Community Health Network of San Francisco

San Francisco General Hospital and Trauma Center
Perinatal Services and Women's Clinic

Antenatal Testing Center (ANTC)
Standardized Procedures and Protocols Manual

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Distribution List:
5M Women’s Clinic
Antenatal Testing Center
Medical Director, Women’s Clinic
Chief, Perinatal Services
6C Birth Center
Medical Staff Office
Midwifery Services
Director of Perinatal Services
San Francisco General Hospital and Medical Trauma Center
Antenatal Testing Center
Women’s Clinic/Birth Center

Standardized Procedures:
Antenatal Testing Center (ANTC)

Introduction

The following protocols are the policies and guidelines for the care provided at San Francisco General Hospital and Medical Trauma Center (SFGHM) Antenatal Testing Center (ANTC) by Registered Nurses. A Registered Nurse (RN) functioning as the ANTC Nurse, will have advanced preparation and skills in the administration and interpretation of Non-stress Tests (NST), Vibratory Acoustical Stimulation Tests (VAS), Breast Stimulation Tests (BST), Oxytocin Challenge/Contraction Stress Tests (OCT/CST), limited OB ultrasound, and Biophysical Profiles (BPP) in the ANTC located in 5M Women’s Health Center or in triage in 6C The Birth Center.

Since it is impossible to anticipate every clinical situation, it is expected that the ANTC RN will follow the ANTC protocols and use nursing clinical judgement to determine when care provider (MD/CNM) referral/assessment is warranted. In general, the ANTC RN shall function within the scope of practice as specified in the State of California Nurse Practice Act.

The Standardized Procedures were developed with assistance from the following:

2. Collaboration by acute care and primary care medical, administrative and nursing staff within Perinatal Services at SFGH.
General Policy: Antenatal Testing Center Nurse in the Women's Clinic and in the Birth Center

I. Policy Statement

A. It is the policy of San Francisco General Hospital and Trauma Medical Center that all standardized procedures are developed collaboratively and approved by the Committee on Interdisciplinary Practice (CIDP) whose membership consists of Nurse Practitioners, Nurse Midwives, Physician Assistants, Pharmacists, Registered Nurses, Physicians and Administrators, and must conform to all eleven steps of the standardized procedure guidelines as specified in Title 16, CCR Section 1474.

B. All standardized procedures will be kept in the 6C Birth Center and 5M Women's Clinic unit-based manuals, and the Antenatal Testing Center (ANTC) which shall include dated, signed approval sheets of the persons covered by the standardized procedures. A copy shall also be kept in the Medical Staff Office.

II. Functions

A. The Antenatal Testing Center (ANTC) RN is a Registered Nurse who has additional preparation and skills in performing antenatal testing procedures and limited obstetrical ultrasound for determining amniotic fluid index, fetal lie, cardiac motion and biophysical profile.

B. The ANTC RN provides antenatal testing procedures that overlap the practice between nursing and medicine. These overlapping activities require standardized procedures that include guidelines and statements of specific conditions and findings that require the ANTC RN to seek care provider (MD/CNM) consultation.

C. Scope of Practice

1. ANTC RNs may perform, interpret and schedule the following:
   a. Non Stress Tests (NST)
   b. Vibratory Acoustical Stimulation Tests (VAS)
   c. Breast Stimulation Tests (BST)
   d. Ultrasound for Fluid Assessment
   e. Limited Ultrasound Examinations
   f. Ultrasound Examination for Biophysical Profile (BPP)
   g. Fetal Movement Assessment
2. MD/CNM consultation is to be obtained as specified in the protocols and under the following circumstances:

a. ANTC obstetrical tests shall be reviewed daily by the Attending Physician on the Obstetric and Gynecology Service.

b. All NSTs or ultrasound exams with results that are unsatisfactory (not good quality or indeterminate) or borderline, and all subsequent follow-up BSTs, OCTs, or BPPs shall be reviewed by either the Obstetric Resident (second year or beyond) for MD patients or the Certified Nurse Midwife on call (CNM) for midwifery patients before the patient is sent home. The MD or CNM will determine the need and timing of scheduled repeat tests.

c. Any ANTC procedure that reveals evidence of:

1. A non-reassuring fetal heart rate pattern (absent or minimal variability, late decelerations, moderate to severe variables, bradycardia, tachycardia, or sinusoidal pattern) and/or
2. An abnormal uterine contraction pattern, tachysystole – as defined as more than five uterine contractions in 10 minutes or a tetanic contraction – as defined as a contraction lasting longer than two (2) minutes in duration

shall be discontinued immediately and:

a. The patient will be placed in a lateral position with oxygen at 8-10 L per tight facemask and may possibly receive Terbutaline and an IV fluid bolus.

b. Concurrently, the patient / fetal status will be reported without delay to the Senior Obstetric Resident and 66 C Birth Center Charge Nurse and the patient will be transferred via gurney to the 6.G Operating Room or L&D Triage for further evaluation and treatment.

d. All of the ANTC procedures with the exception of limited ultrasound and ultrasound examinations for biophysical profiles can be carried out by RN staff members of 6C Birth Center under the direct supervision of the MD/CNM. All results of antenatal testing will be read and interpreted by the MD/CNM and the appropriate plan of care.
(including follow up) and decisions regarding discharge from triage will be made by the MD/CNM.

D. Documentation

1. All ANTC procedures and visits will be documented on the Antenatal Testing Form in the WatchChild Data Management System (Appendix G).
2. Results of all tests will be recorded in the patient chart, along with the date and time of follow up appointment for repeat testing, as indicated.
3. Results may also be recorded on the Ultrasound Report Form (Appendix H). These forms are to be attached to the monitor “paper” strip and will be kept for review by the Attending Physician in Obstetrics.

III. Circumstances Under Which ANTC RN May Perform Function

A. Setting

1. The ANTC RN may perform the identified standardized procedures in the ANTC located in 5M Women’s Clinic and 6C Birth Center consistent with their experience and training.
2. The ANTC RN, based on the nursing process, determines the need for antenatal testing in the pregnant patient in the ANTC in the 5M Women’s Clinic or 6C Birth Center.

B. Scope of Supervision Required

1. The ANTC RN is responsible and accountable to the 5M Women’s Clinic Medical Director and 6C Birth Center Medical Director and Nurse Managers.
2. Overlapping functions are to be performed in 5M and 6C, which allow for a consulting care provider (MD/CNM) to be available to the ANTC RN by phone or in person, including but not limited to the clinical area.
3. MD/CNM consultation is to be obtained as specified in the protocols listed in this standardized procedure.

