I. PURPOSE

To clarify the procedure for administering medications that may be used for inducing a pregnant woman either terminating a pregnancy for fetal reasons or inducing a mother prematurely who has medical issues herself precluding continuing the pregnancy safely. The decision for which medications are used is made by the provider per the condition of the patient and in conjunction with the patient. The registered nurse (RN) trained in labor and delivery will assist/administer the medications per provider order.

II. REFERENCES

Goldberg, A.B., Greenberg, M.B., & Darney, P.D. (2001). Misoprostol and pregnancy. The New England Journal of Medicine, 344(1), 38-47.

Shulman, L.P., & Ling, F.W. (2011) Termination of pregnancy: Second trimester. Retrieved from
UptoDate on May 25, 2012. Termination-of-Pregnancy-second

Refer to Death Procedure for Fetal and Neonatal Loss for further information and assistance in documentation.

- LAMINARIA
- MISOPROSTOl
- OXYTOCIN
- HIGH-DOSE OXYTOCIN
- INTRA-AMNIOTIC DIGOXIN
- DELIVERY OF FETUS
- DELIVERY OF PLACENTA
- RECOVERY
- DISCHARGE

III. DEFINITIONS

None.

IV. POLICY

Members of the Department of Perinatal Services are responsible for carrying out the actions required by this policy as outlined below.

V. PROCEDURES

Critical Points

A. Indications and methods for induction of labor in these circumstances are determined by the patient's condition, in conjunction with the provider.

B. Uterine activity monitoring with a tocodynometer (Toco) should be used for >28 week pregnancies, prior uterine scar, twins at any gestational age, or per the discretion of the provider.

C. Location for delivery is determined by patient condition.

D. Patients must have IV access during administration of any of these agents.

E. Provider or nursing staff will arrange for inpatient Social Work and/or Compass Care consults as appropriate for all patients.

F. Pain management options will be reviewed with patient and given per request. Note: There is no contraindication to the use of early epidural for these patients. If opioids are used for pain relief, consider longer acting routes/medications.

Step by Step Procedure

A. Cervical dilators

1. Assemble the following equipment:
   a. Laminaria (several small, medium, and large) - or - Dilapan (usually 4 mm)
   b. Medium vaginal speculum, ring forceps, and cervical tenaculum
   c. 4 x 4's
   d. Betadine solution
   e. Bedpan or blanket to lift hips off bed
   f. Light Source: Goose neck lamp or flashlight

2. Prepare patient as follows:
   a. Explain that insertion may be uncomfortable and may cause cramping
   b. Provider may consider using 20 mL of 1% Lidocaine or other local anesthetic agent for a paracervical block to make placement more comfortable
   c. Assist provider with insertion of Laminaria
   d. Count number of Laminaria inserted and document on OB flowsheet.

3. Removal of Laminaria
   a. Usually removed from cervix any time after 6 hours.
   b. Assist provider with Laminaria removal.
   c. Count number removed, compare to number inserted, and document on OB flowsheet

B. **Misoprostol**

1. Review plan with provider and patient.
2. Obtain misoprostol from the Pyxis.
3. Assist provider with misoprostol tablet placement in the posterior fornix of the vagina and/or administer medication per order.
4. Continuous toco monitoring if > 28 weeks, prior uterine scar or twins at any GA.
5. Side effects should be explained to patient: fever, nausea, vomiting, diarrhea, flatulence, dyspepsia, abdominal pain, and/or headaches.
6. Suggested Dosing:
   a. 18-22 weeks singleton, no prior uterine scar:
      (1) 400 mcg misoprostol PV Q 3 hours x 5 doses.
         i. Observe for signs and symptoms of labor or patient complaints' of side effects.
         ii. Do not re-dose until labor lessens, or if side effects unbearable for patient. Re-dose at same or lesser dose depending on response.
         iii. If not delivered after 5 doses, re-evaluate for signs of uterine rupture, consider re-initiating this regimen vs. D&E or other approach.
   b. >22-27 6/7 weeks, or prior uterine scar at any GA, or twins at any GA:
      (1) Start with 200 mcg of misoprostol PV. Assess response after 3 hours.

i. Observe for signs and symptoms of labor or patient complaints' of side effects.
ii. Do not re-dose until labor lessens, or if side effects unbearable for patient.
iii. If minimal response, increase dose to 400 mcg and then reassess 3 hours later and re-dose every 3 hours as long as no signs and symptoms of uterine rupture and patient tolerating side effects.
iv. If not delivered after 5 doses, re-evaluate for signs of uterine rupture, consider re-initiating this regimen vs. D&E or other approach.

