UNIT TERMINAL OBJECTIVE

6-1 At the completion of this unit, the EMT-Critical Care Technician student will be able to apply utilize the assessment findings to formulate and implement a treatment plan for a normal or abnormal labor.

COGNITIVE OBJECTIVES

At the completion of this unit, the EMT-Critical Care Technician student will be able to:

6-1.1 Review the anatomic structures and physiology of the reproductive system. (C-1)
6-1.2 Identify the normal events of pregnancy. (C-1)
6-1.3 Describe how to assess an obstetrical patient. (C-1)
6-1.4 Identify the stages of labor and the EMT-Critical Care Technician's role in each stage. (C-1)
6-1.5 Differentiate between normal and abnormal delivery. (C-3)
6-1.6 Identify and describe complications associated with pregnancy and delivery. (C-1)
6-1.7 Identify predelivery emergencies. (C-1)
6-1.8 State indications of an imminent delivery. (C-1)
6-1.9 Differentiate the management of a patient with predelivery emergencies from a normal delivery. (C-3)
6-1.10 State the steps in the predelivery preparation of the mother. (C-1)
6-1.11 State the steps to assist in the delivery of a newborn. (C-1)
6-1.12 Describe how to care for the newborn. (C-1)
6-1.13 Describe how and when to cut the umbilical cord. (C-1)
6-1.14 Discuss the steps in the delivery of the placenta. (C-1)
6-1.15 Describe the management of the mother post-delivery. (C-1)
6-1.16 Describe the procedures for handling abnormal deliveries. (C-1)
6-1.17 Describe the procedures for handling complications of pregnancy. (C-1)
6-1.18 Describe the procedures for handling maternal complications of labor. (C-1)
6-1.19 Describe special considerations when meconium is present in amniotic fluid or during delivery. (C-1)
6-1.20 Describe special considerations of a premature baby. (C-1)

AFFECTIVE OBJECTIVES

At the completion of this unit, the EMT-Critical Care Technician student will be able to:

6-1.21 Advocate the need for treating two patients (mother and baby). (A-2)
6-1.22 Value the importance of maintaining a patient’s modesty and privacy during assessment and management. (A-2)
6-1.23 Serve as a role model for other EMS providers when discussing or performing the steps of childbirth. (A-3)
6-1.24 Value the importance of body substance insolation. (A-2)

PSYCHOMOTOR OBJECTIVES

At the completion of this unit, the EMT-Critical Care Technician student will be able to:

6-1.25 Demonstrate how to assess an obstetric patient. (P-2)
6-1.26 Demonstrate how to provide care for a patient with: (P-2)
   a. Excessive vaginal bleeding
   b. Abdominal pain
6-1.27 Demonstrate how to prepare the obstetric patient for delivery. (P-2)
6-1.28 Demonstrate how to assist in the normal cephalic delivery of the fetus. (P-2)
6-1.29 Demonstrate how to deliver the placenta. (P-2)
6-1.30 Demonstrate how to provide post-delivery care of the mother. (P-2)
6-1.31 Demonstrate how to assist with abnormal deliveries. (P-2)

6-1.32 Demonstrate how to care for the mother with delivery complications. (P-2)

DECLARATIVE

I. Introduction
- A. Pregnancy results from ovulation and fertilization
  - 1. Most pregnancies are uncomplicated
  - 2. Complications can occur
    - a. Eclampsia/ pre-eclampsia
    - b. Diabetes
    - c. Hypotension/ hypertension
    - d. Cardiac disorders
    - e. Abortion
    - f. Trauma
    - g. Placenta abnormalities
- B. Childbirth involves labor and delivery
  - 1. Childbirth is a natural process, often only requiring basic assistance
  - 2. Throughout the process, the EMT-Critical Care Technician is caring for two patients, not one
  - 3. Complications can occur
    - a. Breech/ limb presentation
    - b. Multiple births
    - c. Umbilical cord problems
    - d. Disproportion
    - e. Excessive bleeding
    - f. Neonate requiring resuscitation
    - g. Preterm labor

