

REDUCING THE RISK FOR PRETERM BIRTH: EVIDENCE AND IMPLICATIONS FOR NEONATAL NURSES

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ABSTRACT

The incidence of preterm birth has been slowly rising despite advances in obstetric health care. Neonatal nurses have ongoing contact with women who have had a preterm birth and, thus, who are at high risk to have another preterm birth. This article discusses current evidence about reducing risk for preterm birth. Although preterm birth cannot always be prevented, preconception care can help identify and modify maternal risk and promote optimal health before conception. Quality prenatal care, as defined by the Institute of Medicine, consists of continuing risk assessment, health promotion, and interventions to modify medical and psychosocial risk. When these 3 components are consistently applied, they may confer some protection against preterm birth. Women at highest risk for preterm birth need to seek prenatal care from an expert in maternal-fetal medicine. Women also need to learn about the common, subtle signs of preterm labor so they can recognize symptoms and quickly seek treatment. Neonatal nurses can provide critical information and anticipatory guidance to women at risk for preterm birth so they can make sound decisions about future pregnancies.

KEY WORDS: pregnancy, birth, pregnancy complications, labor, premature, infant, premature, preconception care, prenatal care.

Despite dramatic advances in the standard of living and in obstetric health care over the past 5 decades, the incidence of preterm birth has slowly risen to an all-time high of 12.1% per 1000 live U.S. births.¹ The cause(s) of preterm birth is not clearly understood and it is likely multifactorial.^{2,3} For example, preterm birth may be stimulated by infections, abnormalities in the reproductive system such as a structural defect in the cervix, or a combination of known and unknown factors that occur long before the birth occurs. The high incidence of preterm birth is of concern because preterm infants are most likely to either die in the first year of life or have major health problems such as respiratory disease or neurodevelopmental handicaps.^{2,3}

Some experts think that by the time symptoms of

maternal complications are obvious it may already be too late to prevent preterm birth.³ Neonatal nurses, therefore, should be aware of the evidence for methods to reduce the risk of preterm birth so they can help women make sound decisions about care and participate in their care in a knowledgeable way. Nurses can also function more effectively as patient educators and advocates when they know the strength of the evidence for a particular health care practice. The purpose of this article is to discuss the most current evidence for reducing the risk of preterm birth so nurses can provide guidance for women who either have previously experienced preterm birth or are at risk to have a preterm birth in the future.

For the purpose of this article, evidence to guide nursing care has been obtained from the Cochrane database whenever possible. In addition, results of other quality studies that are not randomized controlled clinical trials are also discussed when appropriate. See Sidebar 1 for a more complete discussion of the Cochrane database and its use.⁴

PRECONCEPTION CARE

One method of care that has been suggested to reduce risk for preterm birth is preconception care. The purpose of preconception care is to promote optimal maternal health and reduce risk before con-

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SIDEBAR 1. EVIDENCE-BASED OBSTETRIC CARE

The Cochrane database was developed in the 1980s. Cochrane, a leader in the evidence-based medicine movement, noted that the use of common obstetric treatments varied greatly from one practice and community to another.⁴ Some methods of care were based on research findings, whereas others were not. Cochrane, therefore, developed a system to review research evidence so that the best evidence about obstetric health care practices could be easily and critically evaluated and disseminated. Each relevant study is reviewed for its quality by using predetermined methodological criteria. Poorly conducted studies are discarded before creating a summary of the evidence.

The evidence for obstetric practice is disseminated via a book and a continuously updated computerized database; both summarize the effectiveness of various obstetric practices. The inexpensive and comprehensive book, which summarizes the data for obstetrics practices, is entitled *A Guide to Effective Care in Pregnancy and Childbirth*.⁴ These tools allow both health care providers and pregnant women to easily access evidence of high quality to guide care to reduce the possibility of preterm birth. The Cochrane database primarily analyzes randomized controlled clinical trials.