7. Suggested dosing for Third Trimester (>28 weeks) Induction with Fetal Demise
   a. Misoprostol 100 mcg per vagina q 12 hours
      i. Observe for signs and symptoms of labor or patient complaints' of side effects.
      ii. Do not re-dose until labor lessens, or if side effects unbearable for patient
   b. Third trimester induction with viable fetus:
      i. Misoprostol 25 mcg per vagina q 4-6hours
      ii. Or other cervical ripening, induction medications as indicated per patient condition and provider.

C. OXYTOCIN

1. Refer to:
http://manuals.ucsfmedicalcenter.org/NursingDept/UnitPolicyProcedure/15Long/PtCare/Oxytocin(Pitocin)InductionandAugmentationofLabor.pdf

D. HIGH-DOSE Oxytocin

1. Usually begun 6 hours after placement of laminaria.
2. Establishing a contraction pattern is not an objective with high-dose oxytocin -- tachysystole is expected.
3. High-dose Oxytocin protocol is an option for termination inductions for 17-24 wks gestation.
4. Assemble the following equipment and medication:
   a. Electronic monitor w/ belt for TOCO monitor when indicated
   b. Infusion pump and buretrol tubing
   c. Medication labels for IV bag and tubing
5. Obtain provider order for:
   a. .Special concentration of 400 units oxytocin /1,000ml (0.4unit/ml) Lactated Ringer's obtained from pharmacy.
6. 6. Call pharmacy and request first bag STAT. Turnaround time should be no more than 1 hour.
7. Provider to examine patient, as needed, for cervical dilatation and document on flowsheet. *Note*: Dilation is not progressive as in term delivery, and may change suddenly.
8. Take vital signs q1 hour, patient can have a clear liquid diet, monitor strict Intake/Output.

9. HIGH DOSE OXYTOCIN INSTRUCTIONS:
    a. Start at 41ml/hr for 3 hours, then turn off (total oxytocin given is 50 units/3hrs)
        i. 1 hour mainline of LR @ 30ml/hr
    b. Resume bag at 83ml/hr for 3 hours, then turn off (total oxytocin given is 100 units/3hrs)
        i. 1 hour mainline of LR @ 30ml/hr
    c. Resume bag at 125ml/hr for 3 hours, then turn off (total oxytocin given is 150 units/3hrs)
        i. 1 hour mainline of LR @ 30ml/hr
    d. If patient undelivered, obtain new bag from pharmacy. Discard old bag and hang new bag.
        i. Start at 167ml/hr, then turn off(total oxytocin given is 200 units/3hrs)
        ii. 1 hour mainline of LR@ 30ml/hr
    e. If patient undelivered, obtain new bag from pharmacy. Discard old bag and hang new bag.
        i. Start at 208ml/hr for 3 hours, then turn off (total oxytocin given is 250units/3hrs)
        ii. 1 hour mainline of LR@ 30 ml/hr
    f. If patient undelivered, obtain new bag from pharmacy. Discard old bag and hang new bag.
        i. Start at 250ml/hr for 3 hours, then turn off (total oxytocin given is 300units/3hrs)
        ii. 1 hour mainline of LR@ 30 ml/hr
10. If protocol is completed and patient has not given birth, discuss with provider other methods of induction.

E. INTRA-AMNIOTIC DIGOXIN

1. Procedure offered only by provider.
2. Indication for use is determined by provider and in conjunction with the patient
3. Maternal contraindications include:
    a. Cardiac Arrhythmia
    b. Hypertrophy obstructive cardiomyopathy
    c. Chronic renal failure requiring dialysis
    d. Patient currently taking the following meds: quinine/quinidine, hydroxychloroquine, verapamil, flecanide, amyloidal, amiodarone, propafenone, cyclosporine, nifedipine, diltiazem, methyldopa.
    e. Known digoxin allergy
    f. Premature rupture of membranes
    g. Known bleeding disorder
    h. Patient indecision regarding procedure
    i. Oligohydramnios or polyhydramnios
4. Risks
    a. Lack of effectiveness (1:10 fetus still living after 124 hours)
    b. Vomiting, nausea, diarrhea or abdominal pain.
    c. Maternal arrhythmias
    d. CNS abnormalities (visual disturbances, headache, weakness, psychosis
    e. Dermatologic reaction

5. Procedure:
   a. One milligram (4ml) of digoxin will be drawn up in a syringe, with a 22-gauge spinal needle, to be used for the injection.
   b. The provider may or may not use U/S to guide needle placement
   c. Injection site prepared with Betadine
   d. Correct needle placement will be confirmed by aspiration of amniotic fluid. If bloody fluid, the needle placement will be re-directed.
   e. Patient may be sent home with appointment to return in 24hours.
   f. Fetal demise confirmed by U/S prior to starting induction.

F. DELIVERY OF FETUS

1. Notify provider when delivery appears imminent.
   ***Note*: Patients < 28 weeks may deliver without warning and thus may deliver with only nurse in attendance. Provider to be notified ASAP.**
2. Complete appropriate documentation in the Perinatal Loss activity and per Birth Center "Death Procedure for Fetal and Neonatal Loss."
3. Complete Delivery Summary documentation.
4. Offer parents opportunity to view and hold fetus.

G. DELIVERY OF PLACENTA

1. Placental delivery should occur within four hours of fetal delivery, observe closely for excessive bleeding.
2. Provider may consider continuing to administer prostaglandin until placental delivery or start a standard concentration oxytocin infusion.
3. Take vital signs every 15-min while observing for placental separation.
4. Notify provider if placenta has not delivered in two hours.
5. Maintain NPO diet status.
6. If after four hours, placenta has not delivered, plan for possible manual or instrumental placenta removal per provider assessment.

H. RECOVERY

1. Check VS, bleeding, and fundus (if palpable) after delivery of placenta per standard vaginal delivery recovery guidelines.
2. Advance diet as ordered and tolerated when the patient is stable.
3. Observe for excessive bleeding (> 2 saturated pads in one hour) - notify provider for excessive bleeding.
4. Discontinue IV as ordered and assess need for Methergine series.
5. Assess the patient's wishes regarding room location in collaboration with the Charge RN:
   a. Some patients prefer to remain on the OB floor for the remainder of their hospitalization, while others prefer to be located on a floor away from the newborn nursery.
6. Make Social Work and Compass Care referrals to speak with parents and families regarding disposition plans and support groups.
7. Document on Fetal Demise and Bereavement Flow Sheet under Perinatal Loss.

I. DISCHARGE

1. Patient may be discharged as early as 6-8 hours postpartum, if stable.
2. Answer patient's questions, provide support, and issue a Compass Care folder with grief information and discharge teaching documents about self-care.
   a. Assess patient's emotional status, offer Spiritual Care visit if appropriate
   b. Provider patient with resources for grief counseling, such as the Pregnancy and Postpartum Mood Assessment Clinic (415) 353-2566
3. Direct patient to consult their provider regarding post-delivery follow-up.
4. Ensure patient's understanding that there will be a 2-3 month delay in autopsy results and other studies if done.

VI. RESPONSIBILITY

For questions concerning this policy, please contact the Birth Center Clinical Nurse Specialist.

VII. HISTORY OF THE PROCEDURE

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VIII. APPENDIX

Appendix A: Medication Table

Appendix A: Medication Table

	Laminaria/Dilapan	Misoprostol	Oxytocin
Action	Swells in cervix to ripen for induction with other agents	Produces uterine contractions and ripen cervix	Produce uterine contractions
Relative Contraindications (Proceed with caution)	Chorioamnionitis	Previous uterine scar	Previous uterine scar
Route of Administration	Cervical-per provider	Per vagina, oral or buccal	Intravenous
Dosage	As many as will fit; various sizes sm/med/ or lg	25-400mcg per provider order and patient condition	Standard:20 units in 500ml LR High Dose:400 units in 1,000ml LR
Side Effects	Minor cramping	Fever, nausea, diarrhea, abdominal pain, flatulence, vomiting, dyspepsia, headache	Tachysystole Water intoxication
Vital Signs	Baseline, then q4 hr.	Baseline, then q2 hr.	Baseline, then q1 hr.
I&O	None	None	Strict I&O
Diet/Activity	Regular Bedrest w/BRP	Regular or Clear Bedrest w/BRP	Clear liquids or NPO Bedrest w/BRP
Toco Monitoring	None	If >28wks GA, twins, or prior uterine scar	Yes
FHR Monitoring	None	None	None

*These are suggested orders; all orders should be based on patient condition.