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Obesity in Pregnancy

Addressing Risks to Improve Outcomes

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ABSTRACT

The rapidly increasing rates of obesity among women of childbearing age, not only in the United States but also across the globe, contribute to increased risks during pregnancy and childbirth. Overweight and obesity are quantified by body mass index (BMI) for clinical purposes. In 2010, 31.9% of US women aged 20 to 39 years met the definition of obesity, a BMI of 30 kg/m^2 or greater. Across the life span, obesity is associated with increased risks of hypertension, cardiovascular disease, diabetes, sleep apnea, and other diseases. During pregnancy, increasing levels of prepregnancy BMI are associated with increases in both maternal and fetal/neonatal risks. This article reviews current knowledge about obesity in pregnancy and health risks related to increased maternal BMI, addresses weight stigma as a barrier to care and interventions that have evidence of benefit, and discusses the development of policies and guidelines to improve care.

Key Words: barriers to care, obesity, policy development, pregnancy, provider attitudes

The increasing rates of obesity among women of childbearing age, not only in the United States but also across the globe, have contributed to increased risks during pregnancy and childbirth. In 2010, 31.9% of US women aged 20 to 39 years met the definition of obesity, a body mass index (BMI) of 30 kg/m^2 or greater.[1] There is no state with an obesity prevalence of less than 20%; in 13 states, 30% or more adults are obese (see Figure 1).[2] Since 2003, rates of obesity among adults have plateaued but have not declined.[3] Rates of obesity in women are highest among non-Hispanic blacks and decrease with rising economic status and higher educational attainment.[4] Across the life span, obesity is associated with increased risks of hypertension, cardiovascular disease, diabetes, sleep apnea, and other diseases; pregnancy both exacerbates existing disease and provokes new-onset health issues. During pregnancy, increasing levels of prepregnancy BMI are associated with increases in both maternal and fetal/neonatal risks. This article reviews current knowledge about obesity in pregnancy and health risks related to increased maternal BMI and interventions that have evidence of benefit and discusses the development of policies and guidelines to improve care.

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BMI AND OTHER MEASURES OF OBESITY

Overweight and obesity are generally quantified by BMI for clinical purposes. It is not a perfect measure—women have relatively higher BMIs than men, based on body composition. Asians have higher body fat at any given BMI, whereas African Americans have higher lean body mass than whites and thus relatively higher BMI for level of fat body mass; any athlete with high lean body mass will have a relatively high BMI. However, BMI is reasonably accurate, is easily quantifiable, and provides standard definitions. It is the most common reference for the degree of obesity in the literature. It is also easy to explain to women and to use as a tool in demonstrating how one's weight and height are related in discussions about risks. Table 1 shows the categories used to describe BMI and the weight at which a woman 64 in tall would cross into each class.

Both waist circumference and weight to hip ratios can be used in the clinical setting to determine central or abdominal obesity. Individuals with increased

