

Emergency Childbirth

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Special Delivery



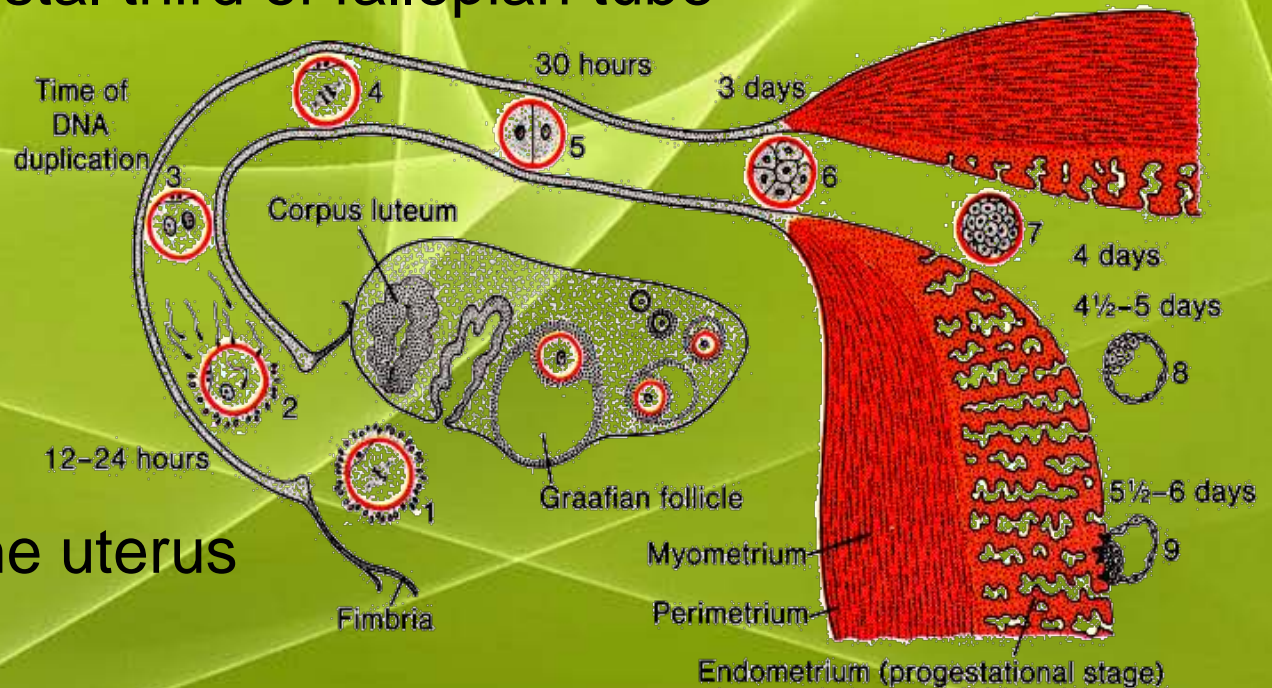
Something to remember is that mothers have been bringing babies into this world since Day 1.

Once in a while we are privileged to assist them.

Your calm and professional reaction will determine the outcome for mother and baby.