It is now widely accepted that evidence to guide care is best obtained from quality research. The use of evidence-based medicine tools and databases is commonplace. A similar database for neonatal care practices was also developed and is widely used. Access to the Cochrane database can be obtained through medical center libraries or by purchasing the book. A subscription to the Cochrane database is needed to obtain full text access.

ception because fetal health is dependent on maternal health. Preconception care, a type of primary health care, is designed to assess the woman's health and make recommendations to maintain health or monitor and modify risks that will place a future pregnancy at risk.

Components of preconception care include a baseline risk assessment, health promotion, and creation of a plan of care to achieve optimal health by using psychosocial and medical interventions. Assessment is aimed at identifying modifiable lifestyle risks and medical and obstetric conditions that are associated with a greater risk of preterm birth.⁵ For example, if a woman has repeated pregnancy losses or a history of genetic disease, she can be referred to the appropriate specialist for assessment. The health promotion component of preconception care consists of encouragement to establish or maintain health behaviors such as good nutrition, ideal weight, and exercise. The intervention component of preconception care is focused on modifying maternal risks that have been identified. For example, if the woman uses over-the-counter and/or prescribed medications, their safety for use during pregnancy can be assessed and prescriptions changed if the drugs are not safe.

Preconception care also provides other services to help women achieve optimal health. Women can be referred to a medical specialist to monitor pre-existing diseases, such as hypertension or diabetes mellitus, or drug therapies prescribed for these diseases that might adversely affect fetal development. Both the woman and her provider can monitor risks and revise the plan of care as needed. Preconception care can also assist in pregnancy planning and identify barriers to care. Once the woman becomes pregnant, she can be directed to the appropriate type of obstetric provider based on her level of risk for preterm birth. Women at high risk, particularly those who have had a previous preterm birth, can be referred to receive care in a regionalized perinatal center where experts in high-risk pregnancy

(maternal–fetal medicine) can monitor the woman more intensively throughout pregnancy.

The Institute of Medicine (IOM) states that preconception care offers one of the best protections against low-birth-weight.⁶ It is currently unknown, however, whether preconception care is effective because it is difficult to determine the effectiveness of care once an intervention for a medical problem has occurred. In contrast, one component of preconception care has been evaluated, i.e., the use of folic acid to prevent neural tube defects. Four recent trials in over 6000 periconceptual women found that folate supplementation had a strong protective effect against neural tube defects.⁷

PRENATAL CARE

Although prenatal care is believed to reduce the risk for preterm birth,^{5,7} there is ongoing debate about its effectiveness. The existing model for prenatal care is over 100 years old and is based upon the prevention of preeclampsia (i.e., assessment of weight gain, proteinuria, and blood pressure). Some believe that the current model of care may not be sufficiently comprehensive to address the different complications seen in practice today.³ This is one reason why the IOM Expert Panel on the Content on Prenatal Care recommended that, similar to preconception care, comprehensive prenatal care should include (1) early and continuing risk assessment, (2) health promotion, and (3) medical and psychosocial interventions.⁶

Women who access prenatal care have fewer complications and a lower incidence of preterm birth (Fig 1).^{5,8} One study analyzed 3 years of U.S. natality health statistics for singleton births.⁹ Failure to obtain prenatal care was associated with a 2.8-fold increased risk for preterm birth for both white and African-American women. Another study, however, analyzed the results of several studies and found that prenatal care did not



Figure 1. Receiving regular prenatal care to monitor maternal–fetal health reduces risk for preterm birth. Photo courtesy of the March of Dimes.

prevent either preterm birth or intrauterine growth restriction.¹⁰ It called for a reconceptualization of prenatal care to develop new strategies to promote maternal health and reduce preterm birth.

One problem in determining the effectiveness of prenatal care is that it is not clear whether obstetric practices have integrated the IOM recommendations of risk assessment, health promotion, and psychosocial interventions into prenatal care. Thus, conflicting evidence about the value of prenatal care may be due to actual differences in the way practitioners provide prenatal care. The components that the IOM recommended be included in prenatal care are critical to providing comprehensive care. It appears that until an effective substitute is shown to improve the incidence of preterm birth, women should continue to receive regular prenatal care from a provider who incorporates the IOM recommendations into practice.