II. Review the anatomy and physiology of the female reproductive system
- A. Normal events of pregnancy
  - 1. Ovulation
  - 2. Fertilization
    - a. Occurs in distal third of fallopian tube
  - 3. Implantation
    - a. Occurs in the uterus
- B. Accessory structures of pregnancy
  - 1. Placenta
    - a. Transfer of gases
      - (1) Oxygen and carbon dioxide
    - b. Transport nutrients
    - c. Excretion of wastes
    - d. Hormone production
      - (1) Placenta acts as temporary endocrine gland
      - (2) Secretes estrogen, progesterone, etc.
        - (a) Prevents menses
        - (b) Causes anatomical changes in preparation of childbirth
    - e. Protection
      - (1) Provides partial barrier against harmful substances
      - (2) Does not protect against steroids, narcotics, some antibiotics
  - 2. Umbilical cord
    - a. Connects placenta to fetus
    - b. Contains two arteries and one vein

3. Amniotic sac and fluid
    a. Membrane surrounding fetus
    b. Fluid originates from fetal sources - urine, secretions
    c. Between 500 and 1000 cc's of fluid after 20 weeks
    d. Rupture of the membrane produces watery discharge

C. Fetal growth process
1. End of 3rd month
    a. Sex may be distinguished
    b. Heart is beating
    c. Every structure found at birth is present
2. End of 5th month
    a. Fetal heart tones can be detected
    b. Fetal movement may be felt by the mother
3. End of 6th month
    a. May be capable of survival if born prematurely
4. Approximately middle of 10th month
    a. Considered to have reached full term
    b. Expected date of confinement (EDC)

D. Obstetric terminology
1. Antepartum - before delivery
2. Postpartum - after delivery
3. Prenatal - existing or occurring before birth
4. Natal - connected with birth
5. Gravida - number of pregnancies
6. Para - number of pregnancies carried to full term
7. Primigravida - a woman who is pregnant for the first time
8. Primipara - a woman who has given birth to her first child
9. Multiparous - a woman who has given birth multiple times
10. Gestation - period of time for intrauterine fetal development

III. General assessment of the obstetric patient

A. Initial assessment

B. History of present illness
1. SAMPLE
    a. Pertinent medical history
        (1) Diabetes
        (2) Heart disease
        (3) Hypertension/ hypotension
        (4) Seizures
2. Current health of patient
    a. Pre-existing conditions
    b. Prenatal care
        (1) None
        (2) Physician
        (3) Nurse midwife
    c. Illicit drug use

C. Obstetrical history
1. Length of gestation
2. Primipara or multiparous
3. Previous cesarean sections

4. Previous gynecologic or obstetric complications
5. Contractions
6. Patient states that "the baby is coming"
7. Anticipating normal delivery (versus multiple births, etc.)
8. Pain
    a. OPQRST
9. Vaginal bleeding
    a. Presence
    b. Amount
    c. Color
    d. Duration
10. Vaginal discharge
    a. Presence
    b. Amount
    c. Color
    d. Duration

D. Physical examination
1. Comforting attitude and approach
    a. Protect patient modesty
    b. Maintain privacy
    c. Be considerate of reasons for patient discomfort
2. Vital signs
    a. Consider orthostatic
3. Genital inspection
    a. When indicated
    b. Visually inspect for crowning and/ or vaginal bleeding

IV. General management of the obstetric patient

A. Body substance insolation

B. Basic treatment modalities
1. Airway and ventilatory support
    a. Administer oxygen
        (1) High flow, high concentration PRN
2. Circulatory support
3. Pharmacological interventions
    a. IV access
        (1) Large bore
        (2) Volume expander
        (3) Consider second line
4. Non-pharmacologic interventions
    a. Position of comfort and care
        (1) Left lateral recumbent after the 24th week, if not in active labor
    b. Monitor cardiac rhythm
    c. Evaluate the fetus status if possible
    d. Treat for hypotension if necessary
5. Transport considerations
    a. Emergently
6. Psychological support/ communications strategies
    a. Calm approach
    b. Maintain modesty/ privacy

