

Preterm Labor/Prevention of Delivery

Preterm labor refers to labor that occurs after the fetus has reached the period of viability (at least 20 weeks' gestation but before the completion of the 37th wk). Carrying the pregnancy to term may be contraindicated if associated client or fetal risks outweigh the risks of delivering a preterm infant.

(To be used in conjunction with CP: The High-Risk Pregnancy.)

CLIENT ASSESSMENT DATA BASE

Note: Etiology is unknown in 70%–80% of cases; PROM occurs in the remaining 20%–30%.

Activity

Works outside home, job heavy/stressful
Unusual fatigue

Circulation

Hypertension, pathological edema (signs of PIH)
Preexisting cardiovascular disease

Ego Integrity

Moderate anxiety apparent

Elimination

Dark amber urine, decreased frequency/amount

Food/Fluid

Inadequate or excessive weight gain
Inadequate fluid intake
Dry mucous membranes

Pain/Discomfort

Intermittent to regular contractions (may not be painful) less than 10 min apart and lasting at least 30 sec for 30–60 min

Respiratory

May be heavy smoker (7–10 cigarettes/day), although any smoking during pregnancy is a risk factor

Safety

Infection may be present (i.e., UTI and/or vaginal infection).

Sexuality

Cervical os softening/dilated/effacing.
Bloody show may be noted.
Membranes may be ruptured (PROM).
Third-trimester bleeding.
Previous abortions, preterm labor/delivery, history of cone biopsy, less than 1 yr since last birth.
Uterus may be overdistended, owing to polyhydramnios, macrosomia, or multiple gestation.

Social Interaction

May be low socioeconomic status

Teaching/Learning

Inadequate or no prenatal care
May be under age 18 or over age 40
Alcohol/other drug use, diethylstilbesterol (DES) exposure

DIAGNOSTIC STUDIES

Ultrasonography: Assesses gestation (with fetal weight of 500–2499 g).

Nitrazine Test or “Ferning” Slide: Determines PROM.

White Blood Cell (WBC) Count: Elevation indicates presence of infection.

Plasma/Cervicovaginal Oncofetal Fibronectin (onfFN): Elevated risk level associated with risk of preterm delivery, as well as pre-eclampsia and other abnormalities. (Currently under investigation as a clinical indicator or predictor of true/preterm labor.)

Urinalysis and Culture: Rule out UTI.

Vaginal Culture, RPR: Identify infection.

Amniocentesis: L/S ratio detects phosphatidyl glycerol (PG) for fetal lung maturity; or amniotic infection.

Electronic Monitoring: Validates uterine activity/fetal status.

NURSING PRIORITIES

1. Ascertain maternal condition/presence of labor and fetal well-being.
2. Assist with efforts to maintain pregnancy, if possible.
3. Prevent complications.
4. Provide emotional support.
5. Provide necessary information.

DISCHARGE GOALS

1. Cessation of uterine contractions
2. Free of complications and/or untoward effects
3. Dealing with situation in a positive manner
4. Signs of preterm labor/complications and therapy needs understood

NURSING DIAGNOSIS:

Anxiety [specify level]/Fear

May Be Related To:

Situational crisis, perceived or actual threats to self and fetus

Possibly Evidenced By:

Increased tension, apprehension, sympathetic stimulation, and extraneous movements

DESIRED OUTCOMES/EVALUATION CRITERIA—CLIENT WILL:

Verbalize understanding of individual situation
and possible outcomes.

Report anxiety is reduced/manageable.

Appear relaxed; with maternal vital signs within normal limits.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Explain procedures, nursing interventions, and treatments. Keep communication open; discuss with client the possible side effects and outcomes, maintaining an optimistic attitude.

Orient client and partner to labor suite environment.

Answer questions honestly, including information regarding contraction pattern and fetal status.

Encourage use of relaxation techniques.

Encourage verbalization of fears or concerns.

Monitor maternal/fetal vital signs.

Assess support systems available to the client/couple, whether client remains hospitalized or is to return home to await delivery.

Knowledge of the reasons for these activities can decrease fear of the unknown.

Helps client and significant other(s) feel at ease and more comfortable in their surroundings.

Providing clear information can help the client/couple understand what is happening and may reduce anxiety.

