

Recommendations for Women of Reproductive Age

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Maintaining health and promoting wellness among women of reproductive age includes a daily routine of healthy habits. The goal of wellness is for women to be in the best state of health possible. It is known that healthy women generally experience healthier pregnancies and deliver healthier babies than women in poorer health. The concept of preconception health includes all women of childbearing age both prior to an initial pregnancy and between pregnancies. Since just under half of all pregnancies are unplanned, all women should be prepared for future pregnancies by maximizing health and minimizing health risks.¹ Part of maximizing health includes receiving recommended routine health screenings, immunizations, education, and management of chronic conditions from health care providers. This article will provide a brief overview of the messages women of reproductive age should receive from their health care practitioner in order to maximize health, minimize health risks, and prepare for future pregnancies.

Routine Screenings and Immunizations

Routine cytology screenings of the cervix (Pap tests) are the best prevention against cervical cancer. Screening should start at age 21 or three years after the onset of sexual activity (whichever comes first).²⁻⁴ The recommended frequency of screening varies among the US Preventive Service Task Force (USPSTF), American Cancer Society (ACS), and American College of Obstetricians and Gynecologist (ACOG). The ACS recommends performing Pap tests annually when using conventional preparations and every two years with liquid-based cytology preparations. The ACOG recommends annual screenings until the age of 30 years, then every two to three years thereafter with no history of abnormalities. The USPSTF states that screening every three years offers the most benefit.²⁻⁴

All women should be assessed regularly and routinely for risk factors for sexually transmitted infections (STIs) and provided individualized counseling based on identified risk behaviors. STI testing, treatment, and counseling that includes information about immunizations available to prevent the transmission of certain STIs should be provided to all women of childbearing age.⁵ All women should be encouraged to know

their HIV status prior to pregnancy and counseled regarding safe sex practices. Women with known HIV infection should be offered contraception and counseling regarding their reproductive life plan and treatment options available in pregnancy to prevent fetal transmission of HIV in pregnancy.⁵

Human Papillomavirus (HPV)

The HPV vaccination has the potential to decrease the occurrence of HPV-related genital disease, including precancerous and cancerous lesions of the cervix, vulva, vagina, and anus.³ The Advisory Committee on Immunization Practices (ACIP) recommends that all women and girls 9-26 years of age receive the HPV vaccination series to reduce the incidence of cervical abnormalities and cervical cancer.⁶

Since just under half of all pregnancies are unplanned, all women should be prepared for future pregnancies by maximizing health and minimizing health risks.

Measles, Mumps, and Rubella (MMR)

The MMR vaccination is extremely efficacious against measles, mumps, and rubella.⁷ All women of reproductive age should be assessed for immunity against measles, mumps, and rubella due to the serious complications that these infections can inflict on the health of women and their pregnancies. Women without acceptable documentation of immunity or a vaccination series should receive the MMR vaccination. To date, there is no evidence of risk to a fetus by receiving the

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vaccination during pregnancy. However, since there remains a potential for harm, women should be counseled against becoming pregnant for three months after receiving the vaccine, and women who state they are pregnant should not receive the vaccine until the postpartum period.⁷⁻⁸

Varicella

Varicella is a highly contagious disease that is usually mild in children but can be severe in adults and cause congenital abnormalities including limb atrophy, central nervous system abnormalities, and eye problems if transmitted to a fetus during the first trimester or early second trimester of pregnancy.⁹ All women of reproductive age should be screened for evidence of immunity for varicella. Those without evidence of immunity by a history of previous vaccination, previous varicella infection, or laboratory documentation of immunity should be offered vaccination for varicella. The varicella vaccination is contraindicated in pregnancy. Nonpregnant women should avoid becoming pregnant for one month after receiving the vaccination.⁹

Diphtheria, Tetanus, and Pertussis

All women of reproductive age should be assessed for being up-to-date for tetanus toxoid because of probable protection against neonatal tetanus with passive immunity.⁸ A single dose of diphtheria-tetanus-pertussis vaccine is recommended for women who might become pregnant to prevent pertussis. This may be given as early as two years after a tetanus-diphtheria (Td) immunization. A combined tetanus, diphtheria, and pertussis (Tdap) vaccination may also be given if the woman has not received a Td booster in the past 10 years.^{10,11}