RISK ASSESSMENT

Risk assessment is used regularly in health care but only intermittently in obstetric care. Risk assessment relies on the identification of 5 categories of factors that have an association with preterm birth. These include:

1. Medical history
2. Obstetric history
3. Lifestyle
4. Behavior
5. Demographics

For example, race and type of pregnancy can indicate increased risk. African-American women have a preterm birth rate that is twice the rate of white women.⁹ Women with a multiple gestation are also at increased risk. In 2002, a twin, on average, was born 3 weeks earlier and 1000 grams lighter than a singleton infant. The incidence of twin gestations has risen 65% since 1980, and higher-order multiples have also dra-

matically increased due to assisted reproductive techniques and older age of childbearing.¹ The increase in multiples is of concern because not only are they more likely to be born before term, but they are also more likely to have lower birth weights. Twins are 5 times and triplets are about 12 times more likely to die within the first year of life.^{1,5}

Inadequate spacing between pregnancies also increases the risk for subsequent preterm delivery. A recent analysis of over 89,000 Scottish births found that an interpregnancy interval of <6 months was associated with preterm delivery and neonatal death in the second birth. This association held true even when controlling for other known risk factors such as previous preterm birth, tobacco use, low income, young maternal age, and unmarried status.¹¹ Additional factors commonly associated with preterm birth are listed in Table 1.

Risk assessment is best conducted using a standardized tool that identifies the most common factors associated with preterm birth and pregnancy complications. Risk assessment tools are not good at predicting preterm birth.^{4,12} A benefit to using these tools, however, is they provide a format that health care providers can use to systematically and comprehensively assess all women for potential risks before complications develop. Repeated assessment detects changes in status or the development of new risk factors. A plan of care is then developed according to the woman's unique risks, and modified as risks change (Table 1).

HEALTH PROMOTION

Although health promotion is not a new concept, it is often underutilized in daily obstetric practice. Health promotion involves educating women about practices to maintain or improve health. For example, common practices include having good nutrition, gaining adequate weight during pregnancy, participating in exercise, and working in an environment that has low stress and no exposure to teratogens. The evidence for each of these health promotion factors is discussed.

Good nutrition and adequate maternal weight gain, especially in the second and third trimesters of pregnancy, are critical to fetal outcome. Inadequate weight gain is associated with lower infant birth weight, intrauterine growth restriction, and increased infant mortality.^{8,13} As a result, the IOM issued recommendations for pregnancy weight gain based on maternal body mass index (BMI) (defined as prepregnancy weight in kilograms divided by height squared in meters).⁸ Women who are underweight are advised to gain at least 1.07 pounds each week in the second and third trimesters for a total of at least 28 pounds. Women with an average BMI are advised to gain approximately 0.97 pounds per week during this time period for a total of 25 to 35 pounds. Overweight women are advised to gain 0.67 pounds per week for a

Table 1. Risk Factors Associated with Preterm Birth²⁸

Behavioral	Demographic	Obstetric	Medical	Psychosocial Risk
Smoking	Age <18 y	Previous preterm birth	Diabetes mellitus	Domestic abuse
Substance abuse	<High school education	Cervical abnormality	Hypertension	High stress
Under/overweight	Unmarried	Diethylstilbestrol exposure	Urinary tract infection	Inadequate housing
No prenatal care	Medicaid eligible	Uterine abnormality	Chronic diseases	Teratogen exposure
		Multiple gestation		

total of 15 to 25 pounds. Women with a multiple gestation should gain a minimum of 1.5 pounds per week from the 20th week of gestation onward. Studies have since found that when women have gained weight according to IOM guidelines, low-birth-weight (LBW) is decreased.^{13,14} These findings also indicate that pregnant women should not diet or go for long periods of time without eating.¹⁵

