion exists before the 20th week of pregnancy. It is also possible that one or more fetuses will spontaneously abort, while the remaining fetuses will continue to develop (Luke & Eberlein, 1999).

Incompetent cervix. Another bleeding complication is caused by an incompetent cervix, a condition in which the cervix spontaneously opens early in the pregnancy. This complication causes most second trimester spontaneous abortions. Women with a multiple pregnancy may be at a higher risk for this condition because of the additional strain on the cervix from the presence of more than one fetus (Luke & Eberlein, 1999). The condition can also develop from a genetic weakness of the cervix, exposure to the drug diethylstilbestrol (also known as “DES”) before the mother was born, or trauma to the cervix during a previous birth, abortion, or medical treatment (Iams, 2002).

When an incompetent cervix is detected early, a cerclage of sutures can often be placed to hold the cervix shut. The sutures used to close the cervix provide structural support to the cervix and are often successful in preventing an early birth. Once in place, a second cerclage is rarely needed (Luke & Eberlein, 1999). The cerclage is removed at 37 weeks or when labor begins (Iams, 2002).

Placental abruption. Placental abruption is more common in women with a multiple pregnancy, especially in women with some of the complications that are also associated with multiple gestation (such as chronic pregnancy-induced hypertension, hydramnios and preeclampsia) (Martin, 2002a). It occurs in 1 in 150 births (Cunningham et al., 1997). Drug abuse can also contribute to placental abruption.

The placenta delivers oxygen to the fetuses. If the placenta starts to separate, the flow of oxygen to the fetuses will be diminished or completely obliterated. Placental abruption is the most common cause of bleeding after the 20th week of gestation. Moderate to heavy bleeding results, and abdominal pain is often present in severe cases. A complete separation greatly endangers the fetuses. Partial separation is

The perinatal educator’s role is to make certain that early in the pregnancy the woman expecting multiple births takes seriously any symptom of bleeding.

less risky because placenta perfusion is still possible (Cunningham et al., 1997). Lack of or poor tissue perfusion can lead to hypoxia, tissue ischemia, and damage to internal organs, including the brain. Placental abruption may also occur after the birth of the first infant in multiple gestations.

Placenta previa. Placenta previa can also result in vaginal bleeding and occurs late in pregnancy once the cervix begins to dilate. It takes place when the placenta implants low in the uterus, partially or completely covering the cervix. Placenta previa is more common in a multiple pregnancy due to the increased size and number of the placentas (Gilleland, 1999). Bleeding results when micro blood vessels rupture from movement of the cervix. Bleeding is usually painless. Once placenta previa is diagnosed, vaginal exams are avoided and birth generally occurs by a cesarean.

The perinatal educator’s role is to make certain that early in the pregnancy the woman expecting multiple births takes seriously any symptom of bleeding. Yet, this must be done sensitively, so that the woman does not overly worry about her increased risks. The balance is most easily struck when the educator is personally acquainted with the woman and can assess her response to the education.

Cord prolapse. Cord prolapse is another potential complication that is more likely during birth in a multiple pregnancy. If the umbilical cord prolapses into the birth canal ahead of the fetuses, it may result in reduced oxygen to the fetal brain, which is a serious emergency. When the cord is compressed or squeezed, the supply of blood and oxygen is restricted or obliterated. Lack of oxygen can lead to severe damage or death if the compression is not resolved within minutes. Fortunately, cord prolapse occurs only rarely. The risk of cord prolapse increases when the membranes rupture spontaneously or artificially before the fetal presenting part descends into the pelvis (Luke & Eberlein, 1999). Thus, women experiencing a multiple pregnancy need to be aware that cord prolapse is a potential complication, particularly when membranes rupture early. They can be instructed to immediately

Support groups for women who have previously delivered premature infants and for families with multiple births are helpful referrals for women with a multiple pregnancy.

notify their health-care provider if their membranes rupture prematurely and the presenting part of an infant is not engaged. In the very rare situation where the cord protrudes, women should assume a knee/chest position.

