

Section: Division of Nursing

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**PROTOCOL**  
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Approval: \_\_\_\_\_

HACKETTSTOWN COMMUNITY HOSPITAL

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**MATERNAL SERVICES**  
(Scope)

**TITLE: PHARMACEUTICAL MANAGEMENT OF PRETERM LABOR**

**PURPOSE:** To describe the pharmaceutical management of preterm labor:  
a. To assure safe and effective administration of a tocolytic agent in the prevention of pre-term delivery.  
b. To provide psychosocial support to the patient during administration of tocolytic agents and  
c. To recognize any adverse reactions to treatment.

**SUPPORTIVE DATA:** Preterm labor is defined as the onset of uterine contractions in a woman who has completed less than 37 weeks gestation but more than 20 weeks. Clinically, uterine contractions should occur at least 10 minutes apart and last 30 seconds and/or demonstrate progressive cervical changes. Maximum cervical dilation prior to onset of tocolysis should be no more than 4 cm.

The three most commonly used drugs are, Terbutaline/Brethine, Magnesium Sulfate and Nifedipine/Procardia.

Preterm labor is associated with ethnicity, low socio-economic status, low maternal weight and age, single marital status, multiple fetuses, polyhydramnios, abnormalities of uterus and cervix, previous preterm delivery, and antepartum hemorrhage. Fetal growth retardation may be associated with preterm labor. Maternal conditions such as pyelonephritis, untreated hyperparathyroidism, hyperadrenocorticism, and cardiovascular or renal disease.

**EQUIPMENT LIST:**

1. Fetal monitor with accessories
2. Intravenous solutions, as ordered by physician, tubing
3. #18 gauge needle (angiocath) and 10cc syringe
4. Medication: tocolytic agent as ordered by physician (Terbutaline/Brethine; Magnesium Sulfate)
5. Infusion pump
6. Laboratory specimen container as indicated
7. Resuscitation equipment available on unit
8. Specific antidote for the tocolytic agent
9. Magnesium Sulfate flow sheet.

**CONTENT:  
NURSING CARE**

1. Admit patient to the OB unit.
2. Explain all procedures and reassure patient and family. Patient and support person may have many questions and concerns. Discuss side effects, precautions, and monitoring. Offer frequent reassurance.
3. Apply external fetal monitor to determine uterine activity and obtain fetal heart baseline. Continue EFM as ordered by provider to determine fetal well-being and uterine activity.
4. Start primary intravenous via pump and obtain blood specimens as ordered.
5. Set up infusion pump with medication ordered.

6. **Tocolytic Administration:**
  - a. Terbutaline/Brethine : See procedure 6160.064a
  - b. Magnesium sulfate : See procedure 6160.019a
  - c. Nifedipine/Procardia : See procedure 6160.090a
7. Position patient in side-lying position to enhance placental perfusion.
8. Take and record I&O as ordered. If urinary output under 30cc/hour, notify the primary care provider.
9. Observe for signs of adverse reaction to medication. Discontinue tocolysis if patient exhibits signs of respiratory and/or cardiovascular distress. Have the patient report any signs of labor or cardiovascular side effects such as palpitations, fainting, dizziness, etc. The patient should be immediately seen and evaluated by the medical care provider.
10. Obtain lab specimens as ordered and report abnormal levels.
11. Encourage patient to express feelings and ask questions.
12. Provide quiet, darkened, environment with minimal stimulation for patient.

**IMPORTANT POINTS:**

1. Medical care provider must initiate consultation with perinatologist at RPC (Morristown Memorial Hospital) for neonate of gestational age that does not meet "basic care" criteria (expect neonate greater than 2,499 grams and at least 36 weeks gestation). Per NJ DOH hospital licensing standard 8:43G-19.1.
2. EKG may be ordered prior to beginning procedure (Terbutaline).
3. Major actions of tocolytic agents:
  - a. Magnesium Sulfate (Central Nervous System Depressant):
    1. Depress central nervous system
    2. Depress skeletal muscle activity
    3. Decrease maternal heart rate
    4. Reduce uterine muscle activity
    5. Decrease respirations
  - b. Terbutaline(Betamimetics):
    1. Decrease contractility of uterine and smooth muscles
    2. Increase blood glucose, insulin, fatty free acids
    3. Increase maternal pulse pressure
    4. Increase maternal and fetal heart rate
    5. Decrease serum potassium level (transient)
  - c. Nifedipine/ Procardia:
    1. Calcium channel blocker inhibits intracellular calcium entry and, by this means, has potent effects on the contraction of smooth muscle.
4. Adverse reaction to Tocolytic agents:
  - a. Magnesium Sulfate:
    1. Dyspnea
    2. Flushing
    3. Sweating
    4. Respiratory arrest
    5. Cardiac arrest
    6. Depress central nervous system
    7. Decreased or absent DTR's
    8. Nausea
    9. Headache
    10. Palpitations
    11. Lethargy
    12. Transient hypotension
    13. Paralytic ileus

14. Pulmonary edema

- b. Terbutaline/Brethine:
  - 1. Maternal tachycardia of 140 or more
  - 2. Decreased serum potassium levels
  - 3. Palpitations
  - 4. Chest pain
  - 5. Shortness of breath
  - 6. N/V
  - 7. Hyperglycemia
  - 8. Hypotension
  - 9. Pulmonary edema
- c. Nifedipine/Procardia:
  - 1. Maternal: hypotension, flushing, nasal congestion, tachycardia, dizziness, nausea, nervousness, bowel changes, headache.
  - 2. Fetal: Adverse neonatal effects from maternal Nifedipine use have not been described.
  - 3. Nifedipine should not be used in combination with magnesium sulfate.
- 5. Refer to "Administering Magnesium Sulfate" (6160.019a), "Administration of Terbutaline" (6160.064a), or "Administration of Nifedipine/Procardia (6160.090a) of the process standards.
- 6. The primary care provider is to be readily available to the obstetrical unit during the first 24 hours of therapy to assess the patient, and thereafter, during the course of therapy.
- 7.
  - a. Antidote for Magnesium sulfate Calcium Gluconate 1gm/10cc/10% solution.
  - b. Antidote for Terbutaline/Brethine is Inderal which should be readily available on unit.
- 8. Relative contraindication to tocolysis:
  - a. Cervical dilation of more than 4 cms and effacement greater than 80 percent
  - b. Placenta previa, abruptio placenta, or unexplained vaginal bleeding.
  - c. Fetal demise
  - d. Chorioamnionitis
  - e. Medical conditions:
    - 1. Renal disease
    - 2. Hyperthyroidism
    - 3. Uncontrolled diabetes
    - 4. Pulmonary or cardiac problems
    - 5. Absence of patellar reflexes
    - 6. Sensitivity to medication
  - f. Contra-indications to Magnesium Sulfate
    - 1. Hypocalcemia
    - 2. Myasthenia gravis
    - 3. Renal failure
  - g. Contra-indications to Terbutaline
    - 1. Maternal cardiac rhythm disturbance or other cardiac disease
    - 2. Poorly controlled diabetes, thyrotoxicosis, or hypertension
  - h. Contra-indications to Nifedipine/Procardia:
    - 1. CHF
    - 2. Aortic stenosis
    - 3. Maternal liver disease

DOCUMENTATION:

- 1. Magnesium Sulfate Flow Sheet
- 2. QS system labor annotations and/or nursing notes

REFERENCES: Simpson and Creehan, AWHONN Perinatal Nursing (2001), p 215-219.

Preterm Labor: Prevention and Nursing Management, 2<sup>nd</sup> Edition, March of Dimes Nursing Modules