Common Antenatal Diagnostic Procedures NCLEX Review

The usual schedule for antepartum health care visits is every 4 weeks for the first 28 to 32 weeks, every 2 weeks from 32 to 36 weeks, and everyweek from 36 to 40 weeks.

A. Blood type and Rh factor

1. ABO typing is performed to determine the woman's blood type in the ABO antigen system.
2. Rh typing is done to determine the woman's blood type in the rhesus antigen system. (Rh positive indicates the presence of the antigen; Rh negative indicates the absence of the antigen.)
3. If the client isRh negative and has a negative antibody screen, she will need repeat antibody screens and should receive Rho(D) immune globulin (RhoGAM) at 28 weeks of gestation.

B. Rubella titer

1. If the client has a negative titer (less than 1:8), indicating susceptibility to the rubella virus,she should receive the appropriate immunization postpartum.
2. The client must be using effective birth control at the time of the immunization and must be counseled not to become pregnant for 1 to 3 months after immunization (as specified by the HCP) and to avoid contact with anyone who is immunocompromised.
3. If the rubella vaccine is administered at the same time as Rho(D) immune globulin, it may not be effective.
4. Rubella vaccine is administered postpartum (before discharge) via the subcutaneous route if the titer is less than 1:8; inquire about sensitivity
to eggs. Rubella vaccine is not given during pregnancy because the live attenuated virus may cross the placenta and present a risk to the developing fetus.

C. Hemoglobin and hematocrit levels

1. Hemoglobin and hematocrit levels decline during gestation as a result of increased plasma volume.
2. A decrease in the hemoglobin level to less than 10 g/dL (100 mmol/L) or in the hematocrit level to less than 30% indicates anemia.

D. Papanicolaou's smear is done during the initial prenatal examination to screen for cervical neoplasia.

E. Sexually transmitted infections

F. Sickle cell screening

1. Screening is indicated for clients at risk for sickle cell disease.
2. A positive test may indicate a need for further screening.

G. Tuberculin skin test

1. The HCP may prefer to perform this skin test after birth.
2. A positive skin test indicates the need for a chest radiograph (using an abdominal lead shield) to rule out active disease; in a pregnant client, chest radiography would not be performed until after 20 weeks of gestation (after the fetal organs are
formed).
3. Converters to positive may be referred for treatment with medication after birth.

H. Hepatitis B surface antigens

1. Testing for hepatitis antigens is recommended for all women because of the prevalence of the disease in the general population.
2. Vaccination for hepatitisBantigen maybe specifically indicated for the following:

a. Health care workers
b. Intravenous drug users
c. Clients born in Asia, Africa, Haiti, or the
Pacific islands
d. Clients with previously undiagnosed jaundice or chronic liver disease
e. Clients with tattoos
f. Clients with histories of blood transfusions
g. Clients with histories of multiple episodes of sexually transmitted infections
h . Clients who have been rejected previously as blood donors
i. Clients with histories of dialysis or renal transplantation
j. Clients from households having members infected with hepatitis B or hemodialysis clients

3. Hepatitis B vaccine is not contraindicated during pregnancy and may be recommended by the HCP.

I. Urinalysis and urine culture

1. A urine specimen for glucose and protein determinations should be obtained at every antepartum visit.
2. Glycosuria is a common result of decreased renal threshold that occurs during pregnancy.
3. If glycosuria persists, it may indicate diabetes.
4. White blood cells in the urine may indicate infection.
5. Ketonuria may result from insufficient food intake or vomiting.
6. Levels of 2+ to 4+ protein in the urine may indicate infection or preeclampsia.

J. Ultrasonography

1. Outlines and identifies fetal and maternal structures
2. Assists in confirming gestational age and estimated date of delivery and evaluating amniotic fluid volume (amniotic fluid index), which is done via special measurements
3. May be done abdominally or transvaginally during pregnancy
4. Can be used to determine the presence of premature dilation of the cervix (incompetent cervix). A transvaginal ultrasound is used during the first trimester to check the length of the cervix.
5. Interventions

a. If an abdominal ultrasound is being performed, the woman may need to drink water to fill the bladder before the procedure to obtain a better image of the fetus.
b. If a transvaginal ultrasound is being performed, a lubricated probe is inserted into the vagina.
c. The client should be informed that the test presents no known risks to the client or the fetus.

K. Biophysical profile

1. Noninvasive assessment of the fetus that includes fetal breathing movements, fetal movements, fetal tone, amniotic fluid index, and fetal heart rate patterns via a nonstress test
2. Normal fetal biophysical activities indicate that the central nervous system is functional and that the fetus is not hypoxemic.

L. Doppler blood flow analysis: Noninvasive (ultrasonography) method of studying the blood flow in the fetus and placenta

M. Percutaneous umbilical blood sampling

1. Percutaneous umbilical blood sampling is performed if fetal blood sampling is necessary; it involves insertion of a needle directly into the fetal umbilical vessel under ultrasound guidance.
2. Fetal heart ratemonitoringisnecessaryfor 1 hour after the procedure, and a follow-up ultrasound to check for bleeding or hematoma formation is done 1 hour after the procedure.

N. ?-Fetoprotein screening

1. Assesses the quantity of fetal serum proteins; abnormal protein levels are associated with open neural tube and abdominal wall defects
2. Assists in screening for spina bifida and Down syndrome
3. If abnormal, repeat test; false positive is common.
4. Interventions

a. ?-Fetoprotein level is determined by a maternal blood sample drawn between 16 and 18 weeks of gestation.
b. If the level is abnormal and the gestation is less than 18 weeks, a second sample is drawn and screened.
c. An ultrasound is performed for elevated levels to rule out fetal abnormalities or multiple gestation.

O. Deoxyribonucleic acid (DNA) genetic testing

1. Can be used to detect abnormalities related to an inherited condition
2. Assists in determining if the woman is at risk for having a fetus with Down syndrome (trisomy 21), Edwards syndrome (trisomy 18), or Patau syndrome (trisomy 13).
3. Interventions: This type of testing can be done as early as 7 weeks of gestation and a blood sample is used.

P. Chorionic villus sampling

1. Performed for the purpose of detecting genetic abnormalities; the HCP aspirates a small sample of chorionic villus tissue at 10 to 13 weeks of gestation.

2. Interventions

a. Ensure informed consent was obtained.
b. The client may need to drink water to fill the bladder before the procedure to aid in the visualization of the uterus for catheter insertion.
c. Obtain baseline vital signs and fetal heart rate; monitor frequently after the procedure.
d. Rh-negative women may be given Rho(D) immune globulin because chorionic villus sampling increases the risk of Rh sensitization.

Q. Amniocentesis

1. Aspiration of amniotic fluid; best performed between 15 and 20 weeks of pregnancy because amniotic fluid volume is adequate and many viable fetal cells are present in the fluid by this time
2. Performed to determine genetic disorders, metabolic defects, and fetal lung maturity
3. Risks

a. Maternal hemorrhage
b. Infection
c. Rh isoimmunization
d. Abruptio placentae
e. Amniotic fluid emboli
f. Premature rupture of the membranes

4. Interventions
a. Ensure informed consent was obtained.
b. If less than 20 weeks of gestation, the client should have a full bladder to support the uterus; if performed after 20 weeks of gestation, the client should have an empty bladder to minimize the chance of puncture.
c. Prepare the client for ultrasonography, which is performed to locate the placenta and avoid puncture.
d. Obtain baseline vital signs and fetal heart rate; monitor every 15 minutes.
e. Position the client supine during the examination and on the left side after the procedure. After chorionic villus sampling and amniocentesis, instruct the client that if chills, fever, bleeding, leakage of fluid at the needle insertion site, decreased fetal movement, uterine contractions, or cramping occurs, she must notify the HCP.

R. Kick counts (fetal movement counting)

1. The client sits quietly or lies down on her side and counts fetal kicks as instructed.
2. Instruct the client to notify the HCP if there are fewer than 10 kicks in 2 consecutive 2-hour periods or as instructed by the HCP.

S. Fern test

1. The fern test is a microscopic slide test to determine the presence of amniotic fluid leakage.
2. Using sterile technique, a specimen is obtained from the external os of the cervix and vaginal pool and is examined on a slide under a microscope.

3. A fernlike pattern produced by the effects of salts of the amniotic fluid indicates the presence of amniotic fluid.
4. Interventions

a. Position the client in the dorsal lithotomy position.
b. Instruct the client to cough, which causes the amniotic fluid to leak from the uterus if the membranes are ruptured.

T. Nitrazine test

1. Anitrazine test strip is used to detect the presenceof amniotic fluid in vaginal secretions.
2. Vaginal secretions have a pH of 4.5 to 5.5 and do not affect the nitrazine strip or swab.
3. Amniotic fluid has a pH of 7.0 to 7.5 and turns the nitrazine strip or swab blue.
4. Interventions

a. Position the client in the dorsal lithotomy position.
b. Touch the test tape to the fluid.
c. Assess the test tape for a blue-green, blue-gray, or deep blue color, which indicates that the membranes are ruptured, causing leakage of amniotic fluid.

U. Fibronectin test

1. Sampling of cervical and vaginal secretions for fetal fibronectin (a protein present in fetal tissues normally found in cervical and vaginal secretions until 16 to 20 weeks of gestation and again at or near term)
2. Positive results may indicate the onset of labor in 1 to 3 weeks; negative test results are more predictive that preterm labor will not begin.
3. Test used if at risk for preterm labor, before 37 weeks of gestation
4. Interventions

a. Client is placed in lithotomy position for sterile speculum exam.
b. Cervical secretions are obtained with cotton swab.
c. Laboratory tests are done for the presence of fibronectin.

V. Nonstress test

W. Contraction stress test