Iron deficiency anemia. Because of the high prevalence of iron deficiency anemia, women need additional iron to support the growth of multiple fetuses (Luke & Eberlein, 1999). Low levels of iron in the red blood cells can affect the adequacy of oxygen delivery to the tissues. The risk increases with each additional fetus, especially if anemia or low levels existed prior to pregnancy. The symptoms of iron deficiency anemia are similar to many of the common complications associated with pregnancy, including fatigue, lightheadedness, pale skin, and shortness of breath. If anemia is left untreated, fetal growth can be compromised and the mother's risk of complications during and after pregnancy can increase (Luke & Eberlein, 1999). Women with a multiple pregnancy should be instructed regarding the signs and symptoms of iron deficiency and tested frequently. To prevent iron deficiency anemia, the mother should increase her intake of iron-rich foods such as red meats and liver. Iron supplements may also be used.

Intrauterine growth restriction. Intrauterine growth restriction is another complication that occurs with a multiple pregnancy. It can occur because of inadequate nutrients, poor placental perfusion, and unknown factors. Multiple fetuses do not grow at the same rate in utero as singletons (Chitkara & Berkowitz, 2002). In later pregnancy, differences in growth rates may be attributed to fetal crowding (Chitkara & Berkowitz, 2002). Also, one fetus may receive more nutrients while the other fetus gets a smaller portion and grows more slowly.

Premature labor and birth. The presence of multiple fetuses places the mother at risk for preterm birth, which is defined as birth before 37 weeks of gestation (Flynn, 1999). Twins have a 67.9% chance of preterm birth (Nassar et al., 2003). Ninety percent of triplets and almost all quadruplets and

higher multiples are born preterm. For every extra fetus, the length of gestation decreases (March of Dimes, 2002). The average gestation for the birth of twins is 35 weeks, for triplets 33 weeks, and for quadruplets 29 weeks (Elster, 2000). While the mechanisms of premature labor and birth are not completely understood, one of the hypotheses for a multiple pregnancy is uterine distension to full-term size (Flynn, 1999). The effects of gravity and increasing pressure on the cervix from the multiple fetuses are also thought to contribute to the incidence of premature labor and birth (Flynn, 1999).

Fetuses that are born early have a higher incidence of neonatal intensive care admission and respiratory complications, including respiratory distress syndrome (Nassar et al., 2003). Respiratory complications often require mechanical ventilation and a lengthy hospital stay.

Prematurity, particularly less than 35 weeks gestation, almost always requires treatment in a neonatal intensive care unit (NICU). Approximately 48% of twins, 78% of triplets and higher, and only 15% of singletons need some type of special care after birth (Elster, 2000). Triplets have an 11–12% risk for early mortality due to premature birth (Kristensen, Salihu, & Alexander, 2004). The mother with multiple fetuses should be prepared for the psychological implications and economic stressors associated with preterm birth. Hospital costs, unpaid leave from work, and the separation of mother and infants during their intensive care stay are factors that should be addressed in order to help support the family with a multiple gestation. Women need to be counseled on how to handle these situations and find support from others. Support groups for women who have previously delivered premature infants and for families with multiple births are helpful referrals for women with a multiple pregnancy.

Recently, methods have been developed to predict which women are at higher risk for premature birth. Success in preventing or delaying a preterm birth is much better when cervical change is detected early. Ultrasound assessment of cervical length and fetal fibronectin are two newer strategies to predict preterm labor and may be used in women with a multiple gestation (Chitkara & Berkowitz, 2002). Cervical shortening and funneling can be seen via transvaginal ultrasound and are predictive of preterm birth when the cervical length is less than 25 mm with or without funneling at 24–26 weeks in twin gestations (Chitkara & Berkowitz, 2002). Ad-

ditionally, fetal fibronectin (FFN) can be evaluated with a cervical swab. If a mother tests positive for FFN at 28 weeks, spontaneous preterm labor prior to 32 weeks is likely (Chitkara & Berkowitz, 2002). Families should be aware that these tests might be used during the course of their pregnancy and understand the rationale behind their use. While identification of a positive FFN allows close monitoring for preterm labor and administration of steroids to promote lung maturity in the newborn, interventions that effectively delay birth are lacking (Daskalakis, Papantoniou, Koutsodimas, Papapanagiotou, & Antsaklis, 2000; Ramsey & Andrews, 2003). Some strategies that are currently being investigated include progesterone therapy, tocolytic treatments, and antibiotic therapy (Ramsey & Andrews, 2003).

Preeclampsia. Preeclampsia is another risk factor that disproportionately affects women with a multiple pregnancy and often contributes to premature birth. The more fetuses present, the greater the risk for developing preeclampsia. Preeclampsia is 3 to 5 times more common in twins (Chism, 1998) and affects more than half of all triplet pregnancies (March of Dimes, 2002). Preeclampsia occurs after 20 weeks gestation and can be superimposed on chronic hypertension, a combination that is associated with increased maternal and fetal complications (Peters & Flack, 2004).

Preeclampsia is characterized by elevated blood pressure above 140 systolic or 90 diastolic. Proteinuria, defined as greater than 3 grams of protein in a 24-hour urine collection, may or may not be present with preeclampsia (Littleton & Engebretson, 2002). Preeclampsia causes vasospasm, which can significantly decrease blood perfusion within the body. This decrease in tissue perfusion can lead to hemoconcentration and, thus, stroke hemorrhage due to thrombocytopenia. Thrombocytopenia is defined as a decrease in the number of platelets in the blood to less than 100,000 (Peters & Flack, 2004). Preeclampsia can also cause changes in the kidney, resulting in decreased renal blood flow and glomerular filtration. Renal calcium levels and uric acid clearance are affected; hypocalciuria and elevated serum urate levels are the end result (Peters & Flack, 2004).

The birth of the fetuses and placenta is the only way to cure preeclampsia. All other interventions—including antihypertensive therapy, aspirin therapy, diuretics, and sodium restriction—have failed to show any benefits to either the mother or

the fetuses (Peters & Flack, 2004). Women with preeclampsia are at risk for continuing problems for as long as 5 days postpartum (Peters & Flack, 2004).

Gestational diabetes. Gestational diabetes is defined as the abnormal metabolism of carbohydrates during pregnancy, wherein the pancreas is unable to produce enough insulin to move glucose into the cells for the production of energy (Cunningham et al., 1997). The end result is hyperglycemia. Diabetic ketoacidosis—an elevated blood glucose level above 200—is more likely to develop in a woman with a multiple pregnancy (Littleton & Engebretson, 2002). Ketoacidosis carries a high risk of maternal mortality (approximately 20%) (Cunningham et al., 1997). Thus, blood glucose monitoring must be conducted during the pregnancy.

Low birth weight. The risk of premature birth increases among women with a multiple pregnancy and results in a decreased fetal birth weight. Ninety percent of preterm multiple fetuses at less than 32 weeks of gestation weigh less than 2,500 grams (5 1/2 lbs). Multiple fetuses grow at a normal rate until the uterus becomes too crowded or maternal nutrients are inadequate to support satisfactory fetal growth (Chitkara & Berkowitz, 2002). Thus, multiple-gestation fetuses may have weights that are low for gestational age.

Low birth-weight infants are approximately 40 times more likely to die in early infancy (Cunningham, et al., 1997). Low birth weight is associated with various complications, including higher rates of childhood physical and psychological problems, neurological handicaps such as cerebral palsy, and lower scores on tests of intelligence and development (Maloni, 2001).

Decreased uteroplacental perfusion. Hypertensive disorders, dehydration, gestational diabetes, intrauterine growth restriction, pregnancy-induced hypertension (all of which are more common in a multiple pregnancy), and multiple fetuses can lead to decreased uteroplacental perfusion and fetal hypoxia (Martin, 2002b). When these conditions are severe, intrauterine death can result (Littleton & Engebretson, 2002). The risk of fetal death at 24 weeks for twins is 0.92 per 1,000 pregnancies; for triplets, this risk is 1.30 per 1,000 pregnancies. In comparison, singleton pregnancies have a risk of only 0.28 per 1,000 pregnancies (Kahn, et al., 2003). When blood flow to the placenta is

decreased, uteroplacental insufficiency develops and nutrients cannot perfuse as readily. Intrauterine growth restriction may result from lack of nutrients. Growth restriction contributes to low birth weight (Littleton & Engebretson, 2002).