Hepatitis B

Vaccination is the primary method of hepatitis B prevention. The Advisory Committee on Immunization Practices recommends that all children 0-18 years receive the hepatitis B vaccination.¹² Women of reproductive age who are at high risk for acquiring hepatitis B virus infection, those who have not previously received the vaccination series, or who request vaccination (regardless of risk) should receive the hepatitis B vaccination series.⁸

Folic Acid

All women of reproductive age should be encouraged to take a multivitamin containing folic acid to support healthy pregnancy outcomes and prevent congenital birth defects.^{13,14} Folic acid is found in folate rich foods such as dark green leafy vegetables, dried beans, oranges, and fortified products such as enriched flour, rice, pasta, bread, cereal, and orange juice. Folic acid from vitamin supplements and fortified foods are more readily available for use by the body than natural folate sources. The Centers for Disease Control and Prevention (CDC) and the March of Dimes recommend that women who could become pregnant consume 400 micrograms daily from a synthetic

form of folic acid to help prevent neural tube defects (NTDs).¹⁴ For women who have had a previous pregnancy affected by a NTD, the recommended daily dose of folic acid is increased to 4,000 micrograms to decrease the risk of having another affected pregnancy.¹⁴

Establish and Maintain a Healthy Weight

Maintenance of a healthy weight contributes to overall health. A balanced diet high in fruits, vegetables, and whole grains while limiting total fat, saturated fats, and simple sugars is recommended to manage weight. Daily activity and exercise will improve cardiorespiratory fitness, decrease abdominal fat, and increase metabolism to support weight management efforts.¹⁵ Dietary habits including excessive fat, sugar, and caloric consumption in combination with inactivity can have serious negative health effects on the body. Health risks of obesity include cardiovascular disease, hypertension, diabetes, breast cancer, and colon cancer.

The World Health Organization estimates over one billion adults are overweight and over 400 million are considered obese by standard definition. Overweight and obesity are classified by measuring a person's body mass index (BMI) which captures a height to weight ratio; obesity is defined as a BMI that equals or exceeds 30kg/m².¹⁶ The current recommendation is to establish a healthy weight range and body mass index through balanced diet and daily activity.

Weight reduction prior to pregnancy can reduce risks associated with obesity in pregnancy. The degree of risk to the pregnancy is positively correlated to overweight; therefore, any reduction in weight would improve pregnancy outcomes. Stillbirth rates are 60% higher in obese women with an alarming racial disparity noted among obese African American women who are nearly 90% higher.¹⁷ Finally, birth defects are significantly higher in obese women; open neural tube defects such as spina bifida occurs twice as often in obese women than average weight women.¹⁸ Other risk factors in pregnancy associated with obesity include gestational hypertensive disorders, gestational diabetes, increased cesarean section rates, and birth trauma associated with macrosomia.

Obesity-related pregnancy complications can be minimized and perhaps avoided by promoting healthy behaviors that contribute to a healthy weight before pregnancy. Recognition of risk may also facilitate early screenings and interventions in pregnancy to improve both maternal and fetal outcomes in pregnancy.

Everyday Healthy Habits

Stress is often overlooked in wellness. Recent research has shown that acute and chronic stress can lead to negative physical effects on the body. Stress may be physical, resulting from illness or injury, but it is most often associated with the social pressures of daily life that result from things such as job pressure, racism, interpersonal relationships, grief responses, and time management. Stress can be reduced with relaxation

State Budget's Effect on Women's Health Care

Tom Vitaglione, MPH

In Proverbs, a book of the Christian and Jewish Bible, is an oft-quoted passage: *Without a vision, the people perish*. This prophetic saying was frequently used to encourage leaders to respond to the critical needs of their constituents. In modern times, it has been used to remind leaders that budgets should reflect a vision for what life should be like and not simply a compilation of numbers that must be in balance. This is apparently much easier said than done, for budgets are often developed in piecemeal fashion through line-items, and any possible overall vision is easily obscured.

The recent budgetary approach to the health care of women of reproductive age in North Carolina is a case in point. It seems reasonable to assume that our leaders would subscribe to a vision of our state in which all women of reproductive age have access to the information and services they need to maximize their own health status and to assure the best possible birth outcomes. The challenge is to keep that vision (and of course many others) when individual service programs are being considered. And unfortunately this challenge is exacerbated when economic downturns require that serious budget reductions be made.

By all accounts, both the state's administrators and the General Assembly have faced the greatest budgetary shortfall in more than a generation. And because the state's revenue picture became worse and worse during the legislative session, any hopes of holding on to a vision were overwhelmed by deadlines to balance the budget.

