



Chapter 7

THE NON-STRESS TEST

Non-stress tests are performed to assist with the assessment of fetal well being during the antenatal period. Accelerations, along with other characteristics of the fetal heart rate; for example baseline, variability, presence or absence of spontaneously occurring decelerations are used, as a means of assessing fetal well-being, particularly in the fetus at risk. Fetal heart rate acceleration in association with fetal movements are indicators of fetal health. Spontaneously occurring fetal heart rate decelerations require clarification and may need active management.

Indications

Antepartum non-stress testing may be considered when risk factors for adverse perinatal outcome are present eg.:

- absence of, or diminished fetal movements as perceived by the mother
- conditions where there is concern regarding utero-placental insufficiency eg. post term, IUGR, previous stillbirth, antepartum hemorrhage
- monitoring health of an at-risk infant eg. Rh sensitization, multiple gestation
- trauma eg. MVA, assault, falls

Methods

1. The woman is placed in semi-fowler or left lateral position to avoid maternal hypotension and its effect on the fetus.
2. External monitor
 - abdominal palpation to assess presentation and position (Leopolds)
 - using contact gel, place the transducer on the abdomen where the fetal heart is best heard
 - place toco to monitor any uterine activity
3. Record relevant information such as: B.P., temperature, contractions, or bleeding as well as any medication the mother may be taking and recent smoking in the health care record to assist in interpretation.
4. Identify graph - using woman's name, date of birth, and physician or attach addressograph label. After physician evaluation, place on the

chart as permanent record. The tracing is to be kept as a permanent record with the chart.

5. A normal NST should be classified and documented by an appropriately trained and designated individual as soon as possible. For atypical or abnormal non-stress tests, the nurse should inform the attending physician (or primary care provider) at the time the classification is apparent. An abnormal NST should be viewed by the attending physician (or primary care provider) and documented immediately.
6. When the NST is normal and there are no risk factors: the woman should continue with daily fetal movement counting. (See chapter 9)
7. When the NST is normal and risk factors or clinical suspicion of IUGR/oligohydramnios is identified: an ultrasound for either full biophysical profile or amniotic fluid volume assessment is carried out within 24 hours. The woman should continue daily fetal movement counts.
8. When the NST is atypical/abnormal: further testing with biophysical profile including assessment of amniotic fluid volume should be performed as soon as possible.

Interpretation

- based on presence or absence of accelerations of fetal heart rate.
- interpretation of the NST is dependent on gestational age. At <32 weeks accelerations of 10 bpm lasting 10 seconds are used.
- if the NST does not meet criteria after 20 minutes, continue monitoring for up to 120 minutes

| Parameter | Normal NST (Previously "Reactive") | Atypical NST (Previously "Non-Reactive") | Abnormal NST (Previously "Non-Reactive") |
|-------------------------------|---|---|--|
| Baseline | 110–160 bpm | <ul style="list-style-type: none"> • 100–110 bpm • > 160 bpm < 30 min. • Rising baseline | <ul style="list-style-type: none"> • Bradycardia < 100 bpm • Tachycardia > 160 for > 30 min. • Erratic baseline |
| Variability | <ul style="list-style-type: none"> • 6–25 bpm (moderate) • ≤ 5 (absent or minimal) for < 40 min. | ≤ 5 (absent or minimal) for 40–80 min. | <ul style="list-style-type: none"> • ≤ 5 for ≥ 80 min. • ≥ 25 bpm > 10 min. • Sinusoidal |
| Decelerations | None or occasional variable < 30 sec. | Variable decelerations 30–60 sec. duration | <ul style="list-style-type: none"> • Variable decelerations > 60 sec. duration • Late deceleration(s) |
| Accelerations Term Fetus | ≥ 2 accelerations with acme of ≥ 15 bpm, lasting 15 sec. < 40 min. of testing | ≤ 2 accelerations with acme of ≥ 15 bpm, lasting 15 sec. in 40–80 min. | <ul style="list-style-type: none"> • ≤ 2 accelerations with acme of ≥ 15 bpm, lasting 15 sec. in > 80 min. |
| Preterm Fetus (< 32 weeks) | ≥ 2 accelerations with acme of ≥ 10 bpm, lasting 10 sec. < 40 min. of testing | ≤ 2 accelerations of ≥ 10 bpm, lasting 10 sec. in 40–80 min. | ≤ 2 accelerations of ≥ 10 bpm, lasting 10 sec. in > 80 min. |
| ACTION | FURTHER ASSESSMENT OPTIONAL, based on total clinical picture | FURTHER ASSESSMENT REQUIRED | URGENT ACTION REQUIRED An overall assessment of the situation and further investigation with U/S or BPP is required. Some situations will require delivery. |

NOTE: There is **no evidence** that food or drink ingested by the mother will cause the test to be reactive. Indeed, the woman should not be given anything by mouth until the plan of management is determined, as a Caesarean Section may be needed, and a full stomach would place the woman at risk of aspiration.

Before the woman is discharged, if she is an outpatient, the timing of the next NST/physician visit, etc. should be determined, based on the indications for the NST.

Suggested Reading

1. Journal of Obstetrics and Gynecology Canada, SOGC Clinical Practice Guideline No. 197 (replaces No. 90 & No. 112), Fetal Health Surveillance: Antepartum and Intrapartum Consensus Guideline, Sept. 2007.
2. Brown, R., Patrick, J., The Non Stress Test: How Long is Enough? Am J Obstet Gynecol., 141:646,1981.