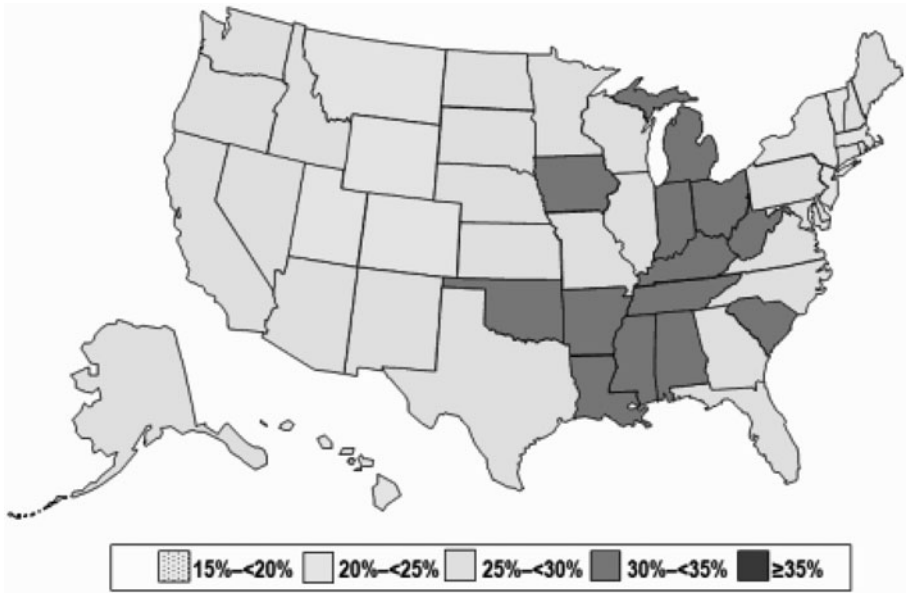

Figure 1. Prevalence of self-reported obesity among US adults: BRFSS 2012. Prevalence reflects BRFSS methodological changes in 2011, and these estimates should not be compared with those before 2011. BRFSS indicates Behavioral Risk Factor Surveillance System. From Centers for Disease Control and Prevention.[2]

abdominal obesity have higher levels of risk for cardiovascular disease and diabetes regardless of BMI. Waist circumference is more commonly assessed, as it requires only one measurement. An abdominal circumference of 35 inches in women is considered indicative of central obesity. Similarly, skin-fold measurements are easy to perform but have not been shown to have good reproducibility. As single measures of obesity, the accuracy of each decreases when the BMI is greater than 35 kg/m^2. While dual-energy x-ray absorptiometry, computed tomography, and magnetic resonance imaging are highly accurate, none can be used during pregnancy, all are expensive, and their accuracy decreases with extremes of obesity.

OBESITY-RELATED RISKS AND PREGNANCY

Rates of prepregnancy obesity have increased across all categories of age, education, income, and tobacco use and among both black and white women.[6] The risks associated with increased BMI can be described as maternal, both pregnancy-related and long-term, and as fetal/neonatal/child. These risks increase as maternal BMI increases. In addition to the human costs, obesity is associated with increased system costs. These costs relate both to increased numbers of visits scheduled and tests ordered and to prolonged hospital stays associated with a rise in cesarean births and postoperative complications for mothers and neonatal intensive care admissions for newborns.[7]

Maternal risks

Among the maternal risks related to pregnancy are gestational diabetes, hypertensive disorders, venous thromboembolism, cesarean delivery, wound infection, and postpartum anemia.[8–13]

Obesity affects the incidence of gestational hypertension and preeclampsia.[14,15] Among obese white women, rates of severe gestational hypertension are higher than those among African Americans, although the reverse is true at a BMI of 25 kg/m^2 or less.[16] The risk of preeclampsia with severe features in both races is 3 times the risk among normal weight women at a BMI of 30 kg/m^2 and 5 times greater at a BMI of 35 kg/m^2.[16] Mechanisms that underlie risk of preeclampsia include insulin resistance, inflammatory changes, oxidative stress, vascular alterations, or other less

Table 1. BMI categories[a]

	BMI, kg/m^2	Obesity class	5′4″ Female, lb
Underweight	<18.5		≤107
Normal	18.5-24.9		108-144
Overweight	25.0-29.9		145-173
Obesity	30.0-34.9	I	174-203
	35.0-39.9	II	204-231
Extreme obesity	40.0+	III	≥232

Abbreviation: BMI, body mass index.
[a]Adapted from National Heart, Lung, and Blood Institute.[5]

well-understood mechanisms.[15] These mechanisms are influenced by maternal weight and more likely to be present among overweight and obese women. The same factors also increase the lifetime risk of cardiovascular disease.

