



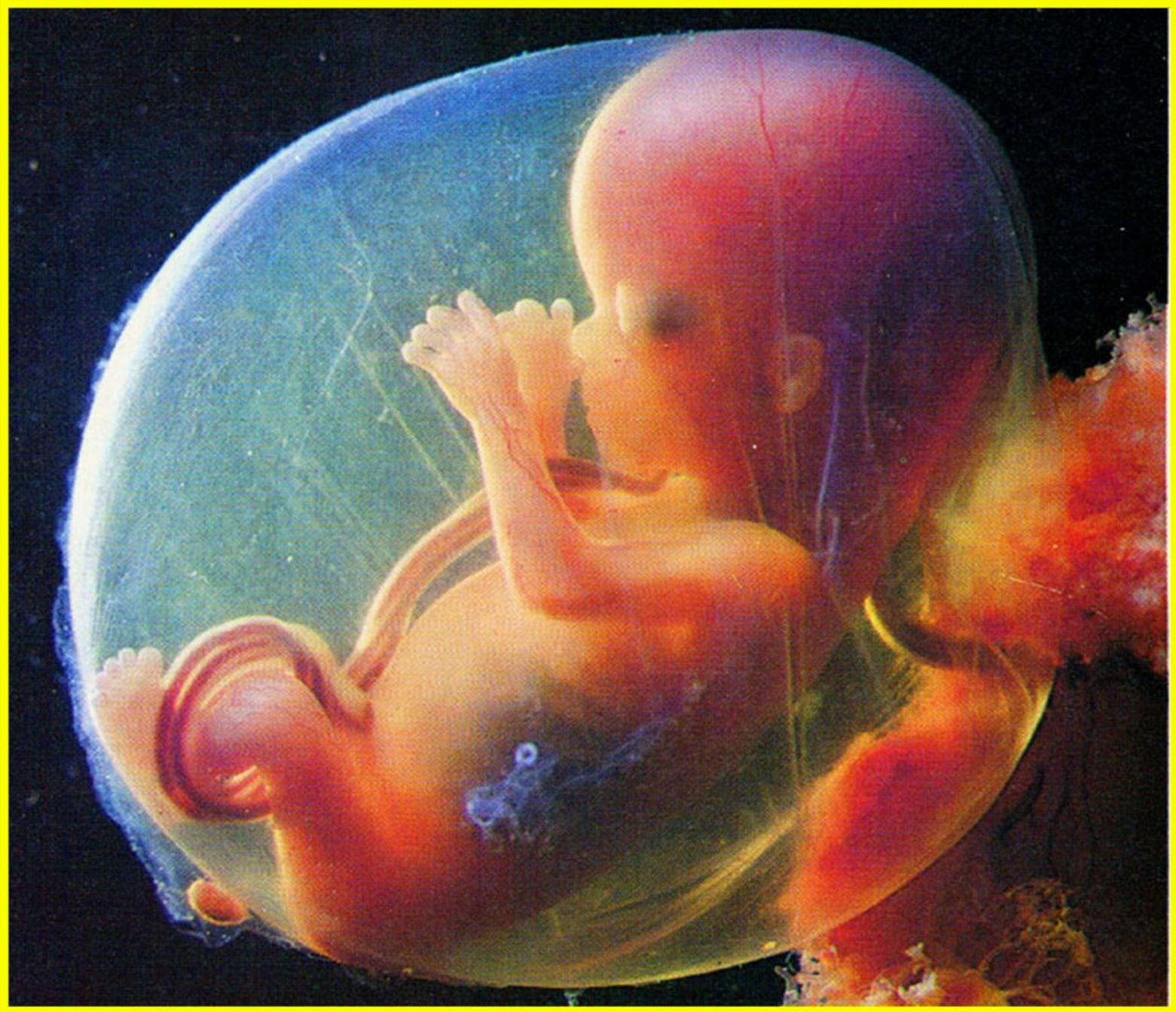
# ***“Having Babies Ain’t All It’s Cracked Up to Be!”***

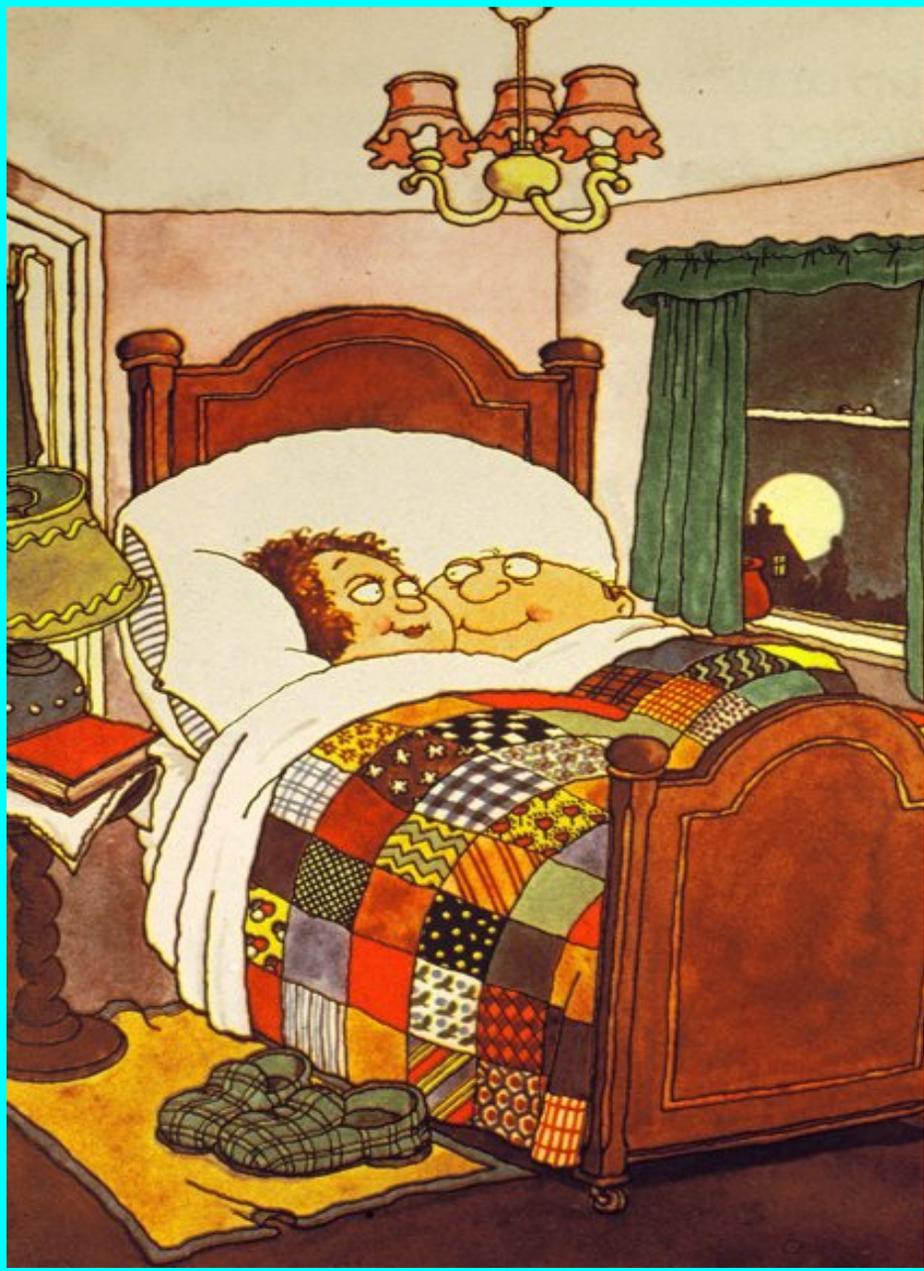
## Complications and Emergencies of Pregnancy

