



Prenatal Care

**Prenatal Care Guideline
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These guidelines should not be construed as including all proper methods of care or excluding other acceptable methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding any specific clinical procedure or treatment must be made by the physician in light of the circumstances presented by the patient.

Patient population: Women of childbearing age and the fetuses of pregnant women.

- Objectives:**
- (1) Reduce maternal mortality and morbidity and fetal loss.
 - (2) Reduce preterm birth, intrauterine growth restriction, congenital anomalies, and failure to thrive.
 - (3) Promote healthy growth and development.

Key Points:

- Preconception care is an important part of prenatal care and permits early identification of risk factors that can then be treated before pregnancy [*evidence: NA**].
- A history should be performed for all women, and should include review of, and necessary counseling and treatment for, smoking [*A**], alcohol [*B**], and drug abuse [*D**].
- Folic acid supplementation should be started at least 3 months prior to conception if at all possible, or immediately on diagnosis of pregnancy (0.4 mg for women without risk factors and up to 4 mg for those having a neural tube defect in a prior pregnancy) [*A**].
- The first pregnancy visit should occur during the first trimester [*B**].
- An ultrasound test is recommended to determine gestational age if: (1) the gestational age as determined by the last menstrual period and uterine size do not agree within 2 weeks of each other; or (2) the patient presents after the first trimester. [*B**].
- All women should be screened for HBsAg and group B streptococcus (GBS) prior to delivery [*A**].

* Levels of evidence reflect the best available literature in support of an intervention or test:
A=randomized controlled trials; B=controlled trials, no randomization; C=observational trials; D=opinion of expert panel.

Clinical Background

Management Issues

Women who receive prenatal care during the first trimester have better pregnancy outcomes than women who have little or no prenatal care. The 1989 U.S. Public Health Service expert panel on the content of prenatal care identified the following three basic components of prenatal care:

- (1) early and continuing risk assessment,
- (2) health promotion, and
- (3) medical and psychosocial interventions and follow-up.

Each of these three components are reflected in this guideline.

Rationale for Recommendations

When to Deliver Care

There is limited evidence as to what represents an adequate number of prenatal care visits. Studies have shown that some prenatal care is better than no prenatal care, and that a visit during the first trimester is especially important. Based upon scientific evidence, recommendations of the U.S. Public Health Service (USPHS), clinical judgment regarding effectiveness of identifying and modifying risk, and the success of medical and psychosocial interventions, a chronological sequence of prenatal care visits is presented.

(Continued on page 4)

Table 1. Guidelines for Prenatal Care

	First Trimester ¹			Second Trimester ¹			Third Trimester ¹		
	1st Visit	8-12 wks: Once	12-16 wks: Once	16-20 wks: Once	20-24 wks: Once	24-28 wks: Once	28-32 wks: Once	32-36 wks: Bi-wkly	36 + wks: Wkly
History									
Obstetrical history [B*]									
Menstrual history [B*]									
Sexual history [NA*]									
Contraceptive history [NA*]									
Family & genetic history [B*]									
Infection history [B*]									
Psychosocial history/update [B*]									
Medical history/update [B*]									
Nutritional history/update [B*]									
Current pregnancy update [NA*]									
Physical Exam									
Height [B*]									
Weight [B*]									
Blood pressure [B*]									
Complete physical exam [NA*]									
Fetal heart rate [NA*]									
Fundal height [NA*]									
Fetal lie [NA*]									
Pelvic exam [NA*]									
Digital cervical exam [D*]									Begin by 41 wks
Tests									
Rubella titer [B*]									
Hemoglobin / hematocrit [B*]									
Hemoglobinopathies (if indicated) [B*]									
Hepatitis B Titer [B*]									
HIV (offered) [B*]									
Rh factor [B*]									
STD screening [GC, Chlamydia, VDRL] [B*]									
Urine culture or urinalysis [A*]									
Urine dipstick (protein & sugar) ² [B*]									
Diabetes screen [A*]									
1 st Trimester Screen (FTS) or Quad Test [A*]		FTS 11-14w		Quad-15-20wks					
Non-stress test (NST) [B*]									all @ 41wks
Group B strep culture [D*]									all @ 36 wks
Influenza vaccine if preg during flu season									

 = Provide service under most circumstances.  = Provide service only for patients with relevant risk factors.