C. Client conditions that warrant antenatal testing are:

1. Post dates 41 weeks gestational age
2. Intrauterine Growth Restriction (IUGR) < 10th percentile
3. Suspected Intrauterine Growth Restriction (IUGR)
4. Diabetes:
   - GDMA2
   - Type I or II without vascular disease
5. Hypertension
6. Preeclampsia
7. Antiphospholipid Antibody Syndrome
8. Cholestasis of Pregnancy
9. Multiple Gestation
10. Previous Stillbirth
11. Decreased Fetal Movement
12. Oligohydramnios
13. Low AFI
14. Polyhydramnios
15. Unexplained Elevated MSAFP, elevated hCG, or low PAPP-A (<1st percentile)
16. Major Congenital Anomaly
17. Fetal Arrhythmias
18. Audible Deceleration
19. Red Cell Alloimmunization
20. Herpes Gestationis
21. Parvovirus
22. HIV +/BAPAC patient
23. Sickle Cell Disease
24. Severe maternal conditions (cardiac, pulmonary, seizure disorder)
25. Active Drug Abuse
26. Maternal age of 40 years or older at EDD
27. IVF pregnancy
28. Morbid obesity

IV. Protocols
A. Non Stress Test (NST)
B. Vibratory Acoustical Stimulation Test (VAS)
C. Breast Stimulation Test (BST)
D. Ultrasound for Fluid assessment
E. Limited Ultrasound Examination
F. Ultrasound Examination for Biophysical Profile (BPP)
G. Fetal Movement Assessment ("kick counts")

V. Antenatal Testing Center Nurse Qualifications and Evaluation:
A. Qualifications:
   1. Each ANTC RN must:
      a. Have a current license in California as a RN
      b. Have at least 2 years of current Labor and Delivery experience, the last year of which must be at SFGH in order to interpret fetal monitor tracings and perform NSTs and OCTs. A non-L & D trained OB clinic RN that has demonstrated competency may perform Limited Obstetrical Ultrasound.
      c. Demonstrate competency in interpretation/assessment of
fetal heart rate monitor tracings and implement timely and appropriate nursing interventions for the clinical situation identified.

d. Complete and pass a certification/competency validation course in Limited Obstetrical Ultrasound and Advanced Fetal Monitoring prior to independent practice.
e. Be trained for BPPs through one-on-one instruction.

1. Competency validation will be determined by return demonstration of twenty (20) BPPs by the ANTC RN per established protocols.

B. Evaluation

1. The ANTC RN will have initial and ongoing competency assessed by the Attending OB/GYN MD’s review of all completed tests.
2. The ANTC nurse manager will complete a performance evaluation with input from the medical staff.
3. To maintain competency, the ANTC nurse will attend either an Advanced Fetal Monitoring Class and/or an Obstetrical Ultrasound class every two years.
4. A written record of those RNs authorized to perform the standardized procedures shall be maintained as an attachment to this document.
5. The list of authorized RNs will be reviewed every year by the Nurse Manager.

VI. Development and Approval of Standardized Procedures

A. All Standardized Procedures are developed collaboratively by the medical, nursing, and administrative staff of the acute care and primary care Perinatal Services Departments and are approved by the SFGH Committee on Interdisciplinary Practice (CIDP), Credentials Committee, Medical Executive Committee and Joint Conference Committee. All Standardized Procedures will be reviewed at least every three years and as practice changes by the medical, nursing, and administrative staff of the acute care and primary care Perinatal Services Departments and CIDP.

VII. REFERENCES

1. ACOG Practice Bulletin Number 9, October 1999: Antepartum Fetal Surveillance
2. ACOG Practice Bulletin Number 13, February 2000: External Cephalic Version
3. ACOG Educational Bulletin Number 251, September 1998: Obstetric Aspects of Trauma Management

Date Approved by the CIDP:
Date Last Reviewed: 7/18/01, 09/04, 09/11
Date Last Revised: 7/18/01, 09/04, 12/31/07, 11/11
Protocol #1
Non Stress Test (NST)

I. Policy

A. As described in the general policy statement.
B. Covers only those RNs as identified in the general policy statement.

II. Protocol

A. Definition
1. An NST is a test of fetal status without the stress of labor. It is based on the premise that the heart rate of a non-acidotic or non-neurologically depressed fetus will accelerate with fetal movement.

B. Relevant Data
1. The normal fetus will exhibit an acceleration of the fetal heart rate (FHR) in response to its own movement in utero. A reactive (normal) NST has been shown to be effective in predicting an extremely low risk of intrauterine fetal demise from placental insufficiency within one week (7 days) of a reactive test.
2. A reactive test is determined by two accelerations in the FHR with or without two episodes of fetal movement as felt by the mother within a twenty (20) minute period.
   a. For the fetus >32 weeks gestation, the acceleration of FHR will peak (but not necessarily remain) at least 15 beats per minute (bpm) above FHR baseline and last at least 15 seconds.
   b. For the fetus 28-< 32 weeks, the acceleration of FHR will peak (but not necessarily remain) at least 10 bpm above FHR baseline and last at least 10 seconds (gestationally appropriate).
   c. In addition, a reactive test is characterized by a normal baseline heart rate (110-160 bpm), with average variability (6-25 bpm).

C. Data Base
1. Subjective Data
   a. Pertinent past medical history
   b. Patient history
   c. Any treatments or medications used prior to arrival
2. Objective Data
   a. NSTs will be administered to women with high-risk pregnancies, including but not limited to the following risk factors:
      1. Prolonged pregnancy, >41 weeks gestational age
2. Intrauterine Growth Restriction (IUGR) < 10th percentile
3. Suspected Intrauterine Growth Restriction (IUGR)
4. Diabetes: GDMA2 Type I or II without vascular disease
5. Hypertension
6. Preeclampsia
7. Antiphospholipid Antibody Syndrome
8. Cholestasis of Pregnancy
9. Multiple Gestations
10. Previous Stillbirth
11. History of abruption in previous pregnancy
12. Decreased Fetal Movement
13. Oligohydramnios
14. Low AFI
15. Polyhydramnios
16. Unexplained Elevated MSAFP, elevated hCG, or low PAPP-A (<1st percentile)
17. Major Congenital Anomaly
18. Fetal Arrhythmias
19. Audible Deceleration
20. Red Cell Alloimmunization
21. Herpes Gestationis
22. Parvovirus
23. HIV+/BAPAC patient
24. Sickle Cell Disease
25. Severe maternal conditions (cardiac, pulmonary, seizure disorder)
26. Active Drug Abuse
27. Maternal age of 40 years or older at EDD
28. In Vitro fertilization (IVF)
29. Morbid obesity

3. Referrals
   Clinics that provide prenatal care will make referrals directly to the ANTC RN. The referring provider will send the patient with a consult form with the request and medical/obstetrical indications for the testing. If the ANTC RN feels that the referral or requested test is inappropriate, the RN will consult with the OB Chief and/or Attending MD on call and confer with the requesting clinic MD / CNM.
   All NST results shall be recorded on an Antenatal Fetal Surveillance form in the patient's chart.

D. Diagnosis
1. Assessment and diagnosis of fetal and maternal health status and obstetrical care needs by subjective (maternal) and objective
(Electronic Fetal Monitor and Ultrasound) findings.