Various nutritional supplements have also been suggested to reduce the risk of preterm birth, but the advantages are unclear.^{4,16} To date, there is no evidence that zinc, iron, protein, or vitamin D supplements offset LBW or preterm birth. Only consumption of folic acid is known to reduce complications and the advantage is limited to reducing the incidence of neural tube defects (Fig 2).⁷

Promotion of exercise is another component of health promotion. Regular aerobic exercise appears to improve or maintain physical fitness and body image, but there is insufficient data to conclude whether exercise has either risks or benefits during pregnancy.¹⁷ Furthermore, despite common recommendations for decreasing activity among women at risk for preterm birth, there is no evidence that exercise increases the risk of preterm birth.¹⁸ One study found that low-income women who climbed stairs >10 times a day had a greater risk of preterm birth.¹⁹ Low-income women, however, have increased risk for preterm birth despite their level of activity. Therefore, recommendations about whether or not to exercise to reduce risk for preterm birth cannot be made.

Similarly, studies of the effects of employment during pregnancy have yielded conflicting results.¹⁵ Employment offers both benefits and risks to the pregnant woman and her fetus. Benefits include increased self-esteem and perception of social support, whereas risks include possible exposure to strenuous activity, stress, and workplace toxins (teratogens). One report states that pregnant women who participate in heavy physical work and those that report >5 hours of both standing and walking are at increased risk for preterm delivery.¹⁵

Another risk associated with work is maternal exposure to environmental teratogens and infectious agents. Both can adversely impact fetal development, particularly during the period of 2 to 8 weeks after conception. Table 2 contains a list of some of the most common

workplace teratogens.^{20,21} Recommendations to decrease risks associated with activity and work should be based on a thorough assessment of the work environment.

Various maternal infections are associated with an increased risk for preterm birth. The most common infectious organisms are relatively low-virulence bacteria that are part of the normal flora in the female reproductive tract.¹⁵ Bacterial vaginosis, which is associated with preterm birth, results from alterations in the normal balance of reproductive tract flora. Genitourinary tract infections are a common cause of spontaneous preterm labor.²² Periodontal disease has also been linked to increased risk for preterm birth.²³ These infectious processes, which are frequently subclinical in nature, cause the release of inflammatory cytokines or



Figure 2. Good nutrition during pregnancy is shown by consistent weight gain during the second and third trimesters. Photo courtesy of the March of Dimes.

Table 2. Common Teratogens^{20,21}

- Alcohol
- Cocaine and other illegal drugs
- Copper
- Disinfecting agents
- Drugs such as chemotherapeutic agents
- Excessive heat, noise, vibration
- Gases such as carbon monoxide or anesthesia gases
- Herbicides
- Insecticides
- Ionizing radiation
- Lead
- Mercury
- Passive smoking
- Solvents

bacterial endotoxins that are associated with preterm labor and rupture of membranes.²⁴ Antibiotic therapy decreases the risk of preterm birth for preterm rupture of membranes²⁵ and reduces infection once membranes have ruptured.²⁶ Once membranes have ruptured, however, the woman is at increased risk for preterm birth.

MEDICAL AND PSYCHOSOCIAL INTERVENTIONS

The third component of comprehensive prenatal care is medical and psychosocial interventions for identified problems. Numerous medical interventions are used to decrease the incidence of preterm birth. Evidence indicates, however, that many of the standard measures to treat symptoms of preterm birth, such as hydration, long-term use of tocolytic drugs to arrest contractions, and bed rest, are ineffective.^{4,27-29} Tocolytic drugs to stop uterine contractions provide only 24- to 48-hour relief; their long-term administration is ineffective. Furthermore, there is no evidence that maintenance therapy with magnesium sulfate or with the terbutaline pumps decreases the risk of preterm birth after preterm labor has occurred.^{30,31} Bed rest is not only known to be ineffective, but also has adverse effects such as maternal musculoskeletal and cardiovascular deconditioning and weight loss.³² There is also some question as to whether bed rest adversely affects fetal weight gain.³³ In summary, there is currently no known effective treatment to prevent preterm birth.

