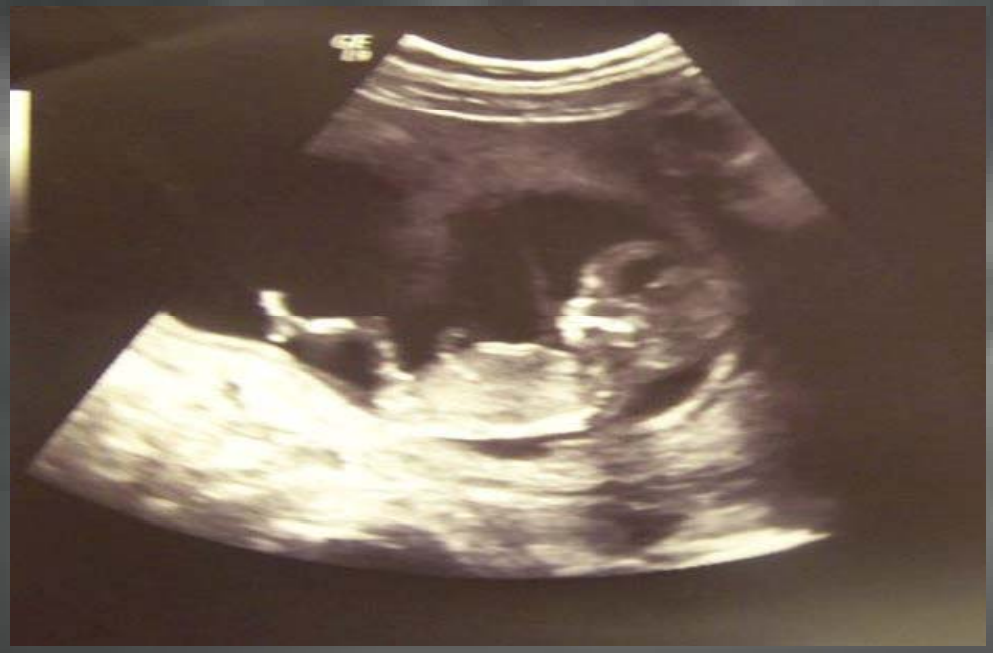
# *The Perfect Storm: OB Emergencies*

*"An event where a rare combination of circumstances will aggravate a situation drastically."*



*"To witness the birth of a child is our best opportunity to experience the meaning of the word miracle!"* *Paul Carvel*

# *Objectives*

- Describe the physiological and emotional changes that occur during pregnancy
- Identify the pathology of OB emergencies and affects on both mother and fetus
- Discuss modification requirements for management of prehospital deliveries involving specific OB emergencies
- Explore the assessment and management of emotional and psychological effects of OB emergencies on parents and EMS personnel