Twin-to-twin transfusion syndrome. Identical twin fetuses (diamniotic-monochorionic twins) carry a 15% risk of developing twin-to-twin transfusion (Chism, 1998). This is a process where the blood of one twin is shunted to the other twin who does not receive enough in return. The underperfused twin becomes anemic and does not grow normally. The overperfused twin becomes polycythemic and may experience fluid overload and other complications related to the increased vascular volume (Littleton & Engebretson, 2002). Twin-to-twin transfusion normally occurs in the second trimester. If the syndrome is severe enough, the survival of the donor twin is compromised (Myers, 2004). The donor fetus has a higher incidence of cerebral palsy (8%) and impaired neurodevelopment (37–42%) due to discordant birth weight (Adegbite, Castille, Ward, & Bajoria, 2004).

Fetal Monitoring for Multiple Fetuses

Accurate fetal monitoring can be a challenge when more than one fetus is present. With each additional fetus, it becomes more of a challenge to ensure that all fetuses are being monitored. Health-care providers may have trouble distinguishing whether they are picking up signals from the same fetus or truly picking up multiple signals. While accuracy varies, many methods to monitor fetal health are available (Eganhouse & Petersen, 1998). Some common methods for assessing fetal health in a multiple pregnancy are discussed below. Active inclusion of the mother in monitoring the fetuses may help to lessen the amount of anxiety associated with the high-risk nature of a multiple pregnancy, thus benefiting the fetuses and the mother.

Electronic fetal monitoring. Electronic fetal monitoring is used to assess the presence of uterine contractions and fetal health status via measurement of the fetal heart tones. Many health-care facilities now have twin monitors, which allows clinicians to monitor twins with a single monitor. With triplets, a dual fetal heart rate monitor plus a single monitor can be used. Location of each fetal back (the best placement for auscultation of fetal heart tones) can be accomplished with ultrasound; otherwise,

monitoring of all fetuses cannot be assured (Eganhouse & Petersen, 1998). Uterine activity is monitored because of the risk for preterm labor and birth, which increases with each additional fetus. Previously, some physicians ordered home-based uterine monitoring, which allowed women to be comfortable in their homes while under surveillance (Eganhouse & Petersen, 1998). However, home fetal monitoring has not been associated with improved outcomes in singleton pregnancies and has not been extensively researched with multiple pregnancies. Thus, home fetal monitoring is not currently used. Health-care providers and educators can focus on teaching the signs and symptoms of preterm labor so that women are knowledgeable and can seek care early.

Biophysical profile. Biophysical profiles are the most commonly used method of fetal monitoring during multiple pregnancies. This form of observation includes ultrasound examination of breathing and body movement, fetal tone, and amniotic fluid. A biophysical profile is not entirely accurate in differentiating between a distressed fetus and a nondistressed fetus when more than one fetus is present (Eganhouse and Petersen, 1998). Women with a multiple pregnancy can expect to receive several biophysical profiles during the course of their pregnancy.

Doppler ultrasound. A continuous-wave Doppler ultrasound may also be used to monitor fetal heart rate. This method uses ultrasound to compare heart activity with tracings from a Doppler. Doppler ultrasound is one of the most accurate ways of monitoring individual fetuses in a multiple pregnancy (Eganhouse & Petersen, 1998). Doppler velocimetry can detect blood flow patterns in the fetal blood vessels and placenta to assess for problems (Joern, Schroeder, Sassen, & Rath, 1997; Malcus, 2004).

Kick counts. Mothers can take an active role in fetal monitoring by counting fetal movements during a certain time of the day. This is referred to as “kick counts.” An average of 6.4 kicks per minute has been reported for fetuses in a multiple pregnancy at 32 weeks gestation (Eganhouse & Petersen, 1998). Generally, the mother is unable to distinguish which baby is moving, but an overall decrease in the amount of movement felt should be reported to the health-care provider (Eganhouse & Petersen, 1998). While some conditions may be specific to

only one fetus, it is likely that when one fetus is experiencing problems others might be too, especially if the cause is proximal to all of them (e.g., maternal hypertension).

Ultrasound. In addition to the methods mentioned above, women pregnant with multiple fetuses will usually experience serial ultrasound assessments during the course of their pregnancy. Ultrasound is useful for monitoring growth, examining the placenta, conducting biophysical profiles, determining the position of each of the fetuses, and completing cervical assessments. Ultrasound can also be used to detect fetal and placental abnormalities, for which intervention may be possible.