1. There is limited evidence as to what represents an adequate number of prenatal care visits. Fewer visits may be appropriate for low risk patients [A*], while more frequent visits may be necessary for high risk patients.
2. Adequate for screening for diabetes before conception. If not performed prior to pregnancy, a urinalysis or urine culture is more appropriate.

Table 2. Guidelines For Health Promotion & Perinatal Education

(This is a comprehensive list of general topics to be discussed with your patient. Some topics may not be relevant for some individuals. Emphasize topics that are most relevant for your patient.)

Topics	Preconception or First Trimester Weeks 1-16 ¹	Second Trimester Weeks 16-28 ¹	Third Trimester Weeks 28-delivery ¹
Avoiding			
- Smoking			
- Alcohol			
- Drugs			
- Harmful substances			
- Infectious diseases			
- Cat litter dust			
- Handling raw meats			
How to use a seatbelt in pregnancy			
Preparing for lab tests			
Need for prenatal care			
Emotional changes			
Family adjustment			(After birth)
Safe sex/sexuality during pregnancy			
Physical changes			(Late pregnancy)
Nutrition in pregnancy			
Exercise/fitness during pregnancy			
Discomfort - self-help			(Late pregnancy)
Baby's growth and development			
Breast feeding			
Available breast feeding & childbirth classes			
Managing work during pregnancy			(Late pregnancy)
Signs of problems in pregnancy			
Fetal movement counting			
Signs of premature labor			
Signs of labor			
Getting to birthing center			
What happens during labor & delivery			
Getting/using infant car seat			
Infant safety after birth			
Getting along with an infant			
Contraception/family planning			
Caring for self and infant after birth (review checklist "You, Your Baby & Us" pages 12-13)			

¹ See "Information About Pregnancy" for parent self-assessment of educational need.

= Discuss at some point during this time

The book "What to Expect When You're Expecting" (by Arlene Eisenberg, Workman Publishing, most recent printing 2005, approximately \$14) is strongly recommended by our panel. This book can be found in most book stores.

Rationale for Recommendations (continued)

Preconception visit. The value of preconception care is that women can be counseled to decrease risk before pregnancy. Consider the following items when a woman expresses her desire for pregnancy.

- Assess maternal health risk, medical history.
- Discuss risk factor reduction - smoking, alcohol, substance abuse, environmental risk factors (e.g., to avoid cat litter if patient has cats that go outside).
- Provide genetic counseling based on family history, race/ethnicity probabilities (e.g., cystic fibrosis, sickle cell, Tay Sachs).
- Review fetal health risks (e.g., optimal blood sugar control in patient with diabetes).
- Assess infectious disease / immunization status for rubella, varicella, hepatitis B, toxoplasmosis, CMV, herpes.
- Vaccinate as indicated (e.g., if rubella titer is negative, then provide preconception vaccination and advise pregnancy should be avoided for 4 weeks).
- Screen for pre-existing diabetes in women at high risk including those with symptoms or signs suggestive of undiagnosed diabetes, a history of gestational diabetes, a strong family history of diabetes, or other risk factors for diabetes (e.g., obesity). Recent recommendations from the American Diabetes Association favor the fasting glucose as a screening test. If the fasting glucose is ≥ 126 mg/dl on 2 or more occasions, diabetes is present.
- Prescribe folic acid 0.4 mg for women without risk factors and up to 4 mg for those having a neural tube defect in a prior pregnancy.
- Calcium supplementation of ≥ 1000 mg/d may reduce the development of gestational hypertension, but probably does not prevent preeclampsia [A*].

First pregnancy visit. The first pregnancy visit will be shorter and more effective if a preconception visit has occurred. If a preconception visit has not taken place, all of the content of the preconception visit must be addressed at the first pregnancy visit or the opportunity for primary prevention will be limited; for example, vaccinations will no longer be feasible. Still, when the first visit takes place at 6-8 weeks of gestation, the activities of prenatal care will be substantially more effective than when the first visit is delayed to the second or third trimester.