Enables the client to obtain maximum benefit from rest periods; prevents muscle fatigue and improves uterine blood flow.

Can help reduce anxiety and stimulate identification of coping behaviors.

Vital signs of client and fetus may be altered by anxiety. Stabilization may reflect reduction of anxiety level.

The assistance and caring of significant others, including caregivers, are extremely important during this time of stress and uncertainty. If client is to return home, additional support will be required to meet self-care needs and homemaker activities as well as child care, as appropriate.

Collaborative

Administer sedative if other measures are not successful.

Provides soothing and tranquilizing effect.

NURSING DIAGNOSIS:

May Be Related To:

Possibly Evidenced By:

**DESIRED OUTCOMES/EVALUATION
CRITERIA—CLIENT WILL:**

Activity Intolerance [specify level]

Muscle/cellular hypersensitivity (contracted plasma volume/dehydration, prolonged physical activity and stress)

Continued uterine contractions/irritability

Reduce activity level.

Identify/engage in activities appropriate to situation.

Demonstrate reduction/cessation of uterine contractions.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Explain the reasons for requiring bedrest, use of lateral recumbent/side-lying position, and decreasing activity.

Provide comfort measures such as back rubs, changes of position, or decreased stimuli in room (e.g., low lighting).

Group activities together as much as possible, such as medication administration, vital signs, and assessments.

Provide uninterrupted periods for rest/sleep.

Offer diversional activities, such as reading, radio, and television, or visits with selected friends or family.

Assess uterine contractions per protocol.

These measures are intended to keep the fetus off the cervix and to enhance uterine perfusion; bedrest may decrease uterine irritability.

Decreases muscle tension and fatigue and helps promote sense of well-being.

Promotes longer opportunities for client to rest between interruptions.

Promotes rest, prevents fatigue, and may enhance relaxation.

Assists client in coping with decreased activity.

Reflects effectiveness of and determines need for further interventions.

NURSING DIAGNOSIS:

Risk Factors May Include:

Possibly Evidenced By:

DESIRED OUTCOMES/EVALUATION CRITERIA—CLIENT WILL:

Poisoning, risk for

Dose-related toxic/side effects of tocolytics

[Not applicable; presence of signs/symptoms establishes an *actual* diagnosis]

Display no evidence of untoward effects of tocolytic therapy.

Prevent or minimize maternal injury.

Demonstrate cessation of uterine contractions, dependent on fetal well-being.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Place client in lateral recumbent position. Elevate head during infusion of IV drug.

Decreases uterine irritability, increases placental perfusion, and reduces supine hypotension.

Monitor vital signs. Auscultate lung sounds; note cardiac irregularities and investigate reports of dyspnea/chest tightness.

Measure intake and output. Encourage fluid intake between 2000 and 3000 ml/day, unless restricted (e.g., during administration of magnesium sulfate [MgSO_4]).

Weigh client daily.

Monitor for drowsiness, hot flashes, visual disturbances, respiratory depression, and depressed deep tendon reflexes, as appropriate.

Have antidote available (calcium gluconate for MgSO_4 ; propranolol for terbutaline sulfate).

Collaborative

Assist as needed with sterile vaginal examination.

Administer IV solution or fluid bolus as indicated.

Administer IV solutions containing tocolytic agents (e.g., MgSO_4 ; terbutaline sulfate) by infusion pump or microdrip equipment, or by subcutaneous route. (Note: Experimental studies are evaluating the efficacy of prostaglandin synthesis inhibitors, such as indomethacin [Indocin], and other beta sympathomimetics, such as hexaprenaline.)

Obtain serum potassium level prior to initiation of IV terbutaline and periodically per protocol. Monitor serum glucose and potassium levels.

Administer nifedipine (Procardia) to be chewed and swallowed with food or drink. Nifedipine may occasionally be alternated with terbutaline sulfate.

Complications, such as pulmonary edema, cardiac dysrhythmias/tachycardia, agitation, dyspnea, chest pain, and increase in plasma volume may occur with administration of beta-receptor agonists, e.g., terbutaline sulfate (Brethine) or ritodrine (Yutopar), which stimulate beta₂ receptors (especially with concomitant use of steroids to stimulate fetal lung maturity).