Although standard therapies to prevent preterm labor and birth have been unsuccessful to date, one new treatment may provide some hope for preventing preterm birth. Use of progesterone, administered either by suppository or injection, is currently being evaluated in clinical trials.^{34,35} In one large trial, progesterone reduced the incidence of preterm birth in a select group of women. Use of this drug, however, is still under investigation. The ideal route of administration and long-term safety of the drug are unknown.^{34,35}

There are also some relatively new diagnostic tests that can provide information about the risk for preterm birth. Elevated salivary estriol has been postulated to be a biological marker for risk of preterm delivery.²² A surge of salivary estriol can be detected approximately 3 weeks before either term or preterm delivery.³⁶ Tests for elevated salivary estriol are better at identifying those women who will not deliver. However, it is a poor predictor of women who will actually deliver before term. As a result, this test has minimal practical use in clinical care until further research is conducted.³⁶

Fetal fibronectin (fFN) is another screening test for predicting risk of preterm birth. fFN is an extracellular matrix protein found in the membranes of the amniotic sac. Because fFN has been detected in the vaginal secretions of women within 2 weeks of delivery, elevated levels between 24 and 35 weeks gestation are used as a biological marker for increased risk of preterm delivery.^{24,37} This marker also has higher negative predictive values (range, 76% to 99.5%) than positive predictive values (range, 12.7% to 85%).³⁸

One concern is that the high incidence of false positive fFN tests can lead to labeling a pregnancy at high risk for preterm birth even though the pregnancy is uncomplicated. Conversely, the negative predictive value may be used to identify women at low risk for preterm birth, perhaps avoiding hospitalization and expensive and ineffective interventions. Use of the fFN marker, however, may help identify those women who should be targeted for intensive efforts to prevent preterm birth and provide information about whether to administer maternal antenatal steroid therapy to hasten fetal lung maturity before preterm birth.^{39,40}

Another test for identifying women at risk for preterm birth is assessment of length of the cervical canal through transvaginal ultrasound.^{41,42} A review of 46 studies of transvaginal ultrasound cervical length determination concluded that this test may help clinicians identify women at higher risk for preterm birth.⁴³ This test, however, has a poor predictive value; therefore, the clinical usefulness of this test is unclear.²²

Other new tests to increase the accuracy of identifying women who are at risk of preterm birth are currently under investigation. These tests include assessment of electromyographic signals (EMG) from the lower abdominal surface and cervical collagen concentrations,²² quantitative ultrasound gray level analysis of cervical tissue,⁴⁴ and serum measurement of maternal corticotropin-releasing hormone.⁴⁵ Further research, however, is needed to determine whether these tests identify women at risk for preterm birth. Even if effective, the appropriate interventions have not yet been developed to prevent prematurity.

A number of psychosocial interventions can be used to help reduce the risk for preterm delivery. One such intervention is referral for smoking cessation counseling. Smoking is one of the few preventable and modifiable risk factors for pregnancy complications.⁴⁶ Cig-

arete smoking is associated with infertility and, during pregnancy, with spontaneous preterm labor and other pregnancy complications, such as abruption, that often result in preterm birth. The highest risks for preterm birth are seen among women who smoke 10 or more cigarettes (approximately one half of a pack) per day.⁴⁷ Smoking may also decrease availability of calories, vitamin B₁₂, amino acids, vitamin C, folic acid, and zinc.²⁸ Infants born to mothers who smoke, on average, weigh less than infants of nonsmoking women. Women should be discouraged from smoking before and during pregnancy. If the woman cannot stop smoking, reducing the number of cigarettes smoked during pregnancy is beneficial.

Another intervention is education about alcohol use and referral if use is excessive. Alcohol consumption affects fetal development. Spontaneous abortion and increased fetal morbidity and mortality, as well as growth restriction and LBW, are common.²⁸ Regular consumption of 2 drinks of alcohol per day is associated with congenital abnormalities.⁴ The safe level of consumption of alcohol is not known. Physicians, therefore, recommend that woman avoid alcohol during pregnancy.