The gestational diabetes rate is increased among women who are overweight or obese and is additionally linked to excessive weight gain during pregnancy.[17–19] Early diabetes testing is recommended to identify undiagnosed pregestational diabetes. Hemoglobin A_{1c} or a 1-hour 50-g glucose challenge can be used at the time of the initial prenatal visit. Solomon et al[18] analyzed data from the Nurses Health Study and found that women with BMI of 30 kg/m^2 or more had a relative risk of gestational diabetes of 2.90 (95% confidence interval [CI], 2.15-3.91) versus those with BMI of less than 20 kg/m^2. Limiting weight gain during pregnancy may have a positive effect on the risks associated with diabetes. Saldana and colleagues[20] reported similar findings to those of Solomon et al and noted that among overweight women, excessive weight gain was associated with impaired glucose tolerance. Wolff et al[21] reported that a dietary counseling intervention led to weight gain restriction in obese pregnant women and fewer problems with glucose metabolism. The standard 50-g glucose screen can be performed between 24 and 28 weeks of pregnancy for women whose initial screen gives a negative result.

Pelvic pain, a common complaint during late pregnancy as the fetus gains weight and settles into the pelvis, is more frequent and more severe among obese women. The odds ratios (ORs) for severe pain in one study were 1.4 (95% CI, 1.2-1.7) in overweight women, 1.7 (95% CI, 1.3-2.2) among women with BMI 30 kg/m^2 or more and less than 35 kg/m^2, and 2.3 (95% CI, 1.6-3.4) among women with BMI 35 kg/m^2 or more.[22]

Risks associated with birth

Pregravid obesity increases birth risk both before and during labor. Duration of first-stage labor is known to be significantly longer in nulliparous obese women.[23] Furthermore, obese women are less likely to enter or complete the first stage of labor without induction or augmentation.[24,25] Cesarean delivery risk is related to multiple factors, among them indicated are delivery for complications of pregnancy, cephalopelvic disproportion resulting from fetal macrosomia, and protracted labor. The Chu et al[26] meta-analysis of route of delivery found that when other factors were accounted for and only low-risk women were considered, there remained an increased risk of cesarean birth among overweight (OR = 1.41; 95% CI, 1.17-1.69) and obese (OR = 1.75; 95% CI, 1.41-2.23) women. The increased risk occurs during the first stage of labor, with second stage being similar in length regardless of maternal BMI class.[23,27] For women whose BMI is 40 kg/m^2 or more who have previously given birth by cesarean delivery, the risk of failed trial of labor, uterine rupture, maternal morbidity, and neonatal injury are all increased with attempted vaginal delivery.[28]

Prolonged hospitalization among obese women is related not only to cesarean birth but also to increases in postoperative complications such as wound infections and thromboembolic disorders.[16] Difficulty with postoperative ambulation and personal hygiene are challenges that need to be addressed in patient teaching.

Fetal risks

Fetal/neonatal risks include structural birth defects, prematurity, macrosomia, birth injury from shoulder dystocia, hypoglycemia, neonatal intensive care admission, and stillbirth.[12–13,16] Maternal obesity programs the fetus for increased risks of obesity, metabolic syndrome, and cardiac disease, beginning in childhood.[29] Other associations have been identified, including higher incidences of asthma,[30] autism spectrum disorder,[31] and attention-deficit/hyperactivity disorder.[32] Structural birth defects, including neural tube defects such as spina bifida, septal anomalies, cleft palate, cardiac defects, anorectal atresia, limb reduction defects, and omphalocele, are increased among obese women; this effect is magnified by gestational diabetes. In contrast, gastroschisis is decreased among the infants of obese mothers.[33,34] Preterm birth, especially prior to 28 weeks, occurs more frequently—reaching 0.53% among women with a BMI of more than 40 kg/m^2 compared with a 0.17% risk among normal weight women (OR = 2.99; 95% CI, 2.28-3.92).[35] Medically indicated rates of preterm birth are also increased.[36] Neonatal mortality among preterm infants of overweight and obese mothers is increased compared with that of normal weight women; the risk is highest among mothers with preterm premature rupture of membranes, with adjusted hazard ratios of 3.5 (95% CI, 1.4-8.7) among overweight and 5.7 (95% CI, 2.2-14.8) among obese women.[37] A meta-analysis of stillbirth risks found a doubling of the rate of stillbirth among infants of obese mothers.[38] Although there are several possible reasons for this, including increased risks associated with diabetic or hypertensive complications, this has not been definitively demonstrated. The risks are noted to be highest among black gravidas, being more than doubled compared with white women with a similar BMI (adjusted hazard ratio = 2.3; 95% CI, 1.8-2.9).[39]

Among pregnancies carried to term, the rate of fetal macrosomia increases with maternal BMI. Increased risk of shoulder dystocia is impacted not only by the larger

weight but also by relatively increased body fat among these infants.[40] In addition, macrosomic infants are at greater risk of hypoglycemia in the neonatal period as a result of the rapid drop in blood glucose availability after cord clamping.

PATIENT AND PROVIDER ATTITUDES AND BEHAVIOR

Addressing the needs of overweight and obese women requires not only time for the necessary counseling but also an acceptance and acknowledgement of the health risks involved. When nurses, midwives, and physicians hold negative attitudes and allow these attitudes to be reflected in their approach to care, it directly affects the quality of that care. Women may themselves contribute to the difficulty by avoiding care, provider shopping, or refusing to address the issue, particularly if they expect to be disrespected because of weight.[41,42] Puhl and Heuer[41] reviewed the research on stigma in obesity and found pervasive beliefs among healthcare providers that obese individuals were fat, lazy, and unwilling to engage in health-related lifestyle improvements.

It has been shown that primary care physicians tend to focus on technical aspects of care, rather than education, when patients are obese.[43] Among prenatal providers, lack of knowledge about weight definitions and prenatal weight gain recommendations affect care. Herring et al[44] found that confidence in one's knowledge and one's satisfaction with one's own body were important contributors to the ability to counsel around obesity issues in pregnancy.

In addition, the physical examination and assessment of the fetus become more difficult when the woman is obese. This can lead to a focus on completing the required elements of care. During pregnancy, increased rates of complications require women to see multiple providers and increase the number of interventions. This may produce a cascade effect, in which long-term health issues are not addressed in favor of the more immediate task.

Women, well aware of provider attitudes, may not "force" the issue by active questioning. Ambivalence about one's own perception of body image and received messages about negative views of obesity can make seeking assistance and information more difficult.[42,45,46] Nyman et al[42] point out that the focus on weight can leave women feeling defensive and ashamed. Merrill and Grassley[47] described women's feelings of being dismissed or perceived as "not quite human" even as they continued to seek care.

In a small focus group study, Furness et al[48] found that women sought unambiguous messages about weight management and supportive, nonjudgmental care. In the same study, midwives reported discomfort discussing a sensitive topic that might offend. Schmied et al[49] described concerns among midwives and other providers that obesity was becoming a more "normal," and thus accepted/ignored topic, even as stigma persisted and that lack of provider knowledge coupled with lack of resources increased difficulty in communication.

Weight and weight gain have to be discussed to provide quality prenatal care. At the same time, women do not want their weight to become the focus of their care; rather, they want their caregivers to share in their pleasure of having a child.[42] Vocal tone and word choice affect women's ability to hear. Touching the abdomen to assess fetal heart tones and to evaluate uterine growth and fetal position can be complicated if it is perceived as negative by either the woman or the caregiver. The provision of a positive, nonjudgmental environment and an open approach to discussing potentially embarrassing issues are key behavioral changes on the part of obstetric providers.

INTERVENTIONS TO IMPROVE PREGNANCY OUTCOMES

Increased BMI is associated with decreases in health-related quality of life, both physically and mentally. Hassan et al[50] found a correlation between improved diet and increased exercise among obese individuals and improved quality of life. During pregnancy, obese women have been shown to have decreased quality of life compared with normal weight women, possibly related both to the exaggerated effect of pregnancy aches when physical function is already impaired and to increased rates of pregnancy complications.[51]

Preconception interventions

The ideal intervention would occur preconception. Opportunities arise during annual examinations and contraceptive visits to discuss women's plans for pregnancy. In the same way that folic acid supplementation is recommended to decrease fetal neural tube defects, and smoking cessation is encouraged, support for weight loss and increased exercise need to be part of the guidance offered to women. For women who meet the criteria, a discussion of bariatric surgery as an option can offer an increased chance of successful pregnancy. Increased fertility, decreased rates of diabetes and hypertensive disorders, preterm birth, and low-birth-weight infants have been shown following surgery.[52] Failure to lose weight with diet and exercise, a BMI of 40 kg/m^2, or a BMI of 35 kg/m^2 with comorbidities are generally considered to be required before recommending surgery. Following the procedure, a delay of 12 to

18 months (the period of most rapid weight loss) is advised before attempting pregnancy.[52] The conversation may be difficult to initiate but is an important one.

