INTRODUCTION:

Antepartum fetal testing is commonly performed in pregnancies at increased risk for fetal compromise. Antepartum fetal testing protocols have incorporated maternal perception of fetal activity (kick counts), fetal non-stress test (NST), and/or ultrasound assessment of amniotic fluid volume (AFV) and fetal activity (biophysical profile).

The NST is the preferable first line antepartum fetal testing modality and may be supplemented with serial assessments of amniotic fluid volume in clinical scenarios with the potential for decreased amniotic fluid volume. The fetal biophysical profile is best reserved as a back-up testing methodology for those fetuses in which the NST is non-reactive (non-reactive, non-interpretable). There is insufficient evidence at this time to support the use of the BPP without NST as a first line antepartum fetal testing modality. Lalor et al

INDICATIONS FOR BIOPHYSICAL PROFILE

- A biophysical profile will be approved when a NST has been done the same day as the request AND was non-reactive or non-interpretable.

- A biophysical profile may be approved, upon clinician review, when there is evidence of, or suspicion of, a congenital fetal heart block when Fetal Heart Rate (FHR) is non-interpretable.

- A biophysical profile may be approved, upon clinician review, when a NST is not available in the region, even with other providers in the area, AND the patient meets the indications for antepartum fetal surveillance noted below.

INDICATIONS FOR ANTEPARTUM FETAL SURVEILLANCE TO ASSESS HIGH-RISK PREGNANCY:

- Antepartum Fetal Surveillance is appropriate for monitoring patients at increased risk for adverse perinatal outcomes; Nageotte et al, Liston et al
  - Studies demonstrate that although there is no consensus on optimal protocol for fetal monitoring, that it is reasonable to implement the modified BPP (which consists of an NST and amniotic fluid volume measurement when indicated), with full BPP reserved for abnormal test results. Nageotte et al, Haws et al
  - This passive and rapid approach to monitoring has been shown to be more cost-effective without diminishing its predictive value. Manning
  - Surveillance may start after 24 weeks but usually starts at 32 weeks or beyond.
• A biophysical profile **BPP** (CPT Codes 76818, 76819) consists of an NST plus 4 ultrasound components (fetal movement, fetal muscle tone, amniotic fluid volume and fetal breathing movement):
  o A BPP is an appropriate second line (back-up) testing strategy when the initial NST test is non-reactive or non-interpretable (non-reassuring).
  o There is insufficient evidence at this time to support use of the biophysical profile (BPP) for the assessment of fetal well-being in high-risk pregnancies compared to an NST or modified BPP (NST and AFV). Lalor et al
  o Compared with conventional fetal monitoring, which is based primarily on ardiotocography/NST, BPP appears to offer no improvement in pregnancy outcomes (Grade C evidence). Haws et al

• **Obstetrical conditions for which Antepartum Fetal Surveillance may be indicated:**
  o Decreased fetal movement evidenced by:
    o documented maternal perception of decreased fetal activity; Froen et al
  o Vaginal bleeding;
  o Current hypertensive disease: pre-eclampsia evidenced by:
    o new onset of blood pressure elevation exceeding 140/90 mm Hg after twenty (20) weeks’ gestation plus new onset proteinuria (> 300 mg/d) Bellamy et al based on twenty-four (24) hour study OR urine dipstick of 1+ or greater;
  o Current hypertensive diseases: chronic hypertension evidenced by:
    o blood pressure ≥ 140 mm Hg systolic and/or 90 mm Hg diastolic diagnosed before conception or before twenty (20) weeks gestation Roberts et al and requiring medical treatment;
  o Diabetes mellitus-gestational evidenced by:
    o diabetes arising or first diagnosed during pregnancy Kelly et al requiring medication (insulin, glyburide) to control;
  o Diabetes mellitus-Type I or Type II, pre-gestational evidenced by:
    o Type I or Type II diabetes diagnosed prior to pregnancy requiring medication (insulin, glyburide) to control;
  o Multiple gestations;
  o Maternal age thirty-eight (38) years or older;
  o Suspected placental abruption;
  o Severe maternal cardiac disease evidenced by:
    o documentation in chart of history of structural, valvular or ischemic heart disease; Dobberga-Rhodes
  o Maternal hypothyroid disease, uncontrolled, evidenced by:
    o elevated thyroid stimulating hormone (TSH) and related maternal symptoms;
  o Maternal hyperthyroid disease, uncontrolled evidenced by:
    o suppressed TSH level with related maternal symptoms;
  o Cholestasis of pregnancy evidenced by:
    o documentation in chart of elevated serum bile acid (upper limit of normal is between 10 and 14 µmol/L; Geenes
  o Maternal Human Immunodeficiency Virus (HIV) infection evidenced by:
    o documentation in chart of confirmed HIV; Cejtin
  o Maternal Sickle cell disease evidenced by:
documentation in chart of previous diagnosis of sickle cell disease (normal Hb A is present in the blood of patient at a lower level than Hb S); Frenette