Pregnancy revisits. Recommendations for second and subsequent visits during pregnancy are based on the assumption that a woman has had a first pregnancy visit at 6 to 8 weeks gestation (see above) and second visit near 8 weeks if the first pregnancy visit is divided into two segments.

In the absence of risk factors, revisits include continuing risk assessment, health promotion, and educational activities as needed. If risk is identified in any category,

increased assessment and intervention, either medical or psychosocial, should take place and should be scheduled as necessary. The intensity and timing of visits will depend on the needs and specific risks of the pregnant woman and her family.

Content of Prenatal Care

History. Taking and documenting a thorough history is recommended for all women at the preconception visit or at the first pregnancy visit if a preconception visit has not taken place. Key elements of the history are identified in Table 1.

Physical examination. Table 1 presents important aspects of the physical examination that are recommended for all women.

Height should be measured at the initial visit [B*].

Weight should be recorded at each visit [B*].

- If a patient experiences excessive or poor weight gain, then a nutrition consult should be initiated.

Blood pressure should be measured at the first visit and then every visit from 24 weeks to delivery [B*].

- If blood pressure is elevated (systolic ≥ 140 mm Hg, diastolic ≥ 90 mm Hg; OR systolic rise ≥ 30 mm Hg, diastolic rise ≥ 15 mm Hg from first trimester level), then assess for proteinuria [NA*].
- If new onset hypertension and proteinuria (1+ or more which is equivalent to ≥ 300 mg/24 hrs), then assess for pregnancy-induced hypertension / preeclampsia and arrange close follow-up [NA*]. Bed rest does not alter the course nor change the prognosis of preeclampsia [A*]. Aspirin prophylaxis does not prevent the development of preeclampsia [A*].
- If pregnancy-induced hypertension/preeclampsia (systolic ≥ 160 , diastolic ≥ 100 , proteinuria 3-4+ or pulmonary edema, oliguria, right upper quadrant [liver] pain, significantly abnormal labs, seizures), then admit patient to hospital for further evaluation and management [NA*].

A complete physical exam, including a breast exam, should be performed at the initial visit.

Fetal heart rate should be assessed at each visit 12 weeks and after [NA*].

- If no heart rate is detected, an ultrasound should be ordered to assess fetal age and viability [NA*].
- Twice weekly monitoring using a fetal nonstress test (NST) should begin at 41 weeks and continue until labor (spontaneous or induced) begins [B*]. Consider

ultrasound assessment of amniotic fluid volume at 41 weeks.

- If NST is non-reactive, a biophysical profile (BPP) (NST and real time ultrasound) should be used to assess fetal tone, fetal movement, fetal breathing movement, and amniotic fluid volume [NA*].
- If NST is non-reactive and BPP is non-reassuring, then delivery should be considered [NA*].

Fundal height and growth should be recorded from each visit from 20-32 weeks [B*].

- If fundal height is 4 cm greater or less than indicated by gestational age, then an ultrasound should be ordered to assess fetal growth and amniotic fluid volume [NA*].

Fetal lie should be recorded at 32 weeks and at each subsequent visit [NA*].

- If a non-vertex presentation is suspected at ≥ 36 weeks, an ultrasound should be obtained to confirm position and determine amniotic fluid volume. External version for breech presentation should not be performed prior to term, as it is ineffective in increasing vertex delivery rates [A*]. External cephalic version does increase vertex delivery rates when performed at term [A*] and should be considered/offered to the patient. Success rates of version depend on amniotic fluid volume [B*].

A pelvic exam should be performed at the initial visit. This exam includes cultures for chlamydia and gonococcus, and a pap smear if not done within the last year. This exam is performed to identify possible cervical abnormalities and to document the size of the uterus in conjunction with estimated gestational age.

A digital cervical exam should be performed by 41 weeks and each visit thereafter [D*]. If cervix remains unripe (Bishop score < 4) at 41 weeks, then cervical ripening should be considered [NA*].

Gestational age should be determined based on: (a) first trimester estimate of last menstrual period and uterine size (these should agree within 2 weeks); or (b) ultrasound if last menstrual period and uterine size do not agree within 2 weeks or if first visit did not occur in the first trimester. Women whose symphysis-fundal height at 20-32 weeks is 4 cm greater or less than indicated by their gestational age should also have an ultrasound.