2013 Virginia EMS Symposium

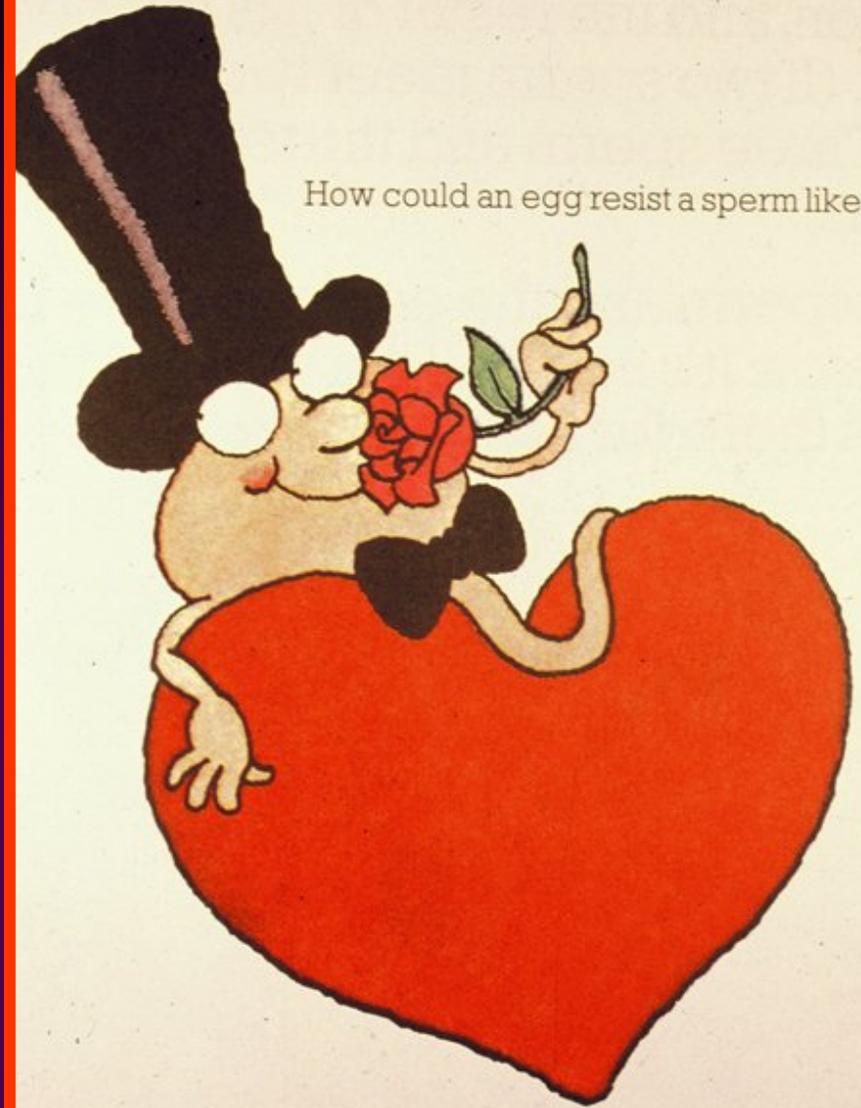
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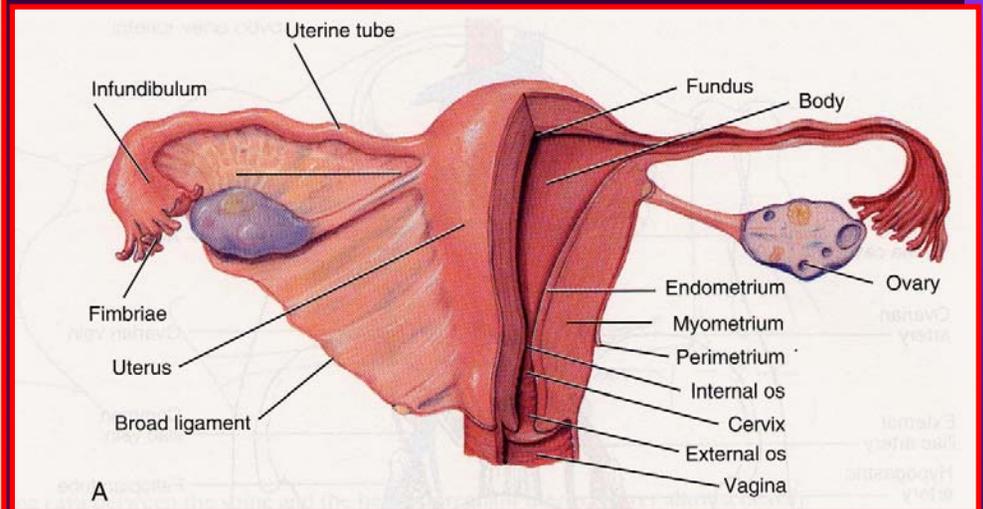
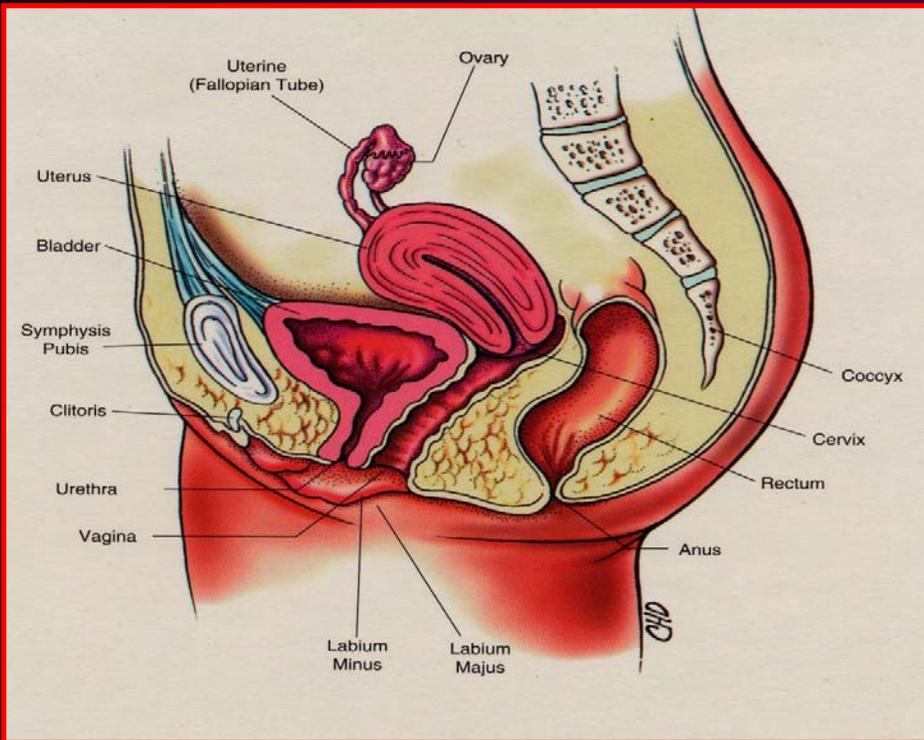