Normal Events of Pregnancy

- Ovulation
- Fertilization
 - Occurs in distal third of fallopian tube



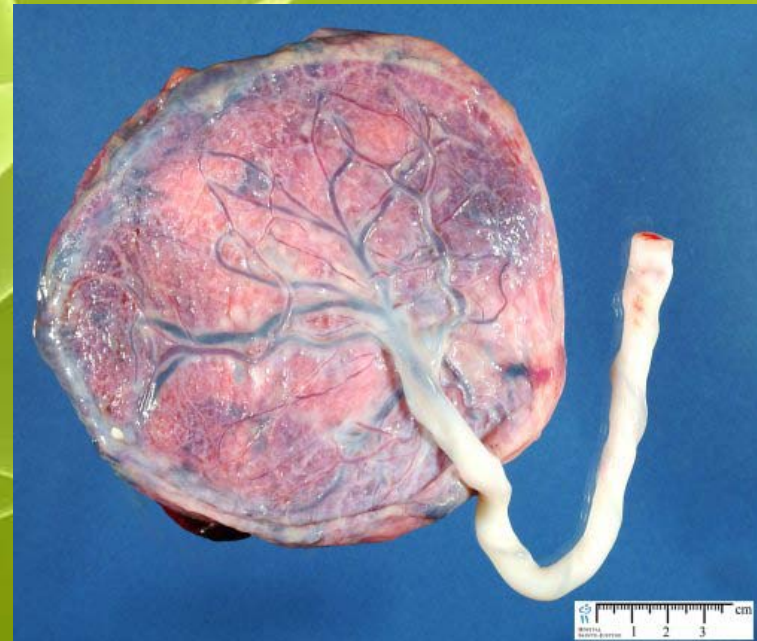
- Implantation
 - Occurs in the uterus

Specialized Structures of Pregnancy

- Placenta
- Umbilical cord
- Amniotic sac and fluid

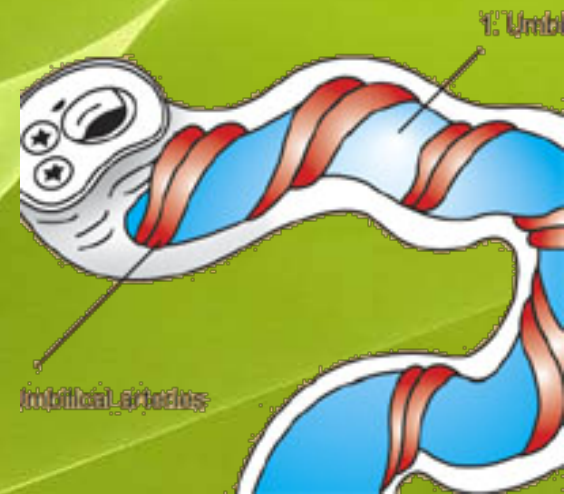
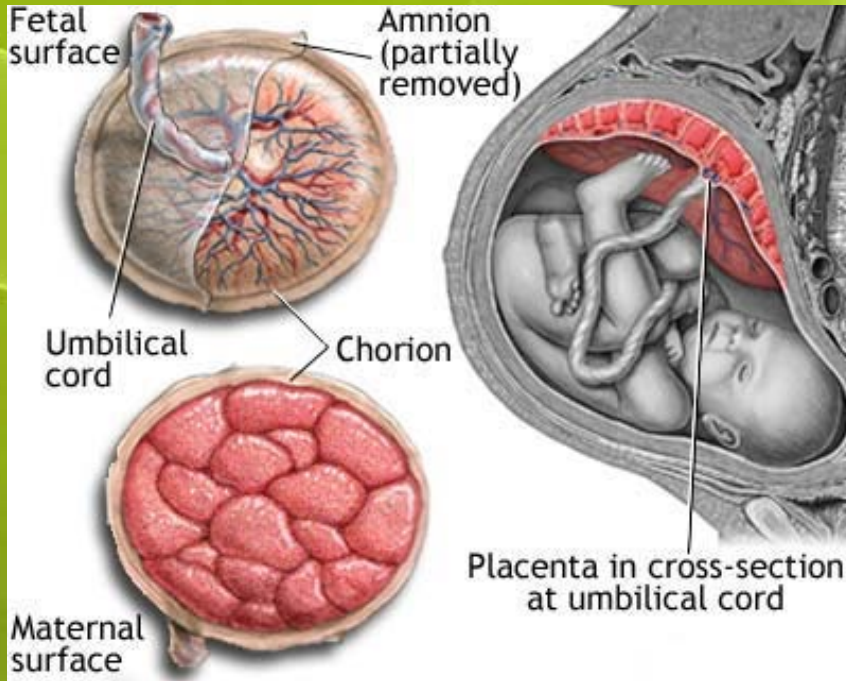
Placenta

- Transfer of gases
- Transport other nutrients
- Excretion of wastes
- Hormone production
- Protection



Umbilical Cord

- Connects placenta to fetus