E. Plan

1. Treatment
   a. Obtain blood pressure, and, for those patients with blood pressure elevations or at risk for preeclampsia, urine dip analysis.
   b. Perform NST
      1. Attach the electronic fetal monitor to patient while patient is in a lateral tilt position. A continuous reading of the fetal heart rate is necessary.

2. Patient conditions requiring consultation / test
   a. As listed under General Policy under Objective Data

3. Education
   a. Explain purpose, process, and expected outcome of external monitoring and NST to patient.
      1. The patient's cooperation and understanding is necessary for the successful completion of the test.
      2. Instruct patient on Kick counts

4. Follow up
   a. Interpretation of NST:
      1. The criteria for a reactive (normal) NST include all the following:
         a. 20 minutes of continuous FHR strip. A ten-minute strip may be acceptable when there is a clearly reactive NST without decelerations.
         b. There must also be normal amniotic fluid index in patients with prolonged or post-dates pregnancy.
         c. A baseline fetal heart rate between 110 and 160 bpm.
         d. Average (normal) variability of the FHR (excursions of 6-25 bpm peak to trough).
         e. Two rises accelerations A rise in the FHR with or without two (2) episodes of fetal movement as felt by the mother within a twenty (20) minute period. For the fetus ≥ than ~28-32 weeks gestation, the acceleration of FHR will peak (but not necessarily remain) at least 15 beats per minute (bpm) above FHR baseline and last at least 15 seconds. For the fetus ~28-32 weeks, the acceleration of FHR will peak (but not necessarily remain) at least 10 bpm above FHR baseline and last at least 10
seconds (gestationally appropriate).

f. Absence of repetitive (3 or more in 20 minutes), or prolonged (>30 seconds) decelerations of the FHR throughout the tracing.

g. Adequate tracing quality to evaluate for all the above.

h. If the fetus does not respond by 10 minutes, determine if the mother is diabetic. If not, give the mother juice or a snack / meal. If the mother is diabetic, check her blood sugar and determine when she last ate, and if she is due to eat her meal or snack.

i. If the fetus does not respond with an increase in heart rate or move within 10 minutes of mother taking in food or drink, or changing positions, stimulate the baby with a loud noise (see VAS section) or use gentle physical manipulation (jiggling) of the abdomen.

2. If the above procedures fail to produce a reactive NST within an additional 20 minutes (40 minutes maximum from beginning of NST), the nurse has the following options:
   a. Proceed with a BPP.
   b. Consult with the Senior Obstetric Resident, CNM or Attending MD who may elect to repeat the test within 24 hours.
   c. In consultation with the MD/CNM, proceed with a BST or an OCT.

3. Protocol for Repeating NST:
   a. A reactive test should be repeated according to the following guidelines (also refer to Appendix B – Guidelines for Antepartum Testing):
   b. Weekly:
      1. Gestational diabetics on insulin (GDMA2) in good control from 32 weeks gestational age (GA) until 40 weeks
      2. High Risk Diabetics from 32 weeks. May be started earlier if requested by senior OB resident or OB attending.
      3. Hypertension in good control
      4. Mild, stable preeclamptics
      5. Kidney disease, heart disease and...
other medical conditions
6. Evidence of IUGR (includes assessment of amniotic fluid)
7. History of previous unexplained or recurrent risk for IUFD/stillbirth
8. At the request of the Senior Obstetric Resident/CNM.
9. BAPAC patient (HIV positive)
10. Increased MSAFP level
11. Antiphospholipid Syndrome
12. Cholestasis of Pregnancy
13. Elevated hCG levels
14. Oligohydramnios < 36 weeks, and ≥ 36 weeks if AFI < 8
15. Polyhydramnios (AFI ≥ 25 cm)
16. Identified/documented major congenital anomaly
17. Significant fetal arrhythmia
18. Documented exposure/infection by Parvovirus
19. Morbid obesity at 36 weeks gestational age
e. Twice Weekly:
1. Prolonged pregnancy: 41 weeks and greater (also see BPP #3 d)
2. Gestational diabetics not yet in good control
3. Gestational diabetics with inadequate control up to 40 weeks
4. Type I and Type II diabetics from 36 weeks GA until delivery
5. High Risk Diabetics ≥ 32 weeks
6. Fetal Heart block/SVT
7. Multiple gestations with growth discordance
8. Oligohydramnios ≥ 36 weeks if AFI < 8
9. At the request of the Perinatologist, Attending, CNM or Senior Obstetric Resident
10. Preterm PROM (in-patient)
11. Preterm Labor (in-patient)
12. Preeclamptic (in-patient)
d. Daily:
4. At the request of the Perinatologist, Attending, CNM or Senior Obstetric
e. One Time Only:
   1. For decreased fetal movement with evidence of adequate movement and reactivity on monitor, in the absence of other high-risk conditions.

f. Other conditions in which antenatal testing may be appropriate:
   1. Maternal hyperthyroidism (poorly controlled)
   2. Hemoglobinopathies (Sickle cell, S-Thalassemia, etc.)
   3. Maternal cyanotic heart disease
   4. Systemic Lupus erythematosus
   5. Maternal chronic renal disease
   6. Chronic hypertensive disorders

F. Record Keeping

1. All ANTC procedures and visits will be documented on the Antenatal Testing Form in the WatchChild Data Management System (Appendix G).

2. Results of all tests will be recorded in the patient chart, along with the date and time of follow up appointment for repeat testing, as indicated.

3. Results may also be recorded on the Ultrasound Report Form (Appendix H). These forms are to be attached to the monitor “paper” strip and will be kept for review by the Attending Physician in Obstetrics.

4. Log Book.
Protocol #2
Vibratory Acoustical Stimulation Test (VAS)

I. Policy
   A. As described in the general policy statement.
   B. Covers only those RNs as identified in the general policy statement.

II. Protocol
   A. Definition
      1. Stimulation of fetus by an external vibratory acoustic apparatus.
   B. Relevant Data
      1. The VAS can reduce the non-reactive NST time without changing the predictive value of the test.
      2. The effects of acoustic stimulus to the fetus are unclear, but it is rarely adverse.
      3. VAS can be used from 28 to 42 weeks gestation.
      4. Vibroacoustic stimulation is not performed during labor or on fetuses with non-reassuring FHR tracings.
   C. Data Base
      1. Subjective Data
         a. Patient history
      2. Objective Data
         a. If after 10 minutes of a non-reactive NST, and maternal ingestion of fluids and repositioning has failed to elicit fetal movement; the fetus will be stimulated with the vibratory acoustic apparatus.
   D. Diagnosis
      1. Assessment and diagnosis of fetal and maternal health status and obstetrical care needs by subjective (maternal) and objective (Electronic Fetal Monitor and Ultrasound) findings.
   E. Plan
      1. Treatment
         a. Perform VAS
            1. A continuous reading of the fetal heart rate is necessary.
               a. Attach fetal acoustical stimulator to the fetal monitor. This will mark the monitor strip when the stimulation is applied. It is also possible to mark the strip by pushing the mark button at the front of the fetal monitor at the time of the test.
               b. The stimulator is held to maternal abdomen close to the fetal head and stimulus is given
for 1-2 seconds. This may be repeated, if necessary, twice more at least one (1) minute apart for progressively longer duration of the stimulus up to 3 seconds.