- Obtaining an ultrasound test in pregnancy is currently recommended only if the duration of gestation is uncertain or if problems for the fetus are suspected. Routine ultrasound screening at 18-22 weeks has not been proven to affect perinatal outcomes on a population basis. Reassurance to parents and the occasional detection of a major congenital anomaly or

multiple gestation may be of some health benefit, although further research is needed in this area. This area has been reviewed by a National Institutes of Health Consensus Panel (National Institutes of Health 1984). Research in this area continues to be a high priority, and, as with any procedure, this recommendation may change when new data are available.

Laboratory Tests. The tests that are recommended are listed in Table 1. In many cases, if the test is obtained prior to conception, it need not be repeated during pregnancy. For example, if rubella immunity has been documented, a repeat rubella antibody serology is unnecessary.

Rubella titer should be performed for all women at the first pregnancy visit, unless a positive result to this test has been recorded at the preconception visit or if documentation of immunization is present, in which case the test should not be performed.

Hemoglobin / hematocrit should be performed on all women at the initial visit, and should be repeated once on all women after 24 weeks [B*].

- If anemia (Hgb < 10 g/dl, HCT < 30%) is detected, and patient is not at risk for hemoglobinopathies, then additional iron supplementation (60-120mg/day) should be initiated [NA*].

Hemoglobinopathies. Consider hemoglobin electrophoresis for patients in one of the following high prevalence groups to rule out hemoglobinopathy as the cause of anemia. This test does not need to be repeated if performed previously.

- If mother has sickle cell trait or disease, the baby's father should be screened for hemoglobinopathies.
- Those of African, Mediterranean and East Indian descent are at high risk for sickle cell disease and should be screened for hemoglobinopathies.
- If mother and father are positive for the sickle cell trait, or mother is positive and father is high risk and unavailable for testing, then an amniocentesis or chorionic villus sampling should be offered. Genetic counseling should also be offered.
- Those of Italian, Greek, North African, Southeast Asian, Indian or Pakistani descent are at high risk for β -thalassemia and should be screened for hemoglobinopathies.
- Southeast Asians are at high risk for β -thalassemia and should be screened for hemoglobinopathies.

Hepatitis B surface antigen (HBsAg). For women carrying HBsAg, carrier status should be documented in the delivery record so that the infant can be immunized. Treatment of newborns with HB vaccine and HB immunoglobulin can prevent 85% to 95% of perinatal HBV infection.

Influenza vaccine. Influenza vaccination is recommended for all women who will be pregnant during influenza season, including women in the first trimester

HIV. An HIV test should be offered to all women. For women at risk, an HIV test is recommended at the initial visit and should be repeated at 24-28 weeks.

Rh factor should be performed at the first pregnancy visit for all women.

- Rh Antibody Screen should be repeated once just prior to administration of Rh₀D Immune Globulin (Human) [e.g., Rhogam] for all women who have not tested positive previously [B*].
- If the test is positive, women should be questioned about transfusions and use of Rh₀D Immune Globulin (Human) in prior pregnancies.
- Women who are Rh negative and unsensitized should receive (300ug) Rh₀D Immune Globulin (Human) between 28 and 32 weeks prenatal, and postpartum if the neonate is Rh positive [NA*].
- If Rhogam is given during the prenatal period for prophylaxis, it should be repeated at 12 week intervals until delivery.

Screening for sexually transmitted disease (STD). STD Screening (chlamydia, gonorrhea, syphilis) should be performed on all women at the initial visit. Repeat screens should also be considered at 36 weeks in high risk patients (previous infection, new partner, unstable relationship, etc.) [B*].

- Gonococcal culture (GC). If culture is positive, treatment should conform to the Public Health Service Guidelines on the treatment of sexually transmitted disease in pregnancy (250 mg IM once of ceftriaxone) to cover for gonococcus. Check contacts.

Women with positive cultures should receive a post-treatment follow-up culture 4-7 days after treatment is completed. Repeat culture later in pregnancy (36 + weeks).