Promotes adequate hydration and prevents fluid excess, especially when MgSO_4 is administered. MgSO_4 is excreted through the kidneys, therefore, urine output must be maintained. Initial therapy may cause transient increase in output, and intake may be restricted in presence of generalized edema.

Detects potential alteration in urinary functioning/retention of fluid.

Signs of neuromuscular depression, indicating increasing serum levels of MgSO_4 .

Administration of antidote may be necessary to reverse or counteract effects of tocolytic agent.

To assess cervical status. Vaginal examinations are kept to a minimum, because they may contribute to uterine irritability and infection. Safety of tocolytics when cervix is more than 4 cm dilated or 80% effaced is not documented and is generally contraindicated.

Hydration may decrease uterine activity. Before beginning drug therapy, hydration promotes renal clearance and minimizes hypotension.

MgSO_4 acts directly on myometrial tissue to promote relaxation; therefore, there are fewer side effects than other drug choices. For example, unlike IV ritodrine, it produces no change in blood pressure, maternal heart rate or cardiac output. Terbutaline sulfate relaxes uterine muscle as well as bronchioles and blood vessel walls. Only ritodrine is currently approved by the FDA as a tocolytic agent; however, terbutaline sulfate is preferred because of its efficacy and lower cost.

Terbutaline sulfate (and ritodrine) cause movement of potassium ions into cells, decreasing plasma levels; elevated blood glucose and plasma insulin levels, and release of glycogen from muscle and liver may result in hyperglycemia.

Nifedipine, a calcium channel blocker, has been used experimentally when other drugs fail to suppress uterine activity.

Monitor nifedipine levels as appropriate. Note development of tachycardia, hypotension, peripheral edema, or proteinuria.

Apply antiembolic hose as indicated, and provide passive range of motion exercises to legs every 1–2 hr.

Monitor serum magnesium levels per protocol during administration of MgSO₄. (Refer to CP: Pregnancy-Induced Hypertension.)

Insert indwelling catheter, as indicated.

Assess uterine contractions and FHR electronically while IV tocolytic agents are administered, or at least twice a day when oral route is used.

Decrease IV dose of tocolytics and gradually wean client to subcutaneous or oral dose, as indicated.

Arrange for transfer of client to high-risk facility or tertiary care center, if uterine activity persists following administration of tocolytics.

The therapeutic dosage of nifedipine for preterm labor has not been established. Periodic monitoring may prevent development of adverse/toxic effects, such as congestive heart failure.

Prevents pooling of blood in lower extremities, which can occur because of smooth muscle relaxation.

Therapeutic level is 4–7 mEq/L, or 6–8 mg/dL. Toxic signs and symptoms develop above 10 mg/dL.

Urine output must be monitored and maintained when administering MgSO₄. Output should be at least 30 ml/hr, or 100 ml in a 4-hr period.

Tactile and electronic monitoring of uterine contractions and FHR provides a continuous fetal/uterine assessment and basis for altering or maintaining rate of drug administration. Note: External monitors may increase contractions with some patients.

IV therapy should continue for at least 12 hr after contractions cease. Oral/subcutaneous therapy should begin 30 min before stopping IV infusion. Note: Intermittent subcutaneous administration of terbutaline may be preferred over oral route because of significantly lower dosages, continued effectiveness, and uninterrupted sleep.

Helps ensure availability of appropriate intensive care, which may be needed by newborn following preterm delivery. (Refer to other CPs as appropriate; e.g., Cesarean Birth; Preterm Infant.)

NURSING DIAGNOSIS:

Risk Factors May Include:

Possibly Evidenced By:

**DESIRED OUTCOMES/EVALUATION
CRITERIA—CLIENT WILL:**

Injury, risk for fetal

Delivery of preterm/immature infant

[Not applicable; presence of signs/symptoms establishes an *actual* diagnosis]

Maintain the pregnancy at least to the point of fetal maturity.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Assess for maternal conditions that would contraindicate steroid therapy to facilitate fetal lung maturity.

Assess FHR; note presence of uterine activity or cervical changes. Prepare for possible preterm delivery.

Provide information about the actions and side effects of the drug therapy.

Review potential side effects of steroid therapy with client/couple.

Stress necessity of follow-up care.

Collaborative

Assist as needed with analysis of amniotic fluid from amniocentesis or vaginal pool specimen; test for ferning.