2. Continue monitoring until NST meets criteria for a reactive NST. If the testing continues to be non-reactive, obtain Biophysical Profile and consult with the Senior Obstetric Resident, CNM or Attending MD. Failure of fetus to become reactive requires further evaluation.

2. Patient conditions requiring consultation/test
   a. A non-reactive NST.

3. Education
   a. Explain purpose, process, and expected outcome of VAS to patient.
   b. The patient's cooperation and understanding is necessary for the successful completion of the test.

4. Follow up
   a. Interpretation of VAS:
      1. Follow protocol for interpretation of NSTs (Protocol # 1, 4, a).
   b. Protocol for Repeating VAS:
      1. Reactive testing: Follow protocol for rescheduling reactive NSTs in Protocol #1, E, 4, a., 3).
      2. Non-reactive testing: Consult with Senior Obstetric Resident, CNM or Attending MD.

F. Record Keeping
1. All ANTC procedures and visits will be documented on the Antenatal Testing Form in the WatchChild Data Management System (Appendix G).
2. Results of all tests will be recorded in the patient chart, along with the date and time of follow up appointment for repeat testing, as indicated.
3. Results may also be recorded on the Ultrasound Report Form (Appendix H). These forms are to be attached to the monitor “paper” strip and will be kept for review by the Attending Physician in Obstetrics.
Protocol #3  
Breast Stimulation Test (BST) – performed in 6C Birth Center only

I. Policy
A. As described in the general policy statement.
B. Covers only those RNs as identified in the general policy statement.

II. Protocol
A. Definition
1. A Breast Stimulation Test (BST) is a test to demonstrate uteroplacental sufficiency by the endogenous stimulation of oxytocin, which initiates contractions.
   a. The nipples are stimulated to produce the release of enough endogenous oxytocin as to cause three (3) good quality contractions (those that palpate moderate to strong) for a minimum of 50 second duration in ten (10) minutes.
   b. The fetal heart rate is observed for response to the stress of contractions.
B. Relevant Data
1. It has been shown that stimulation of the mother’s nipples by various means can cause the release of endogenous oxytocin, causing contractions, which are physiologically similar to the contractions of labor.
2. The ability of the fetus to tolerate such contractions, without late (hypoxic) decelerations of the fetal heart, indicates a very low risk of spontaneous intrauterine death due to hypoxia for a one-week period after the test.
3. Some women are not able to generate sufficient contractions with nipple stimulation; in such cases, a Contraction Stress Test is initiated by the infusion of intravenous oxytocin (Pitocin).
C. Data Base
1. Subjective Data
   a. Patient obstetrical and medical history
2. Objective Data:
   a. Breast Stimulation Tests (BSTs) will be administered to women with high-risk pregnancies with the same risk factors which would indicate the need for a NST.
   b. The BST will be performed when the NST is non-reactive or unsatisfactory, as an alternative to the use of an OCT as a back-up test.
c. CONTRAINDICATIONS:
   1. With the exception of placenta previa, the following list contains relative contraindications. BSTs and OCTs may still be performed on those women with the following relative contraindications in 6C Birth Center under the direct supervision of a Senior Resident, or Chief Obstetric Resident or Obstetric Attending Physician.
      a. Lack of indication, as listed in C, 2, a., in NST Protocol
      b. Placenta previa (absolute contraindication)
      c. High risk for preterm labor and less than 37 weeks gestation
      d. Patients with cervical cerclage in place
      e. Less than 26 completed weeks gestation
      f. Vertical uterine scar
      g. Rupture of membranes
      h. Multiple gestations
      i. Polyhydramnios
      j. Oligohydramnios
      k. History of extensive uterine surgery

D. Plan
   1. Treatment
      a. Attach fetal monitor correctly.
      b. Correct placement is assured by:
         1. Continuous tracing of the FHR, even during maternal contractions (if any), and episodes of maternal or fetal movement.
         2. Continuous recording of abdominal wall tension, including the ability to pick up test episodes of maternal cough.
      c. Obtain baseline vital signs (T, P, R, and BP)
      d. Monitor baseline FHR and uterine activity for 10 to 20 minutes.
      e. Place patient in bed or chair in semi-fowler or lateral position, and attach EFM monitor.
      f. Ensure privacy.
      g. Apply warm towels to both breasts for 10 minutes.
         1. Application of heat alone may release oxytocin.
         2. If uterine activity does not result from heat administration only, it does increase circulation and promotes sensitivity to manual stimulation of the nipples.
      h. Instruct mother to rub with the palmar surface of her hand or to pull one nipple between forefinger and thumb through her clothing.
1. Start with one nipple only, until a contraction begins or for two (2) minutes, whichever occurs first.
   a. Starting with one nipple ensures the lowest possible dose of endogenous oxytocin.
   b. Some women may be less sensitive and need to release more oxytocin and will require more nipple stimulation than others.
2. If no response or inadequate contractions result, refrain from stimulation for 5 minutes and repeat sequence of stimulation as above.
3. Continue to repeat sequence until 3 moderately palpated contractions for a minimum of 50 second duration in 10 minutes are obtained or until a decision is made to proceed with OCT.
   i. Remain with mother during entire procedure.
   1. An occasional mother will be hypersensitive to oxytocin and will experience frequent sequential (tachysystole) or tetanic contractions, which may result in a non-reassuring fetal heart rate pattern and indicate fetal intolerance of contractions.
   2. If this occurs, discontinue the stimulation immediately, turn the mother to a lateral position and administer oxygen by mask at 10 liters per minute.
   3. If tetanic contraction or uterine tachysystole persists, call for help and administer 0.25 mg Terbutaline subcutaneously or 0.125 – 0.25 mg IV push.
   4. If a non-reassuring FHR pattern occurs or uterine over-stimulation continues, prepare to move the patient to the 6 G OR for assessment and intervention as needed.
3. Education
   a. Explain purpose, process, and expected outcome of external monitoring and BST to patient.
   1. If for cultural or personal reasons, mother declines BST, explain risks and benefits of BST and OCT. If mother still declines BST, proceed to OCT.
4. Follow up
   a. Interpretation of BST
      1. A Contraction Stress Test, either BST or OCT, is interpreted according to the presence or absence of late fetal heart rate decelerations.
      2. A late deceleration is defined as a gradual
deceleration (onset to nadir more than 30 seconds) in fetal heart rate that reaches its nadir after the peak of the contraction and that usually persists beyond the end of the contraction.

b. The BST is to be interpreted according to the following diagnostic categories and criteria as defined by ACOG Clinical Management Guidelines for Obstetricians-Gynecologists Number 9, October 1999:

1. **Negative**: no late or significant (moderate to severe) variable decelerations when an adequate contraction pattern of three (3) contractions in 10 minutes was obtained.