- Contains two arteries and one vein



Amniotic Sac and Fluid

- Membrane surrounding the fetus
- Fluid originates from fetal sources – urine, secretions
 - Fluid accumulates rapidly
 - Amounts to about 175 to 225 mL by the fifteenth week of pregnancy and about 1 L at birth
- Rupture of the membrane produces watery discharge

Fetal Growth and Development

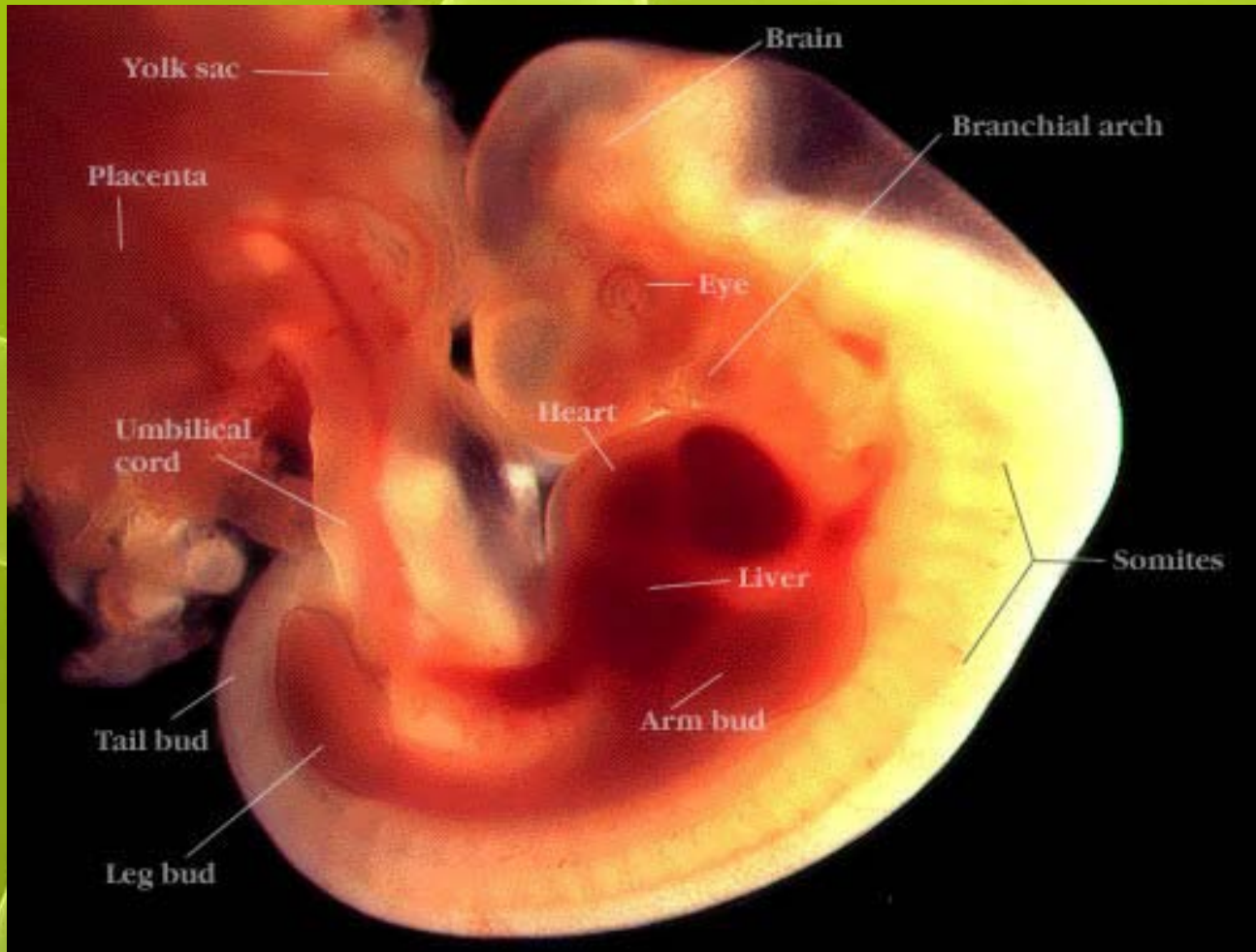
- During the first 8 weeks of pregnancy the developing ovum is known as an embryo
- After that and until birth it is called a fetus