V. Specific complications of pregnancy
  A. Trauma
    1. Minor trauma common in the obstetric patient
      a. Reasons
        (1) Syncopal episodes
        (2) Diminished coordination
        (3) Loosening of the joints
    2. Major trauma
      a. Susceptible to a life-threatening episode due to increased vascularity
        (1) May deteriorate suddenly
    3. Abdominal trauma
      a. Premature separation of the placenta
      b. Premature labor
      c. Abortion
      d. Rupture of the uterus
      e. Fetal death
        (1) Death of the mother
        (2) Separation of the placenta
        (3) Maternal shock
        (4) Uterine rupture
        (5) Fetal head injury
  B. Vaginal bleeding
    1. Abortion/ miscarriage
      a. Classifications
        (1) Complete
          (a) Uterus completely evacuates fetus, placenta, and decidual lining
        (2) Incomplete
          (a) Some placental tissue remaining in uterus after expulsion of fetus
        (3) Spontaneous
          (a) Occur before 20th week, due to maternal or ovular defects
        (4) Criminal
          (a) Intentional ending of pregnancy under any condition not allowed by law
        (5) Therapeutic
          (a) End pregnancy as thought necessary by a physician
        (6) Threatened
          (a) Vaginal bleeding during first half of pregnancy
        (7) Inevitable
          (a) Severe cramping and cervix effacement and dilation
          (b) Attempts to maintain pregnancy are useless; changes are irreversible
      b. Incidence
        (1) Assume during first and second trimester of known pregnancy
      c. Specific assessment findings
        (1) Additional history
          (a) Statement that she has recently passed tissue vaginally
          (b) Complaint of abdominal pain and cramping
          (c) History of similar events
        (2) Additional physical examination

(a) Evaluate impending shock - check orthostatic vital signs
(b) Presence and volume of vaginal blood
(c) Presence of tissue or large clots

d. Transport considerations
(1) Collect and transport any passed tissue, if possible

e. Psychological support/ communications strategies
(1) Emotional support extremely important

2. Ectopic pregnancy
a. Incidence
(1) Approximately 1 of every 200 pregnancies
(2) Most are symptomatic and/ or detected 2-12 weeks gestation
b. Cause
(1) Ovum develops outside the uterus
(a) Previous surgical adhesions
(b) Pelvic inflammatory disease
(c) Tubal ligation
(d) Use of an IUD
c. Organs affected
(1) Fallopian tube
d. Complications
(1) May be life-threatening
(2) May lead to hypovolemic shock and death
e. Specific assessment findings
(1) Severe abdominal pain, may radiate to back
(2) Amenorrhea - absence of monthly blood flow and discharge
(3) Vaginal bleeding absent or minimal
(4) Upon rupture, bleeding may be excessive
(5) Shock signs and symptoms
(6) Additional history
(a) Previous surgical adhesions
(b) Pelvic inflammatory disease
(c) Tubal ligation
(d) Use of an IUD
(e) Previous ectopic pregnancy
(7) Additional physical examination
(a) Check for impending shock - orthostatic vital signs
(b) Presence and volume of vaginal blood
f. Additional management
(1) See "general management"
(2) Second large bore IV line
(3) Trendelenburg, if shock impending
g. Transport considerations
(1) Emergency transport to nearest surgically-capable facility
h. Psychological support/ communications strategies

3. Placenta previa
a. Incidence
(1) About 1 in 300
(2) Higher in preterm births
b. Cause
(1) Placenta implantation in lower uterus; covering cervix opening

- (2) Associate with increasing age, multiparity, previous cesarean sections, intercourse
- c. Organs affected
  - (1) Placenta, uterus
- d. Complications
  - (1) Placental insufficiency and fetal hypoxia
- e. Specific assessment findings
  - (1) Bright red blood flow without pain or uterine contractions
- f. Transport considerations
  - (1) Emergency transport to appropriate facility
  - (2) Definitive treatment is cesarean section
- g. Psychological support/ communications strategies

4. Abruptio placenta
   - a. Incidence
     - (1) Occurs in up to 2% of pregnancies
     - (2) Occurs in 1 in 200 deliveries
     - (3) 1 out of 400 fetal deaths
     - (4) Typically a third trimester complication
     - (5) Associated with hypertension, pre-eclampsia, trauma, multiparity
   - b. Cause
     - (1) Premature separation of placenta from uterus
   - c. Organs affected
     - (1) Placenta, uterus
   - d. Complications
     - (1) Fetal hypoxia and death
   - e. Specific assessment findings
     - (1) Third trimester bleeding
     - (2) Acute alteration in the contraction pattern
     - (3) Uterus becomes tender
     - (4) Uterus becomes board-like if hemorrhage retained
     - (5) Symptoms of shock inconsistent with amount of visible bleeding
   - f. Transport considerations
     - (1) Assess fetal heart tones often
     - (2) Transport in LLR position unless Trendelenburg is indicated
     - (3) Emergency transport to appropriate facility
     - (4) Definitive treatment is cesarean section
   - g. Psychological support/ communications strategies