This is not to say that there are no positive pieces of the new budget. New appropriations were approved for folic acid/vitamin supplements for low-income women to reduce the occurrence of neural tube defects; health education and progesterone will be available for low-income pregnant women who have had a previous preterm birth; and teen pregnancy prevention initiatives will be enhanced. In addition, a special provision asks the Department of Health and Human Services (DHHS) to develop a federal Medicaid waiver request that would provide interconceptional care to low-income women who are at high risk for preterm birth. Finally, another provision instructs DHHS to submit a

Medicaid plan amendment to provide coverage to financially-eligible legally-resident pregnant immigrant women who have been in this country for less than five years.

It should be noted that most all of these pieces focus on the reproductive process itself (and therefore better birth outcomes) and do not respond to the greater vision of creating the healthiest possible cohort of women during their reproductive years. What is even more disappointing is that the budget contains huge reductions that have the potential to reverse the gains that have been made in infant mortality reduction in our state.

The General Assembly has taken the relatively rare step of requiring budget reductions within broad parameters while allowing the administrative departments to make the final decisions regarding the reductions. (The decision-making process will be ongoing for some time.) For example, the Division of Public Health is required to reduce contracts by more than \$5 million. These contracts include high-risk maternity care, the outreach/education campaign to reduce infant mortality, and a host of other services affecting women of reproductive age. All could be in jeopardy.

Perhaps worse, another item requires the reduction of more than \$200 million in case management services. While most legislators believed this would affect mental health services almost exclusively, this reduction is so deep that department personnel are seriously considering eliminating maternity care coordination, which has been acclaimed for more than a decade as a cost-saving, baby-saving support service for families.

For some time now, the practice and research communities have been developing a vision of knowledgeable, healthy women of reproductive age. This vision needs to become part of the legislative process. It is clearly not yet there, and one could say that the severe economic downturn will make it difficult to have this vision adopted. Historically, however, difficult times have usually produced the greatest prophets. We await ours.

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techniques such as guided imagery, meditation, breathing exercises, and hypnosis. Exercise reduces stress through a reduction in cortisol levels and an increase in circulating endorphins, thereby causing a physiologic response that reduces the effects of a stressful event.¹⁹

Substance use must be addressed when promoting a healthy lifestyle. Tobacco use is associated with cardiovascular disease, cancer, fetal growth restriction, stillbirth, and stroke. It

is estimated that 22% of all women in the US smoke and about 20% of those women will not quit smoking in pregnancy.¹ Smoking cessation programs and medications can be helpful when the commitment to quit is finalized; however, it is important to know that medications for smoking cessation are not recommended once pregnant.²⁰ Health care providers should refer women for formal treatment when use of recreational drugs is identified; the occasional drug user may

be using more than they report. Alcohol use may be more difficult to assess and more readily hidden from providers. Utilization of a standardized questionnaire may make screening more universal, but it may not identify all women at risk. The provision of education to women regarding the potential risks to their health and future family is essential in empowering women to take responsibility for their personal health.

Routine health examinations and dental examinations are encouraged to keep women engaged in routine screenings to allow for prompt intervention when abnormalities are identified. Most women do not see a dental provider during pregnancy, which increases risk for gingivitis and oral infections that could predispose women to preterm labor and premature birth.²¹

The concept of preconception health should be envisioned as a continuum or circle of health in life, rather than a time period identified as prior to a pregnancy.

Control Chronic Disease

Many women have underlying medical conditions or chronic diseases that require special attention during childbearing years. A preconception visit is recommended for all women prior to pregnancy, but it is particularly important in women with diabetes, hypertension, cardiac disease, asthma, seizure disorders, endocrine disease, and psychiatric disorders.

Providers need to discuss health status and recommendations for pregnancy; if a woman is not healthy enough to become pregnant then a reliable and effective contraception should be prescribed. Pre-existing disease prior to pregnancy creates a high-risk state in pregnancy that requires close observation and management.

Approximately 7% of the US population has a form of diabetes; this rate continues to increase with the growing rate of obesity. Pre-existing diabetes increases the risk of intrauterine fetal death and stillbirth in pregnancy. Women with uncontrolled diabetes with a hemoglobin (Hgb) A1c level of greater than six will have a 15%-20% increase in the risk of miscarriage and a 5%-10% increase in birth defects, specifically fetal cardiac anomalies.²² It is recommended that women with uncontrolled diabetes with elevated HgbA1c levels be counseled about potential fetal anomalies and offered options for pregnancy management that include genetic counseling, genetic screening, and pregnancy termination if desired.²³ Women with pre-existing diabetes have an increased risk of pregnancy-induced hypertensive disorder such as preeclampsia and HELLP syndrome (H - hemolysis; EL - elevated liver enzymes; LP - low platelet count).²⁴ It is not just maternal risks that should be a concern; children exposed to high levels of glucose in utero have increased risk of birth trauma, development of childhood obesity, and adult onset of diabetes.²⁵ It is recommended that women establish and maintain glycemic control several months prior to conception and throughout pregnancy in order to reduce risk to both mother and baby. A combination of prescribed dietary changes, exercise, weight reduction, and medications are utilized to achieve the goals of therapy. Oral hyperglycemic agents and

insulin are utilized in pregnancy to maintain glycemic control; increasing levels of hyperglycemic agents are necessary in later gestation due to effects of placental lactogen on insulin regulation.

Hypertension is the most common complication of pregnancy and the leading cause of maternal morbidity. Approximately 22% of childbearing women in the United States have a hypertensive disorder. Women with pre-existing hypertension prior to pregnancy have significant risk to develop gestational diabetes and preeclampsia.²⁶ In women of childbearing years it is important to choose the appropriate medication for hypertensive management with consideration for pregnancy implication. Many of the pharmaceuticals used for hypertension may not be well-suited for pregnancy and lactation. ACE inhibitors and angiotensin II receptor blockers are not utilized in pregnancy due to potential fetal birth defects.²⁷ In addition, diuretics are not routinely prescribed to prevent counteraction of the physiological volume expansion in pregnancy. Risks in pregnancy associated with hypertensive disorders include placental abruption, fetal growth restriction, preterm delivery, and intrauterine fetal death.

Seizure disorders do not usually cause problems in pregnancy. Over 90% of women with seizure disorders experience a normal pregnancy and deliver healthy neonate. There is a 4%-8% increase in fetal anomalies with the use of anti-seizure medications. The most common fetal defects identified are cleft lip, cleft palate, cardiac anomalies, and spina bifida. Valproic acid is identified as a teratogen specifically associated with open neural tube defects.²⁸ It is not recommended to stop medications while pregnant as this may cause increase in seizure activity; however, it is important to utilize the lowest effective dose and select medications less likely to cause fetal harm.

Mental health disorders are very common among childbearing women with depression, anxiety, bipolar disorder, and attention deficit/hyperactivity disorder (ADHD) being commonly cited in medical records. An acute depressive episode can result with abrupt cessation of antidepressant medication. Collaborative management with mental health providers is crucial in the management of mental health disorders in pregnancy and postpartum due to the overriding psychosocial issues that can emerge with pregnancy. There are many questions and concerns about antidepressant use in pregnancy. The current recommendation is to continue medications at the lowest effective dose after counseling about potential effects to the pregnancy.²⁸ The March of Dimes issued a statement about depression in pregnancy which stated there is no definitive evidence linking antidepressants to fetal anomalies, but cautioned providers to weigh risk versus benefit in individual cases. There is a warning from the Federal Drug Administration about the antidepressant Paxil being associated with fetal cardiac defects and a recommendation that alternative medications be prescribed during pregnancy and lactation. The recommendations will change as new research becomes available; the best practice remains to stay informed of current recommendations and provide women with information to make informed decisions.

Promoting health and wellness for women of reproductive age requires a commitment from both the health care provider and the woman being cared for. As health care providers of women, we need to arm ourselves with the knowledge and tools to empower women to plan for the future by investing in

their health today. As the providers seeing these women, we need to thoughtfully consider the impact of our word, actions, and recommendations on the health and actions of our patients. The preconception recommendations are summarized in Table 1. **NCMJ**