Administer betamethasone (Celestone) deep IM.

Administer antibiotics, as indicated.

Initiate tocolytic therapy, as ordered.

In PIH and chorioamnionitis, steroid therapy may aggravate hypertension and mask signs of infection. Steroids may increase serum glucose levels in the patient with diabetes. Drug will not be effective if unable to delay birth for at least 48 hr.

Tocolytics can increase FHR. Delivery may be extremely rapid with small infant if persistent uterine contractions are unresponsive to tocolytics, or if cervical changes continue.

Important for the client/couple to know the purpose of the drug(s) being administered. Beta-agonist therapy may cause fetal tachycardia, hyperglycemia, acidosis, and hypoxia. Steroid therapy is most effective for increasing lung surfactant when the fetus is between 30 and 32 weeks' gestation (but may be used between 26 and 34 weeks' gestation).

Short-term effects may include hypoglycemia, increased risk of sepsis, and possible suppression of aldosterone for up to 2 wk following delivery. Long-term effects on the development of the child will not be known until longitudinal studies have been completed.

If fetus is not delivered within 7 days of administration of steroids, dose should be repeated weekly.

L/S ratio, presence of PG, and shake test results indicate fetal lung status. Ferning indicates rupture of membranes with increased risk of infection.

This synthetic cortisol can accelerate fetal lung maturity by stimulating surfactant production and thereby preventing or decreasing the severity of respiratory distress syndrome. Note: Administration into the deltoid muscle may result in local atrophy.

In the event of PROM and fetal lung immaturity, antibiotics may be used to prevent/reduce risk of infection, while allowing an additional 24–28 hr to elapse after administration of Celestone.

Helps reduce myometrial activity to prevent/delay early delivery.

NURSING DIAGNOSIS:

May Be Related To:

Pain [acute]/[Discomfort]

Muscle contractions, effects of medications

Possibly Evidenced By:

Reports of pain/discomfort, muscle tension, narrowed focus

**DESIRED OUTCOMES/EVALUATION
CRITERIA—CLIENT WILL:**

Report of discomfort is minimized, controlled.

Use relaxation techniques, effectively.

Appear relaxed, resting appropriately.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Expedite the admissions process and institute bedrest for client, using lateral recumbent position.
Review relaxation techniques, e.g., deep breathing exercises, visualization, guided imagery, soft music.

Side-lying position improves uterine blood flow and may decrease uterine irritability.

Helps client refocus attention, decreases muscle tension, reduces perception of discomfort and promotes sense of control. (Refer to ND: Anxiety [specify level]/Fear.)

Use nursing comfort measures such as changes of linen and position, back rug, and Therapeutic Touch.

Relieves muscle tension and fatigue.

Encourage routine inspection of mucous membranes for ulceration or reaction to chewing of nifedipine, if used.

Nifedipine may be irritating to oral cavity, in which case it should be swallowed whole.

Monitor maternal and fetal vital signs.

Reflects effectiveness of interventions.

Collaborative

Administer analgesics, as indicated.

Mild analgesics decrease muscle tension and discomfort.

NURSING DIAGNOSIS:

Knowledge deficit [Learning Need], regarding preterm labor, treatment needs, and prognosis

May Be Related To:

Misinterpretation or lack of information

Possibly Evidenced By:

Verbalization of questions/concerns, statements of misconceptions

**DESIRED OUTCOMES/EVALUATION
CRITERIA—CLIENT WILL:**

Verbalize awareness of implications and possible outcomes of preterm labor.

**DESIRED OUTCOMES/EVALUATION
CRITERIA—CLIENT WILL (cont.):**

Demonstrate understanding of home therapy and/or self-care needs.

Identify signs/symptoms requiring evaluation/ intervention.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Ascertain client’s knowledge about preterm labor and possible outcomes.

Establishes data base and identifies needs.

Assess client readiness to learn.

Include significant other(s) in teaching-learning process.

Provide information about follow-up care when client is discharged.

Identify signs/symptoms that should be reported immediately to healthcare provider, i.e., sustained uterine contractions, clear drainage from vagina.

Review signs/symptoms of “early” labor. (Refer to CP: The High-Risk Pregnancy; ND: Knowledge deficit [Learning Need]).