How could an egg resist a sperm like this?



# Emergencies of Pregnancy

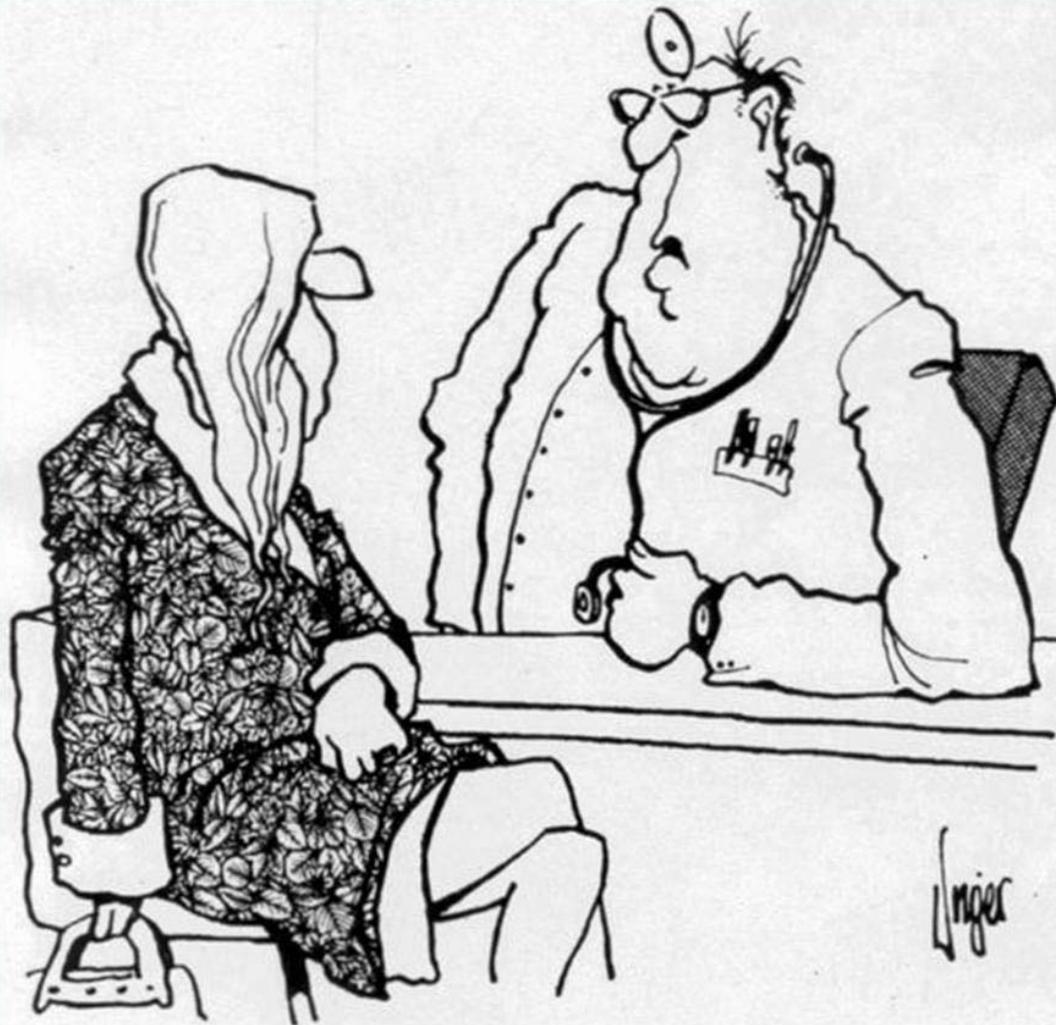
- Anatomy and Physiology





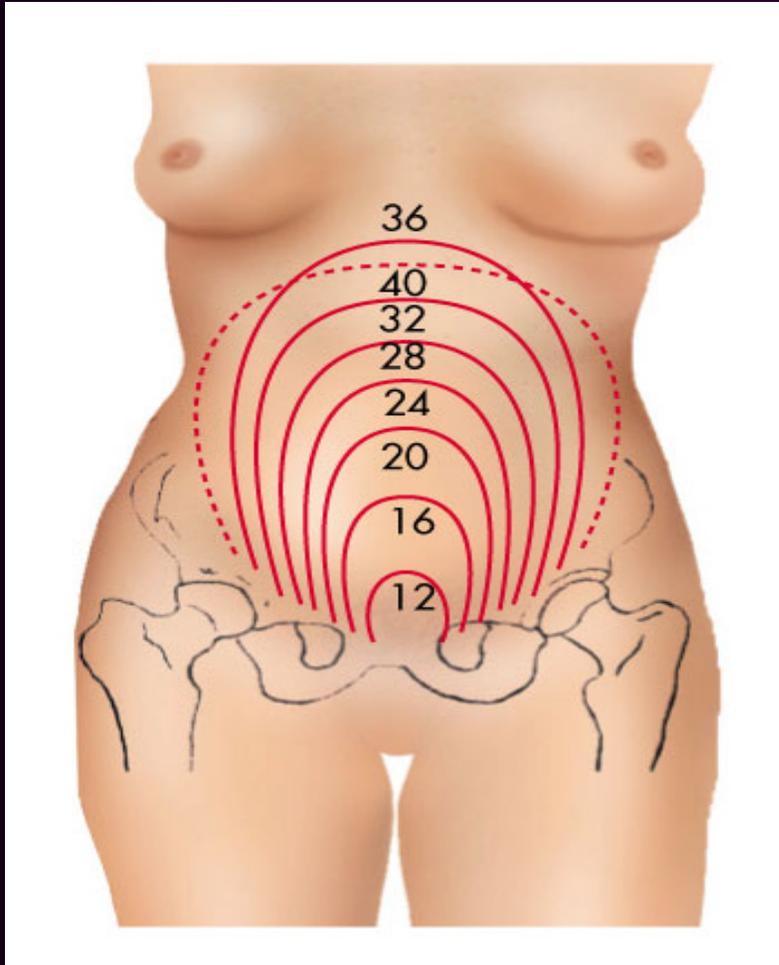
# *Obstetrical Terms*

- Antepartum
  - Postpartum
  - Gestation
    - Term gestation
  - Gravida
    - Primigravida
    - Multigravida
    - Grandmultigravida
  - Para
    - Primipara
    - Multipara
    - Grandmultipara
  - Prenatal
    - Natal
- |       |           |
|-------|-----------|
| G0 P0 | G2 P1     |
| G1 P0 | G3 P2 AB1 |
| G1 P1 | G3 P3 AB1 |

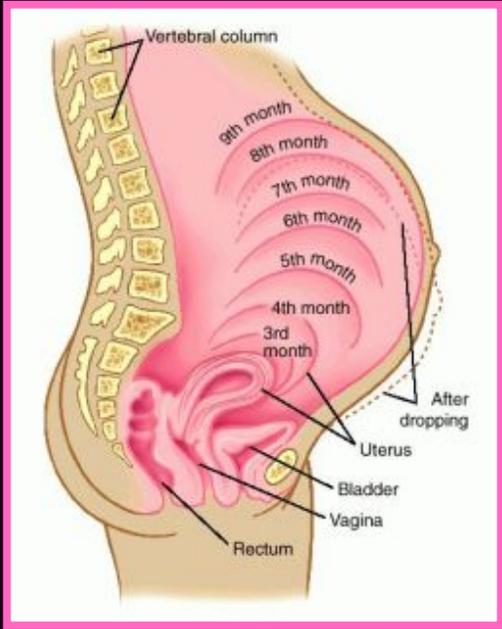


**“You’ve got Egyptian flu. You’re going to be a ‘mummy.’”**

# *Evaluation of Uterine Size*



- 8-10 weeks
  - Uterine contour irregular
- 12-16 weeks
  - Uterus above symphysis pubis
- 24 weeks
  - Uterus at level of umbilicus
- Term
  - Uterus near xiphoid process



# *Physiologic changes in Pregnancy*

- Cardiovascular Changes
  - Vasoconstriction lost during 1st & 2nd trimester
  - Maternal blood volume increases 40% to 50% above baseline
  - Red blood volume increases by 20%
