

**Texas Tech University Health Sciences Center El Paso
Department of Obstetrics and Gynecology**

Protocol #4

The Nonstress Test (NST)

Background

The nonstress test (NST) evaluates the fetal heart rate baseline in the absence of uterine activity. It was noted as early as the late 60s that if the fetal heart rate increased due to fetal activity, uterine contractions, or stimulation, that the fetus could be considered "safe." Fetal heart rate accelerations may be absent during periods of sleep, but in general the healthy fetus will have an average of 34 accelerations above the baseline with average amplitude of 20-25 bpm each hour. This process is mediated by coupling of the fetal CNS and the fetal heart. This coupling is altered during fetal hypoxia. Fetal heart rate accelerations can also be affected by narcotics and by smoking.

A reactive NST is associated with a perinatal mortality of 5/1000. A non-reactive NST has a high false positive rate.

A. Indications

- Any fetus at risk of hypoxia
- Change in fetal movement as perceived by the patient
- Chronic hypertension
- Diabetes
- Maternal thyroid disease
- Previous stillbirth
- Suspected IUGR
- Oligohydramnios
- Prolonged pregnancy
- Fetal anomalies

The timing and frequency of testing should be individualized.

B. Contraindications

- Gestational age <24 weeks

C. Procedure

- The patient is placed in a supine position tilted slightly to the left or in a semi-Fowler's position.
- Routine vital signs are obtained.
- An external fetal monitor, capable of simultaneous FHTs and uterine activity measurement, is placed.

- Baseline FHTs are determined while spontaneous uterine activity is looked for.
- The patient then indicates fetal movement or the personnel performing the NST indicates palpable fetal activity.
- If no fetal heart rate accelerations with fetal activity are noted within 20 minutes, the testing is continued an additional 20 minutes.
- Alternative – if the fetus appears to be in a sleep state, acoustic stimulation via an artificial larynx may be used to change the fetal state from sleep to activity.

D. Interpretation

1. >32 weeks

a. Reactive NST

A tracing that has two fetal heart rate accelerations within a 20-minute interval, peaking at least 15 beats per minute above the base line and lasting 15 seconds from baseline to baseline.

b. Nonreactive NST

No acceptable fetal heart rate accelerations in a 40-minute time period.

If the NST is reactive, follow up as scheduled.

If the NST is nonreactive, perform a BPP.

NOTE: Moderate to severe variable decelerations may indicate oligohydramnios and an AFI should be obtained.

2. <32 weeks

a. Reassuring for gestational age

A tracing that has two fetal heart rate accelerations 10 beats above the baseline and lasting for 10 seconds within a 20-minute interval.

b. Not reassuring for gestational age

No acceptable fetal heart rate accelerations in a 40-minute time period.

If the NST is reassuring for the gestational age, follow up as planned.

If the NST is not reassuring for gestational age, perform a BPP.

NOTE: Mild variable decelerations are common and to be expected in gestations <32 weeks. Variable decelerations greater than 30 bpm below the base line and lasting longer than 30 seconds may indicate oligohydramnios and an AFI should be obtained.

References:

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