- Severe asthma evidenced by:
  - documentation in chart of asthma requiring continuous medication beyond PRN;
- Maternal renal disease evidenced by:
  - documentation in chart of history of parenchymal renal disease prior to pregnancy;
- Active drug/methadone/ETOH abuse evidenced by:
  - documentation in chart of history of active drug/methadone/ETOH abuse;
- Systemic lupus erythematosus (SLE); antiphospholipid syndrome evidenced by:
  - documentation in chart of previous diagnosis of SLE-antiphospholipid syndrome; or
- Abnormal maternal serum screening evidenced by:
  - elevated MSAFP level, > 2.0 - 2.5 MoMs (quantitative unit of measure for MSAFP reported as multiples of the median) Bjorklund et al
  - low PAPP-A <0.3 MoMs;
- Known fetal anomaly evidenced by:
  - follow-up observation of identified, major fetal anomaly;
- Fetal intrauterine growth restriction (IUGR) evidenced by:
  - An estimated fetal weight less than the tenth (10th) percentile for gestational age; Scifres

- Suspected abnormalities of amniotic fluid value evidenced by:
  - oligohydramnios - decreased amniotic fluid volume relative to gestational age, characterized by an amniotic fluid index (AFI) less than five (5) cm ACOG No.101
  - polyhydramnios – increased amniotic fluid volume relative to gestational age characterized by an AFI greater than or equal to twenty-four (24) cm; ACOG No.101
- Post term pregnancy evidenced by:
  - pregnancy that persists beyond forty (40 weeks gestation);
- Other high-risk medical conditions when discussed with clinical reviewer.

ADDITIONAL INFORMATION RELATED TO OB US, including BPP:

- **Types of OB US in second- or third-semester.** The ACOG committee provides information indicating three types of OB US examinations that are performed during the second or third trimester:
  - **Standard Examination (also called basic):** A standard OB US performed in the second or third trimester includes an evaluation of fetal presentation, amniotic fluid volume, cardiac activity, placental position, fetal biometry, and fetal number. It also includes an anatomic survey. When technically feasible, the maternal cervix and adnexa should be examined as clinically appropriate. ACOG Practice Bulletin No. 101
  - **Limited Examination:** A limited examination may be performed only after a prior complete OB US examination has been performed ACOG and when a specific question requires investigation. It may be performed to evaluate interval growth, estimate
amniotic fluid volume, evaluate the cervix and assess the presence of cardiac activity. It is also used in clinical emergencies. ACR

- **Specialized Examination:** This is a detailed (anatomically directed) examination performed when an anomaly is suspected. History, biochemical abnormalities, or the results of either the standard or limited examination may trigger the need for this examination. A biophysical profile is a specialized examination. AIUM Other specialized examinations may also be needed, e.g., fetal echocardiogram or fetal Doppler. ACOG Practice Bulletin No. 101

- **Fetal Safety:**
  - Ultrasound is considered safe for the fetus when it is used only when medical information about the pregnancy is needed and it is used appropriately. Ultrasonic exposure settings should be the lowest possible to obtain the necessary diagnostic information under the “as low as reasonably achievable” (ALARA) principle. AIUM
  
  - Casual use of ultrasonography during pregnancy should be avoided.
  
  - The American College of Obstetricians and Gynecologists published in a practice bulletin, “The use of either two-dimensional or three-dimensional ultrasonography only to view the fetus, obtain a picture of the fetus, or determine the fetal sex without a medical indication is inappropriate and contrary to responsible medical practice.” ACOG Practice Bulletin No. 101
REFERENCES:


