| **Subject: Cervical Ripening and Labor Induction: Misoprostol (Cytotec)** | |
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| REVISION DATE: July 2015, 10/1998, 4/2007<br>REPLACES: L&D Misoprostol Guidelines | WRITTEN: July 1998<br>SUPERSEDES DATE: June 2012 |

This guideline is used to assist staff when administering misoprostol (Cytotec) to patients for the purpose of inducing labor. This applies to all medical and nursing personnel.

**Purpose:** The goal of cervical ripening is to facilitate cervical dilatation, effacement, and softening to reduce the rate of failed inductions.

**Summary of Changes:** References/content updated to reflect most current standards of practice.

**1. References:**

1.1. AWHONN (2011). Core Curriculum for Maternal-Newborn Nursing 4th ed. Philadelphia: W.B. Saunders.

1.2. Cunningham, G., N., Leveno, K., Bloom, S., Hauth, J., Rouse, D., Spong, C.Y. (2010). Williams Obstetrics, 23rd ed. New York: The McGraw-Hill Companies.

1.3. AWHONN (2009). Fetal Heart Monitoring Principles and Practices, 4th ed. Dubuque, Iowa. Kendall/Hunt publishing.

**2. Responsibilities:**

2.1. Credentialed delivering provider.

2.1.1. Assess patient requiring induction/cervical ripening. Order appropriate amount/route for misoprostol (Cytotec) induction/ripening.

2.1.2. Responsible for counseling/consenting patient for all medical procedures.

2.1.3. Primary obstetric provider will remain in house for 4 hours after each dose of misoprostol.

2.2. Nurse.

2.2.1. Acknowledge all provider orders in the Electronic Health Record (EHR).

2.2.2. Ensure that provider has obtained patient's informed consent..

2.2.3. Verify no prior history of uterine incision or prior cesarean delivery.

2.2.4. Assist provider when inserting the misoprostol.

2.2.5. Monitor fetal heart rate and uterine activity before and after medication insertion.

2.2.6. Notify provider of Category II or III FHR patterns, the presense of tachysystole, or evidence that there is inadequate response to misoprostol as noted on the electronic fetal monitor (EFM).

**3. General**

3.1. Misoprostol is a synthetic PGE1 analogue that is used for the treatment and prevention of peptic ulcers, but is useful for cervical ripening and labor induction.

3.1.1. Misoprostol is easy to store and stable at room temperature.

3.1.2. Misoprostol can be obtained from the pyxis or pharmacy in pre-cut 25 mcg, and intact 100 and 200 mcg tablets.

3.2. **Definitions**

3.2.1. **Cervical ripening**: Process of effecting physical softening and distensibility of the cervix in preparation for labor and birth.

3.2.2. **Labor induction**: Stimulation of uterine contractions before the spontaneous onset of labor for the purpose of accomplishing vaginal birth.

3.2.3. **Tachysystole**: More than 5 contractions in 10 minutes, averaged over a 30 minute window. Tachysystole should always be qualified as to whether or not it is associated with fetal heart rate abnormalities such as decelerations. Tachysystole can occur in spontaneous, as well as induced or augmented, labor.

3.2.3.1 The term hyperstimulation should not be used to document uterine tachysystole.

3.2.4. **Hypertonus**: Elevated resting tone greater than 25 mmHg, depending on the type of Intrauterine Pressure Catheter (IUPC) used.

3.3. **Indications for Use.**

3.3.1. Indications for induction of labor are not absolute, but should take into account maternal and fetal conditions, gestational age, cervical status, and other factors.

3.3.2. Reasons for induction of labor may include, but are not limited to, the following:

3.3.2.1. Postterm pregnancy.

3.3.2.2. Preeclampsia/eclampsia.

3.3.2.3. Chorioamnionitis.

3.3.2.4. Fetal demise.

3.3.2.5. Gestational hypertension.

3.3.2.6. Premature rupture of membranes.

3.3.2.7. Maternal medical condition (diabetes, renal disease, chronic hypertension, intrahepatic cholestasis of pregnancy).

3.3.2.8. Fetal compromise (IUGR) and/or oligohydramnios.

3.3.2.9. Logistical reasons (i.e. hx of rapid labor and living remote from hospital).

3.4. **Contraindications to Labor Induction.**

3.4.1. Active herpes lesion.

3.4.2. Transverse lie.

3.4.3. Umbilical cord prolapse.

3.4.4. Complete placenta previa.

3.4.5. Previous uterine surgery (other than low transverse cesarean), including classical uterine incision.

3.4.5.1. Misoprostol **will not** be used in patients with a prior cesarean delivery.

3.4.6. Active labor.

3.4.7. Unexplained vaginal bleeding.

3.5. **Obstetric conditions that are not contraindicated to induction but require special attention**.

3.5.1. Breech presentation.

3.5.2. Maternal heart disease.

3.5.3. Multifetal pregnancy.

3.5.4. Polyhydramnios.

3.5.5. Presenting part above pelvic inlet.

3.5.6. Severe hypertension

3.5.7. Abnormal FHR pattern not requiring emergent birth.

3.5.8. Abruptio placentae.

**4. Standards of Practice/Guidelines for Care:**

4.1. Admit patient to Labor & Delivery for inpatient induction or quick register into OB Triage for outpatient cervical ripening.

4.2. On day of admission to inpatient status, draw Complete Blood Count (CBC) and Type and Screen (T&S) with start of large bore peripheral IV and send to lab.