Measures to decrease stress are an additional area for intervention. Maternal stress is associated with a 1.5- to 2-fold increase in preterm birth.¹⁵ High exposure to chronic stressors resulting from family relationships, employment, neighborhood crime, and housing concerns are common to low-income and minority populations. Pregnancy-specific worries about maternal and neonatal outcomes also contribute to shortened gestation.¹⁵ Psychosocial and physical stress results in the release of corticotropin-releasing hormone and cortisol, hormones that are thought to suppress the immune system, thereby making women more susceptible to infection and preterm birth. A recent study found that relaxation therapy exercise is associated with a longer pregnancy gestation and greater infant birth weight; however, more research is needed.⁴⁸

Another intervention to reduce the risk for preterm birth is to assess for domestic violence. Ironically, domestic violence often increases in frequency and severity during pregnancy.⁴⁹ The fetus may also be injured. Partners are the most common perpetrators of domestic violence. One study reports that most women will not report abuse unless asked.⁵⁰ Routine assessment of abuse for every woman is important to interrupt the cycle of violence.

Last, another intervention to reduce risk for preterm birth is maternal education about the subtle symptoms of preterm labor. In future pregnancies, the mother should be encouraged to monitor for symptoms and seek care early if concerns arise.

One of the biggest challenges in educating women about symptoms of preterm birth is that the symptoms are subtle and difficult to detect. All women experience new symptoms during a pregnancy. As a result, women with symptoms of preterm labor often cannot

Table 3. Symptoms of Preterm Labor^{28,51-55}

- Menstrual-like cramps
- Low dull or constant backache
- Pelvic pressure or feeling heavy “down below”
- Changes in color, amount, or consistency of vaginal discharge
- Cramping with or without diarrhea
- Increased frequency of urination
- Painful or painless uterine contractions, described as “tightening or balling up”
- Bleeding from the vagina
- Sudden gush or constant slow leak of fluid from the vagina

differentiate between symptoms or discomforts that are expected during pregnancy and those indicative of complications, i.e., “diagnostic confusion.”⁵¹ Several studies have identified a variety of symptoms that women experience before preterm birth.⁵²⁻⁵⁵ Commonly known symptoms associated with preterm birth are given in Table 3, highlighting the reasons for maternal diagnostic confusion. A variety of symptoms indicates preterm labor, including contractions which may be present or absent and painful or painless.

All women, not just those at high risk, should be taught about recognition of preterm labor symptoms, because it is unclear who will have a preterm birth.²⁴ Health care providers have not, however, been diligent in providing this information to women.⁵⁶ One study found that women were not aware of the symptoms and did not know what to do if the symptoms occurred.⁵⁷

Critical steps for a woman to take if she has unusual symptoms include reacting immediately, rather than waiting. The expectant mother should be encouraged to report symptoms directly to her health care provider at the time they occur, even if she is unsure as to what they mean. If she cannot contact her health care provider, she needs to seek immediate help at the hospital to determine whether the symptoms are of concern. If the expectant mother cannot transport herself to the hospital, she should ask someone to take her there or call emergency services to help. There is a critical window for intervention and treatment. Health care providers would rather care for a woman in no or early labor than one in advanced labor because it is easier to stop preterm labor in the early stages. Health care providers will, therefore, welcome the woman’s attention to her symptoms and request for assistance. A teaching tool for use with women at risk for preterm birth is included in the Family Teaching Toolbox pages 175-176.

THE NICU NURSES’ ROLE IN PREVENTION

Nurses who provide care to the premature infant often develop enduring and trusting relationships with the infant’s parents. Thus, neonatal nurses are

in an ideal position to provide information to new mothers that may help them reduce risk for preterm birth in a subsequent pregnancy. Interventions can start immediately.

New mothers often need to relive their birth experiences. Mothers of premature infants may not have had the time to complete their prenatal classes, or fully prepare mentally and physically for the birth. Further, they may be emotionally traumatized by the rapid sequence of events that often surrounds high-risk births.