  - Disproportionate increase between plasma and red blood cells causes maternal physiological anemia
  - Heart rate increases 10 to 15 beats per minute

# *Physiological Changes in Pregnancy*

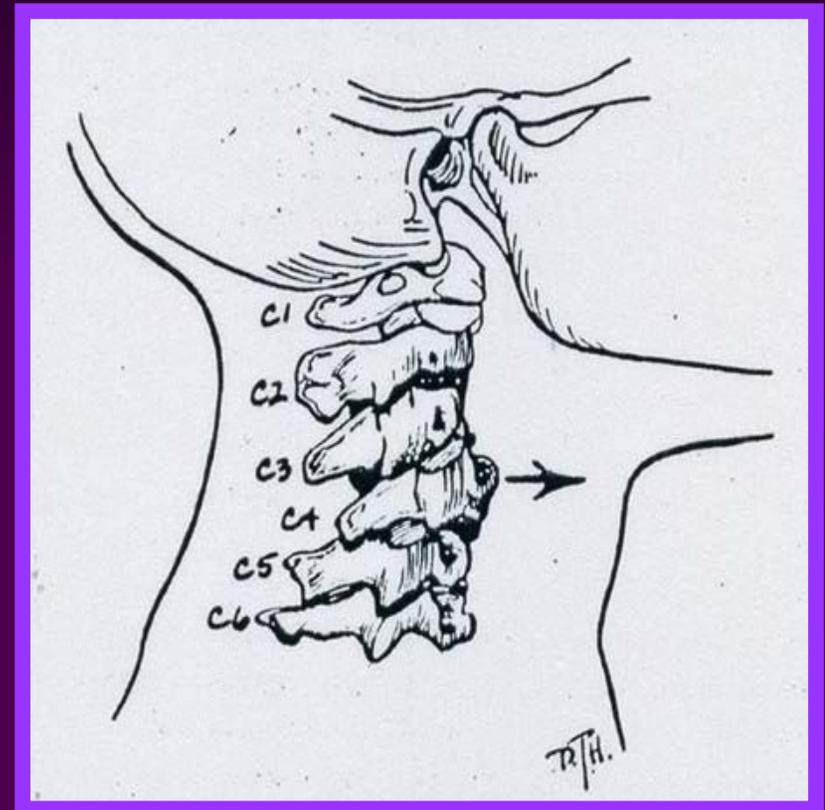
- Cardiac output increases by 30% to 50%
  - Hypervolemia can mask a 30% gradual or 15% acute blood loss
- Blood pressure decreases during the first and second trimesters, but returns to normal range during the third trimester
- Blood pressure is affected by maternal position
  - Supine hypotension occurs when the mother is placed in a flat position

# *Physiologic changes in Pregnancy*

- Hematologic Changes
  - Hct: 32 - 34 %
  - Physiologic anemia
  - WBC: 18, 000 - 25,000 at delivery
- Respiratory Changes
  - PCO<sub>2</sub> drops to 30 mmHg (sea level)
  - Tidal volume increased
  - Rate increased
  - Residual volume decreased

# *Physiologic changes in Pregnancy*

- Other Changes
  - Delayed gastric emptying
    - Frequent heartburn and constipation
    - Prone to vomiting
  - Generalized smooth muscle relaxation
  - Rectus muscle relaxation