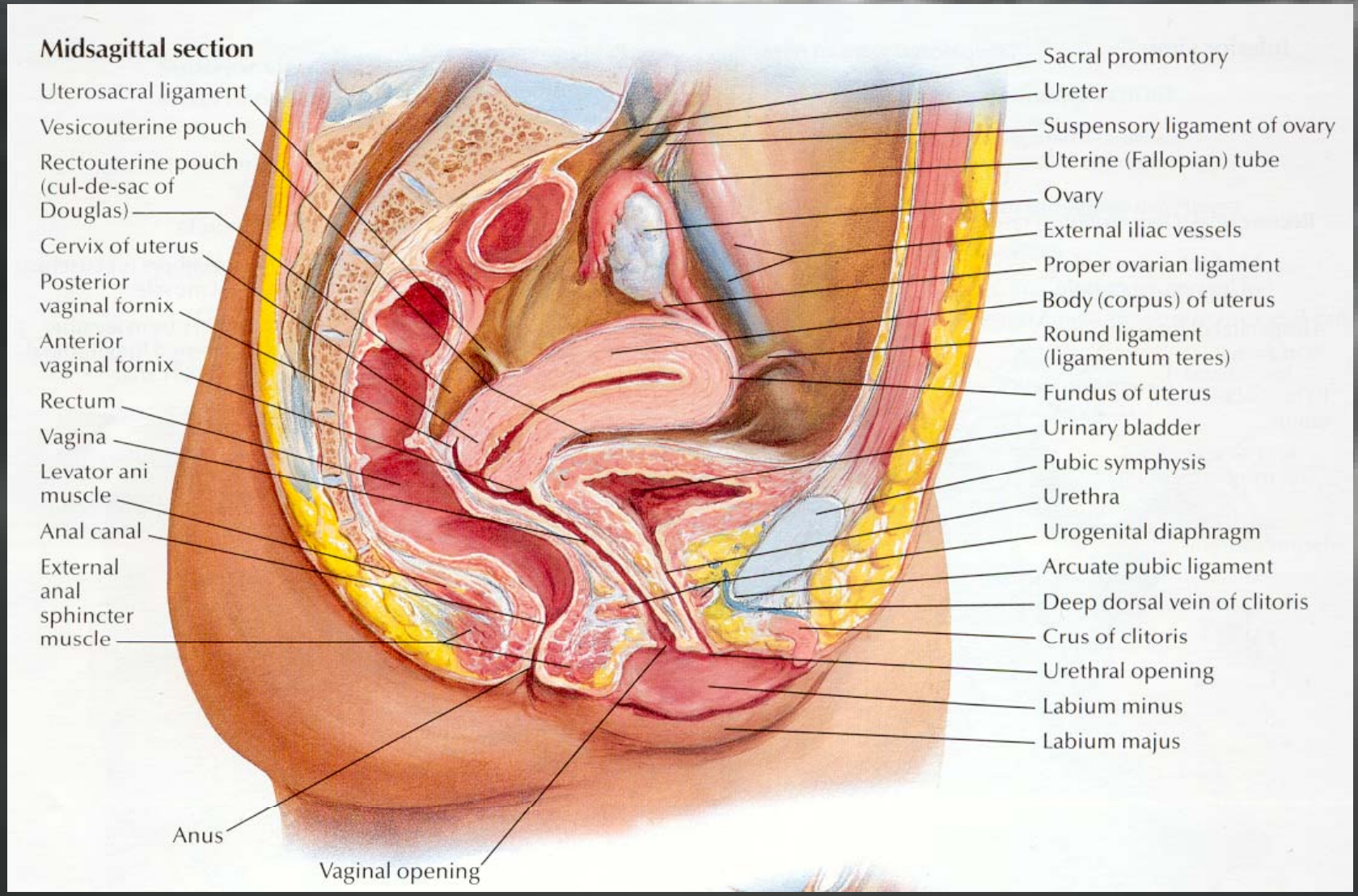
# *Case Scenario*

You are called for a female in labor. Upon arrival you find an 18 y/o fully clothed pregnant female lying on her back on her bed crying.

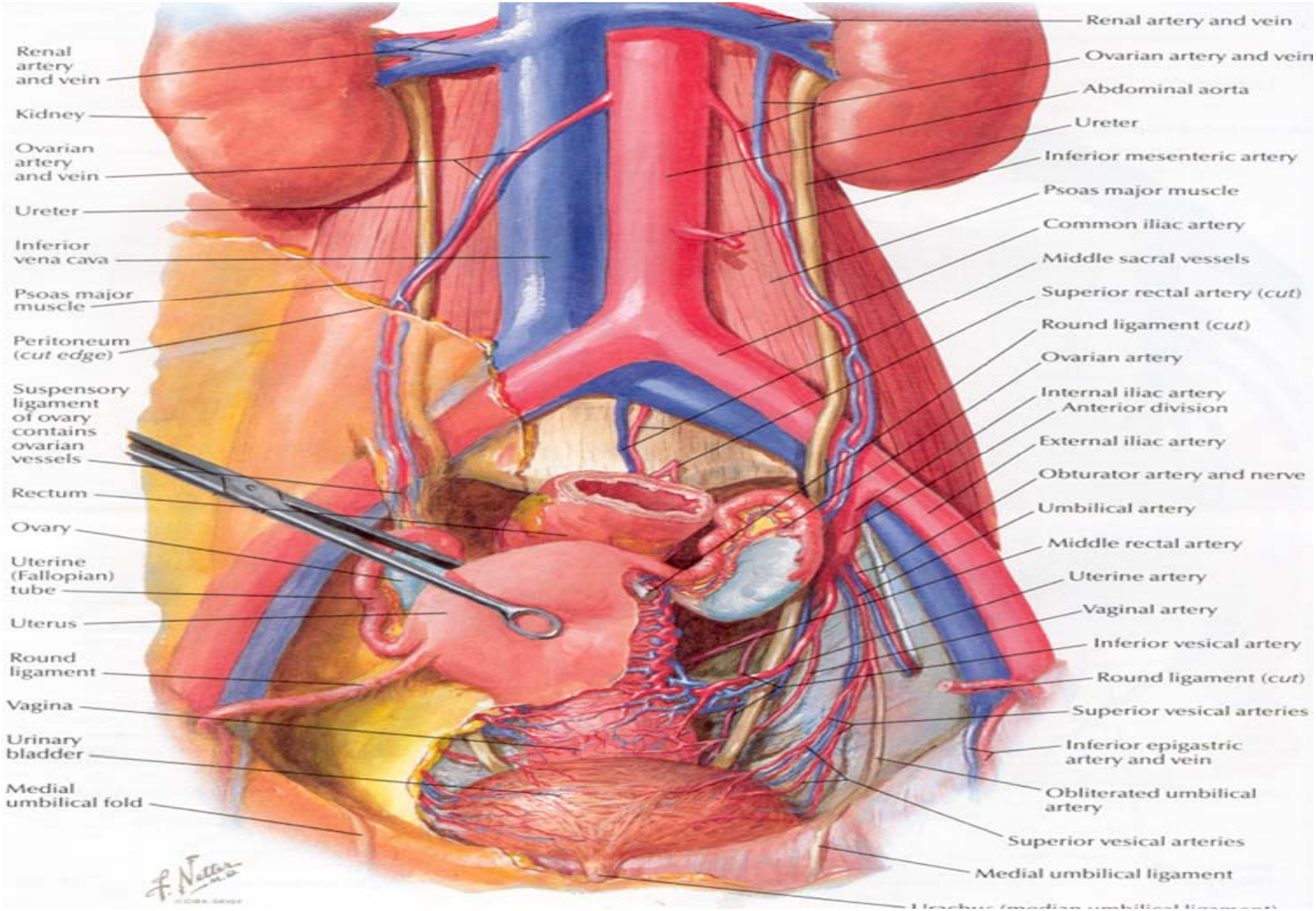
Her clothing is wet and she states she has been having pains for several hours.

She has been waiting for her boyfriend to come take her to the hospital but she now can't even walk because it hurts to bad.