2. **Positive**: late decelerations following 50% or more of contractions, even if the contraction pattern is less than three (3) in 10 minutes.

3. **Equivocal – suspicious**: intermittent late decelerations or significant (moderate or severe) variable decelerations.

4. **Equivocal – hyperstimulatory**: fetal heart rate decelerations that occur in the presence of contractions more frequent than every two (2) minutes or lasting longer than 90 seconds.

5. **Unsatisfactory**: fewer than three (3) contractions in 10 minutes or an uninterpretable tracing.

c. Management of Complications

1. **Uterine Tachysystole**
   a. Uterine over-stimulation or more than 5 uterine contractions in a 10 minute period without a concurrent non-reassuring fetal heart rate pattern.
      1. Turn mother to side.
      2. Take mother's vital signs and observe.

2. **Uterine tachysystole**
   a. If more than 5 uterine contractions in a 10 minute period with a concurrent non-reassuring fetal heart rate pattern.
      1. Open mainline infusion to rate of 200cc per hour, if mother has IV. If mother does not have IV, place one and begin hydration.
      2. Turn mother to lateral side where fetus has best response.
      3. Administer oxygen at 10 liters per minute per facemask.
4. Take mother's vital signs.
5. Notify Senior Obstetric Resident, CNM or Attending MD.
6. Prepare a syringe with 0.25mg Terbutaline, and administer subcutaneously or 0.125 mg IV push if uterine tachysystole and associated fetal heart rate decelerations are not resolving or if uterine tone has not returned to baseline within 3 minutes.
7. If concerning fetal heart rate decelerations continues, prepare to move the patient to the 6G OR for further assessment and treatment.

b. Scheduling of Follow Up Procedures

1. Negative BST and/or OCT with a reactive NST
   a. Patient should be rescheduled in 3-7 days for repeat NST, depending on indication for initial fetal assessment.

2. Negative BST and/or OCT with a non-reactive NST
   a. Perform BPP, if requested by OB resident or attending
   b. Consult with Senior Obstetric Resident, CNM or Attending Physician for follow up.

3. Positive BST and/or OCT with a reactive NST
   a. Perform BPP.
   b. Consult with Senior Obstetric Resident, CNM or Attending Physician for follow up.
   c. Leave IV in place until follow-up plans are made.

4. Positive BST and/or OCT with a non-reactive NST
   a. Consult with Senior Obstetric Resident/CNM or Attending Physician for follow up.
   b. Anticipate admission and notify 6C Birth Center staff.
E. Record Keeping

1. All ANTC procedures and visits will be documented on the Antenatal Testing Form, in the WatchChild Data Management System, Medical Record or LCR.

2. Results of all tests will be recorded in the patient chart, along with the date and time of follow up appointment for repeat testing, as indicated.

3. Results may also be recorded on the Ultrasound Report Form (Appendix H). These forms are to be attached to the monitor “paper” strip and will be kept for review by the Attending Physician in Obstetrics
Protocol #4
Ultrasound for Fluid Assessment

I. Policy
A. As described in the general policy statement.
B. Covers only those RNs as identified in the general policy statement.

II. Protocol
A. Definition
   1. The use of ultrasonic waves to visualize a fetus and its surrounding environment in utero.

B. Relevant Data:
   1. Ultrasound is used in pregnancies to determine the amount of amniotic fluid surrounding the fetus. Amniotic fluid is used as an indicator of fetal condition and long-term uteroplacental function.
   2. It is expected that a fetus will have an Amniotic Fluid Index (AFI) (calculated as the sum of the vertical diameters of the largest fluid pocket in each of the four uterine quadrants) of at least 5.0 in order to be considered to have adequate fluid.
   3. AFI is one parameter used in the assessment of fetal well being.

C. Data Base
   1. Subjective Data
      a. Patient history.
   2. Objective Data
      a. Ultrasound for fluid assessment will be administered to women with high-risk pregnancies including, but not limited to, the following risk factors (refer to Appendix B):
         1. Prolonged pregnancy (41 weeks gestation or greater).
         2. Intrauterine growth retardation.
         3. Diabetes, Type I or II after 32 weeks gestation.
         4. FHR tracings with minimal variability and/or variable decelerations on NST or BST/OCT.
         5. Increased BP with IUGR.
         6. At the request of the Senior Obstetric Resident, CNM, Attending MD or Perinatologist.
         7. Referrals for AFIs from Community Health Network Clinics that provide prenatal care will be made directly to the ANTC RN.
            a. The referring provider will send the patient with a consult form with the request and medical/obstetrical indications for the testing.
            b. If the ANTC RN feels that the referral or
requested test is inappropriate, the RN will consult with the OB Chief and/or Attending MD to call and confer with the requesting clinic MD/CNM.

D. Diagnosis
1. Assessment and diagnosis of fetal and maternal health status and obstetrical care needs by subjective (maternal) and objective (Electronic Fetal Monitor and Ultrasound) findings.

E. Plan
1. Treatment
   a. Perform Ultrasound for Fluid Assessment
      1. Explain purpose, process, and expected outcome of ultrasound to patient.
      2. Place ultrasound transducer on mother's abdomen using ultrasound coupling gel, while patient is in a supine in a lateral tilt or a semi-Fowler position with the head of the bed up at a 45 degree angle.
      3. The uterus is divided into four (4) quadrants with the linea nigra and the umbilicus serving as the dividing points.
      4. The transducer should be placed along the patient's longitudinal axis and perpendicular to the floor.
      5. Each quadrant is measured by scanning the vertical diameter of the largest pocket of amniotic fluid. Fluid pockets with cord can be measured as long as the pocket contains no greater than 50% cord. The largest pocket of fluid is then measured in the pocket above or below the cord.
      6. The sum of the numbers represents the total Amniotic Fluid Index (AFI).
      7. Pictures of all four quadrants are required, even those quadrants which did not have fluid noted.
         Each photograph is capable of accommodating two frames, which are labeled as to location (i.e., LLQ, RUQ, etc.).
      8. Ultrasound evaluation of amniotic fluid volume in twin pregnancies is done using the single deepest vertical pocket (DVP) method for each twin. The dividing membrane needs to be seen when obtaining the each of the DVPs.

2. Patient conditions requiring consultation / test
   a. As evidenced by risk factors or previous antenatal testing as listed in objective data (C.2).

3. Education
   a. Explain purpose, process and expected outcome of
ultrasound to patient.
b. The patient’s cooperation and understanding is necessary for the successful completion of the test.