# *Obstetric History*

- 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



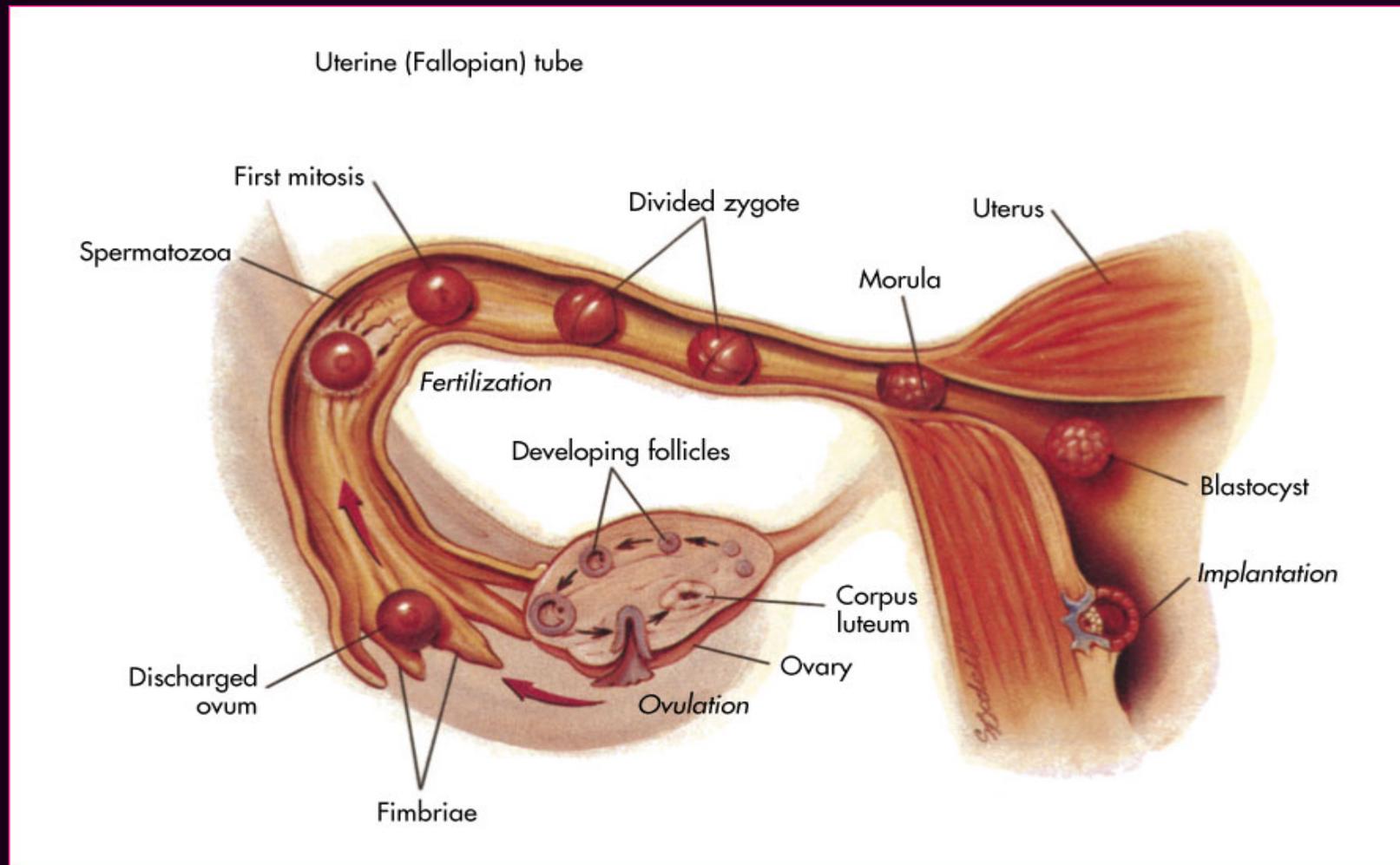
## *Obstetric History*

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

# *Emergencies of Pregnancy*

- Early Complications
  - Ectopics
  - Spontaneous miscarriage
- Late Complications
  - Placenta previa
  - Placenta abruptio
  - Pre eclampsia/eclampsia

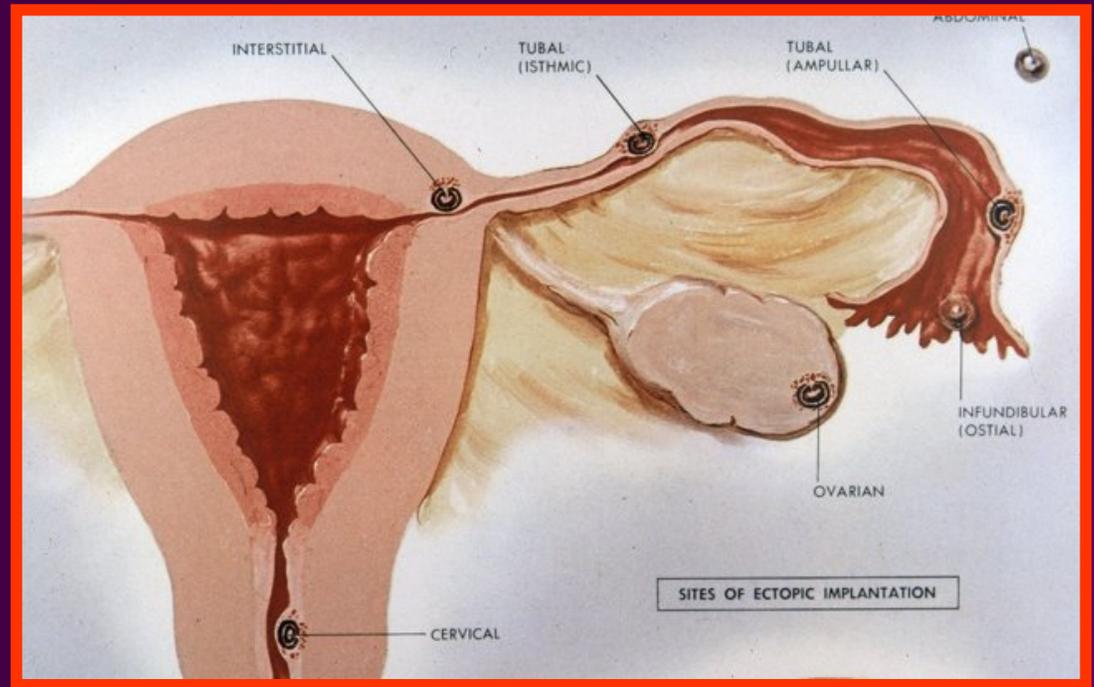
# Normal Implantation



# *Emergencies of Pregnancy*

## *Ectopics*

- Pregnancy outside the upper 1/3 of the uterus
- Extra-uterine implantation
- 95% occur in the fallopian tube
- “Tubal” pregnancy



# *Emergencies of Pregnancy*

## *Risk Factors*

- Women older than 35
- Previous ectopic pregnancy
- Previous tubule surgery
- Pelvic Inflammatory Disease
- IUD use
- Previous pelvic surgery
- Previous elective abortions
- Artificial insemination