Allow the mother to tell her story; be prepared to answer questions. Encourage open expression of thoughts and feelings about the experience. Frequently, mothers will express guilt about the birth. This is a time to reaffirm all of the positive actions the mother took to care for herself during pregnancy. You can also discuss unfounded concerns, and begin to identify health behaviors and beliefs that can be changed to modify risk for future pregnancies.

Women who have a history of one preterm birth are at risk for a subsequent preterm birth and should be informed of this risk. Advise the woman to consider seeing a maternal–fetal medicine specialist now, before planning a pregnancy, for a thorough medical assessment. The maternal–fetal specialist (perinatologist) may be able to answer the family's questions about the cause of the current preterm or high-risk birth, and will provide guidance and make recommendations about interventions that may further reduce risk for a subsequent preterm birth.

Neonatal nurses can emphasize the importance of preconception care to improve health. The risk for preterm birth can be further reduced by using effective contraceptive methods; inadequate spacing between pregnancies is associated with preterm birth. An early referral to their obstetric provider may be useful to discuss options before the traditional six-week visit. Other steps to reduce risk include taking folic acid before pregnancy to reduce the incidence of neural tube defects.

Remind mothers about the importance of eliminating genitourinary and periodontal infections, reducing or eliminating use of cigarettes and alcohol, and achieving an ideal prepregnancy weight as well as adequate weight gain during pregnancy. Inadequate weight gain during pregnancy may signal chronic malnutrition; nutritionally compromised women, and their families, may benefit from referral to local food banks, WIC, and other local resources. Similarly, women in need of dental care can be referred to their private dentist or free or discounted services in the community.

Refer women with concerns about housing, personal relationships, finances, or parenting a preterm infant to social service agencies that will help reduce stress and improve quality of life. Be alert for indications of domestic violence, including both physical and verbal abuse. Every NICU should have a well-developed plan to evaluate for and intervene with suspected domestic



Figure 3. Receiving care from a maternal–fetal specialist involves early and regular monitoring of health status. Photo courtesy of the March of Dimes.

abuse. The nurse may benefit from specialized professional assistance and expertise in the proper timing and method of screening, exploring sources of help, developing options for safety, and documenting abuse when and if mothers disclose these issues.

Recommend that once a new pregnancy is suspected, the expectant mother should immediately seek prenatal care from a health care provider consistent with her level of risk. If previous preterm birth(s) or other identified risks are present, both she and her fetus will benefit from the care of a maternal–fetal medicine specialist from the start of her pregnancy (Fig 3). Women should also continue to practice good health behaviors and monitor their level of risk. Expectant mothers need to be aware of the subtle warning symptoms indicative of preterm labor to avoid dismissing symptoms and delaying treatment.

CONCLUSION

In summary, the cause(s) of preterm birth are not well understood, and it is difficult to prevent preterm birth even when one practices good health behaviors. It is important that women receive periconceptional and prenatal care that assesses risk for preterm birth, promotes health, and prescribes medical and psychosocial interventions to modify risk. A number of interventions are available to reduce risk, but not all of them are based on evidence. Whenever possible interventions should be based on strong evidence for their effectiveness. Education and encouragement to participate in healthy behaviors before conception and during pregnancy may reduce risk, but it still may not be possible to prevent preterm birth.

Of importance, once pregnancy occurs, women need to learn about the common symptoms indicative of preterm labor and birth. They also need to learn what to do if symptoms are experienced because early medical attention can assist in treating and delaying preterm birth to facilitate better infant outcomes. The

neonatal nurse, who has an established relationship with parents, is in an ideal position to answer a patient's questions and refer her to information about health promotion activities and interventions that can positively impact reproductive health.

Neonatal nurses typically provide parents with an important source of support. Perhaps the most critical information that the nurse can provide to women to reduce risk for a future preterm birth is to (1) consult with a maternal-fetal medicine specialist, (2) change health behaviors that increase risk, and (3) receive early prenatal care.

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