Fetal Growth and Development

- The period during which intrauterine fetal development takes place (gestation) usually averages 40 weeks from time of fertilization to delivery
 - Progress of gestation is usually considered in terms of 90-day periods or trimesters

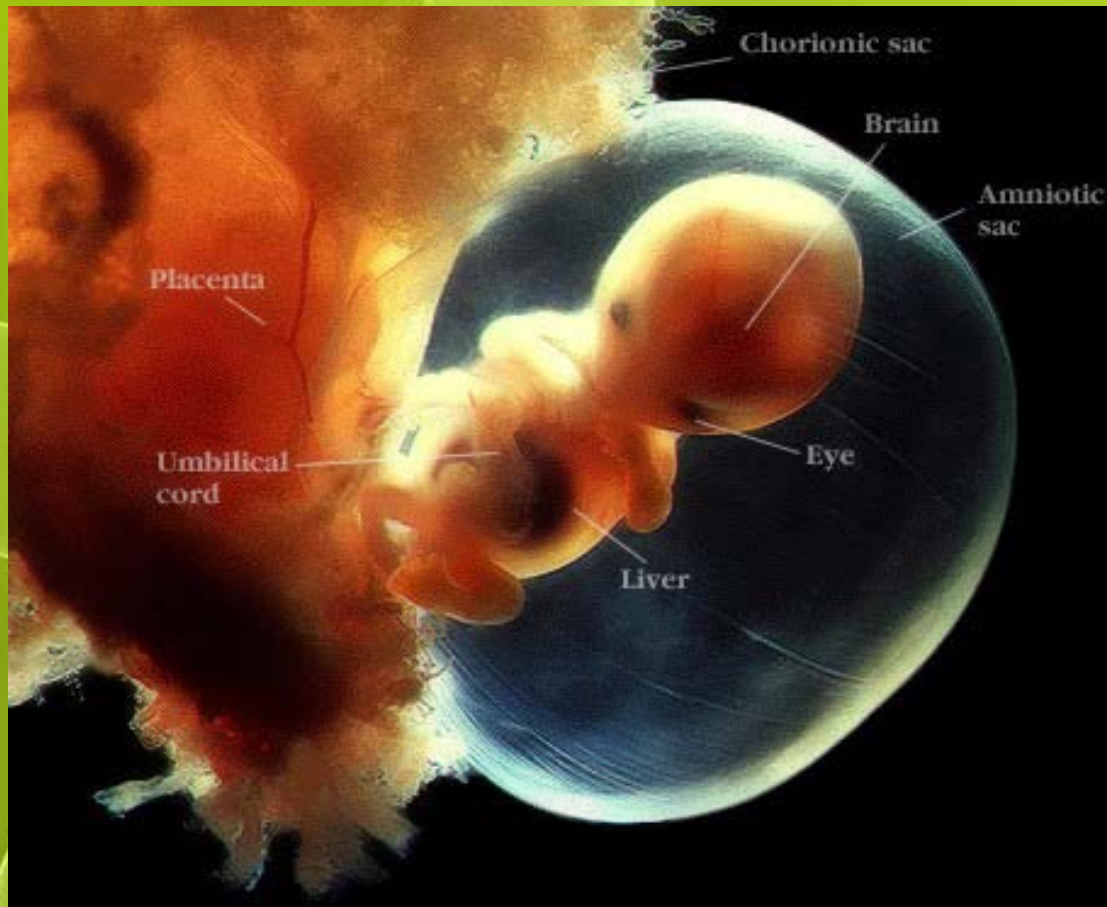
Human embryo and fetus at 21 days



Weeks 4-5



Weeks 6-7

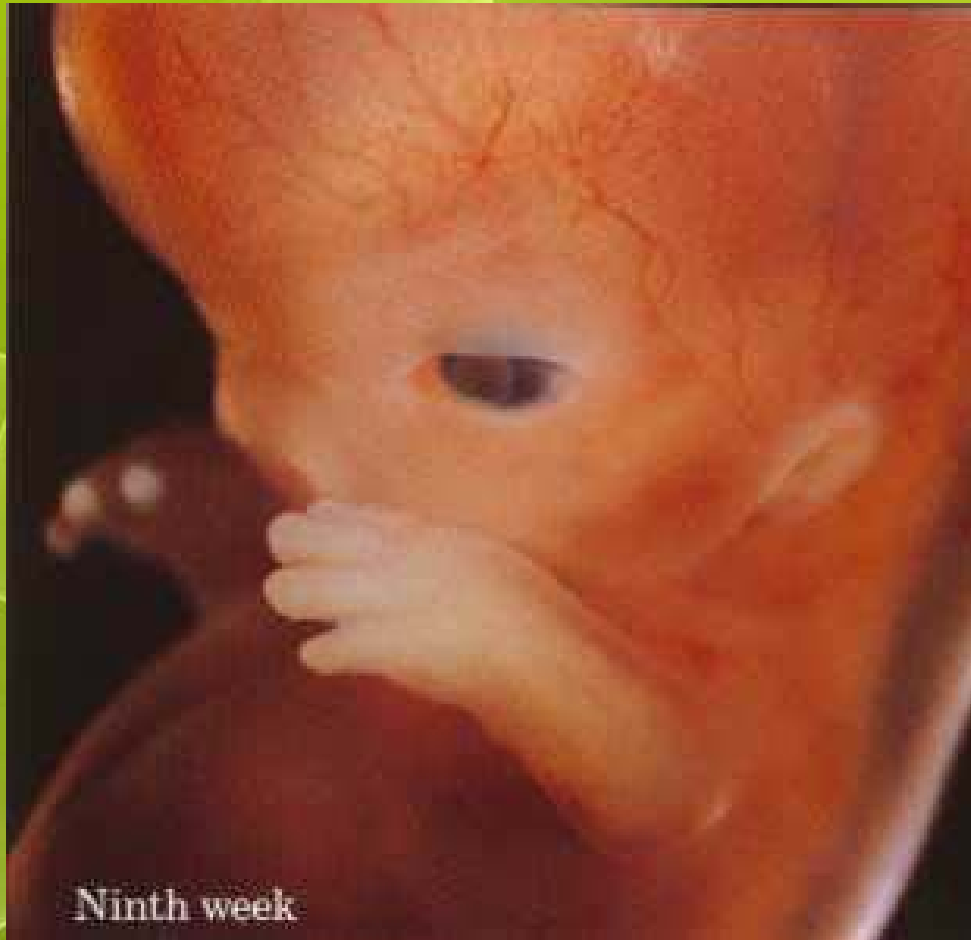


Week 8



Eighth week

Week 9-13



Ninth week

Months 4-5



Obstetrical Terminology

- Gravida – refers to the number of all of the woman's current and past pregnancies
- Para – refers only to the number of the woman's past pregnancies that have remained viable to delivery
- Antepartum – the maternal period before delivery
- Gestation – period of intrauterine fetal development
- Grand multipara – a woman who has had seven deliveries or more

Obstetrical Terminology

- Multigravida – a woman who has had two or more pregnancies
- Multipara – a woman who has had two or more deliveries
- Natal – connected with birth
- Nullipara – a woman who has never delivered
- Perinatal – occurring at or near the time of birth
- Postpartum – the maternal period after delivery

Obstetrical Terminology

- Prenatal – existing or occurring before birth
- Primigravida – a woman who is pregnant for the first time
- Primipara – a woman who has given birth only once
- Term – a pregnancy that has reached 40 weeks gestation

Maternal Changes During Pregnancy

- Besides cessation of menstruation and the obvious enlargement of the uterus, the pregnant woman undergoes many other physiological changes affecting the:
 - Genital tract
 - Breasts
 - Gastrointestinal system
 - Cardiovascular system
 - Respiratory system
 - Metabolism

Obstetric History

Questions to ask patient

- Length of gestation
- Parity and gravidity
- Previous cesarean delivery
- Maternal lifestyle (alcohol or other drug use, smoking history)
- Infectious disease status
- History of previous gynecological or obstetrical complications
- Presence of pain

Obstetric History

Questions to ask patient

- Presence, quantity, and character of vaginal bleeding
- Presence of abnormal vaginal discharge
- Presence of “show” (expulsion of the mucous plug in early labor) or rupture of membranes
- Current general health and prenatal care (none, physician, nurse midwife, etc)

Obstetric History

Questions to ask patient

- Allergies, medications taken (especially the use of narcotics in the last 4 hours)
- Maternal urge to bear down or sensation of imminent bowel movement, suggesting imminent delivery