Adequacy of provider counseling

A survey of obesity-related care by obstetricians found that while most screened for obesity and blood pressure, the degree of involvement in dietary counseling and weight management varied widely. While 85% counseled pregnant women about weight gain, a much smaller number put emphasis on weight gain limitation in obese women.[53] By asking women about their experience of weight-related counseling during pregnancy, several authors have verified the lack of well-informed education around weight gain. On the basis of a series of semistructured interviews with postpartum women, Stengel et al[54] described themes including inaccurate or absent information on appropriate weight gain and exercise, perceived lack of provider concern about excessive weight gain, lack of provider knowledge, and a desire on the part of the women to have been given more information. Brown and Avery[55] echoed these themes in a study that included both normal weight and obese women, finding that both groups had similar experiences, and noted that increased anxiety and stress were reported by some women. These studies reflect a need to move past prejudices and personal discomfort with discussing difficult subjects, have accurate information available, and reinforce desired behaviors on a regular basis during prenatal care.

Institute of Medicine guidelines

The Institute of Medicine (IOM) guidelines for weight gain during pregnancy were rewritten in 2009.[56] Table 2 indicates the recommended total weight gain for singleton pregnancies. The IOM had expressed concern that too little weight gain might increase fetal risk of growth restriction or ketonemia; however, there has not been a significant increase in fetal or neonatal complications reported.

Gestational weight gain limitations based on the IOM guidelines have been challenged as being too generous for best outcomes. On the basis of a large population-based cohort study in Sweden, Cedergren[57] recommended a weight gain of less than 13 lb in women with BMI of 30 kg/m^2 or more. Kiel et al[58] reported that among women with class 3 obesity in a population-based cohort in the Midwestern United States, even weight loss of 0 to 9 lb was associated with a minimum risk. Crane et al[59] found that among nulliparous women with morbid obesity, weight gain of less than 15 lb was associated with a decrease in adverse outcomes (OR = 0.18; 95% CI, 0.04-0.83; $P = .027$). Most recently, Kominiarek et al[60] used a composite of adverse outcomes and found that overall net pregnancy gain or loss within a 10-lb range above or below prepregnancy baseline was desirable. Keeping in mind that the weight associated with the growing fetus, placenta, amniotic fluid, and maternal blood volumes totals 20 lb or more, this restriction amounts to a weight loss of 10 pounds or more during pregnancy.

Table 2. Recommendations for total and rate of weight gain during pregnancy, by prepregnancy BMI[a]

Prepregnancy BMI	Total weight gain, range in lb	Rates of weight gain during second and third trimesters, mean (range) in lb/wk
Underweight (<18.5 kg/m^2)	28-40	1 (1-1.3)
Normal weight (18.5-24.9 kg/m^2)	25-35	1 (0.8-1)
Overweight (25.0-29.9 kg/m^2)	15-25	0.6 (0.5-0.7)
Obese (≥30.0 kg/m^2)	11-20	0.5 (0.4-0.6)

Abbreviation: BMI, body mass index.
[a]The weekly gain is based on a calculated first-trimester weight gain of 4.4 lb or less. Adapted from National Research Council.[56]

Nutrition and exercise

Obese women describe barriers to physical activity that could contribute to a healthier pregnancy. These include both motivational factors, physical limitations and family or work demands on time.[61] Several studies have reported benefit in limiting weight gain and weight retention after childbirth when exercise programs are provided or encouraged, although the degree of benefit varies.[62–64] Mottola[65] recommends that programs offer specific behavioral goals to improve compliance. Walking has been demonstrated to be acceptable and beneficial; beginning with 15 minutes, 3 to 4 times weekly, and using the ability to speak while exercising as a gauge of appropriate level of intensity is a safe, basic recommendation in otherwise low-risk pregnancies. Whether or not women exercise during pregnancy, postpartum education that includes advice to begin an aerobic program can contribute to the loss of retained weight. Long-term health benefits accrue from successful weight loss.