4. Follow up
a. Protocol for Interpretation of Ultrasound for Fluid Assessment:
   1. Results of the AFI are defined as:
      a. \[5 = \text{oligohydramnios}\]
      b. \[5 \text{ to } 8 = \text{low normal}\]
      c. \[9 \text{ to } 24 = \text{normal}\]
      d. \[> 24 = \text{polyhydramnios}\]
   2. Criteria for a normal Ultrasound Fluid Assessment include:
      a. AFI in low normal to normal range.
      b. No substantial change in fluid pockets since last assessment.
      c. No pockets greater than 8cm in greatest dimension.
      d. Twin pregnancies, a DVP of 2 or less cm is considered olygohydramnios. A DVP of 8 cm or greater is considered polyhydramnios.

b. If above procedures do not indicate adequate amniotic fluid or if the ANTC nurse has questions about what is being visualized, the RN should consult with the Senior Obstetric Resident or Attending Physician immediately while the patient is still in the ANTC.
c. Non-OB trained RN performing Limited Ultrasounds will discuss findings with Senior Obstetric Resident or Attending Physician prior to the patient being discharged from ANTC.
d. Protocol for Repeating an Ultrasound for Fluid Assessment
   1). An Ultrasound test for fluid determination which shows adequate fluid should be rescheduled according to the corresponding NST protocols (refer to Protocol, NST, section 6).

F. Record Keeping
1. All ultrasound results shall be recorded in the WatchChild data management system, print report and attach photograph. If not on WatchChild, document on an Ultrasonography Reporting Form with an accompanying photograph(s).
2. A copy of the test results/documentation with photos shall be placed immediately in the patient's chart.
3. Another copy of the documentation is printed submit for billing.
Protocol #5
Limited Ultrasound Examination

I. Policy

A. As described in the general policy statement.
B. Covers only those RNs as identified in the general policy statement.

II. Protocol

A. Definition
   1. The use of ultrasonic waves to visualize a fetus in order to determine fetal lie, number of fetuses, cardiac activity, and AFI.

B. Relevant Data
   1. Ultrasound is commonly used in pregnancy.
   2. Number and position of fetuses are identified through ultrasound.

C. Data Base
   1. Subjective Data
      a. Patient history.
   2. Objective Data
      a. Obstetrical history.
      b. Medical history.
      c. Limited ultrasound will be administered to women only upon direct request from either the Senior Obstetrical Resident, CNM, Attending MD, or Perinatologist from the 5M clinic or the 6C Birth Center or by direct referral from other providers within the Community Health Network.

D. Diagnosis
   1. Assessment and diagnosis of fetal and maternal health status and obstetrical care needs by subjective (maternal) and objective (obstetrical and / or medical history and Electronic Fetal Monitor and Ultrasound) findings.

E. Plan
   1. Treatment
         1. Explain purpose, process and expected outcome of limited Ultrasound to patient.
         2. Place Ultrasound transducer on mother's abdomen with Ultrasound coupling gel while patient is in a recumbent lateral position. Adjust transducer to enhance image.
         3. Identify and document the following:
            a. Position of fetal head in relation to maternal pelvis.
b. Number of fetuses and relative position to each other and maternal pelvis.
c. Amniotic fluid index.
d. Presence of fetal cardiac activity.
e. Position of placenta(s).

2. Patient conditions requiring consultation/test
   a. As evidenced by risk factors or previous antenatal testing.

3. Education
   a. Explain purpose, process and expected outcome of ultrasound to patient.
   b. The patient’s cooperation and understanding is necessary for the successful completion of the test.

4. Follow up
   a. Protocol for Interpretation of Limited Ultrasound
      1. After 35 weeks, the fetus should be located in the cephalic position.
      2. Any fetal position other than cephalic shall be reported to the Senior Obstetric Resident, CNM or Attending Physician.
      3. After verification of abnormal fetal lie, an external version may be scheduled at that time (36 weeks).
      4. Any abnormalities in placental position, amniotic fluid index, fetal cardiac activity, and/or number of fetuses must be reported to the Senior Obstetric Resident, CNM, or Attending MD.
   b. Protocol for Rescheduling Limited Ultrasounds
      1. Limited Ultrasounds shall be routinely scheduled in conjunction with NSTs per the guidelines listed in Appendix B.

F. Record Keeping
   1. A copy of the test results/documentation from WatchChild (Antepartum Testing) and/or the original copy of the Ultrasound Report Form with photos shall be placed immediately in the patient’s chart.
   2. Another copy of the documentation is printed/provided for the Attending Physician in OB/GYN for review and to submit for billing.
Protocol #6
Ultrasound Examination for Biophysical Profile (BPP) Score

I. Policy
A. As described in the general policy statement.
B. Covers only those RNs as identified in the general policy statement.

II. Protocol
A. Definition
1. The Biophysical Profile (BPP) consists of:
   a. The NST
   b. Gross Fetal Movements (FM)
   c. Fetal Breathing Movements (FBM)
   d. Fetal Tone (FT)
   e. Amniotic Fluid Index (AFI)
B. Relevant Data
1. The BPP has been shown to have a well-documented predictive value in the compromised fetus.
2. When there is an abnormal or unsatisfactory NST or OCT, the BPP can be used as a confirmatory test.
C. Data Base
1. Subjective Data
   a. Patient history.
2. Objective Data
   a. BPPs will not be performed before 26 weeks unless ordered by the OB attending physician. High-risk pregnancies after 26 completed weeks (27 0/7 weeks) of gestation, including but not limited to the following risk factors:
      1. Multiple gestations.
      2. History of maternal substance abuse or maintenance medications/drugs, i.e., methadone.
         a. Any suspected ongoing maternal substance abuse.
         b. Acute or chronic psychiatric patients on drug treatment.
         c. Maternal use of any medication for treatments of medical/obstetrical conditions that may affect uteroplacental function and fetal well being.
      3. Any maternal medical/obstetrical condition that may affect uteroplacental function and fetal well being.
         a. Prolonged pregnancy (41 weeks GA or greater).
b. Non-reactive or unsatisfactory NST.
c. Non-reactive, negative BST and/or OCT.
d. Reactive, positive BST and/or OCT.

4. As back up test on specific request of Senior/Chief Obstetric Resident.

D. Diagnosis

1. Assessment and diagnosis of fetal and maternal health status and obstetrical care needs by subjective (maternal) and objective (obstetrical and /or medical history and Electronic Fetal Monitor and Ultrasound) findings.

E. Plan

1. Treatment
   a. Protocol for Performing BPP.
   b. Explain purpose, process and expected outcome of procedure to the patient.
   c. Place ultrasound transducer on the maternal abdomen and identify fluid pockets. (See Protocol for Fluid Assessment).
   d. Check fetal position to rule out abnormal presentation/position.
   e. Gross body movements are determined by observing discrete body/limb movements (tone).
   f. Identify fetal breathing movements (FBM).
      1. FBM is defined by initial inward/upward movement of the thorax, diaphragm and abdominal contents followed by descent of the diaphragm and abdominal contents returning to their original position.
   g. Identify fetal tone (FT).
      1. FT is defined as active extension with return to flexion of hands, feet or limbs.
   h. Perform NST. See Protocols III B #5 for interpretation of the NST.

2. Patient conditions requiring consultation/test
   a. As evidenced by risk factors or previous antenatal testing as listed in objective data (C.2).

