with a urine culture for asymptomatic bacteriuria at the first prenatal visit. Subsequent screening with nitrite/leukocyte esterase strips is indicated for high-risk women, such as those with sickle cell trait or a history of urinary tract infections. All women with positive screens should be treated. Pregnant women who develop pyelonephritis need careful monitoring, including inpatient IV antibiotic administration due to the elevated risk of urosepsis and acute respiratory distress syndrome in pregnancy.

Abdominal pain and fever during pregnancy create a clinical dilemma. The diagnosis of greatest concern is intrauterine amniotic infection. While amniotic infection most commonly follows rupture of the membranes, this is not always the case. In general, antibiotic therapy is not recommended as a temporizing measure in these circumstances. If intrauterine infection is suspected, induced delivery with concomitant antibiotic therapy is generally indicated. Intrauterine amniotic infection is most often caused by pathogens such as *Escherichia coli* and group B *Streptococcus* (GBS). In high-risk patients at term or in preterm patients, routine intrapartum prophylaxis of GBS disease is recommended. Penicillin G and ampicillin are the drugs of choice. In penicillin-allergic patients with a low risk of anaphylaxis, cefazolin is recommended. If the patient is at high risk of anaphylaxis, vancomycin is recommended. If the organism is known to be sensitive to clindamycin, this antibiotic may be used. For the reduction of neonatal morbidity due to GBS, universal screening of pregnant women for GBS between 35 and 37 weeks of gestation, with intrapartum antibiotic treatment of infected women, is recommended.

Postpartum infection is a significant cause of maternal morbidity and mortality. Postpartum endomyometritis is more common after cesarean delivery than vaginal delivery and develops in 2% of women after elective repeat cesarean section and in up to 10% after emergency cesarean section following prolonged labor. To reduce the risk of endomyometritis, prophylactic antibiotics should be given to all patients undergoing cesarean section, and administration 30–60 min prior to skin incision is preferable to administration at the time of umbilical cord clamping. As most cases of postpartum endomyometritis are polymicrobial, broad-spectrum antibiotic coverage with a penicillin, an aminoglycoside, and metronidazole is recommended (Chap. 201). Most cases resolve within 72 h. Women who do not respond to antibiotic treatment for postpartum endomyometritis should be evaluated for septic pelvic thrombophlebitis. Imaging studies may be helpful in establishing the diagnosis, which is primarily a clinical diagnosis of exclusion. Patients with septic pelvic thrombophlebitis generally have tachycardia out of proportion to their fever and respond rapidly to IV administration of heparin.

All pregnant patients are screened prenatally for gonorrhea and chlamydial infections, and the detection of either should result in prompt treatment. Ceftriaxone and azithromycin are the agents of choice (Chaps. 181 and 213).

VIRAL INFECTIONS

Influenza (See also Chap. 224) Pregnant women with influenza are at increased risk of serious complications and death. All women who are pregnant or plan to become pregnant in the near future should receive inactivated influenza vaccine. The prompt initiation of antiviral treatment is recommended for pregnant women in whom influenza is suspected. Treatment can be reconsidered once the results of high-sensitivity tests are available. Prompt initiation of treatment lowers the risk of admission to an intensive care unit and death.

Cytomegalovirus Infection The most common cause of congenital viral infection in the United States is cytomegalovirus (CMV) (Chap. 219). As many as 50–90% of women of childbearing age have antibodies to CMV, but only rarely does CMV reactivation result in neonatal infection. More commonly, primary CMV infection during pregnancy creates a risk of congenital CMV. No currently accepted treatment of CMV infection during pregnancy has been demonstrated to protect the fetus effectively. Moreover, it is difficult to predict which fetus will sustain a life-threatening CMV infection. Severe CMV disease in the newborn is characterized most often by petechiae, hepatosplenomegaly, and jaundice. Chorioretinitis, microcephaly, intracranial calcifications, hepatitis, hemolytic anemia, and purpura may also develop. CNS involvement, resulting in the development of psychomotor, ocular, auditory, and dental abnormalities over time, has been described.

Rubella (See also Chap. 230e) Rubella virus is a known teratogen; first-trimester rubella carries a high risk of fetal anomalies, though the risk significantly decreases later in pregnancy. Congenital rubella may be diagnosed by percutaneous umbilical-blood sampling with the detection of IgM antibodies in fetal blood. All pregnant women and all women of childbearing age should be tested for their immune status to rubella. All nonpregnant women who are not immune to rubella should be vaccinated. The incidence of congenital rubella in the United States is extremely low.

Herpesvirus Infection (See also Chap. 216) The acquisition of genital herpes during pregnancy is associated with spontaneous abortion, prematurity, and congenital and neonatal herpes. A cohort study of pregnant women without evidence of previous herpesvirus infection demonstrated that ~2% acquired a new herpesvirus infection during the pregnancy. Approximately 60% of the newly infected women had no clinical symptoms. Infection occurred with equal frequency in all three trimesters. If herpesvirus seroconversion occurred early in pregnancy, the risk of transmission to the newborn was very low. In women who acquired genital herpes shortly before delivery, the risk of transmission was high. The risk of active genital herpes lesions at term can be reduced by prescribing acyclovir for the last 4 weeks of pregnancy to women who have had their first episode of genital herpes during the pregnancy.

Herpesvirus infection in the newborn can be devastating. Disseminated neonatal herpes carries with it high mortality and morbidity rates from CNS involvement. It is recommended that pregnant women with active genital herpes lesions at the time of presentation in labor be delivered by cesarean section.

Parvovirus Infection (See also Chap. 221) Parvovirus infection (caused by human parvovirus B19) may occur during pregnancy. It rarely causes sequelae, but susceptible women infected during pregnancy may be at risk for fetal hydrops secondary to erythroid aplasia and profound anemia.

HIV Infection (See also Chap. 226) The predominant cause of HIV infection in children is transmission of the virus from mother to newborn during the perinatal period. All pregnant women should be screened for HIV infection. Factors that increase the risk of mother-to-newborn transmission include high maternal viral load, low maternal CD4+ T cell count, prolonged labor, prolonged duration of membrane rupture, and the presence of other genital tract infections, such as syphilis or herpes. Prior to the widespread use of antiretroviral treatment, the perinatal transmission rate was in the range of 20%. In women with a good response to antiretroviral treatment, the transmission rate is about 1%. Measurement of maternal plasma HIV RNA copy number guides the decision for vaginal versus cesarean delivery. For women with <1000 copies of plasma HIV RNA/ml who are receiving combination antiretroviral therapy, the risk of transmission to the newborn is approximately 1% regardless of mode of delivery or duration of membrane rupture. These women may elect to attempt a vaginal birth following the spontaneous onset of labor. For women with a viral load of ≥1000 copies/ml prior to 38 weeks of gestation, a scheduled prelabor cesarean at 38 weeks is recommended to reduce the risk of HIV transmission to the newborn. To reduce the risk of mother-to-newborn transmission, women with >400 copies of HIV RNA/ml should be treated during the intrapartum interval with zidovudine. All newborns of HIV-infected mothers should be treated with zidovudine for 6 months after birth. Women who are HIV-positive may transmit the virus through their breast milk. In developed countries, HIV-infected mothers are advised not to breast-feed.

VACCINATIONS

(See also Chap. 148) For rubella-nonimmune individuals contemplating pregnancy, measles-mumps-rubella vaccine should be administered, ideally at least 3 months prior to conception but otherwise in