On the basis of these findings, providers should offer counseling to obese pregnant women that includes accurate information on limiting weight gain, dietary options, and the importance of exercise. Having a nutritionist available to assist with the time-intensive aspects

of diet assessment and recommendations is a valuable resource. Assessment to reduce fetal risk can include monitoring for ketonuria, especially when weight loss is noted among obese women, as well as serial assessment of fetal growth by ultrasonography when clinical assessment is limited by the mother's habitus.

Additional considerations during pregnancy

During the prenatal period, planning for risk reduction during childbirth also requires discussion. Cardiac function testing, early diabetic testing, or pulmonary function/sleep apnea testing can be arranged and explained. Physicians and midwives need to counsel patients regarding potential risks and interventions at the time of birth including whether certain amenities, such as water labor or birth, will be available. When birth options are limited, this should be clarified. The most appropriate methods of fetal monitoring are based on pregnancy risk factors, including the possible need for internal monitoring if external tracing is not feasible with extremes of obesity. Patient education also includes the possible use of antithromboembolic precautions, including early ambulation, anticoagulation, and sequential compression devices. Anesthesia consultation can be arranged prior to admission for labor and provides for evaluation of concerns related to anesthesia during labor. Limitations on emergency birth may also be addressed during these discussions.

POLICY DEVELOPMENT TO STANDARDIZE AND IMPROVE CARE

Interventions to assist obese women in attaining and maintaining a normal BMI prior to pregnancy, supporting appropriate weight gain, and monitoring during pregnancy are essential components of improved outcomes. At the same time, establishing institutional policies that standardize best care creates a more welcoming and safer environment for birth. These policies include having available the equipment and supplies necessary for care, ensuring access to anesthesia consultation and general surgery assistance if needed for cesarean delivery, and obtaining consent for care that addresses potential increased risks associated with obesity.

Each facility needs to determine whether it is able to provide care for women with class 3 obesity, based on the availability of appropriate clothing, beds, and toilets, as well as surgical equipment. As an example, wall-mounted toilets rarely support more than 325 lb; a bariatric commode can support someone weighing more than 500 lb. Standard surgical instruments may not be long enough to access the uterus in a woman with central obesity. Table 3 lists appropriate resources needed.

In addition to materials, additional human resources may be needed and readily available, and one-on-one nursing care is recommended. Difficulty maintaining continuous fetal monitoring requires increased bedside attention. Physical difficulty in movement, whether changing position or assistance with self-care, is not uncommon among women with extremes of BMI.

Both absolute weight and elevated BMI may complicate the administration of anesthesia in labor. Epidural administration may be complicated by difficulty with maternal positioning, identification of anatomic landmarks, inconsistent spread of the anesthetic, dislocation of the catheter, and increased risk of accidental dural puncture.[66,67] Longer epidural needles may be required. During administration of general anesthesia, obesity is a risk factor for maternal mortality. Mace and colleagues,[67] in their review, cited increased difficulties with intubation from decreased chest wall compliance, increased abdominal pressure, rapid desaturation and increased risk of aspiration among the risks. A constricted airway may prevent rapid induction of general anesthesia in an emergency situation; awake intubation may be required. Antepartum consultation with the anesthesiologist and a clear-cut discussion of risks associated with anesthesia administration during childbirth are useful. Difficult airway simulation drills for the anesthesia team can improve skills in emergency settings.