Physical Examination

- The patient's chief complaint determines the extent of the physical examination
 - The prehospital objective in examining an obstetrical patient is to rapidly identify acute surgical or life-threatening conditions or imminent delivery and take appropriate management steps

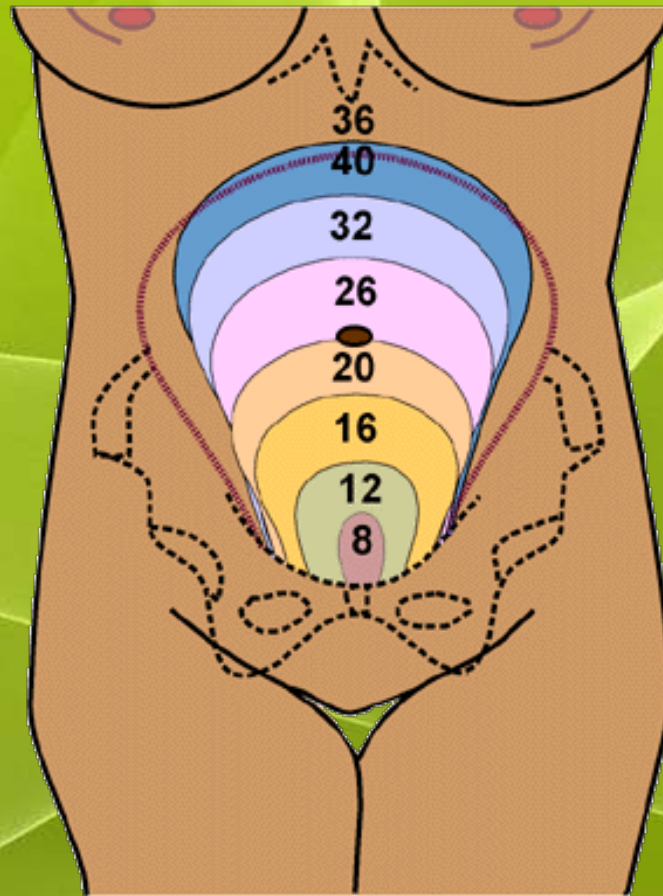
Physical Examination

- Evaluate the patient's general appearance
- Assess vital signs and frequently reassess them throughout the patient encounter
- Examine the abdomen for previous scars and any gross deformity, such as that caused by a hernia or marked abdominal distention

Evaluation of Uterine Size

- The uterine contour is usually irregular between weeks 8 and 10
 - Early uterine enlargement may not be symmetrical
 - The uterus may be deviated to one side
- At 12 to 16 weeks, the uterus is above the symphysis pubis
- At 24 weeks, the uterus is at the level of the umbilicus
- At term, the uterus is near the xiphoid process

Changes in fundal height in pregnancy, weeks 10 to 40



General Management of OB Patient

- If birth is not imminent, care for the healthy patient will often be limited to basic treatment modalities.
 - Follow local Mecklenburg County Protocols.

General Management of OB Patient

- In the absence of distress or injury, transport the patient in a position of comfort (usually left lateral recumbent)
 - ECG monitoring, high-concentration oxygen administration, and fetal monitoring may be indicated for some patients, based on patient assessment and vital sign determinations
 - Medical direction may recommend IV access be established in some patients
 - Assist Medic with IV set up.

Complications of Pregnancy

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Trauma in Pregnancy

- Causes of maternal injury in decreasing order of frequency:
 - Vehicular crashes
 - Falls
 - Penetrating objects
- The greatest risk of fetal death is from fetal distress and intrauterine demise caused by trauma to the mother or her death

Trauma in Pregnancy

- When dealing with a pregnant trauma patient, promptly assess and intervene on behalf of the mother
- Causes of fetal death from maternal trauma
- Assessment and management
- Special management considerations
- Transportation strategies
- Follow local Mecklenburg County Protocols (BLS).

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*Medical Conditions
and Disease Processes*

Supine Hypotensive Syndrome

- Occurring in the third trimester
- Results when mother is supine and the combined weight of the uterus and fetus presses on the inferior vena cava. Causing inadequate venous blood flow back to the heart.
- Symptoms
 - Lightheadedness, dizziness or fainting
- Treatment
 - Place Patient in sitting position or on left side

Preeclampsia and Eclampsia

- Preeclampsia
 - A disease of unknown origin that primarily affects previously healthy, normotensive primigravidae
 - Occurs after the twentieth week of gestation, often near term
 - Signs and symptoms
 - High blood pressure (hypertension)
 - Severe Headaches, Upper abdominal Pain, Nausea, Dizziness, sudden weight gain.
 - Eclampsia
 - Characterized by the same signs and symptoms plus seizures or coma

Preeclampsia and Eclampsia

- The criteria for diagnosis of preeclampsia are based on the presence of the “classic triad”
 - Hypertension (blood pressure greater than 140/90 mm Hg, an acute rise of 20 mm Hg in systolic pressure, or a rise of 10 mm Hg in diastolic pressure over pre-pregnancy levels)
 - Proteinuria
 - Excessive weight gain with edema

Vaginal Bleeding

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Abortion

- The termination of pregnancy from any cause before the twentieth week of gestation (after which it is known as a preterm birth)
- Common classifications of abortion
- When obtaining a history, determine
 - The time of onset of pain and bleeding
 - Amount of blood loss
 - If the patient passed any tissue with the blood
- Management
 - Follow local Mecklenburg County Protocols (BLS).