**NOTE: 43% of women with ectopics have NO risk factors!**

*An opened oviduct with an ectopic pregnancy at about 7 weeks gestational age*



# *Emergencies of Pregnancy*

- Signs and Symptoms of Ectopics
  - Pain ... mild  severe
  - Abnormal bleeding
  - Shoulder pain
  - Rebound tenderness
  - Palpable mass
  - Alteration in vital signs

# *Emergencies of Pregnancy*

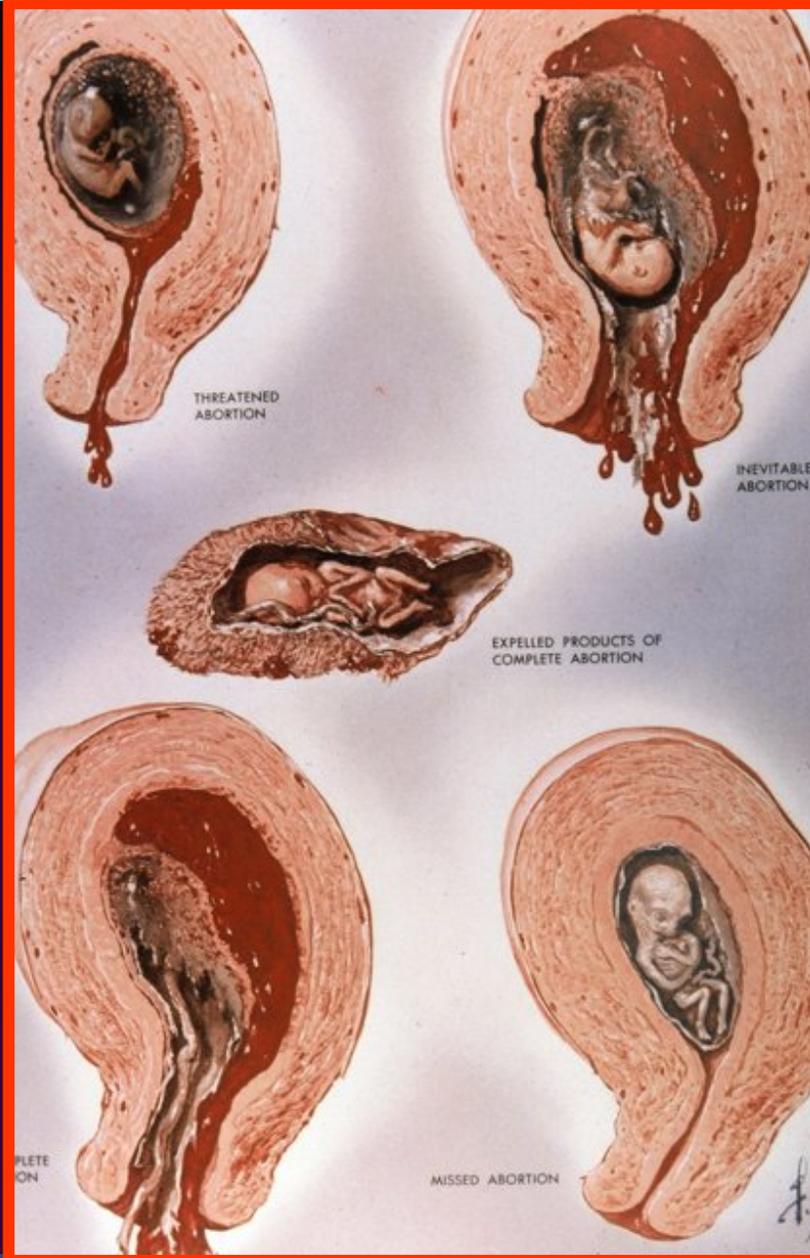
- Management of Ectopics
  - Assume ruptured ectopic in non-traumatic hypotension
  - True medical emergency
  - Early diagnosis
  - Prevent shock
  - Ultrasound, culdocentesis, surgery

# *Emergencies of Pregnancy*

## *Spontaneous Abortions*

- Non-induced loss of an intrauterine pregnancy before the 20th week
- 15 - 20 % of all pregnancies
- As "natural" as a term pregnancy
- Maternal age, maternal health and conditions, tobacco, alcohol, cocaine

Threatened



Incomplete

Complete

Inevitable

Septic  
Missed

# *Emergencies of Pregnancy*

- Signs and Symptoms of Spontaneous Abortions
  - Consider in any female of child-bearing age
  - Pain, cramping, mild → severe
  - Bleeding, spotting → heavy
  - Passage of POC

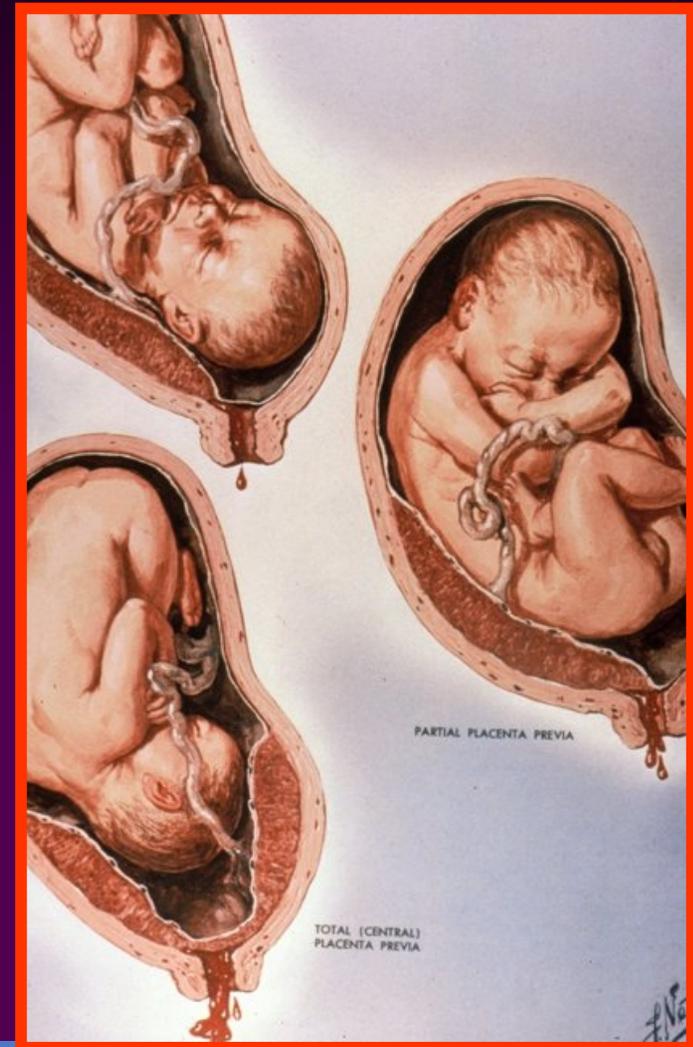
# *Emergencies of Pregnancy*

- Management of Spontaneous Abortions
  - Prevent and treat for shock
  - Pelvic exam
  - Diagnosis, pregnancy test, BhCG and ultrasound
  - “Wait and watch” vs. completion