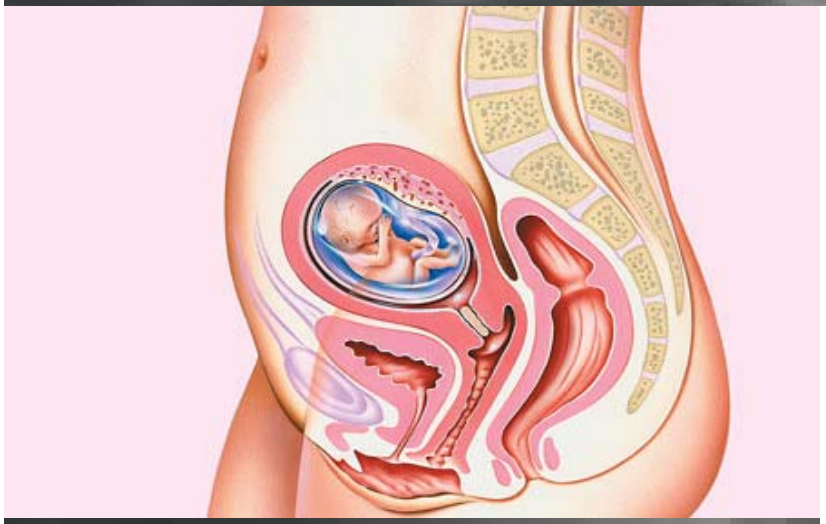
# Maternal A & P

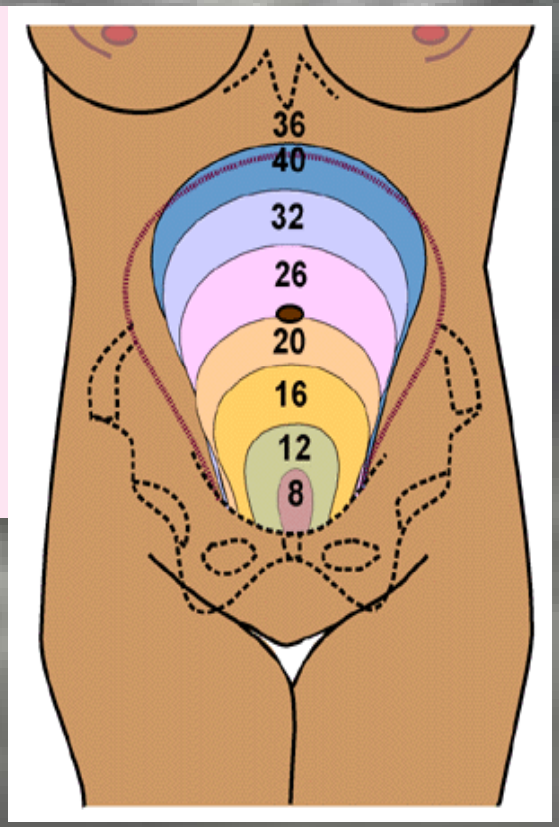

Midsagittal section
Uterosacral ligament
Vesicouterine pouch
Rectouterine pouch (cul-de-sac of Douglas)
Cervix of uterus
Posterior vaginal fornix
Anterior vaginal fornix
Rectum
Vagina
Levator ani muscle
Anal canal
External anal sphincter muscle
Anus
Vaginal opening
Sacral promontory
Ureter
Suspensory ligament of ovary
Uterine (Fallopian) tube
Ovary
External iliac vessels
Proper ovarian ligament
Body (corpus) of uterus
Round ligament (ligamentum teres)
Fundus of uterus
Urinary bladder
Pubic symphysis
Urethra
Urogenital diaphragm
Arcuate pubic ligament
Deep dorsal vein of clitoris
Crus of clitoris
Urethral opening
Labium minus
Labium majus

# *Maternal A & P*


Renal artery and vein
Kidney
Ovarian artery and vein
Ureter
Inferior vena cava
Psoas major muscle
Peritoneum (*cut edge*)
Suspensory ligament of ovary contains ovarian vessels
Rectum
Ovary
Uterine (Fallopian) tube
Uterus
Round ligament
Vagina
Urinary bladder
Medial umbilical fold
Renal artery and vein
Ovarian artery and vein
Abdominal aorta
Ureter
Inferior mesenteric artery
Psoas major muscle
Common iliac artery
Middle sacral vessels
Superior rectal artery (*cut*)
Round ligament (*cut*)
Ovarian artery
Internal iliac artery
Anterior division
External iliac artery
Obturator artery and nerve
Umbilical artery
Middle rectal artery
Uterine artery
Vaginal artery
Inferior vesical artery
Round ligament (*cut*)
Superior vesical arteries
Inferior epigastric artery and vein
Obliterated umbilical artery
Superior vesical arteries
Medial umbilical ligament