Ectopic Pregnancy

- Occurs when a fertilized ovum implants anywhere other than the endometrium of the uterine cavity
- Incidence
- Predisposing factors
- Classic triad of symptoms
 - Abdominal pain
 - Vaginal bleeding

Third-trimester Bleeding

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Abruptio Placentae

- A partial or complete detachment of a normally implanted placenta at more than 20 weeks gestation

Placenta Previa

- Placental implantation in the lower uterine segment encroaching on or covering the cervical

Management of Third-trimester Bleeding

- Prehospital management of a patient with third-trimester bleeding is aimed at preventing shock
- No attempt should be made to examine the patient vaginally
 - Doing so may increase hemorrhage and precipitate labor
- Emergency care
 - Follow local Mecklenburg County Protocols (BLS).

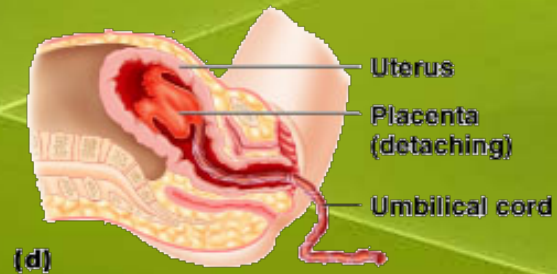
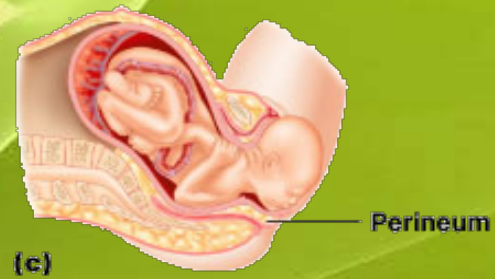
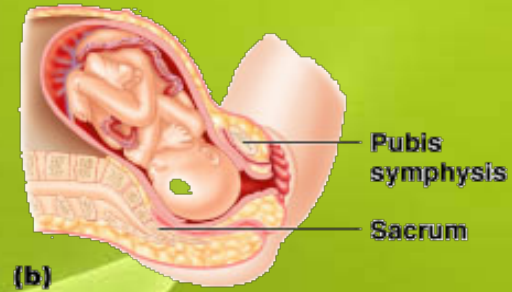
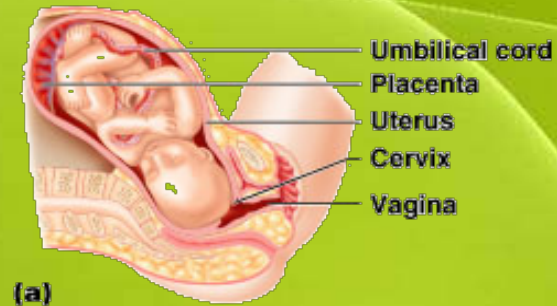
Labor and Delivery

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Stages of Labor

- Stage 1
 - Begins with the onset of regular contractions and ends with complete dilation of the cervix
- Stage 2
 - Measured from full dilation of the cervix to delivery of the infant
- Stage 3
 - Begins with delivery of the infant and ends when the placenta has been expelled and the uterus has contracted

The process of childbirth



Signs and Symptoms of Imminent Delivery

- If any of these signs and symptoms are present, prepare for delivery:
 - Regular contractions lasting 45 to 60 seconds at 1- to 2-minute intervals
 - The mother has an urge to bear down or has a sensation of a bowel movement
 - There is a large amount of bloody show
 - Crowning occurs
 - The mother believes delivery is imminent

Signs and Symptoms of Imminent Delivery

- Except for cord presentation, the delay or restraint of delivery should not be attempted in any fashion
- If complications are anticipated or an abnormal delivery occurs, medical direction may recommend expedited transport of the patient to a medical facility
- Preparing for delivery
- Delivery equipment

Prehospital Delivery Equipment



Assisting With Delivery

- In most cases, the EMT \ paramedic only assists in the natural events of childbirth
- Primary responsibilities of the EMS crew:
 - Prevent an uncontrolled delivery
 - Protect the infant from cold and stress after the birth

Assisting with a Normal Delivery

- Delivery procedure
- Evaluating the infant
- Cutting the umbilical cord
- Delivery of the placenta
- Initiate fundal massage to promote uterine contraction

Normal Delivery

- At crowning, apply gentle palm pressure to infant's head



Normal Delivery

- Examine neck for presence of looped umbilical cord



Normal Delivery

- Support infant's head as it rotates for shoulder presentation



Normal Delivery

- Guide infant's head downward to deliver anterior shoulder



Normal Delivery

- Guide infant's head upward to release posterior shoulder



Delivery

- After delivery and evaluation of infant, clamp and cut cord



Postpartum Hemorrhage

- More than 500 mL of blood loss after delivery of the newborn
- Incidence
- Causes
- Signs and symptoms
- Management
 - Follow local Mecklenburg County Protocols (BLS).