- Chlamydia culture. Chlamydia trachomatis cervical infections occur in 8-10% of pregnancies and may be related to the onset of premature labor. Newborns of mothers with chlamydial infection have an 18% incidence of conjunctivitis and a 16% incidence of pneumonia. Mothers with a positive cervical chlamydial culture should be treated with erythromycin (with 500 mg orally 4 times per day for 7 days, or 250 mg 4 times per day for 14 days if patient cannot tolerate higher doses).
- Syphilis test. If the nontreponemal test (VDRL) is reactive, a treponemal test (FTA) should be ordered to confirm the presence of syphilis before treatment.

Women with confirmed positive serology should be treated with penicillin appropriate for the stage of the disease; tetracycline and doxycycline are contraindicated in pregnancy.

Urine culture or urinalysis. If urine dipstick and urinalysis indicate infection, perform clean catch urine culture and treat with an appropriate antibiotic [A*].

- Five to six percent of pregnant patients have asymptomatic bacteriuria (ASB), defined as the presence of a urinary tract infection in the absence of specific symptoms. ASB is diagnosed by the presence of > 100,000 colonies of a single uropathogen per mL of urine. The Enterobacteracea, particularly E. coli and Klebsiella-Enterobacter species, account for 90% of urinary tract infections in pregnancy. Thirty percent of pregnancies with ASB will develop acute pyelonephritis if untreated. Treatment of ASB in pregnancy can be accomplished with a variety of FDA drugs classified as category B for pregnancy. Included in this group are the following: Nitrofurantoin, sulfonamides, cephalosporins, and ampicillin. These agents can be given in single dose regimens with reported cure rates of 65-88%. Alternatively, they can be given in multiple dose regimens for five to seven days. One particular regimen that is quite successful is Nitrofurantoin 100 mg taken orally at bedtime for ten days. It is important to evaluate these patients with repeat urine cultures after treatment, because one-third will experience persistence or recurrence during the pregnancy. For pregnancies complicated with persistent or recurrent bacteriuria; suppressive therapy with Nitrofurantoin 100 mg given orally at bedtime can be used for the remainder of the pregnancy.
- Acute cystitis occurs in 0.3-2.0% of pregnant women. Treatment should be similar to that of ASB except that single-dose therapies are generally ineffective and not recommended. Women with acute cystitis should be followed with surveillance cultures for the remainder of the pregnancy, since 25% will have another infection. Post-treatment follow-up culture should be performed within 1 month of completing treatment.

Urine dipstick (glucose, protein). If urine dipstick is positive, evaluate for underlying cause (e.g., diabetes, preeclampsia, renal disease).

Screening for gestational diabetes (GDM)

- Recommendations from the American Diabetes Association support risk-based screening for gestational diabetes [B]. Risk assessment for GDM should be ascertained at the first prenatal visit.

- Low Risk. Blood glucose testing not routinely required if all of the following characteristics are present:

- Member of an ethnic group with a low prevalence of GDM (Caucasian)
- No known diabetes in first-degree relatives
- Age < 25 years
- Weight normal before pregnancy
- No history of abnormal glucose metabolism
- No history of poor obstetric outcome

- Average risk. Perform blood glucose testing at 24-28 weeks using one of the following:

- Two-step procedure: 50-g glucose challenge test (GCT) followed by a diagnostic oral glucose tolerance test (OGTT) in those meeting the threshold value in the GCT (see below) OR
- One-step procedure: diagnostic OGTT performed on all subjects (see below)

In the GCT, 50 g glucose is ingested followed by a blood glucose test in one hour. If the GCT is abnormal (≥ 140 mg/dl or 7.8 mg/dl), then a 3 hour 100 g glucose tolerance test should be performed. If the 3 hour GTT has 2 or more abnormal values (fasting plasma glucose ≥ 95 mg/dl, 1hr ≥ 180 mg/dl, 2hr ≥ 155 mg/dl, 3hr ≥ 140 mg/dl), then the patient has gestational diabetes.

- High risk. In women with symptoms or signs suggestive of undiagnosed diabetes and those with a history of gestational diabetes, a strong family history of diabetes, or other risk factors for diabetes (e.g., advanced age, obesity, inactive lifestyle), perform blood glucose testing as soon as feasible, using the procedures described above.