# *Changes in Pregnancy*

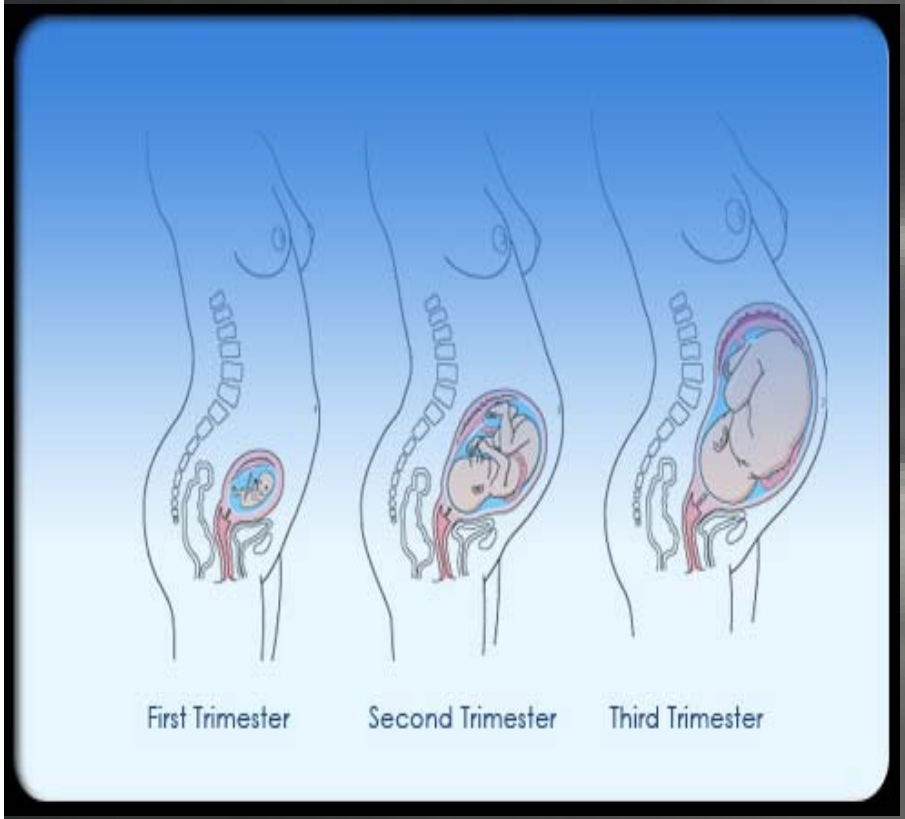





Weight gain by organ
Fetus: 6-9 lbs
Placenta and amniotic fluid: 3 lbs
Blood volume: 4 lbs
Breasts: 2 lbs
Maternal fat: 4 lbs

Anticipated total: 20 pounds

# The Three Stages of Pregnancy (1st, 2nd, and 3rd Trimester)

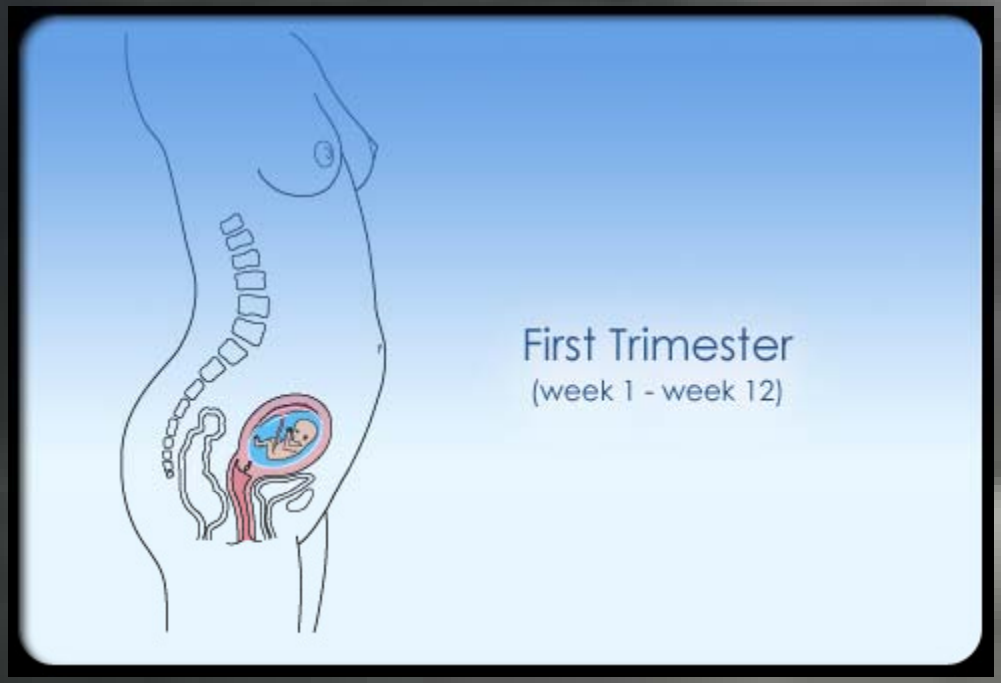



First Trimester-0 to 12 weeks

Second Trimester-12-27 weeks

Third Trimester 28-Birth

# *First Trimester -Mom*




Physical/Emotional changes:

- Hormones
- Period stops
- Extreme tiredness
- Tender-swollen breast
- Morning sickness
- Cravings/distastes
- Mood swings
- Constipation
- Polyuria
- Headache
- Heartburn
- Weight gain/loss

# *First Trimester—Baby—4-12 weeks*

**At Four weeks baby has:**
Brain & Spinal cord
Heart
Arm and leg buds

**At 8 Weeks:**
All major organs and external structures
Regular Heart Beat
Fingers and toes develop
Sex organs develop
Eyelids-eyes forward

**At 12 weeks baby's:**
Nerves and muscles begin working
Together—Baby make a fist
Eyelids close – open again at 28th week
Head growth slows

# *Second Trimester--Mom*


Easier than 1st trimester

- Nausea and fatigue disappear
- Abdomen expands-stretch marks
- Fetal movement
- Darkening aureoles
- Carpal tunnel syndrome
- Body aches
- Darkened skin patches (mask of pregnancy

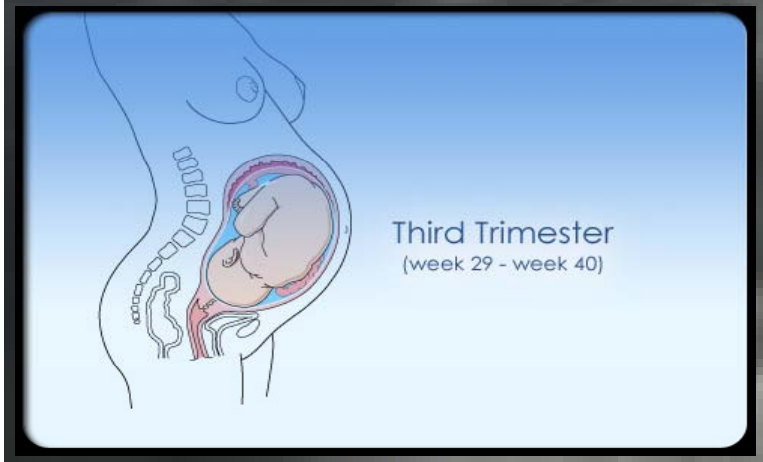
Itching-abdomen, palms, soles of feet-with loss of appetite, vomiting, jaundice or fatigue—serious liver problem

Swelling –ankles, fingers, face=extreme with weight gain-preeclampsia

# *Second Trimester—Baby –16-24 weeks*

- Skin begins-translucent
- Meconium develops
- Sucking reflex
- Active movement-fluttering
- Lanugo-fine-downy hair cover
- Vernix-waxy protection
- Eyebrows, eyelashes, fingernails and toenails formed
- Hearing and swallowing
- Lungs formed-non functional
- Foot and fingerprints
- Sleep and awake
- Startle reflex
- Testicles move into scrotum
- Uterus/ovaries in place
- 12 in—1 ½ lbs

# *Third Trimester-Mom*




Growing baby puts increased pressure on organs and blood vessels

- Shortness of breath
- Heartburn
- Swelling of extremities and face
- Hemorrhoids
- Tender breasts-colostrum
- Belly button
- Trouble sleeping

- **Baby drops**
- **Contractions**
- **Cervix effaces-thins and softens**

# *Third Trimester—Baby—32-40 weeks*

- Bones fully formed-soft
- Eyes open and close
- Senses light changes
- Body stores vital minerals
- Quick weight gain= ½ pound weekly
- Practice breathing movements occur
- Vernix thickens
- Body fat increased
- Organs functioning
- head-down
- 6lbs-2oz to 9-2oz
- 19-21 inches

# *OB Emergencies*

- Mother: Placenta Previa, Abruptio Placenta, Pre-eclamsia, Eclampsia, Retained Placenta Hemorrhage, Uterine (rupture, atony, inversion) Laceration
- Fetus: Sepsis, Strep-B, shoulder dystocia, Umbilical cord (prolapse/compression), breech with head entrapment
- **Mortality can be 200%**

# *Common Emergencies*

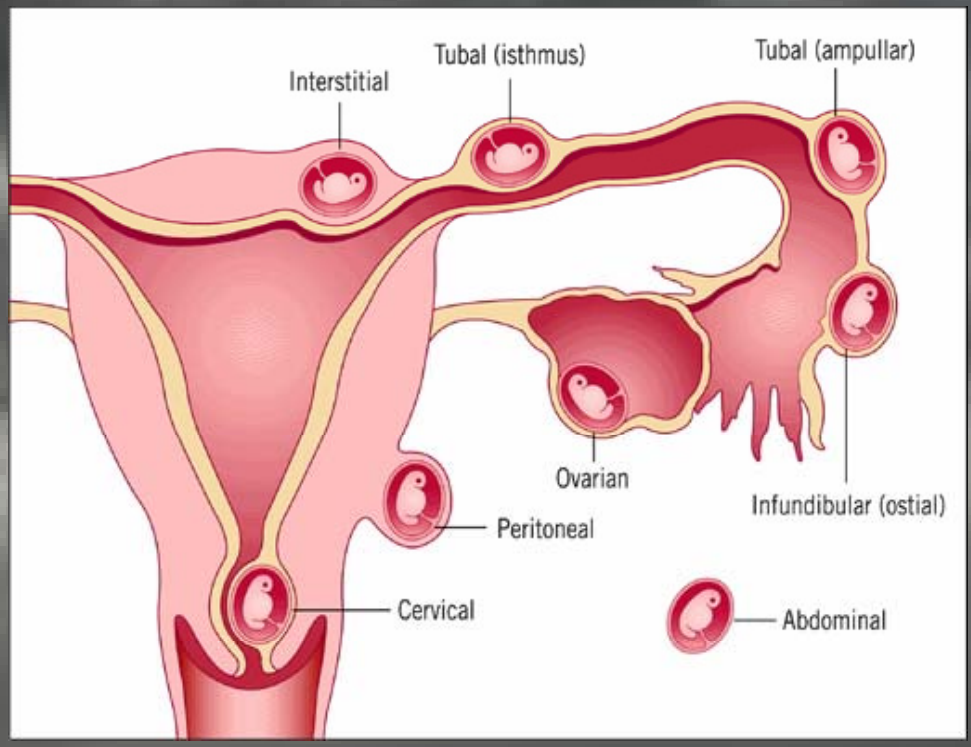
- Hypertensive Disorders
- Trauma
- Shoulder Dystocia
- Umbilical Cord Prolapse
- Acute Abdomen
- Ectopic Pregnancy/Spontaneous Abortion

# *Immediate Obstetric Hemorrhage*

| Cause | Incidence |
| --- | --- |
| • Lacerations | • 1:8 |
| • Atony | • 1:20-1:50 |
| • Abruptio | • 1:80-1:150 |
| • Retained placenta | • 1:100-1:160 |
| • Previa Accreta | • 1:200 |
| • Rupture | • 1:2000-1:2500 |
| • Inversion | • 1:6400 |

# *OB Emergencies-Early Pregnancy*
# *Ectopic Pregnancy*

- 2% of all pregnancies
- Risk factors: prior tubal surgery, prior ectopic
- IUD use
- Hx of PID or DES exposure



# *Ectopic Pregnancy Emergency*

- Clinical Presentation
  - Pain w/ rupture usually lateralized, sudden and severe
    - May be referred
    - Other atypical pain patterns
  - Hypovolemia may be present
    - Bradycardia due to vagal stimulation
- Management
  - Pertinent hx
    - Missed menses
    - Sexually active
    - Previous EP, STD, surgery, etc.
  - Lower quadrant pain/tenderness
    - Avoid aggressive palpation/repeated exam
  - $O_2$—as needed
    - Position
    - IV access
  - Surgical intervention usually required

# *Spontaneous Abortion*

## Etiology

- Defined as loss of fetus <20 wks or <500gm
- 75% occur before 8 wks
  - Most common cause is chromosomal abnormality
  - Other causes:
    - Advanced age
    - Poor obstetric hx
    - Medical hx
    - Syphilis/HIV
    - Certain anesthetic agents
    - Tobacco use
    - Exposure to heavy metals
  - Management
    - Support
    - Manage bleeding

# *Uterine Rupture*

- Etiology
  - Life-threatening  Mom & baby
  - Occurs during labor
- Risk Factors
  - Prior cesarean delivery especially classical cesarean scar (90%)
  - Rupture of myomectomy scar
  - Precipitous labor or prolonged labor
  - Excessive oxytocin stimulation
  - Abdominal trauma
  - Grand multiparity
  - Direct uterine trauma-forceps or curettage

# *Uterine Rupture*

- Clinical Aspects
  - Mild or severe third trimester bleeding
  - Intense abdominal pain
  - Complete cessation of pain after
  - Dystonic uterine contractions
  - Complete cessation of contractions
  - Rigid abdomen
    - Fetus may be felt outside uterine cavity
- Management
  - Surgery
    - Death of fetus without timely surgical intervention
    - Death of mom=severe hemorrhage/shock

# Preeclampsia/Eclampsia

- Etiology
  - HTN, edema, proteinuria
  - Eclampsia is above plus seizures
    - Occur from 20th week to 7 days post partum
    - Have been reported up to 26 days
    - Predisposed by chronic HTN
- Clinical Presentation
  - Preeclampsia
    - HA, Visual disturbances
    - Edema, weight gain
  - All gravid pt's w/ HTN should be evaluated

# *Preeclampsia/Eclampsia*

- Management
  - Eclamptic
    - Versed 2.5-5 mg IV/IM
    - Magnesium 2 gm IV over 5-10 min
    - Rapid transport for delivery
- Complications
  - Spontaneous hepatic/splenic hemorrhage
  - End-organ failure
  - Abruptio
  - IC bleed
  - Fetal compromise

# *Placenta Previa*

- Etiology
  - 1 in 200 (0.5%) of pregnancies
  - Abnormal implantation of the placenta
    - Partial or complete coverage of cervix and os
- Risk Factors
  - Previous C-section
    - 1% to 4%
  - Smoking
  - Multiple gestations/grand multiparity (>7)
  - Previous placenta previa

# *Placenta Previa*

- Clinical Aspects
  - Third Trimester Bleeding
  - Preterm labor
  - Premature rupture of membranes
  - Intrauterine growth restriction
  - Malpresentation
- Management
  - Support mom's vital functions
    - O2, IV, LR/NS to maternal/fetal perfusion

# *Case Study 2*

You are called to assist a BLS unit with a baby delivered into the toilet. Dispatch advises the mother is only 26 weeks along.

Enroute you are advised by the BLS ambulance they will meet you approximately 15 miles from the hospital and that the baby is breathing….

# *Case Study continued*

Upon arrival, you see an approximately 24 y/o female with a tiny fetus lying on the cot between her legs. The baby is being ventilated via BVM by FR.

Mom is pale and but conscious, stating she was on bed rest and was going to the bathroom when she felt the baby slip between her legs.

# *Case Study continued*

Why would the baby have “fallen out” while mom was urinating?

What do you need to know from mom?

Is the baby viable for resuscitation?

What do you need to do immediately for mom?

What, if anything should you do for baby?

# *Abruptio Placentae*

- Etiology
  - 1% of all pregnancies
    - 15% of fetal perinatal deaths
    - 50% fetal death due to maternal hypoxia
  - Separation of placenta after week 20
  - Placenta positioned high in uterus
- Risk Factors
  - Trauma
    - 1.5% to 9.4% of all cases
  - Maternal hypertension
  - Multiparity (>5)

# *Abruptio Placentae*

- Risk Factors
  - Increased maternal age (>35)
  - Smoking
  - Premature rupture of amniotic sac (<34 weeks)
  - Vascular disease (diabetes)
  - Previous abruptio
  - Drug and alcohol use/abuse
  - Uterine abnormalities

## Clinical

- Partial separation (margins intact)

  Bleeding not present—
  Abdominal pain, uterine tenderness, S/S of hemorrhage and shock

- Partial Separation (margins not intact)

  Vaginal bleeding, abdominal pain, uterine tenderness

- Complete Separation

  Abdominal pain, uterine tenderness and rigidity, contractions
  S/S of hypovolemia and shock without vaginal bleeding

# *Abruptio Placentae*

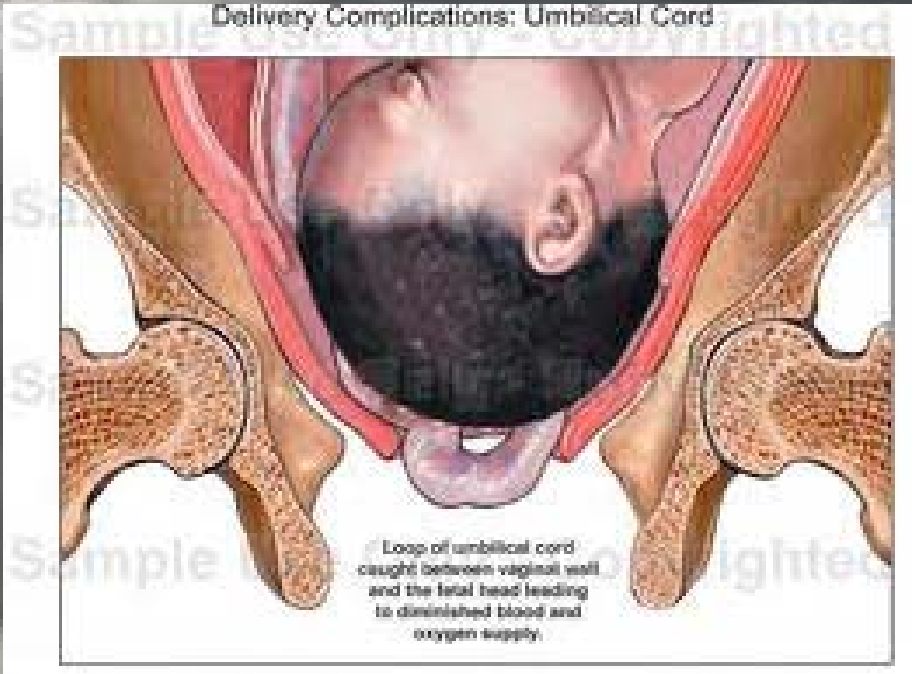
- Clinical Aspects
  - Typical presentation:
    - Abdominal pain or lower lumbar pain and uterine tenderness (70%)
    - Vaginal bleeding (80%)
    - Abnormal uterine contractions (35%)
    - Fetal distress (60%)
- Management
  - Support mom's vital functions
  - O2, IV (LR/NS) to maintain maternal and fetal perfusion
  - Monitor Fetal heart tones
    - Fetal bradycardia
  - Transport

# *Complications during Delivery*

- Nuchal Cord
  - Etiology
    - Cord wrapped around neck (may be multiple times)
- Clinical
  - Cord compression: Will cause hypoxic injury if not removed
  - Be aware of twins!!!!
- Management
  - Unwrap cord
  - If unable, clamp and cut cord

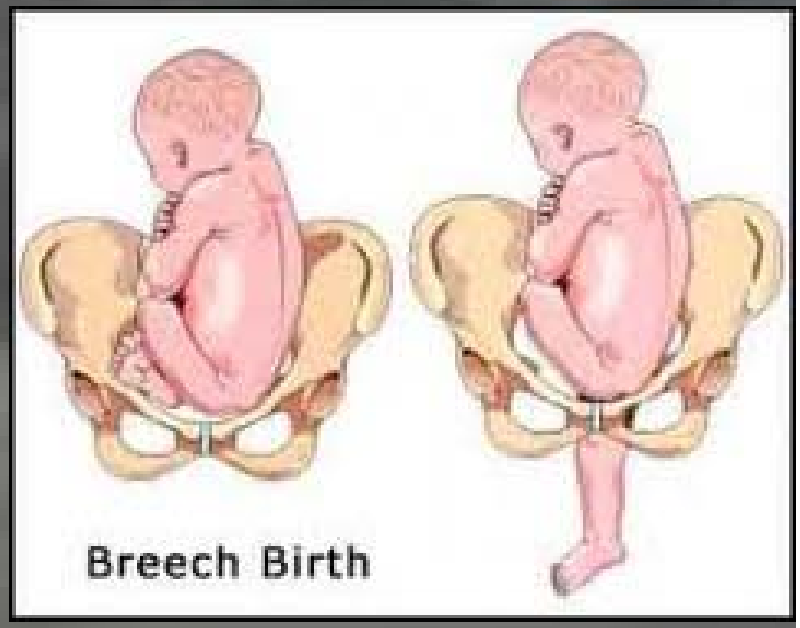
# *Prolapsed Cord*

- Etiology
  - Presentation of cord at vaginal opening
  - Caused by abnormal birth, i.e. twins, breech, etc..
  - Complications occur if cord is compressed.
- Management
  - Pt. in knee/chest position or elevate buttocks
  - Relieve pressure on cord
  - Supportive




# Breech Presentation

- Etiology
  - Occur in 3-4% of term pregnancies
  - Result in 3-4 times greater morbidity
  - More frequent in prematurity
- Distress due to Head/Cord entrapment
- Clinical presentation
- Frank, complete, incomplete, footling
  - Frank (50-70%) Hips flexed, knees extended (Pike position
  - Complete (5-10%) Hips flexed, knees flexed (cannonball position)
  - Footling or incomplete (10-30%) One or both hips extended, foot presenting



# *Breech Presentation*

## Head Entrapment:

- True obstetric emergency
- Small body through partially dilated cervix trapping head
- Vaginal breech delivery- Discouraged

## Management:

- Enlarge opening—cervix
- Keep quiet and calm

# *Case Scenario 1 revisited*

You asked the patient pertinent questions:

Date of last menstruation—expected due date

Previous pregnancies

Due date

Prenatal care

Complications—expectations

# *Case Study 1 revisited*

You notice mom is a very petite young woman and that she appears to have a very large abdomen.

What if any birth complications might occur based on your observation of mom's physical make up and size of fundus?

# *Case Study 1 revisited*

Contractions are coming every 2-3 three minutes. You check for crowning and notice that you can clearly see the baby crown with each contraction but that the head seems to "go back up" when the contraction stops.

Mom is crying now, saying she can't take the pain anymore and she has to get the baby out

What is the next step?

Does retraction of the head between contractions concern you?

# *Case Study 1 Revisited*

You determine that birth is imminent and the hospital is 10-15 minutes away—or more depending on traffic.

Mom is pushing but the head is taking along time to deliver.

What can you do to help deliver the head?

What other difficulties might occur?

# *Shoulder Dystocia*

- Etiology
  - 0.2-3% of all live births
  - 25-50% have no defined risk factor!
  - 50% of cases occur in infants whose birth weight is <4000g
  - 84% of patients did not have prenatal dx. of macrosomia  by US
  - 82%of infants with brachial plexus palsy did not have macrosomia
- Risk Factors
  - Gestational Diabetes/Maternal obesity/ Excessive weight gain
  - Previous large baby
  - Previous shoulder dystocia deliver
  - Post term pregnancy
  - Protracted/prolonged labor
  - Short stature/small pelvis
  - Forceps/Vacuum assisted vaginal delivery

# *Shoulder Dystocia*

- Complications
  - **Maternal**
    - Hemorrhage
    - 4th degree laceration
  - **Fetal**
    - Fx of humerus or clavicle
    - Brachial plexus injury (Erb's/Klumpke's palsy)
    - Asphyxia/cord compression
- Management
- Goal: Safe delivery before neontal asphyxia and/or cortical injury
  - 7 -10 minutes!!!