Delivery Complications

- Factors associated with high risk of abnormal delivery
 - Maternal factors
 - Fetal factors

Cephalopelvic Disproportion

- Produces a difficult labor because of the presence of a small pelvis, an oversized fetus, or fetal abnormalities (hydrocephalus, conjoined twins, fetal tumors)
 - The mother is often primigravida and experiencing strong, frequent contractions for a prolonged period
- Prehospital care is limited to maternal oxygen administration, IV access for fluid resuscitation if needed, and rapid transport to the receiving hospital

Abnormal Presentation

- Most infants are born head first (cephalic or vertex presentation)
 - On rare occasions, a presentation is abnormal
- Breech presentation
 - Management
- Shoulder dystocia
 - Management
- Shoulder presentation (transverse presentation)
 - Management

Breech Presentations



Frank Breech



Complete Breech



Footling Breech

Abnormal Presentation

- Cord presentation (prolapsed cord)
 - Management
- Other abnormal presentations

Abnormal Presentation

- Goals of prehospital management
 - Early recognition of potential complications
 - Maternal support and reassurance
 - Rapid transport for definitive care

Premature Birth

- A premature infant is one born before 37 weeks of gestation
- Care of the premature infant

Multiple Gestation

- A pregnancy with more than one fetus
- Associated complications
- Delivery procedure

Precipitous Delivery

- A rapid spontaneous delivery, with less than 3 hours from onset of labor to birth
- Results from overactive uterine contractions and little maternal soft tissue or bony resistance

Pulmonary Embolism

- The development of pulmonary embolism during pregnancy, labor, or the postpartum period is one of the most common causes of maternal death

Fetal Membrane Disorders

- Premature rupture of membranes
 - A rupture of the amniotic sac before the onset of labor, regardless of gestational age
 - Signs and symptoms include a history of a “trickle” or sudden gush of fluid from the vagina
 - Transport for physician evaluation
- Amniotic fluid embolism
 - May occur when amniotic fluid gains access to maternal circulation during labor or delivery or immediately after delivery

Meconium Staining

- Presence of fetal stool in amniotic fluid
- Incidence

Mecklenburg County Protocol

3.2.24 PREGNANCY / CHILDBIRTH

- **Historical Information**
 - 1. Incident
 - a. Second or third trimester of pregnancy
 - b. At or near term
 - c. Infant recently delivered

3.2.24 PREGNANCY / CHILDBIRTH

- Complaints
- a. Pain
 - i. Non-specific abdominal pain
 - ii. Active labor (regular, frequent contractions with an urge to valsalva, usually < 2minutes apart)
 - iii. Headache
- b. Associated symptoms
 - i. Gynecological conditions (vaginal bleeding, water broken)
 - ii. Bowel or bladder incontinence
 - iii. Blurred vision

3.2.24 PREGNANCY / CHILDBIRTH

- Past history
 - a. Gynecological
 - i. Bleeding problems during pregnancy
 - ii. Hypertension and/or seizures, or other complications of pregnancy

3.2.24 PREGNANCY / CHILDBIRTH

- **Physical Examination - Possible Findings**
 - General
 - a. Conscious and alert
 - b. Actively seizing
 - c. Post-ictal
 - Focused (primary) examination
 - a. Airway: patent
 - b. Breath sounds: normal
 - c. Circulation: normal, weak or unequal pulses

3.2.24 PREGNANCY / CHILDBIRTH

- Detailed (secondary) examination
- a. Abdominal
 - i. Gravid abdomen
 - ii. Diffuse or localized tenderness elicited with abdominal palpation
- b. Gynecological
 - i. Hemorrhage may or may not be present
 - ii. Crowning of fetus or other presenting parts may be noted at vaginal introitus

3.2.24 PREGNANCY / CHILDBIRTH

Basic Medical Care

1. Maintain airway.
2. Assess peripheral pulses for rate and strength. If unable to palpate, attempt to assess central pulses.
3. If patient appears to be in severe distress, administer oxygen via non-rebreathing mask at 15 L/min. Otherwise, administer oxygen via nasal cannula at 2-6 L/min.
4. Remove clothes below waist to visualize delivery progression or any bleeding present. Maintain appropriate privacy.
5. Obtain, record, and continue to monitor vital signs until Medic arrival. Vital signs should be repeated every 5 minutes.

3.2.24 PREGNANCY / CHILDBIRTH

6. If patient has not delivered baby, consider the following:
 - a. If hypotensive, place patient in left lateral decubitus (left side down) and in Trendelenburg position.
 - b. Reassure and keep patient as quiet as possible.

3.2.24 PREGNANCY / CHILDBIRTH

7. If patient actively delivering baby, consider the following:
 - a. Remove clothes below waist to visualize progression.
 - b. If delivery is occurring, assist with process. When baby's head is delivered, use bulb syringe suction to clear mouth, oropharynx, and nose. Assess for a nuchal cord and if present, attempt manual removal as described below. After baby is completely delivered, newborn care consists of keeping baby warm, dry, and maintaining body temperature, mild tactile stimulation if needed, oxygen and suction as appropriate.

3.2.24 PREGNANCY / CHILDBIRTH

- c. APGAR scoring should be performed at 1 and 5 minutes.
- d. Control any excessive bleeding with pressure.
- e. Apply umbilical clamp to umbilical cord 2 to 3 inches above umbilicus and a second clamp 1 inch distally. Cut cord between clamps.
- f. When malpresentation (arm or foot) is noted, place patient in Trendelenburg position.