Subject	Risk to Health	Recommendation
Acne medications²⁸	Increased risk of miscarriage and birth defects.	Discontinue and avoid exposure to Acutane, products containing Retin-A, Vitamin A supplements, and doxycycline during pregnancy.
Alcohol²⁸	Fetal alcohol syndrome may occur with even a small exposure. Moderate to heavy amounts of alcohol ingestion may contribute to habituation and eventually cause liver damage.	There is no safe amount of alcohol in pregnancy. Avoid all alcohol consumption during pregnancy.
Anti-seizure medications²⁸	Valproic acid is teratogenic and is linked with the following birth defects: cleft lip, cleft palate, open neural tube defects, and cardiac defects.	Do not abruptly stop medication as it may trigger increased seizure activity. Use lowest effective dose and consider other alternatives to valproic acid.
Dental care²¹	Poor dental hygiene and undiagnosed periodontal disease can contribute to systemic illness, preterm labor, and fetal death.	All women should have routine dental visits and periodontal disease be addressed. Dental visits are safe and recommended in pregnancy.
Diabetes - type 1 or 2²²	Uncontrolled diabetes is associated with cardiac defects, miscarriage, stillbirth, and birth trauma.	Maintain glycemic control prior to conception and throughout pregnancy.
Epilepsy²⁸	Seizure activity may increase as serum levels of medications change in pregnancy. Medications used to control seizure are associated with fetal birth defects and growth restriction.	Counsel women prior to pregnancy to risk of medication to a fetus. Utilize lowest effective dose of anti-seizure medication and consider alternative medications.
Folic acid¹⁴	Folic acid deficiency is associated with open neural tube defects.	All women should supplement with 400-800 mcg of folic acid daily.
Hepatitis B⁸	Adult risk with hepatitis infections; ultimately fatal liver damage is possible. Fetal effects include miscarriage and stillbirth.	All women should be screened for hepatitis B infection in pregnancy. Recommendation for hepatitis B vaccine series.
HIV	Unmanaged HIV can result in AIDS and death. Viral transmission is associated in pregnancy across placental barrier and through breastfeeding.	All women should be screened for HIV infection in pregnancy. Utilization of anti-viral medication reduces viral transmission in pregnancy. Delivery route determined by viral load. Breastfeeding is not recommended.

**Table 1. (cont.)
Risks and Recommendations for Women of Reproductive Age**

Subject	Risk to Health	Recommendation
Hypertension¹	Hypertension is associated with stroke, kidney disease, and cardiovascular disease. Risk to pregnancy includes placental abruption, fetal growth restriction, and stillbirth. Some antihypertensive agents are not recommended for use in pregnancy and lactation.	Women should be screened for hypertension at annual exams. Avoidance of ace inhibitors and diuretics in pregnancy due to potential fetal effects.
Immunizations⁷	Lack of adequate immunization may lead to increased risk of acquiring disease.	
MMR (measles/mumps/rubella) Tdap (tetanus/diphtheria/pertussis) Varicella (chicken pox)	Risk of active infection in pregnancy associated with growth restriction, birth defects, and neonatal death.	All women should be current on all immunizations. Serum titres should be checked on varicella and rubella should be assessed for immunity in women. Live attenuated immunizations are not recommended in pregnancy. Women should wait at least one month to conceive after receiving immunizations.
Influenza	Significant respiratory illness may occur in pregnancy due to physiological decrease in immune function.	Offer flu vaccination to pregnant and lactating women.
Obesity¹⁶	Increases risk of cardiovascular disease and diabetes. Risk to pregnancy includes an increased risk of stillbirth, cesarean section delivery, and open neural tube defects.	Establish and maintain a normal BMI. Institute a weight loss management program suited for individual results/compliance.
Nutrition¹⁵	Poor dietary choices high in fat and sugar lead to excessive weight gain and nutritional deficiencies.	Nutritional counseling to promote a balanced diet high in fiber, fruits, and vegetables with reduction in fats and sugars. Consider nutrition/dietician consult as indicated.
Preconception visit²⁸	Pregnancy preparation allows for identification of potential risks and early intervention to promote positive pregnancy outcomes.	Women should have a preconception visit prior to conception.
Sexually transmitted infections	Untreated sexually transmitted infections can lead to pelvic inflammatory disease, preterm labor, premature rupture of membranes, and infertility. Fetal risk includes eye infections, congenital malformations, blindness, low birth weight, premature delivery, and stillbirth.	Screen all women in pregnancy for STIs and treat according to CDC recommendations.
Stress	Excessive daily stress levels cause physiological responses that can depress the immune system leading to illness, cardiovascular disease, and mental health conditions.	Discuss chronic stress and interventions to reduce stress in daily life.
Tobacco¹	Tobacco use is associated with cancer, cardiovascular disease, fetal growth restriction, preterm birth, SIDS, and stillbirth.	Counsel women not to smoke or use tobacco products and offer referral to a formal cessation program.

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