Pre-hospital Management of Obstetric Patients with Complications Including Trauma

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Objectives

- Be able to ask key important questions of a laboring patient
- Learn basic anatomy and physiology of pregnancy
- Learn simple delivery techniques
- Be able to discuss trauma in pregnancy
- Know MVA injury prevention techniques for the pregnant woman

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The Stork Arrives

- The call can come in as:
  - “diarrhea”
  - “abdominal pain”
  - “vaginal bleeding”
  - “home birth gone bad”
- Arrive at the scene and find a woman in pain, having contractions every 2 minutes or closer, lasting 60-90 seconds, crowning, or having a strong urge to push.
- My objective today is to make this scenario not so anxiety provoking.

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Location of Deliveries in the U.S.

- *1900s, most U.S. birth occur outside of a hospital.*
- *1940, this fell to 44%*
- *1969, the rate of deliveries at home decreased to less than 1%*
- *1990-2004, the rate of home birth was less than 0.56%*
- *2005-present, the rate has increased and sustained at 0.59% =* ***25,000 births/year***
- **Idaho, Montana, Oregon and Pennsylvania have the highest level of home births 1.5 - 2.4%**

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Births away from Hospital Planned or Unplanned

- Planned home birth ➡ 7 to 17 % end in transfer to hospital as result of complications and are at risk for adverse outcomes.
- Unplanned births are usually result of precipitous labors and come in a setting unprepared for a delivery.

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Planned Home Birth

- 2007, American College of Obstetrics and Gynecologists sited concerns regarding the safety of home births for mother and infants, and issued a position statement opposing home births. A resolution supported by the American Medical Association passed in 2008.
- In contrast, the World Health Organization, the College of Nurse Midwives and the American Public Health Association all support home births and out of hospital births as an option for low risk women.
- 7-17% of all planned home births require transfer to a hospital for complications, these births may be at risk for adverse outcomes.

"Planned home births" were found to have comparable neonatal and maternal mortality rates to those of high risk hospital based deliveries such as C-sections and inductions of labor. (BIRTH 38:1 March 2011)

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Background on Home Births

- 2006, non-Hispanic white women were 3x as likely to have a home birth.
- More prevalent in married women 25+ years of age with singleton pregnancies and whom have several previous children and more prevalent in areas of the U.S. with larger families. (BIRTH 38:1 March 2011)

- 7.5% by physicians
- 61% of home births were delivered by Midwives
- 16% were certified mid-wives (requires Master's degree and certification/licensure)
- 45% lay mid-wives
- 31% by birth attendants or other (including family, EMS, and taxi driver)
- Idaho ranks in the top 13 states for home deliveries with 1.5-2.4% of all births occurring at home. (national average less than 0.5%)

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Key Questions Before delivery

- Does the patient feel the need to push or have a bowel movement?
  - This is a symptom of the babies head moving into the birth canal.
- Has the patient had any vaginal bleeding?
  - This is often a sign that labor has started.
- Has the patient's water broken?
  - Delivery may be imminent. Ask about the color of the fluid. Meconium

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Key Questions cont.

- **When is your baby due?**
  - If more than 3 weeks premature and anticipate infant may require resuscitation.
- **How many babies are you expecting?**
  - If more than 1, more EMS teams needed. Expect that each baby after the first will require more resuscitation.
- **Is this your first pregnancy?**
  - Successive pregnancies often deliver more rapidly

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OB Birth Pack

- Contains all essential items for a vaginal delivery and initial care for the newborn and mother.
- Precipitous Birth Pack Contents
  (Nurse Educator/Robinson May 2009)
- Bulb syringe
- Two blankets
- Towel
- Cord clamp x2
- Infant hat
- Ambu bag with size 1 mask
- Larygoscope and 0 blade
- ETT size 2.5,3.0,3.5 (most common used sizes)
- 8 and 10 Fr suction catheter
- Sterile gloves
- Sterile scissors
- Gallon size zip lock bag- *cut corner and place baby's head through it covering the baby with the bag to decrease insensible heat loss.*
- Consider a Braslow kit

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Anatomy and Physiology

- Uterus size of fist non pregnant state
- Cervix about 2 inches long and unable to penetrate 1 finger non pregnant state
- Placenta-afterbirth
- Umbilical cord 2 arteries-waste; 1 vein carries oxygen saturated blood
- Amniotic fluid 500-1000 cc (I/2 gallon)
- Full term pregnancy 280 days

A & P Changes of Pregnancy

- **Cardiac Output**
  - Increases 1-1.5 L/min
- **Blood Pressure**
  - Decreases 5-15 mm
- **Heart Rate**
  - Increases 15-20 bpm
- **Supine position**
  - May decrease cardiac output up to 30%
- **Blood Volume**
  - Increases 40-50% by week 13
- **Hemoglobin**
  - Decreases 1-2 g/dl

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A & P Changes of Pregnancy

- **Intestines**
  - Displaced into upper abdomen later in pregnancy
- **Gastric empting time**
  - Increases
- **Urinary bladder**
  - Becomes abdominal organ 2-3rd trimesters
- **Uterus**
  - Increases to 36 cm and 1000 g organ
- **Uterine blood flow**
  - Increases from 60 to 600ml/min

A & P Labor Stages

- 3 stages
- First stage: Dilation
  - first baby 8-10 hr.; 2nd and more babies 5-7 hrs.
- Second stage: Expulsion
  - first 1 hr.; 2nd and more 20-30 min
- Third stage: Placenta detaching 5-20 min

Anatomy and Physiology Pearls

Pregnancy can mask the signs of shock due to the increase of blood volume

Transport on the left side: Key Fact

Supine hypotensive syndrome—poor venous return to the heart due to pressure of the gravid uterus on the vena cava results in decreased blood pressure and fainting.