- If GDM is not diagnosed, blood glucose testing should be repeated at 24-48 weeks or at any time a patient has symptoms or signs suggestive of hyperglycemia.

Women with GDM should be referred for:

- dietary counseling
- instruction in home blood glucose monitoring
If goal of fasting blood sugar < 95 mg/dl or 2hr postprandial < 120 mg/dl cannot be maintained (2 or more consecutive abnormal), then insulin therapy should be considered [A*].

First Trimester Screen (FTS) is a screening test to identify women with a pregnancy at risk for Down syndrome and trisomy 18. FTS is offered between 11 and 14 weeks. The test is a combination of two blood proteins, free beta-hCG and PAPP-A (pregnant associated plasma protein A). In addition, an ultrasound exam of the back of the fetus's neck (nuchal translucency). FTS can identify about 85% of pregnancies with Down syndrome and 97% with trisomy 18, with a false positive rate of 5%.

Quad Screen. The Quad test (alpha-fetoprotein, beta-hCG, estriol, and inhibin A) is a test to identify women with pregnancies at risk for Down syndrome, open spina bifida, and trisomy 18. The test is performed between the 15th and 21st weeks of pregnancy. The Quad screen can identify about 80% of fetuses with Down syndrome, 80% of those with open neural tube defects, and 60% with trisomy 18, with a false positive rate of 5%.

In using these tests it is important to remember that if either of these screening tests are positive, then genetic counseling and confirmatory testing should be offered (chorionic villi sampling or amniocentesis).

- Prior to performing the test, a discussion of possible results and subsequent testing required should occur with the patient [NA*].

Fetal non-stress test (NST). This test of fetal well being is usually initiated at 32-36 weeks for women at risk, and at 41 weeks for all women. Once initiated, the frequency of testing depends on the clinical circumstances. The test is considered reactive if there are two episodes of fetal heart rate acceleration (increase of 15 beats per minute for 15 seconds) within a twenty-minute window. The test is non-reactive if there are no episodes of fetal heart rate acceleration. If there is one episode of fetal heart rate acceleration, the test is considered equivocal and monitoring will be extended beyond twenty minutes.

Group B streptococcus culture. Three national groups have developed guidelines to prevent group B streptococcus (GBS) infection in the newborn. The Center for Disease Control and Prevention, American College of Obstetricians and Gynecologists (ACOG), and American Academy of Family Physicians (AAFP) recommend universal screening of all pregnant women by obtaining ano-genital GBS cultures with antibiotic sensitivity testing at 35-37 weeks gestation (MMWR, Fall 1995). A positive culture indicates the need for intrapartum treatment with IV penicillin G (5 million units initially, then 2.5 million units every 4 hours until delivery). Penicillin-allergic patients at high risk for anaphylaxis should receive clindamycin 900mg IV every 8 hours if their isolate is sensitive, or vancomycin 1 gm IV every 12 hours if their isolate is clindamycin-resistant. Allergic patients at low risk for anaphylaxis can be given cefazolin 2 gm IV then 1 gm IV every 4 hours.

The following patients should be treated presumptively if their GBS status is unknown:

- prior newborn child with invasive neonatal GBS disease
- preterm labor less than 37 weeks (36 completed weeks) unless delivered by c-section with intact membranes and no labor
- ruptured membranes ≥ 18 hours at any gestational age
- fever in labor ≥ 38 degrees Celsius (100.4 degrees Fahrenheit); consider treatment for chorioamnionitis

-
- GBBS bacteriuria during this pregnancy.

Bacterial Vaginosis (BV) is associated with preterm labor in both low and high risk women. Unfortunately, a recent systematic review of controlled trials found that the use of antibiotic treatment for BV failed to reduce the risk of preterm labor. Screening for BV and treatment of asymptomatic BV are therefore not indicated.

Health Promotion And Education

Categories of health promotion are:

- (1) counseling to promote and support healthful behaviors,
- (2) general knowledge of pregnancy and parenting,
- (3) information on proposed care.