C. Complications of pregnancy

1. Exacerbation of pre-existing medical conditions
   - a. Diabetes
     - (1) May become unstable during pregnancy
     - (2) Higher incidence of coma
   - b. Hypertension
     - (1) May be complicated by pre-eclampsia/ eclampsia
     - (2) More susceptible to additional complications
       - (a) Cerebral hemorrhage
       - (b) Cardiac failure
       - (c) Renal failure
   - c. Neuromuscular disorders
     - (1) May be aggravated by pregnancy

d. Cardiac disorders
   (1) Additional stress on the heart
      (a) Cardiac output increases 30% by week 34

2. Medical complications of pregnancy
   a. Toxemia (pre-eclampsia/ eclampsia)
      (1) Incidence
         (a) Serious condition
         (b) Pregnancy induced hypertension (PIH)
      (2) Cause
         (a) Associated with first birth, multiple births, excessive amniotic fluid
         (b) Pre-existing conditions
            i) Hypertension
            ii) Renal disease
            iii) Diabetes
      (3) Organs affected
      (4) Complications
         (a) Convulsions seriously threaten the fetus by abruptio placenta
      (5) Specific assessment findings
         (a) Occurs in the last trimester of pregnancy
         (b) Pre-eclampsia is non-convulsive state of toxemia
         (c) Pre-eclampsia has two of the following three signs
            i) Hypertension (BP > 140/90 - acute systolic rise > 20 and diastolic rise > 10)
            ii) Fluid retention with excessive weight gain
            iii) Proteinuria
         (d) Eclampsia includes convulsions
         (e) Additional history
            i) Hypertension
            ii) Excessive weight gain with edema and/ or seizures
         (f) Additional physical exam
            i) Headaches and/ or epigastric pain; possible seizure
            ii) Visual problems
      (6) Transport considerations
         (a) If a seizure has not occurred
            i) Keep patient calm and quiet
            ii) IV access
            iii) Darken ambulance
            iv) Position patient LLR
            v) Transport gently
            vi) Minimize stimuli to avoid precipitating seizure
         (b) If a seizure is occurring
            i) IV access
            ii) Consider the administration of 5 to 10 mg of diazepam IV push
         (c) Emergency transport to appropriate facility
         (d) Definitive treatment is cesarean section
      (7) Psychological support/ communications strategies
   b. Diabetes

(1) Can be caused by pregnancy
c. Supine-hypotensive syndrome
(1) Incidence
(a) Occurs near term
(2) Cause
(a) Abdominal mass compresses the inferior vena cava
i) Reduces pre-load and thereby cardiac output
(3) Organs affected
(4) Complications
(5) Specific assessment findings
(a) Check to see if volume depletion is the problem
(b) Additional history
i) Recent medical history including diarrhea, vomiting
ii) Problem coincidental to supine positioning
(c) Additional physical exam
i) Orthostatic vital signs
ii) Tenting of skin
(6) Management
(7) Transport considerations
(a) If not volume depletion
i) Transport LLR
(b) If possibility of volume depletion
i) Consider 2 large bore IVS
ii) Volume replacement
iii) Transport LLR as precaution
(8) Psychological support/ communications strategies
3. Braxton-Hicks contractions
a. Incidence
(1) Benign phenomenon that simulates labor
(2) Usually occurs after the third month of pregnancy
b. Specific assessment findings
(1) Contractions are generally painless and may be helped by walking
c. Management
(1) Transport considerations
(2) Psychological support/ communications strategies
4. Preterm labor
a. Labor that begins prior to 38 weeks gestation
b. Incidence
(1) Incidence varies with age, presence of multiple gestations, and other risk factors
c. Causes
(1) Physiologic abnormalities (multiple factors)
(2) Uterine or cervical anatomical abnormalities
(3) Premature rupture of membranes
(4) Multiple gestations
(5) Intrauterine infections
d. Complications
(1) Premature delivery of infant
e. Specific assessment findings
(1) Contractions that result in the progressive dilation or effacement of the

cervix (not a field assessment)
(2) May be difficult to differentiate labor from Braxton-Hicks contractions (false labor)
f. Management
(1) Transport considerations
(a) Requires transport for evaluation and treatment by an appropriate health care provider
g. Psychological support/ communications strategies