4.3. Obtain nonstress test (NST) to evaluate fetal heart rate (FHR) tracing and uterine activity.

4.4. Provider or ultrasound-certified RN will verify vertex position of the fetus via ultrasound and perform a sterile vaginal exam to document a baseline dilation, effacement, and station in reasonable proximity to time of insertion.

4.5. Provider will obtain informed consent, including patient understanding of the procedure, indications, risks, and benefits..

4.6. Review the patient's chart for induction indicators, medical and nursing assessment of fetal/maternal status, and review provider orders.

4.7. Encourage patient to empty her bladder. Inform of the need to remain in a supine or lateral recumbent position for 1 hour following placement of misoprostol into the posterior fornix.

4.8. Prepare supplies for insertion, including: sterile gloves, water soluble lubricant, and misoprostol 25 micrograms (found in PYXIS).

4.8.1. This dose is prepared by pharmacy by cutting 100 microgram tablets into 4 equal pieces which are placed in single-dose blister packs.

4.8.2. The dose will be administered by the provider or RN with documented competency.

4.9. Various dosing regimens have been reported.

4.9.1. The safest approach is 25 mcg (1/4 tablet) inserted into the posterior fornix and repeated every 3-6 hours with up to eight doses in 24 hours or the onset of active labor. Misoprostol may be used per provider order in dosages of 25-50 mcg q 2-4 hours. Sublingual or buccal methods are not recommended at this time.

4.9.1.1. Uterine tachysystole with and without fetal heart rate abnormalities is a potential complication of misoprostol.

4.9.1.2. Uterine rupture is also a rare, but known, complication of induction of labor with misoprostol.

4.9.1.3. Lower rates of uterine tachysystole with fetal heart rate changes have been noted with lower dosages of misoprostol.

4.10. **Subsequent doses of medication are permissible if** cervical condition remains unfavorable, uterine activity is less than three contractions in ten minutes, averaged over 30 minutes, and FHR is reassuring.

4.11. **Subsequent doses of medication are withheld if** there are three or more contractions in ten minutes, adequate cervical ripening is achieved (Bishop score $\geq$ 8 or cervix 3 cm dilated/80% effaced), patient enters active labor, or non-reassuring FHR tracing.

| Score | Cervical Dilation | Cervical Effacement | Station of Baby | Cervical Position | Cervical Consistency |
|---|---|---|---|---|---|
| 0 | closed | 0-30% | -3 | posterior | firm |
| 1 | 1-2cm | 40-50% | -2 | mid-line | moderately firm |
| 2 | 3-4cm | 60-70% | -1,0 | anterior | soft (ripe) |
| 3 | 5+ cm | 80+% | +1, +2 | | |

4.12. Oxytocin augmentation **<u>will not</u>** begin until 4 hours after the last vaginaldose of misoprostol, and 2 hours after the last PO dose is given.

4.13. Vital signs should be assessed every 30 minutes x 2 and then every 1 hour x 3 for vaginal doses and every 30 minutes x 2 and then every 1 hour x's 1 for PO doses and then repeating with each dose of misoprostol administered. Frequency will be increased if the patient has a risk factor/condition where more frequent vital signs assessment is indicated, per provider order, and unit guidelines.

4.14. Fetal heart rate (FHR) and uterine activity (UA) will be monitored continuously for 1 hour following administration of misoprostol. Patient may then ambulate for 30 minutes and then monitor FHR and UA x's 30 minutes if no evidence of non-reassuring FHR or tachysystole. Repeat hourly x's 3 for vaginal doses and x's 1 for oral doses.

4.15. Temperature (T) will be assessed every 4 hours until rupture of membranes occurs and then every 2 hours after rupture of membranes. If febrile ( $\geq$ 100.4), assess temperature hourly.

4.16. Diet as ordered per provider.

4.17. Provide nursing support to include hygiene care, relaxation, and emotional support to patient.

4.18. **Notify the provider immediately for the following:**

4.18.1. Hypertonus

4.18.2. Uterine tachysystole

4.18.3. Non-reassuring tracing, regardless of contraction pattern.

4.18.4. Onset of active labor (> 4 cm).

4.19. If any of the above occurs, nursing interventions may include, but are not limited to the following:

4.19.1. Reposition patient.

4.19.2. Administer an IV fluid bolus.

4.19.3. Apply oxygen at 10-12 L/min via nonrebreather face mask.

4.19.4. Consider a provider order for Terbutaline 0.25 mg subcutaneously.

4.19.5. Prepare for cesarean section if indicated.

4.19.6. Removal of the tablet, if possible, may help reverse the effect of tachysystole with or without fetal heart rate abnormalities. Irrigation of the cervix and vagina is not beneficial.

4.20. **Recommended documentation**.

4.20.1. Vital signs as ordered.

4.20.2. Fetal heart rate tracing and uterine contraction pattern per Electronic Fetal Monitoring guideline.

4.20.3. Cervical dilation, effacement, and fetal presentation.

**5. Administration for Intrauterine Fetal Demise.**

5.1. If no contraindication for vaginal delivery, provider, or RN with documented competency, may give 100-200 mcg vaginally per provider orders every 4 hours until an active labor pattern has been established. Misoprostol has been given orally in doses of 100-200 mcg every four hours although the induction may be prolonged. For gestational age of < 28 weeks dosage of 200-400 mcg vaginally every 4-12 hours is permissible.