# *Emergencies of Pregnancy*

## *Placenta Previa*

- Placental implantation in lower uterus
- 1/200 pregnancies
- Partial or complete
- Risk factors
  - Age and parity
  - Chronic hypertension
  - Smoking
  - Previous C-section
  - Previous placenta previa

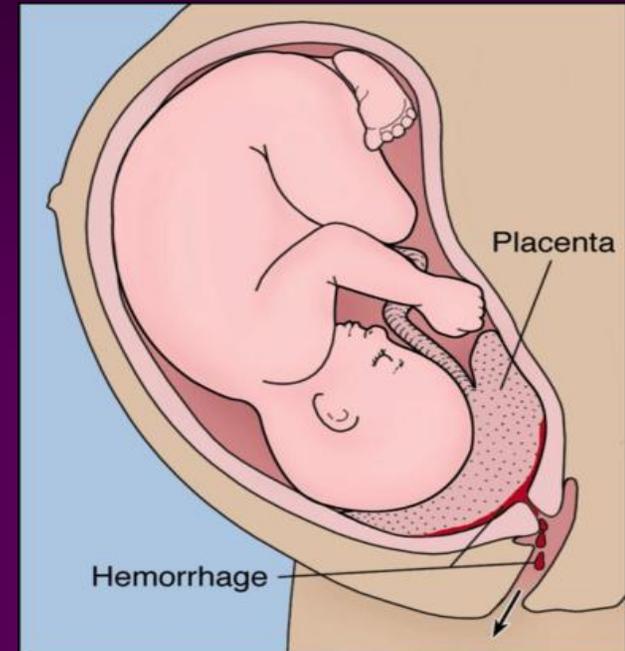


# *Emergencies of Pregnancy*

- Signs and Symptoms of Placenta Previa
  - 3rd trimester bleeding
  - May be progressive and recurrent bleeding.
  - Usually painless bleeding
  - Bright red, spotting or heavier
  - Bleeding may be induced
  - Abnormal ultrasound

# *Emergencies of Pregnancy*

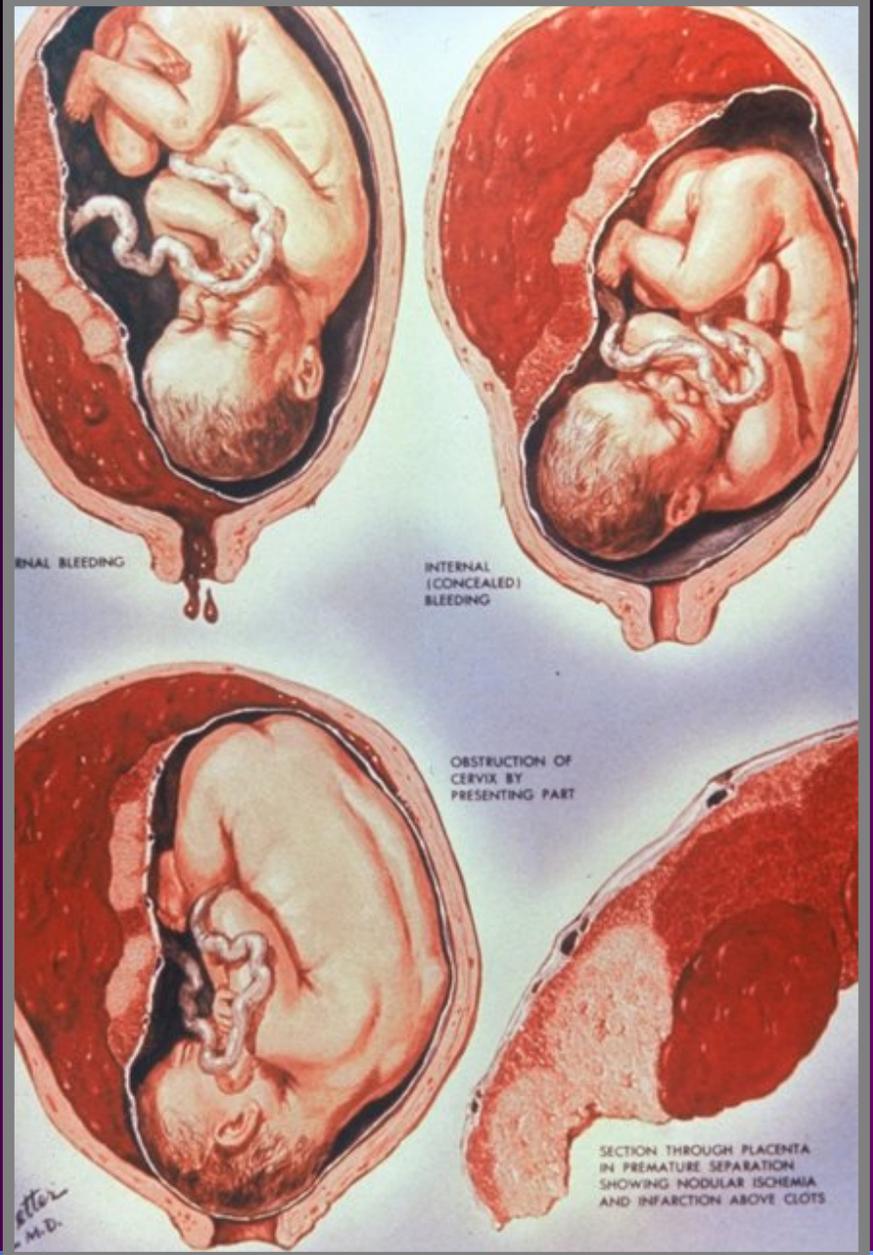
- Management of Placenta Previa
  - Early diagnosis
  - Prevent shock
  - Proper position
  - Accurate gestational age
  - Ultrasound
  - Double set-up



# *Emergencies of Pregnancy*

## *Placenta Abruptio*

- Premature separation of a normally implanted placenta
- .5 - 2.7 % of all pregnancies
  - 15% fetal mortality
- Associated with age, parity, smoking, cocaine, hypertension
- Trauma - blunt abdominal



# *Emergencies of Pregnancy*

- Signs and Symptoms of Placenta Abruption
  - Dark red bleeding, moderate → heavy
    - 80% vaginal bleeding
  - Painful, mild → severe contractions
  - Soft, non-tender uterus → hard and “board like”
  - Fetal distress