Combination methods. Women with a multiple pregnancy should be aware that the accuracy of a single method of fetal monitoring is not high and that numerous methods will likely be used. The expectant family should be aware of the different types of monitoring that can be conducted with the goal to ensure the best outcomes for all of the infants. It may be helpful for women to understand that fetal monitoring and testing are frequently conducted during a multiple pregnancy and can be tiresome. Anticipatory guidance may help the family to cope with these demands.

RECOMMENDATIONS FOR CHILDBIRTH EDUCATORS

Perinatal education for mothers expecting multiples should logically begin early in pregnancy, given the amount of information that is helpful to enable them to promote a healthy pregnancy and detect complications early. Although it is important for the educator to be aware of the details of the risks these women encounter, it is critical to present information to the families in a manner that does not overly stress them as they face the increased risks described above. The focus of the education should be on preventative measures or monitoring actions they can take.

Childbirth educators play an instrumental role in the delivery and mastery of prenatal issues, labor and birth strategies, and newborn content acquisition among expectant parents. While today's fast-paced society offers many childbirth-education options available to couples—including a comprehensive class series over several weeks, extended Saturday sessions, and educators who provide pri-

The timing of prenatal education can be tricky for this population of women, given that they may experience periods of acute complications.

ate classes at their clients' homes—these arrangements may not meet the needs of couples with a multiple pregnancy. Women experiencing a multiple pregnancy are often at high risk and experience complications that may include hospitalization. As detailed above, women with triplets and higher are at much greater risk for complications than women who are pregnant with twins. As the pregnancy progresses, these women may experience repeated hospitalizations and, despite the procedure's potential harms and lack of efficacy, be placed on bed rest. Repeated hospitalizations and prolonged bed rest at home can interfere with attending perinatal education programs in the traditional formats. Thus, their classes on pregnancy may be best scheduled early in the pregnancy when complications are less likely to have occurred. Private home classes might be a realistic option for some couples. In-hospital visits can also be recommended after the acute phase of the presenting problem has passed.

Special classes tailored for mothers with higher-order multiple births would be particularly useful. In the current hospital environment, many perinatal units are short-staffed, and nurses often simply do not have the time for patient teaching or may not understand its value. Resource materials, including Web sites that are specifically tailored to women with a multiple pregnancy, would also be helpful strategies to reinforce teaching.

In addition to these strategies, the actual content of the classes can be modified to better meet the needs of women expecting more than two infants. Many (if not all) of these women will experience a cesarean birth; thus, for this group, education on the natural birth process and coping with labor will be less relevant and can probably be excluded. The addition of class content on managing more than one infant at home and what to expect with a NICU admission can be included more extensively. Breast-feeding discussions can include issues relevant to multiple infants, prolonged pumping, and ensuring adequate milk volume for multiple infants.

The timing of prenatal education can be tricky for this population of women, given that they may experience periods of acute complications followed by a long period of bed rest (and boredom)

in which any distraction would likely be appreciated. Individualized sessions are one option, and childbirth educators can certainly be creative about offering private classes to patients with a multiple pregnancy. For example, a childbirth educator with expertise in issues relevant to women with a multiple pregnancy might offer a series of six classes scheduled at the woman's and her family's convenience, or perhaps once a month. Flexibility will certainly be needed to accommodate changes in the woman's condition, which might make the educational process less effective. Education might also be facilitated with the development of workbooks or videos that expectant couples can review at their convenience. Questions and clarification regarding content can be directed to the childbirth educator or other health professionals at the facility.

Childbirth educators employed in a hospital setting could develop a series of courses geared toward women with a multiple pregnancy. They could visit women who were hospitalized and offer class content based on the women's gestational age. Thus, content would be tailored and women who were stable could also participate in the education sessions. Reduction of boredom while gaining childbirth education expertise can be useful to women with a multiple pregnancy and viewed as a benefit to women in that facility. In this situation, the childbirth educator would probably be employed by the health-care system; thus, this opportunity for education could be viewed as a "perk" during the mother's antepartum hospitalization. Added to the benefits provided by the education itself, these sessions would help alleviate maternal boredom. Additionally, childbirth educators would become more integrated members of the health-care team.