Policies are needed that spell out the need for one-on-one nursing care, an early labor anesthesia consult, and blood availability. A patient education form may be used to guide prenatal discussion. An example is the Patient Information and Consent for Care form shown as the Appendix. This form was developed by our health system's Obstetric Patient Safety Committee. In addition

Table 3. Equipment and supplies for safe care of obese gravidas (BMI >40 kg/m^2)

Bariatric scales
Bariatric examination table
Power transport gurney (600 lb limit)
Bariatric bed (650-1000 lb models)
Bariatric OR table (600 lb limit)
Hover mat for patient transfer
Bariatric wheelchair (≥450 lb)
Bariatric commode
Extra-large blood pressure cuff (up to 60-cm arm circumference)
Extra long surgical instruments for abdominal cases
Extra long specula
Additional retractors for vaginal delivery/repair
Bariatric hospital gowns

Abbreviations: BMI, body mass index; OR, operating room.

to prenatal information offered to women, facilities can consider whether an additional consent form obtained at the time of admission is appropriate. All of the information contained in this form should already have been discussed prior to admission to the hospital. No woman should present for the first time in labor with a form addressing her childbirth risks.

CONCLUSION

Caring for obese women during pregnancy is a more common experience with every passing year. Competent prenatal care, nutrition counseling, support for change, informed decision making all contribute to a safe outcome of pregnancy for mother and infant. This cannot be accomplished without increasing provider knowledge about nutrition and weight management in pregnancy and decreasing barriers to sharing that information with women. Hospital policies, staffing, and appropriate equipment play a direct role in the safety and success of childbirth in this population.

Several areas for continued research can be suggested. These include validation of the safety of minimal weight loss and innovative techniques for supporting obese women during pregnancy. In addition, ways to address provider biases and reticence to discuss difficult concerns such as obesity should be developed.

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APPENDIX

Patient Information and Consent for Care

This information is provided to help you and your care provider discuss your needs during pregnancy and childbirth. Increasing numbers of women cared for during pregnancy meet the definition of obesity. About 2/3 of American women of childbearing age are overweight (BMI 25-29.9) and 1 in 4 are obese (BMI 30 or more). At some point, the mother's weight, or her weight gain during pregnancy, increases her risks. These risks include diabetes, high blood pressure, stillbirth, preterm birth, and cesarean section. Babies may be large for their gestational age or have birth injuries. The degree of obesity and any other health problems play a role in the care a mother needs.

1. Obese women need to limit weight gain, both as a general health measure and as a way to decrease risks. A good weight gain for someone who is obese ranges from 0 to 20 pounds during the entire pregnancy. Diet counseling and nutrition support can help you have a healthier pregnancy and a safer birth.
2. Exercising is safe for pregnant women. You should try to be active (walking, swimming, low-impact aerobics, etc) for 30 minutes every day. High-intensity or high-impact workouts are not advised.
3. Obese women need special testing during pregnancy. An early diabetes test is usually performed. You may be advised to have a heart or lung function evaluation, be checked for sleep apnea, or have more ultrasounds than other women.
4. Around 26-28 weeks of pregnancy, near the time of the second diabetes screen, you may be asked to consult with an anesthesiologist. Your obesity may delay the timely performance of emergency or urgent surgical procedures, which may then impact maternal or fetal outcomes. Some hospitals may not be able to provide effective anesthesia around the clock for obese women.
5. At the time of birth, some choices offered by your hospital may not be available. For example, laboring or giving birth in water or in some birth positions may not be possible.
6. Babies that are too large may have difficulty delivering (vaginally or by cesarean section) without injury. There is usually no way to tell prior to labor whether a specific baby will be too big to be born safely, but some measurements can help us make good recommendations.
7. Even a planned scheduled cesarean carries additional risks for obese persons.

I have read this information and discussed it with my doctor or midwife. The following recommendations have been made at this time:

__ early diabetes screen
__ limit weight gain to less than ___ pounds
__ be active for a half hour at a time daily
__ serial ultrasounds/fetal testing
__ EKG/echocardiogram
__ pulmonary function testing
__ sleep apnea testing
__ anesthesia consult

I understand that as my pregnancy progresses other recommendations may be made.

_____

Date /Time/ Patient signature

_____

Date /Time/ Physician/Midwife signature

Source: From the University of Maryland Medical System Obstetric Patient Safety Committee.

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