**Oxytocin Challenge / Contraction Stress Test**

**Purpose:**
1. To evaluate the response of the fetal heart rate to induced contractions.
2. To unmask poor placental function.
3. May be indicated if no access to sonographic assessment or if trying to decide if a fetus can tolerate labour.

**Principles:**

**Recommended Facilities**

The CST should be performed in a hospital where emergency Cesarean section is available and the woman should be fully informed of the risks and benefits of the test. The use of intravenous oxytocin will necessitate the CST being performed in or near a labour and delivery suite.

The responsible Obstetrician ordering the CST should be in the facility at the time the CST is conducted, if the tracing is atypical or abnormal and/or the BPP is less than 5 out of 8.

Family practice physicians and midwives are required to obtain a consultation from an obstetrician for women requiring a CST.

Family practice physicians will follow the consultation requirements as outlined in:
- Family Physicians’ Guideline for Physician Consultation and Transfer of Responsibility for Care – Edmonton Zone
- Individual Privileging and Required Skills for General Practitioners with Obstetrical Privileges – Edmonton Zone

Midwives will follow the consultation requirements as outlined in:
- Midwifery Guidelines for Physician Consultation and Transfer of Responsibility for Care – Edmonton Zone

**Parent Policy:**

Not Applicable

**Applicability:**

This guideline applies to all Covenant Health facilities, staff, medical staff, volunteers, students and any other persons acting on behalf of Covenant Health.

**Responsibility:**

Registered Nurses (RNs); Licensed Practical Nurses (LPNs); Registered Midwives (RMs), Nurse Practitioners (NPs), Medical Doctors (MDs) will demonstrate commitment to the safety and care of all patients undergoing the oxytocin challenge/contraction stress test (CST).
**Procedure:**

**Test Procedure**

- Women should receive continuous close support from an appropriately trained person.  
- A baseline record of FHR and uterine activity is obtained (i.e. non-stress test [NST]).  
- Note fetal movement on baseline record of FHR.  
- Record maternal baseline blood pressure and pulse prior to the initiation of oxytocin and with each increase in rate of the oxytocin infusion.  
- Administer the CST with the patient in the lateral recumbent, or semi-fowler’s, position.  
- An intravenous main line infusion is placed.  
- An oxytocin infusion will be mixed and administered as per the following protocol unless otherwise ordered:
  - Twenty (20) units of oxytocin added to 1000 mLs of Lactated Ringers, mixed and labeled = 20 milli units (mU)/mL.  
  - Dosage to be recorded in mU/min.  
  - 1 mu/min = 3 mLs/hr.  
- The oxytocin infusion will always be regulated using the SMART infusion pump with DERS (Dose Error Reduction Software).  
- The oxytocin is always given as a piggyback infusion.  
- The line with the oxytocin should be connected to the main line at the most proximal port to the IV insertion site and labeled.  
- If then considered appropriate by responsible Obstetrician, uterine contractions are induced using oxytocin.  
- The oxytocin will commence at 1 mU/min, and increase every 10 minutes according to the oxytocin challenge/contraction stress test increment table (Appendix A), until three contractions lasting one minute each within a 10-minute period are achieved.  
- If three or more spontaneous contractions lasting at least 40 seconds occur in a 10-20 minute window, additional uterine stimulation is unnecessary.  
- If the oxytocin infusion is at a rate of 16 mU/min and uterine activity has not been established, notify the responsible Obstetrician. An Obstetrician’s bedside reassessment and order is required for all patients receiving an oxytocin dose greater than 20 mU/min.  
- At the dose of 20 mU/min, the incremental increasing of oxytocin will decrease to 1 to 2 mU/min every 30 minutes or as ordered by the Obstetrician.  
- Continuous fetal surveillance is required to detect potential fetal decompensation and to allow timely and effective intervention.  
- The tracing is evaluated for baseline rate, baseline variability, and decelerations.  
- If tachysystole (more than 5 contractions in a 10 minute window, averaged over 30 minutes) WITHOUT an abnormal FHR tracing occurs:
  a) Notify responsible Obstetrician.  
- If tachysystole WITH an abnormal FHR tracing occurs:
  a) Stop the source of stimulation including:
    - Stop oxytocin infusion (half-life of oxytocin is approximately five [5] minutes);  
  b) Implement intrauterine resuscitative measures including:
    - Maternal position changes;  
    - Improve maternal hydration with an intravenous fluid bolus if required; and  
    - Notify the responsible Obstetrician.
Interpretation

The commonly accepted categories of CST interpretation are presented below:

<table>
<thead>
<tr>
<th>RESULT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEGATIVE</td>
<td>No late or complicated variable decelerations are identified on tracing with adequate uterine activity [2,3,4,7,8,9]</td>
</tr>
<tr>
<td>POSITIVE</td>
<td>Late decelerations are identified with 50% or more of contractions, even if the contraction frequency is less than three in 10 minutes [2,3,4,7,8,9]</td>
</tr>
<tr>
<td>EQUIVOCAL / SUSPICIOUS</td>
<td>Intermittent late (late decelerations with fewer than 50% of contractions) or complicated variable decelerations are observed [2,3,4,7,8,9]</td>
</tr>
<tr>
<td>EQUIVOCAL / TACHYSYSTOLIC</td>
<td>Uterine contractions occur more frequently than every 2 minutes or last longer than 90 seconds with accompanying late decelerations [2,3,4,7,8,9]</td>
</tr>
<tr>
<td>UNSATISFACTORY</td>
<td>Fewer than three contractions occur within 10 minutes, or there may be a tracing quality that cannot be interpreted [2,3,4,7,8,9]</td>
</tr>
</tbody>
</table>

Indications

The CST may be used when the fetus is at risk for the consequences of uteroplacental pathology and may include conditions such as:
- Diabetes \[5,7\]
- Hypertension in Pregnancy \[5,7\]
- Intrauterine fetal growth restriction \[5,7\]
- Oligohydramnios \[5,7\]
- Postdates \[5,7\]

Contraindications

The CST should not be used in any woman for whom vaginal delivery is contraindicated such as:
- Complete placenta previa \[2,7\]
- Third trimester bleeding \[4\]
- Previous classical Cesarean section \[2,5,7,9\]
- History of extensive uterine surgery \[2,9\]
- Below the gestational age at which intervention would be made on behalf of the fetus \[7\]
- Known hypersensitivity to oxytocin \[4,5\]

Relative Contraindications

- Prematurity \[2,4,9\]
- Placenta previa \[2,9\]
- Preterm rupture of membranes \[2,9\]
- Polyhydramnios or marked uterine over-distention \[4\]
- Conditions that interfere with adequate uterine monitoring (i.e. marked obesity) \[4\]

Definitions: N/A

Related Documents: N/A

References:


**Revisions:** April 1, 2019
Appendix A

OXYTOCIN CHALLENGE/CONTRACTION STRESS TEST
OXYTOCIN INCREMENT TABLE

20 units OXYTOCIN in 1000 mL

= 20 milli units (mU) per milliliter (mL)
Increase every 10 minutes

<table>
<thead>
<tr>
<th>Dosage (mU/minute)</th>
<th>Pump (mL/hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
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<tr>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>16</td>
<td>48</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
</tr>
</tbody>
</table>

An Obstetrician’s bedside reassessment and order is required for all patients receiving OXYTOCIN dose greater than 20 mU/min. At the dose of 20 mU/min, the incremental increasing of OXYTOCIN will decrease to 1 to 2mU/min every 30 minutes, or as ordered by the Obstetrician.