3. Education
   a. Explain purpose, process and expected outcome of ultrasound to patient.
   b. The patient's cooperation and understanding is necessary for the successful completion of the test.

4. Follow up
   a. Biophysical Profile Scoring System
1. Interpretation

<table>
<thead>
<tr>
<th>Variable/Indicator</th>
<th>Normal = 2</th>
<th>Abnormal = 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non Stress Test (NST)</td>
<td>&gt;32 weeks = Two or more fetal heart rate accelerations of at least 15 bpm in amplitude for at least 15 seconds duration associated with fetal movement(s) within a 20 minute period.</td>
<td>&gt;32 weeks = One or less fetal heart rate accelerations of at least 15 bpm in amplitude for at least 15 seconds duration associated with fetal movement(s) within a 40 minute period.</td>
</tr>
<tr>
<td></td>
<td>&lt;28-32 weeks = Two or more fetal heart rate accelerations of at least 10 bpm in amplitude for at least 10 seconds duration associated with fetal movement(s) within a 20 minute period.</td>
<td>&lt;28-32 weeks = One or less fetal heart rate accelerations of at least 10 bpm in amplitude for at least 10 seconds duration associated with fetal movement(s) within a 40 minute period.</td>
</tr>
<tr>
<td>Fetal Movements (FM)</td>
<td>3 or more discrete body/limb movements in 30 minutes. Continuous movement should be counted as 1 movement.</td>
<td>2 or fewer movements in 30 minutes</td>
</tr>
<tr>
<td>Fetal Breathing Movements (FBM)</td>
<td>1 or more episodes of FBM of at least 30 seconds duration in 30 minutes.</td>
<td>Absent, or no episodes of FBM of at least 30 seconds duration in 30 minutes</td>
</tr>
<tr>
<td>Fetal Tone (FT)</td>
<td>1 or more episodes of active extension with return to flexion of hand, foot or limb.</td>
<td>None or full extension without movement to return to flexion</td>
</tr>
<tr>
<td>Amniotic Fluid Index (AFI)</td>
<td>≥ 5.1</td>
<td>≤ 5.0</td>
</tr>
</tbody>
</table>

* The score or "points given" for each variable/indicator is either 2 (two) or 0 (zero). The maximum BPP score is 10/10 when the NST is included.
or 8/8 of the NST is not included.

2. Protocol for Rescheduling of BPP.

<table>
<thead>
<tr>
<th>Score</th>
<th>Follow – up testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/10</td>
<td>Return in 3 days to one week according to indication and patient risk / prenatal issues.</td>
</tr>
<tr>
<td>8/10 with a non-reactive NST</td>
<td>Repeat in 3 days: Consult with Senior Obstetric Resident for evaluation prior to patient leaving ANTC. Frequencies of subsequent visits are based on consultation with Attending MD / Perinatologist.</td>
</tr>
<tr>
<td>8/10 with decreased AFI</td>
<td>Consult with Senior Obstetric Resident for evaluation prior to patient leaving ANTC.</td>
</tr>
<tr>
<td>6/10 and below</td>
<td>Consult with Senior Obstetric Resident for evaluation prior to patient leaving ANTC.</td>
</tr>
</tbody>
</table>

b. Rescheduling BPPs of post-dates patients – Refer to Appendix B.
c. Non-OB trained RN performing Limited Ultrasounds will discuss findings with Senior Obstetric Resident or Attending Physician prior to the patient being discharged from ANTC.

F. Record Keeping

1. The test will be documented on the WatchChild Antenatal Testing Form.
2. A second copy of the test will be provided for the Attending Physician in OB/GYN to review.
Protocol #7
Fetal Movement Assessment

Fetal movement assessment, or kick counts, can be done by any obstetrical patient. A diminution of the maternal perception of fetal movement often, but not always, precedes fetal death, and in some cases, by several days. Patients undergoing antenatal testing should be encouraged to assess fetal movement and should be given kick count instructions.

The patient is told to assess fetal movements once daily, for a period of up to 60 minutes, usually at or after a meal. Four fetal movements in one hour are considered normal, and she may stop counting once this number is achieved.

If the patient perceives less than 4 movements in a 60 minute period, she should notify her provider, or call labor and delivery (L&D) for further advice.
APPENDIX A

6F ANTC EMERGENCY TRANSPORT PROTOCOL

* In case of fetal distress occurring in the 6F ANTC, the assigned RN for the ANTC will contact the Obstetrical Chief Resident or 2nd year resident to come immediately and evaluate the patient. The following circumstances warrant evaluations.

1. FHR patterns such as:
   a. Persistent bradycardia or tachycardia.
   b. Absent variability after stimulation.
   c. Moderate or severe variable decelerations, whether spontaneous or associated with either contractions or fetal movements.
   d. Late decelerations.
   e. Sinusoidal pattern.
2. Tetanic contractions which fail to relax after 2 minutes.
3. Vaginal bleeding.
4. Spontaneous rupture of membranes with a non-reassuring FHR.
5. Imminent delivery.
6. Umbilical cord prolapse.
7. Maternal seizure.
10. Maternal fainting episode.
11. Maternal hypoglycemia or hyperglycemia with or without symptoms.

* At these times the 6C/Birth Center Chief Resident will be paged. A current OB/GYN pager list will be displayed prominently in the ANTC.

*When a decision is made to transport the patient:

*The ANTC RN or the 5M Resource Nurse or her designee will call the 6C/Birth Center Charge Nurse at 206-8725 in order to notify the Birth Center staff (MD and nursing) that an emergency situation is occurring in the ANTC.

*The ANTC RN will bring the patient directly to the 6G OR through the back (East or 6D side) elevators and hallways via reclining chair. A 6 C staff member is to be at the door of 6 G and be ready to assist in moving the patient back to the OR. The ANTC RN will give report to the nursing and medical staff present who will receive responsibility for the patient. The 6C Charge Nurse will be asked to page Pediatric Residents and Attendings as well as Anesthesia.