Table 2 provides guidelines for the general timing of health promotion, and is based on recommendations from the U.S. Public Health Service, the American College of Obstetricians and Gynecologists, and The University of Michigan Medical Center Department of Nursing. Examples of specific health promotion activities include counseling on smoking cessation, alcohol avoidance, physical activity/exercise, and maternal seatbelt use.

- Exercise in pregnancy is safe for most women. It improves maternal fitness and body image [B*]. Insufficient evidence exists to determine whether it improves fetal outcomes.
- The benefits of seat belts far outweigh potential injury to the fetus from belts. Belts should be worn low across the hips, not across the abdomen.

Sharing information about pregnancy with the woman encourages her active participation in her care, helps her know what is taking place or what will take place, and lets her know what information needs to be shared promptly with her provider.

The Smart Moms, Healthy Babies website at www.med.umich.edu/obgyn/smartmoms covers many topics of interest to pregnant women and their families. Some of the information is specific to those receiving care through UMHHS but much of it is valuable to all patients.

Copies of the University of Michigan Hospitals chart forms entitled "Information About Pregnancy" are provided as attachments. Clinicians may wish to add these forms to the medical record to track parent competencies and interest in educational material related to prenatal care and delivery. Copies of these forms should already be available at most clinics. If additional copies are needed, they can be obtained from Kelly Parkinson at Allegra Printing (phone 734-944-1404, ext. 118). Copies of "You, Your Baby and Us" may also be ordered at the above number.

Evidence Summary

For this update the initial evidence base was the literature search performed by Department of Defense and Veterans Administration in conjunction with the publication of the DoD/VA Clinical Practice Guideline for the Management of Uncomplicated Pregnancy (Oct. 2002, see references). A Medline search for literature published since that time was performed. The search was conducted prospectively using the major key words of *pregnancy (prenatal care), guidelines, controlled trials, published from 1/1/02 through 4/30/05, women (adolescent, adult), English language*. Specific searches were performed for: *GBS (Strep-β) screening and treatment, screening in first trimester, screening based on race/ethnicity probabilities, baseline urine culture, bacterial vaginosis, gestational diabetes, breech (lie), exercise, dip stick urine analysis, calcium, folic acid, aspirin prophylaxis, and domestic violence/abuse*.

The searches were supplemented with recent clinical trials known to expert members of the panel. The search was single cycle. Conclusions were based on prospective randomized clinical trials if available, to the exclusion of other data. If RTC were not available, observational studies were admitted to consideration. If no such data were available, expert opinion was used to estimate effect size.

Disclosures

No member of the Prenatal Care Guideline Team has relationships with commercial companies whose products are discussed in this guideline. (The members of the team are listed on the front page of this guideline.)

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Annotated References

Kirkham C, Harris S, Grzybowski S. Evidence-based prenatal care: Part I. General prenatal care and counseling issues. *Am Fam Physician*. 2005 Apr 1;71(7):1307-16.

A recent evidence-based review of many aspects of prenatal care.

The Management of Uncomplicated Pregnancy Working Group. DoD/VA Clinical Practice Guideline for the Management of Uncomplicated Pregnancy. Washington, DC: Department of Defense and Veterans Administration, 2002.

This 100 page document summarizes evidence and recommendations for the management of uncomplicated pregnancy.

Caring for our future: The content of prenatal care. A report of the Public Health Service expert panel on the content of prenatal care. Department of Health and Human Services, Washington, D.C. 1989.

A report on effective and efficient approaches for prenatal care, developed by the Public Health Service expert panel.

McDuffie RS, Bischoff KJ, Beck A, Orleans M. Does reducing the number of prenatal office visits for low-risk women result in increased use of other medical services? *Obstetrics & Gynecology* 1997;90:68-70.

A randomized, controlled trial involving 2328 pregnant women judged to be at low risk of adverse perinatal outcomes. Women were assigned to an experimental (nine visits) or a control (14 visits) schedule. The reduction in prenatal visits achieved using the experimental schedule was not accompanied by an increase in the use of other medical services compared with the routine schedule. Also, no differences were found with regard to low birth weight, preterm delivery, or Cesarean delivery.

Metzger, BE, Coustan, DR. Summary and recommendations of the fourth international workshop-conference on gestational diabetes mellitus. *Diabetes Care* 1998 21(2): B161-7