# *Shoulder Dystocia*

- Management
  - Episiotomy
  - Suprapubic Pressure
  - McRoberts Maneuver
    - Hyperflex legs, widen pelvis through abduction of legs
  - Woods  Maneuver
    - Anterior shoulder to baby chest, posterior to baby back
  - Zavenelli
    - Push back the delivered fetal head into birth canal and perform an emergent c/s—not recommended

# *Post Delivery Complications Hemorrhage*

- Etiology
  - Cause of~ 28% pregnancy related deaths
  - May be delayed days to weeks
  - Dx immediately after delivery:
    - Uterine atony/rupture
    - Laceration
    - Retained placental tissue
    - Uterine inversion
    - Coagulopathy
  - Dx delayed hemorrhage
    - Retained placental tissue
    - Uterine polyps
    - Coagulopathy (von Willebrands)

# *Post Delivery Hemorrhage*

- Atony
  - Etiology
    - 2-5% of deliveries
    - Uterine muscle tone loss—no contractions
    - Most common cause of significant blood loss and blood transfusion
  - Management
    - Uterine massage
    - Fluids/oxygen to sustain VS

- Risk Factors

  Multiparity
  Polyhydramnios
  Macrosomia
  Precipitous labor/excessive oxytocin use
  Prolonged labor
  Retained placenta

# *Post Delivery Hemorrhage*

- Etiology
  - Rare-1 in 3000 births
  - Maternal fatality rate ~85%
  - Placenta is fundally implanted
  - Placenta fails to separate
  - Uterus delivers “inside/out”
- Clinical Aspect
  - Severe life-threatening hemorrhage is unrecognized
- Management
  - Immediate reversal of uterus
  - Treat for shock

# *Lacerations*

- First thing to be ruled out in bleeding post partum woman with a firm uterus
- Careful examination of the entire genital tract
- Rarely results in massive blood loss
- May be life threatening if extends to the retro peritoneum

# *Lacerations—Vaginal Tears*

Vaginal Area:

- Common
- Most superficial
- Discomfort
- Heals quickly

# *Lacerations-Vaginal Tears*

## First-degree

- Least severe
- Involves only external skin
- Mild burning
- Stinging with urination
- Heal within a few weeks
- Minimal bleeding

# *Lacerations-Vaginal Tears*

## Second-degree

- Vaginal mucosa (tissue)
- Perineal muscles
- Requires stitches
- Heals within weeks
- Discomfort
- Minimum bleeding

# *Lacerations-Vaginal Tears*

## Third-degree

- Vaginal tissue
- Perineal muscles
- Anal sphincter
- Surgical repair possible
- 6 weeks to heal
- Moderate to heavy bleeding
- Discomfort
  - Pain with bowel movement

# *Lacerations-Vaginal Tears*

## Fourth-degree

- Perineal muscle
- Anal sphincter
- Rectal tissue
- Require surgical repair
- 6 week+ recovery
- Painful—heavy bleeding
- Complications:
  - Fecal incontinence
  - Painful intercourse

# *OB Emergencies-Emotional Rollercoaster*

## Severe Maternal Morbidity:

Woman may have severe physical or psychological damage

- During event--include in delivery if possible
  - Culturally appropriate
- Ensure there is someone to care for emotional and informational needs
- After event-explain condition and treatment
- Answer questions to best of ability
- Continued emotional support

# *OB Emergencies-Emotional Rollercoaster*

## Neonatal Mortality or Morbidity

- Intrauterine Death or Stillbirth
- Influencing factors to woman's reaction
  - Previous obstetric and life history
  - Extent of desire for baby
  - Events surrounding birth and cause of death
  - Previous experiences with death
- Time of event:
  - Allow parents to see efforts of resuscitation if appropriate
  - Prepare them for disturbing or unexpected appearance of baby
  - Avoid separating mom and baby too soon

# *OB Emergencies-Emotional Rollercoaster*

## Neonatal Mortality or Morbidity

### After the Event:

- Allow mom/family to spend time with the baby
- Offer small mementos
- Encourage mom/family to call baby by the chosen name
- Allow mom/family to prepare/clean baby if appropriate
  - Medical procedures such as autopsies preclude
- Encourage locally-accepted customs/practices
- Arrange for minister or other support system
- Encourage discussion of the event

# *OB Emergencies-Emotional Rollercoaster*

## Baby with Abnormality

- Malformation
  - Range of emotions
    - Unfairness, despair, depression, anxiety, anger, apprehension
  - Time of Event—give baby to parents at delivery
    - Wrap baby-do not force mom to examine abnormality
  - After Event—keep baby with mom if possible
    - More quick acceptance of baby
    - Ensure access to supportive care/groups

# *OB Emergencies-Emotional Rollercoaster*

## EMS

- Fear and Anxiety
- Joy and Happiness
- Feelings of accomplishment
- Sadness/Inadequacy
- Anger

## Management

- Talk to someone
- Rest and nutrition
- Exercise
- Case Review
- CISM
- Professional counseling

# *Perfect Storm--Summary*

- Understand the physiological changes that occur during pregnancy and the development of the baby is vital in OB emergencies
- Identifying some of the most common OB emergencies is essential to decision making, preparation and management of both mom and baby
- The birth of a child has an emotional impact on all present.
- Be Flexible and THINK OUTSIDE THE BOX!

# *Thank You*
# *VA EMS Symposium 2013!!!*

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