* If both operating rooms on 6G are being utilized or there is a change in where the patient needs to be treated, one of the Birth Center staff will wait at the entry doors to the 6G operating rooms and direct the 6F/ANTC staff accordingly.
## APPENDIX B
GUIDELINES FOR ANTEPARTUM TESTING SFGH

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>INITIATION OF TESTING</th>
<th>APPROPRIATE TESTS</th>
<th>INTERVAL OF TESTING</th>
</tr>
</thead>
</table>
| Prolonged Pregnancy
Begin testing for postdates prior to 41 weeks if EDD is unsure | 41 0/7                | NST/AFI           | 41-42 0/7 weeks: 2x / week   |
| IUGR (documented by ultrasound, <10th percentile)                        | 28 weeks              | NST/AFI           | 2x / week                    |
|                                                                            |                       | Doppler Studies*  | 1 x / week                   |
| Suspected IUGR (awaiting ultrasound confirmation)                         | 28 weeks              | NST/AFI           | 1x/week                      |
| Diabetes –
GDMA1 and good control ((FBG < 95 mg/dl PPBG < 140 mg/dl))          | 32 weeks              | Kick counts only  |                              |
| GDMA2 good control (FBG < 95 mg/dl PPBG < 140 mg/dl)                      | 32 weeks              | NST/AFI           | 1x / week                    |
| DM Type I or II Diabetic without vascular disease, or GDM A2 with poor control | 32 weeks              | NST/AFI           | 2x/week                      |
| DM type I or II – High-Risk
Poor control, vascular disease or previous loss                           | 28 weeks              | NST/AFI           | 2x/week                      |
| Hypertension
Mild-Moderate (less than 160/105s)                                     | 32 weeks              | NST/AFI           | 1x / week                    |
<p>| Hypertension, severe or with other risk factors                           | 28 weeks              | NST/AFI           | 2x / week                    |
| Preeclampsia                                                             | 28 weeks              | NST/AFI           | 2x / week                    |
| Antiphospholipid Antibody Syndrome                                        | 32 weeks              | NST/AFI           | 1x / week                    |
| Cholestasis of Pregnancy                                                 | 32 weeks              | NST/AFI           | 1x / week                    |</p>
<table>
<thead>
<tr>
<th>Condition</th>
<th>Timing</th>
<th>Test Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twins&lt;br&gt;Dichorionic-diamniotic or, monochorionic-diamniotic with normal growth</td>
<td>32 weeks&lt;br&gt;from 36 weeks on</td>
<td>NST / AF of largest pocket in each sac**&lt;br&gt;NST / AF of largest pocket in each sac**</td>
<td>1x / week&lt;br&gt;2x / week</td>
</tr>
<tr>
<td>Twins&lt;br&gt;IUGR or Discordant &gt; 20 % or low AF</td>
<td>28 weeks</td>
<td>NST / AF of largest pocket in each sac**</td>
<td>2x / week</td>
</tr>
<tr>
<td>Twins: mono-mono</td>
<td>28 weeks (or at gestational age of intervention)</td>
<td>NST/AFI</td>
<td>Daily</td>
</tr>
<tr>
<td>Previous Stillbirth</td>
<td>32 weeks or 2 weeks prior to gestational age of previous occurrence (if IUFD &lt;32 weeks)</td>
<td>NST/AFI</td>
<td>1x / week</td>
</tr>
<tr>
<td>Decreased Fetal Movement – testing is discontinued if normal FM AND normal testing (NST/AFI)</td>
<td>When occurs if GA is greater than 26 weeks</td>
<td>NST/AFI&lt;br&gt;Watch for fetal movement on sono</td>
<td>If decreased fetal movement is persistent: 1x / week&lt;br&gt;**Absent movements require consultation with HROB team</td>
</tr>
<tr>
<td>Oligohydramnios (AFI less than 5)</td>
<td>28 weeks</td>
<td>NST/AFI</td>
<td>As indicated. Inpatient management may be appropriate in some cases.</td>
</tr>
<tr>
<td>Low AFI (&gt;5 &lt;8) &lt;br&gt;Without other risk factors **testing is discontinued for decreased fluid if AFI is &gt; 8 on two (2) consecutive tests</td>
<td>28 weeks</td>
<td>NST/AFI</td>
<td>1x / week</td>
</tr>
<tr>
<td>Polyhydramnios (AFI ≥ 25)</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1x / week</td>
</tr>
<tr>
<td>Morbid Obesity</td>
<td>36 weeks</td>
<td>NST/AFI</td>
<td>1x / week</td>
</tr>
<tr>
<td>Unexplained Elevated MSAFP, elevated hCG, or Low PAPP-A (&lt;1st percentile)</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1 x / week</td>
</tr>
<tr>
<td>Major Congenital Anomaly</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1 x / week</td>
</tr>
<tr>
<td>Condition</td>
<td>Timing</td>
<td>BPP (NST / AFI for intermittent arrhythmias)</td>
<td>Frequency</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Fetal Arrhythmias</td>
<td>At diagnosis or &gt; 26 weeks</td>
<td>NST/AFI</td>
<td>1x / week</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sono check for hydrops (call OB Chief Resident or Attending)</td>
<td></td>
</tr>
<tr>
<td>Audible Deceleration</td>
<td>When occurs if GA &gt; 28 weeks</td>
<td>NST/AFI</td>
<td>May be discontinued if NST/AFI is normal</td>
</tr>
<tr>
<td>using doppler on clinic visit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Cell Alloimmunization</td>
<td>28 weeks</td>
<td>NST/AFI</td>
<td>1 x / week or more frequently depending on Doppler MCA or OD450 values</td>
</tr>
<tr>
<td>Herpes Gestationis</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1 x / week</td>
</tr>
<tr>
<td>Parvovirus &gt;24 weeks with + IGM</td>
<td>28 weeks</td>
<td>NST/AFI ONLY if fetus is at risk (determined by Doppler MCA studies*)</td>
<td>1x / week x 12 weeks</td>
</tr>
<tr>
<td>HIV + / BAPAC patient</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1x / week</td>
</tr>
<tr>
<td>Sickle cell disease</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1 x / week</td>
</tr>
<tr>
<td>Severe maternal conditions</td>
<td>Case-by-case basis</td>
<td>NST/AFI</td>
<td>1 x / week or more frequently</td>
</tr>
<tr>
<td>(cardiac, pulmonary, others)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seizure disorder (poorly</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1 x / week</td>
</tr>
<tr>
<td>controlled)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active drug abuse</td>
<td>36 weeks</td>
<td>NST/AFI</td>
<td>1 x / week</td>
</tr>
<tr>
<td>Advanced maternal age</td>
<td>32 weeks</td>
<td>NST/AFI</td>
<td>1 x / week</td>
</tr>
<tr>
<td>40 years or greater at EDD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IVF</td>
<td>36 weeks or &gt; 40 weeks</td>
<td>NST/AFI</td>
<td>1 x / week 2x / week</td>
</tr>
<tr>
<td>History of abruption</td>
<td>2 weeks prior to GA at previous</td>
<td>NST/AFI</td>
<td>1x / week</td>
</tr>
<tr>
<td>previous pregnancy</td>
<td>abortion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Doppler studies are performed in Ultrasound, Department of Radiology.
** Assessment of the amniotic fluid in twins is done by measuring the largest vertical pocket for each twin where membrane is clearly visible.
APPENDIX C

MANAGEMENT OF THE FETUS AFTER ANTENATAL TESTING FOR PROLONGED PREGNANCY

CRITERIA FOR TRAINING – ANTENATAL TESTING CENTER

<table>
<thead>
<tr>
<th>Name of Orientee</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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### Appendix D

**Criteria for Training - Antenatal Testing Center**

Name of Orientee: ____________________________________________

Name of Proctor(s): ___________________________________________

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**APPENDIX E**

**WATCHCHILD ANTC DOCUMENTATION FORM**