3.2.24 PREGNANCY / CHILDBIRTH

8. If patient has delivered baby, consider the following:
 - a. Ensure and maintain airway.
 - b. Keep infant flat or on side to ensure minimal flexion or extension to neck. Suction mouth and nose (in that order) with a bulb syringe. Suctioning should not last longer than 5 seconds at a time.
 - c. Thoroughly dry, stimulate, and keep patient warm.
 - d. Assess heart rate and skin color. If rate < 100 and/or skin shows evidence of central cyanosis, hold an oxygen source (mask or tubing) close to the patient's airway.

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- e. Record APGAR score at 1 and 5 minutes.
- f. If heart rate remains < 100 , labored respirations persists, or central cyanosis remains after above measures are employed, assist ventilations with bag-valve mask and 100% oxygen. Ventilate at 40-60 breaths per minute.
- g. If heart rate remains unchanged at 80 beats per minute or less after the patient's airway is secured, initiate CPR.

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9. Record patient's medications (name, dose, how taken) and allergies.

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Advanced Medical Care

1. Problems associated with umbilical cord:

a. Prolapsed:

Place patient in Trendelenburg position. Insert hand into vagina and manipulate baby's presenting part upward in order to relieve pressure off the cord. Assess cord pulse during manipulation. Attempt to keep cord moist with saline-soaked gauze.

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b. Nuchal (cord around neck):

Attempt to manually remove cord from around neck. If unable, clamp the cord in two proximate locations, cut cord between the two clamps, and proceed immediately with delivery. Before clamping the cord, assess whether the patient has twins, triplets, etc. Use precaution in clamping a cord when multiple gestations are encountered. Only clamp and cut a nuchal cord belonging to that infant. If a cord needs to be cut, always perform emergent delivery.

3.2.24 PREGNANCY / CHILDBIRTH

c. Breech Presentation:

Allow and assist the buttocks and trunk to deliver spontaneously. As the baby is delivered, continue to support with both hands. Assist with the delivery of the head by exerting pressure above the pubic symphysis. The face should be kept in a downward position.

3.2.24 PREGNANCY / CHILDBIRTH

2. If newborn is apneic and pulseless, refer to 3.9 **CARDIAC ARREST** protocol.
3. If newborn airway is clear and spontaneous breathing does not occur, or if patient is hypoventilating or airway compromise is apparent, provide assisted ventilations with bag-valve mask and 100% oxygen. Ventilate at 40-60 breaths per minute.

3.2.24 PREGNANCY / CHILDBIRTH

Medic Assist

1. Apply pulse oximeter and cardiac monitor.
2. Prepare IV set-up and any medication if advised.
3. If intubation is to be attempted, prepare appropriate equipment and assist in preparing end-tidal CO₂ monitoring device.

3.2.24 PREGNANCY / CHILDBIRTH

Documentation

1. Subjective

a. Description of complaint

Abdominal pain

i. Onset

ii. Duration

iii. Character

iv. Bleeding

v. Palliative and provocative factors

vi. Associated symptoms

3.2.24 PREGNANCY / CHILDBIRTH

Hemorrhage

- i. Onset
- ii. Duration
- iii. Pain
- vi. Associated symptoms

Delivery

- i. Time and type of delivery
- ii. APGAR at 1 and 5 minutes
- iii. Placenta delivered
- iv. Any complications

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b. Other

- i. Past medical, surgical, and obstetrical history
- ii. Last menses
- iii. Medications
- iv. Allergies

3.2.24 PREGNANCY / CHILDBIRTH

2. Objective

- a. Vital signs
- b. Systems assessment
 - i. Abdomen

3. Assessment (presumptive diagnosis)

4. Plan

- a. Oxygen
- b. Delivery procedures

5. Reassessment

3.2.24 PREGNANCY / CHILDBIRTH

Clinical Supplement

Hemorrhage

1. Never attempt to localize the site of any vaginal bleeding. Any manipulation may promote more hemorrhage.
2. Have all necessary delivery/obstetrical equipment in a proximate location for emergent delivery.
3. Mild hypotension (90/60) is normal during the third trimester of pregnancy.

3.2.24 PREGNANCY / CHILDBIRTH

Toxemia

1. Toxemia is more common with first pregnancies.
2. Rapid transportation to an appropriate facility is necessary for emergent delivery.
3. Toxemia may occur for up to two weeks postpartum.

3.2.24 PREGNANCY / CHILDBIRTH

Emergency Delivery

1. Attempt to transport to appropriate hospital of patient's choice. If any complication (hemorrhage or neonatal distress) occurs, divert to closest hospital with labor and delivery services.
2. Never pull on the umbilical cord to deliver the placenta. Only assist with placental delivery once it has detached. Fundal massage may be performed after the placenta is delivered. Transportation should not be delayed for placental delivery.

3.2.24 PREGNANCY / CHILDBIRTH

Newborn Resuscitation

1. All newborn infants must be kept warm to preserve body temperature, to decrease oxygen demands, and to prevent acidosis.
2. Neonates can easily become extubated due to the short trachea. Therefore, endotracheal tube position must be frequently reassessed.
3. If thick meconium is found in the amniotic fluid at the time of delivery or is present in the oropharynx, intubation should be performed before stimulation.
4. Preterm neonates require intense warming.