SUMMARY

Women with a multiple pregnancy have extensive learning needs in the perinatal period and may require different methods of childbirth education to achieve desired outcomes. The high-risk status of the pregnancy, combined with hospitalization and/or bed rest, may make access to childbirth education difficult. New paradigms of childbirth education are needed to meet the needs of these women and their families.

REFERENCES

Adegbite, A. L., Castille, S., Ward, S., & Bajoria, R. (2004). Neuromorbidity in preterm twins in relation to chorionicity and discordant birth weight [Electronic

version]. *American Journal of Obstetrics and Gynecology*, 190, 156–163.

Chism, D. M. (1998). *The high risk pregnancy sourcebook*. WebMD. Retrieved March 5, 2004, from <http://www.WebMd.com>

Chitkara, U., & Berkowitz, R. L. (2002). Multiple gestations. In S. G. Gabbe, J. R. Niebyl, & J. L. Simpson (Eds.), *Obstetrics. Normal and problem pregnancies* (4th ed., pp. 827–867). New York: Churchill Livingstone.

Cunningham, F., MacDonald, P., Gant, N., Leveno, K., Gilstrap, L., Hankins, G., & Clark, S. (Eds.). (1997). *Williams obstetrics* (20th ed). Stamford, CT: Appleton and Lange.

Daskalakis, J., Papantoniou, N. E., Koutsodimas, N. B., Papapanagiotou, A., & Antsaklis, A. J. (2000). Fetal fibronectin as a predictor of preterm birth. *Journal of Obstetrics and Gynecology*, 20, 347–353.

Eganhouse, D. J., & Petersen, L. A. (1998). Fetal surveillance in multifetal pregnancy. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 27, 312–321.

Elliot, J. P. (2003). *Multiple gestation*. Retrieved February 4, 2004, from <http://www.bestdoctors.com>

Elster, N. (2000). Less is more: The risks of multiple births [Electronic version]. *Fertility and Sterility*, 74, 617–623.

Flynn, K. (1999). Preterm labor and premature rupture of membranes. In L. K. Mandeville & N. H. Troiano (Eds.), *High-risk and critical care intrapartum nursing* (2nd ed., pp. 102–122). Philadelphia: Lippincott.

Gilleland, C. (1999, January). Multiple births multiply the risks. *Journal of Newborn Nursing*, 35–37.

Harvey, M. G. (1999). Physiologic changes during pregnancy. In L. K. Mandeville & N. H. Troiano (Eds.), *High-risk & critical care intrapartum nursing* (2nd ed., pp. 2–31). Philadelphia: Lippincott.

Iams, J. D. (2002). Preterm birth. In S. G. Gabbe, J. R. Niebyl, & J. L. Simpson (Eds.), *Obstetrics. Normal and problem pregnancies* (4th ed., pp. 755–826.). New York: Churchill Livingstone.

Joern, H., Schroeder, W., Sassen, R., & Rath, W. (1997). Predictive value of a single CTG, ultrasound and Doppler examination to diagnose acute and chronic placental insufficiency in multiple pregnancies. *Journal of Perinatal Medicine*, 25, 325–332.

Kahn, B., Lumey, L. H., Zybert, P. A., Lorenz, J. M., Cleary-Goldman, J., D'Alton, M. E., & Robinson, J. N. (2003). Prospective risk of fetal death in singleton, twin, and triple gestations: Implications for practice [Electronic version]. *Obstetrics and Gynecology*, 102, 685–692.

Kristensen, S., Salihu, H. M., & Alexander, G. R. (2004). Premature rupture of membranes and early mortality among triplets in the United States [Electronic version]. *European Journal of Obstetric and Reproductive Biology*, 112, 36–42.

Littleton, L. Y., & Engebretson, J. C. (2002). *Maternal, neonatal, and women's health nursing*. Albany, NY: Delmar-Thomson Learning.

Luke, B., & Eberlein, T. (1999). *When you're expecting twins, triplets, or quads*. New York: Quill.