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Pregnancy is a normal state. Signs that indicate problems:

- Excessive pain, nausea or vomiting
- Vaginal bleeding or passage of tissue
- Weakness or dizziness
- Altered mental state
- Seizures
- Excessive swelling of the face or extremities
- Abdominal trauma
- Shock

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Pre Delivery Emergencies

- Spontaneous abortions (SAB) or miscarriages.
  - Key Fact: Can be associated with life threatening bleeding.

Fetal losses are considered abortions if less than 20 weeks gestation.

50% are from genetic abnormalities.

20-50 % of all pregnancies end in SAB

Usually occur from 8-12 weeks

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Pre Delivery Emergencies

- Seizures can be life threatening especially if from eclampsia. *Transport immediately.*
- Vaginal bleeding late in pregnancy also can be life threatening. Often associated with abruption or placenta previa.
  - Remember the increased blood flow to uterus at term—600cc/min.

  **Mom's can bleed out rapidly.*
- Prolapsed cord Mom in knee chest position, *TRANSPORT ASAP!!!!*

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That time you say “Oh No!”

- When you see head crowning you know you have no choice but to deliver.
- Always remember universal precautions
- ***Do NOT*** *let the patient go to the bathroom*
- ***Do NOT*** *hold legs together*
- ***Do NOT*** *hold the head in - let the baby deliver*
- Signs of imminent delivery include crowning, contractions every 2 minutes or closer, feeling a need to push or have a bowel movement

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Emergency care for delivery

- Position patient
- Sterile field around vaginal opening
- Monitor patient
- With crowning access for presenting part-head, buttocks etc. Avoid soft spot of head and eyes.
- Rupture the membranes if not already done
- Apply counter pressure to the head to prevent rapid expulsion (steady soft pressure)

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Emergency care cont.

- As soon as the head is out, feel around the head to see if a cord is around the baby's neck.
- If it is, gently lift it around the head or push it back behind the shoulders.
- If the shoulders do not come out immediately have mom lie on back and bring her knees up towards her chest and have her push.
- Once the shoulders come out the rest of the baby will come quickly.

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Emergency care cont.

- When the baby is born place on mothers chest and cover both.
- Clamp cord in 2 places with cord clamps and cut between.
- The placenta will be ready to come out in a few minutes you usually will see a gush of blood when it separates and is ready to be removed.
- Message the lower abdomen and this will help the uterus to contract and stop bleeding.

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Epidemiology of Trauma in Pregnancy

- 49% Motor Vehicle accidents
- 25% Falls
- 18% Assaults
- 4% Guns
- 1% Burns

Above are the most common causes

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Epidemiology cont.

- When looking solely at injuries resulting in death, the 2 most common are:
- Homicide 36%
- MVA 32%
- Remainder are drug use, suicide and other causes

Trauma in Pregnancy

- Trauma is more likely to cause maternal death than any other medical complication.
- Life threatening maternal trauma is associated with a 40-50% fetal loss rate, and less severe trauma in pregnant women is associated with a fetal loss of 1-5%.
- Preterm delivery occurred in 31% of women with orthopedic injuries compared to 3% prematurity in women with non-orthopedic trauma.
- Placental separation or abruption occurred in 30% of women with pelvic fractures.

Trauma in Pregnancy cont.

- Penetrating trauma to the abdomen accounts for 36% of overall maternal mortality.
- Gunshot wounds and stabs are the most common penetrating trauma.
- Penetrating trauma to the uterus has a 67% fetal death rate.
- 41% of fetuses dies when the mother experiences a life-threatening injury.

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Trauma in Pregnancy cont.

- Uterine contractions occur in 39% of trauma patients.
- Spontaneous abortion may occur if the trauma is before 20 weeks.
- Abruption placenta occurs with blunt trauma and accounts for 50-70% of the fetal losses.
- Uterine rupture- rare event and occurs in fewer than 1% of trauma pts. Most common in MVA.

Cardiorespiratory Arrest

- Cardiorespiratory arrest in pregnant female poses huge threat to fetus.
- More than 41% of fetuses die if mother suffers an arrest.
- Difficult to access fetus, so aggressive management of mother.
- Chance of survival min for fetus but aggressive tx necessary if mom is >24 weeks.
- Receiving facility notified so can be ready to perform C-section.

Beyond Basics

- With spinal immobilization of the pregnant patient the backboard will need to be tilted 15-30 degrees to the left to prevent SHS -supine hypotensive syndrome.
- Establish and maintain open airway and anticipate vomiting due to delayed gastric emptying.
- Provide oxygen to maintain SpO2 close to 100%. Remember fetus is very vulnerable to hypoxia.

Beyond Basics

- Access circulation and expect internal hemorrhage.
- Anticipate and prevent shock. Signs and symptoms not present in pregnant pt. til more than 30% total blood volume is lost.
- Establish 2 large bore IV line and infuse to maintain maternal and fetal perfusion.
- Continuous ECG monitoring for mom.

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Beyond Basics

- Monitor fetal heart tones if possible. A rate less than 100 is associated with severe distress.
- Treat and manage any other life threatening injuries.
- Transport to closest appropriate receiving facility, and call in advance with as much info as possible.

Injury prevention

Community Education Opportunity

- Always fasten seat belt.
- Sit at least 10 inches from steering wheel.
- Position lap belt below prominence of pregnant abdomen.
- Place shoulder harness off to the side of uterus, between breast and over midline of clavicle.
- Tilt wheel towards chest, away from abdomen
- Do not disable airbags

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Questions?

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