Demonstrate how client is to evaluate contraction activity after discharge, e.g., lying down, tilted to one side with a pillow to the back; placing fingertips on the fundus for approximately 1 hr to note hardening/tightening of the uterus; or via use of electronic recorder.

Stress importance of maintaining daily record of uterine activity and other pertinent information as individually appropriate.

Arrange for client to visit neonatal intensive care unit.

Discuss need to restrict lifestyle by stopping smoking and probably by restricting sexual activity and nipple stimulation.

Encourage regular rest periods 2–3 times daily in side-lying position. If bedrest is to be continued after discharge, suggest client spend part of day on couch/recliner.

Review daily routine, employment, and activity schedule to identify alternatives and ways to compensate for limitations.

Determine availability and level of commitment of supportive resources.

Recommend client empty bladder every 2 hr while awake.

Review daily fluid need, i.e., 2–3 quarts of liquid and avoidance of caffeine.

Factors such as anxiety or lack of awareness of need for information can interfere with readiness to learn. Retention of information is enhanced when client is motivated and ready to learn.

Support from significant others can help allay anxiety as well as reinforce principles of teaching and learning.

Client may need to return on a regular basis for monitoring and/or treatments.

Prompt evaluation and interventions may improve the outcome of the pregnancy.

Assists client to recognize preterm labor so that therapy to suppress this labor can be instituted or reinstated promptly.

Although uterine contractions commonly occur periodically, contractions occurring 10 min or less apart for an hour can result in cervical dilation and labor without prompt intervention. Self-monitoring is usually adequate and has no cost; however, some healthcare providers may require electronic monitoring, which necessitates data be transmitted via telephone lines and interpreted by a nurse upon receipt.

Periodic review of data will be used to adjust therapy.

Helps alleviate fears and facilitates adjustment to situation.

Nicotine has adverse effect on fetoplacental growth and on uterine circulation. Orgasm or release of oxytocin may stimulate uterine activity.

Enhances relaxation and reduces fatigue. If client is up and about, resting in the bedroom may maximize rest; however, the client on full bedrest may feel isolated and bored without a “change of

Pacing activities, avoidance of heavy chores/lifting, and modification in work duties or cessation of employment may help prevent recurrence of preterm labor.

Division of homecare responsibilities helps reduce risk of caregiver burn-out when one individual attempts to take on responsibilities of the client in addition to own role.

Prevents pressure of a full bladder on the irritable uterus.

Dehydration and caffeine both lead to increased uterine muscle irritability.

Obtain permit, if necessary, for administration of terbutaline.

Stress avoidance of OTC drugs while tocolytic agents are administered unless approved by physician.

Recommend adhering to a predetermined schedule for oral drug therapy.

Provide information about taking oral tocolytics with food.

Instruct in proper use of infusion pump when used and need to count/record pulse before bolus doses are administered.

Identify drug side effects requiring medical evaluation.

Establish routine schedule for homecare nurse visitation. Provide regular telephone contact.

Identify other resources, as indicated (e.g., community or home health nurse, childbirth preparation classes, groups such as Parents of Twins, or other couple who have had a successful outcome, Internet support groups).

Currently only ritodrine is FDA-approved as a tocolytic agent but is not generally used; terbutaline sulfate, which is usually the drug of choice, is still considered an experimental drug.

Concurrent use of OTC drugs may cause deleterious effects, especially if OTC drug has similar side effects to tocolytic agent (e.g., antihistamines or inhalers with bronchodilating effects such as epinephrine [Primatene Mist]).

Maintains blood level of drug for optimum effect. Note: Recent studies are evaluating the effectiveness and safety of low-dose continuous subcutaneous infusion and intermittent high-dose bolus administration of terbutaline in place of oral therapy.

Food improves tolerance to drug and reduces side effects.

Promotes safe use of drug, enhances participation in therapeutic regimen and supports self-care/independence.

Pulse rate greater than 120 bpm; presence of tremors, palpitations, chest pain, or dyspnea; or feelings of nervousness and agitation may require alteration/discontinuation of drug.

Weekly or biweekly visits provide opportunity for regular physical assessment, review of uterine activity record, additional education, and timely problem solving. Between visits, daily contact may be maintained via telephone, with a 24-hr "hot line" number also available for emergencies.

May need additional help in coping with situation, especially if client returns home to await delivery.