VI. Normal childbirth
A. Characteristics of labor
1. Discomfort in the back and/ or the abdomen
2. Contractions occurring at regular intervals
a. Increasing frequency and intensity of contractions
b. Time from the beginning of one contraction to the beginning of the next
B. Stages of labor
1. Stage I (Dilatation stage)
a. Onset of regular uterine contractions to complete cervical dilation
b. Average time
(1) 12.5 hours in primipara
(2) 7 hours in multipara
2. Stage II (Expulsion stage)
a. Full dilatation of the cervix to the delivery of the newborn
b. Average time
(1) 80 minutes in a primipara
(2) 30 minutes in a multipara
3. Stage III (Placental stage)
a. Immediately following delivery of the baby until expulsion of the placenta
b. Average time
(1) 5 to 20 minutes
C. Progression of labor
1. First stage of labor
a. Contractions
(1) Typically begin short and gently
(2) Occur at intervals of ten to fifteen minutes
b. Effacement
(1) Thinning and shortening of the cervix
c. Cervical dilation
(1) Stretching of the opening of the cervix to accommodate baby
2. Second stage of labor
a. Contractions
(1) Stronger and longer
(2) Lasting 50-70 seconds
(3) Occurring at intervals of 2-3 minutes
b. Amniotic sac typically ruptures
c. Urge to bear down or push becomes very strong
d. Crowning
(1) Largest part of the fetal head is visible
D. Delivery process
1. The decision to transport

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a. Related to the imminence of delivery
    (1) Number of pregnancies
        (a) Labor is shortened with multiparity
    (2) Frequency of contractions
        (a) Two minutes apart may signal imminent delivery
    (3) Maternal urge to push
        (a) Desire to push signals imminent delivery
    (4) Crowning of the presenting part
        (a) Imminent delivery
b. Related to the presence of complications
    (1) Abnormal presentation
    (2) Fetal distress
    (3) Multiple births

2. Delivery of the newborn
    a. Prepare a delivery area
        (1) Clean, adequate space
    b. Provide oxygen to the mother
        (1) Nonrebreather or nasal cannula
    c. Establish an IV
        (1) KVO/ TKO rate
    d. Position mother on her back and drape appropriately
    e. Monitor the fetal heart rate, if time allows
    f. Coach the mother in breathing patterns
    g. Encourage mother to push with contractions
    h. Establish body substance isolation
    i. Control the delivery of the fetal head
        (1) Apply gentle hand pressure on the head
        (2) Beware of fontanelle
        (3) Support the head as it delivers
    j. Tear amniotic sac if it continues to cover the baby's head
        (1) Permits escape of amniotic fluid
        (2) Allows the newborn to start breathing
    k. Check for the presence of the umbilical cord wrapped around the neck
        (1) Carefully remove it
    l. Suction the neonate’s mouth and nose
    m. Provide support as the head rotates and the shoulders deliver
        (1) Keep the neonate’s head above the level of the vagina
    n. Clamp the umbilical cord
        (1) First clamp approximately 4 inches from the neonate
        (2) Second clamp approximately 6 inches from the neonate
        (3) Cut the cord between the two clamps
    o. Support and evaluate the neonate following delivery
3. Delivery of the placenta
    a. Usually occurs 5-20 minutes after delivery of neonate
    b. Do not delay transport to wait for the delivery of the placenta
    c. If it delivers, place the placenta in a plastic bag

E. Additional care
1. Care for the mother
    a. Excessive bleeding
        (1) Perform fundal massage of the uterus

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(a) Stimulates contraction
(b) Breast feeding stimulates contraction of the uterus
(2) Manage any perineal tears by direct pressure
b. Observe and monitor the mother
(1) Signs of hemorrhage and stability of pulse and blood pressure
2. Neonate care

VII. Routine care of the neonate (for more detail, see neonatology unit)
A. Care within first minute following delivery
1. Support the newborn
2. Position the newborn on his/ her side on warm clean object, such as sterile towels
3. Clear airway
a. Repeat suction of the nose and mouth
b. Wipe away secretions with sterile gauze
4. Dry
5. Maintain warmth
6. Tactile stimulation
7. Evaluate the newborn using APGAR scoring