- Malcus, P. (2004). Antenatal fetal surveillance. *Current Opinion in Obstetrics and Gynecology*, 16, 123–128.
- Maloni, J. A. (2001). Preventing low birth weight. How smoking cessation counseling can help. *Association of Women's Health, Obstetric and Neonatal Nurses: Lifelines*, 5, 32–35.
- Maloni, J. A., Alexander, G. R., Schluchter, M. D., Shah, D. M., & Park, S. (2004). Antepartum bed rest: Maternal weight change and infant birth weight. *Biological Research for Nursing*, 5, 177–186.
- March of Dimes. (2002). *Quick reference and fact sheets. Multiples: Twins, triplets, and beyond*. Retrieved June 8, 2004, from http://www.marchofdimes.com/professionals/681_4545.asp
- Martin, E. J. (2002a). Admission assessment of the laboring woman. In E. J. Martin (Ed.), *Intrapartum management modules. A perinatal education program* (3rd ed., pp. 61–96). Philadelphia: Lippincott, Williams, & Wilkins.
- Martin, E. J. (2002b). Admission assessment of the fetus. In E. J. Martin (Ed.), *Intrapartum management modules. A perinatal education program* (3rd ed., pp. 97–125). Philadelphia: Lippincott, Williams, & Wilkins.
- Martin, J. A., & Park, M. M. (2003). *Annual CDC US vital statistics and trends in twin and triplet births: 1980–1998*. Retrieved February 24, 2004, from <http://www.twinstuff.com/twinfopg.htm>
- Myers, M. C. (2004, March). *Management of multiple gestations: When there are two, three, four, or more!* Symposium conducted at the meeting of the South Carolina Perinatal Association, Columbia, SC.
- Nassar, A. H., Usta, I. M., Rechdan, J. B., Harb, T. S., Adra, A. M., & Abu-Musa, A. A. (2003). Pregnancy outcome in spontaneous twins versus twins who were conceived through in vitro fertilization [Electronic version]. *American Journal of Obstetrics & Gynecology*, 189, 513–518.
- Peters, R. M., & Flack, J. M. (2004). Hypertensive disorders of pregnancy [Electronic version]. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 33, 209–220.
- Ramsey, P. S., & Andrews, W. W. (2003). Biochemical predictors of preterm labor: Fetal fibronectin and salivary estriol. *Clinics in Perinatology*, 30, 701–733.
- Somer, E. (2002). *Nutrition for a healthy pregnancy* (2nd ed.). New York: Henry Holt & Company.
- Sosa, C., Althabe, F., Belizan, J., & Bergel, E. (2004). Bed rest in singleton pregnancies for preventing preterm birth. *Cochrane Database of Systematic Reviews*, CD003581.

KRISTEN MONTGOMERY is an assistant professor in the College of Nursing at the University of South Carolina in Columbia, South Carolina. SABRINA CUBERA is a BSN student in the College of Nursing at the University of South Carolina. She is also a nurse technician in the post-anesthesia care unit at Palmetto Health-Baptist in Columbia. CHRISTIE BELCHER, DAVID PATRICK, HEATHER FUNDERBURK, CHRISTA MELTON, and MICHELLE FASTENAU are BSN students in the College of Nursing at the University of South Carolina.

MATERNAL RISK-REDUCTION PROGRAMS

Perinatal educators may want to take advantage of a program that trains care providers to assist child-bearing women to quit smoking. The program can be downloaded free at the Dartmouth Interactive Media Laboratory web site (www.iml.dartmouth.edu/education/cme/Smoking/install.html). Six hours of nursing continuing education contact hours for this program are available (www.iml.dartmouth.edu/Smoking_linkpage/nce.html).

The American Academy of Pediatrics (AAP) has published material on safe sleeping practices for children (www.healthychildcare.org/pdf/SIDSparentsafesleep.pdf) and on providing infant tummy time (www.healthychildcare.org/pdf/SIDStummytime.pdf). AAP has also published “A Child Care Provider’s Guide to Safe Sleep,” along with data and SIDS information (www.healthychildcare.org/pdf/SIDSchildcaresafesleep.pdf).

As part of The Year of the Healthy Child agenda, the U.S. Surgeon General released an advisory on background data and resource availability related to alcohol use in pregnancy (www.hhs.gov/surgeongeneral/pressreleases/sg02222005.html). More information on The Year of the Healthy Child is available at www.hhs.gov/surgeongeneral/healthychild.