VIII. Abnormal deliveries
A. Breech presentation
1. Incidence
a. Most common in premature births and uterine abnormalities
2. Assessment
a. Feet or buttocks are presenting part
3. Management
a. Shoulders, not the head, are normally the difficult part to deliver
b. If delivering
(1) Allow neonate to deliver to the umbilicus
(2) With the legs clear, support the body in palm
(3) Extract approximately 4-6 inch loop of umbilical cord
(4) Rotate neonate for anterior-posterior shoulder positioning
(5) Apply gentle traction until axilla visible
(6) Guide neonate upward and deliver posterior shoulder
(7) Guide neonate downward to deliver anterior shoulder
(8) Ease the head out, do not apply excessive manipulation
c. If head does not deliver
(1) Form V with fingers on sides of neonate's nose
(a) Creates airway
B. Umbilical cord presentation
1. Incidence
a. Approximately 1 in 200 pregnancies
b. Suspect when fetal distress present
c. Contributing factors include breech birth, multiple births, large fetus
2. Assessment
a. Portion of cord visible, protruding through vagina
3. Management
a. Position mother with hips elevated
(1) Trendelenburg
(2) Knee-chest

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b. Mother should pant with contractions to avoid bearing down
c. Use gloved hand to hold fetus in vagina
d. Keep pressure off cord

C. Limb presentation
1. Incidence
2. Assessment
a. Limb presents through vagina
3. Management
a. Emergency transport
b. Cesarean section delivery

D. Multiple births
1. Incidence
a. Twins occur in about 1 in every 90 births
b. Approximately 40% of twin deliveries are premature
2. Assessment
a. Mother may not know
b. First sign may be additional contractions and need to push
3. Management
a. Deliver in same manner as individual delivery
b. Need additional supplies

E. Cephalopelvic disproportion
1. Incidence
a. Small pelvis
b. Fetal abnormalities
c. Mother often primigravida
2. Assessment
a. Lack of progress through stages of delivery
b. Frequent, prolonged contractions
3. Management
a. Cesarean delivery necessary to avoid uterine rupture
b. Oxygenation, ventilation, circulatory support
c. Emergency transport

F. Meconium staining
1. Meconium in amniotic fluid
a. Could be aspirated
2. Incidence
a. Between 8 and 30% of deliveries
b. Increased perinatal mortality
3. Assessment
a. Color varies from yellow, light green, or dark green (pea soup)
b. The thicker and darker the fluid, the higher the risk of morbidity
4. Management
a. Prepare for intubation
b. Clear airway/ thoroughly suction
(1) Mouth, pharynx, nose
(2) Direct visualization and suction of hypopharynx
c. Intubate
(1) Suction proximal end of endotracheal tube

G. Maternal complications of labor and delivery
1. Postpartum hemorrhage

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a. Loss of more than 500 cc's of blood immediately following delivery
b. May be caused by
    (1) Lack of uterine tone
    (2) Vaginal or cervical tears
    (3) Retained pieces of the placenta
    (4) Clotting disorders
c. Incidence
d. Assessment
    (1) History
        (a) Large infant
        (b) Multiple births have occurred
        (c) The patient has had placenta previa
        (d) The patient has had abruptio placenta
        (e) The patient has had prolonged labor
    (2) Physical examination
        (a) Treat the patient, EMT-Critical Care Technician must rely on the patient's clinical appearance and vital signs
        (b) The uterus feels soft on palpation
        (c) Inspect the external genitalia for injury resulting in excessive bleeding
        (d) Observe for signs and symptoms of hypovolemic shock
e. Management
    (1) Airway and ventilatory support
        (a) High flow, high concentration oxygen
    (2) Circulatory support
    (3) Pharmacologic interventions
        (a) Consider 2 large-bore IV's for volume replacement
    (4) Non-pharmacologic interventions
        (a) Place the infant at the mother's breast if just delivered
        (b) Provide uterine massage
        (c) Do not attempt to force delivery of the placenta
        (d) Do not pack the vagina
    (5) Transport considerations
        (a) Emergent transport of the patient
    (6) Psycological support/ communications strategies

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