# *Emergencies of Pregnancy*

- Management of Placenta Abruptio
  - Aggressive prevention and management of shock
  - Proper position
  - Accurate gestational age
  - Fetal viability
  - Emergency c-section

# *Emergencies of Pregnancy*

## *Preeclampsia*

- a.k.a. Toxemia of Pregnancy
- 5 - 8 % of all pregnancies
- Hypertension and proteinuria after the 20th week
- Associated with 1<sup>st</sup> pg, age, PMHx, parity, multiple gestations, race
- 12-18% of pregnancy-related maternal deaths

# *Emergencies of Pregnancy*

- Unknown cause
  - Often healthy, normotensive primigravida
    - After twentieth week, often near term
- Characterized by:
  - Vasospasm
  - Endothelial cell injury
  - Increased capillary permeability
  - Activation of clotting cascade
  - Is not reversed until after delivery

# *Emergencies of Pregnancy*

- Signs and Symptoms of Preeclampsia
  - BP > 140/90
  - Excessive weight gain
  - Generalized edema (face, hands, feet)
  - Sx/sm associated with systemic edema
    - HA, visual disturbances
    - SOB, pulmonary edema



# *Emergencies of Pregnancy*

- Management of Preeclampsia
  - Early diagnosis
  - Bed rest
  - Antihypertensive management
    - (hydralazine, labetalol, nifedipine)
  - Preventative hospitalization
  - ? Early delivery of the infant

# *Emergencies of Pregnancy*

## *Eclampsia*

- True medical emergency
- Coma/Convulsive stage of preeclampsia
- 0.5 % - 2% of preeclampsia progress to eclampsia
- Intense vasoconstriction, cerebral edema



# *Emergencies of Pregnancy*

- Signs and Symptoms of Eclampsia
  - Grand mal seizure
    - 25% occur before labor
    - 50% during labor
    - 25% after labor
  - Rarely status seizures
  - Prolonged postictal phase
  - Severe impact on fetus
    - 12% mortality rate

# *Emergencies of Pregnancy*

- Management of Eclampsia
  - Airway management
  - Prevent further injury
  - Treatment of the seizures
    - Magnesium sulfate
    - Valium
  - Antihypertensive therapy
  - Rapid delivery of the infant

# *Magnesium – MgSO4*

- Eclamptic seizures controlled - success rate > 95%.
- It has little antihypertensive effect but is an effective anticonvulsant.
- Acts as a membrane stabilizer and vasodilator, reducing cerebral ischemia.
- Maintains uterine and fetal blood flow.
- Indicated for Systolic BP > 180, Diastolic BP > 120 with altered mental status or seizures.
- Mix 4-6 gm in 50 ml NS and run in over 15 - 30 minutes.
- Watch out for respiratory depression.

# *Magnesium – MgSO<sub>4</sub>*

- Toxicity
  1. Complete heart block
  2. Hypocalcemic tetany  
> flaccid paralysis
  3. Respiratory paralysis
- Seizures not controlled with MgSO<sub>4</sub> may require *Diazepam*, but this is not the first line drug.
- Remember: Seizures may be seen in the postpartum period in the pre-eclamptic patient, up to 10 days.

# *Magnesium – MgSo4*

- Antidote:

## Calcium Gluconate/Glucepate

1. Administer 10 cc of a 10% solution *slow* IVP  
–*rapid administration may cause cardiac arrest!*
2. Watch for shortened QT & inverted T-waves (= calcium toxicity) on monitor.
3. *If conscious the pt. may c/o “chalky taste”; tingling sensation; & oppressive waves of heat.*

# *Trauma in Pregnancy*

## *Considerations in Traumatic Injuries*

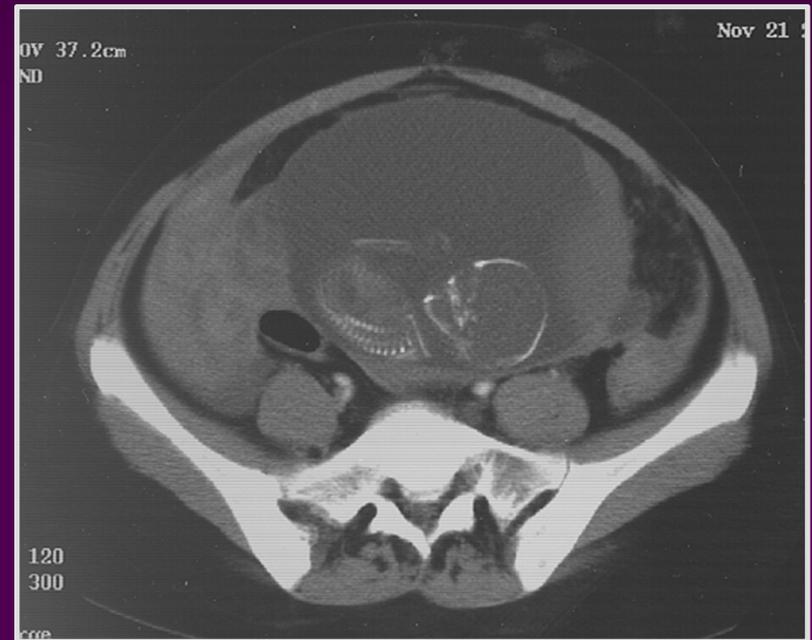
- Less compensatory mechanisms
- Less respiratory reserve
- Poor renal and vascular compensation
- Large volume lost before changes in vitals
- Increased bleeding from venous injury
- Fetus steals reserves from the mother
- Uterine shunting

# *Trauma in Pregnancy*

- Patterns of Domestic Violence
  - May increase during pregnant
  - Abdomen often the target of injury
  - Blunt and penetrating trauma
- Patterns of Injury
  - Blunt trauma
  - Motor vehicle accidents
    - No seat belts
    - Improper seat belts
  - Falls

# *Trauma in Pregnancy*

- Patterns of MVA Injuries
  - Often life-threatening, multiple injuries
    - 80% mortality associated with maternal hypotension
  - High incidence of pelvic fractures
  - Significant injuries may also cause placenta abruptio or uterine rupture





BUCKLE UP YOUR



UNBORN BABY

Always  
buckle up  
properly



# *Trauma in Pregnancy*

- Emergency Management of Trauma
  - Aggressive management of mother
    - Airway
    - Fluid resuscitation - prevention of shock
  - Determination of gestational age, viability of the fetus
  - Consider mode of transportation and destination options
  - Consider “crash” c-section
  - May consider treat/transport mother that would normally be considered “Dead On Scene”

# *Supine Hypotensive Syndrome*

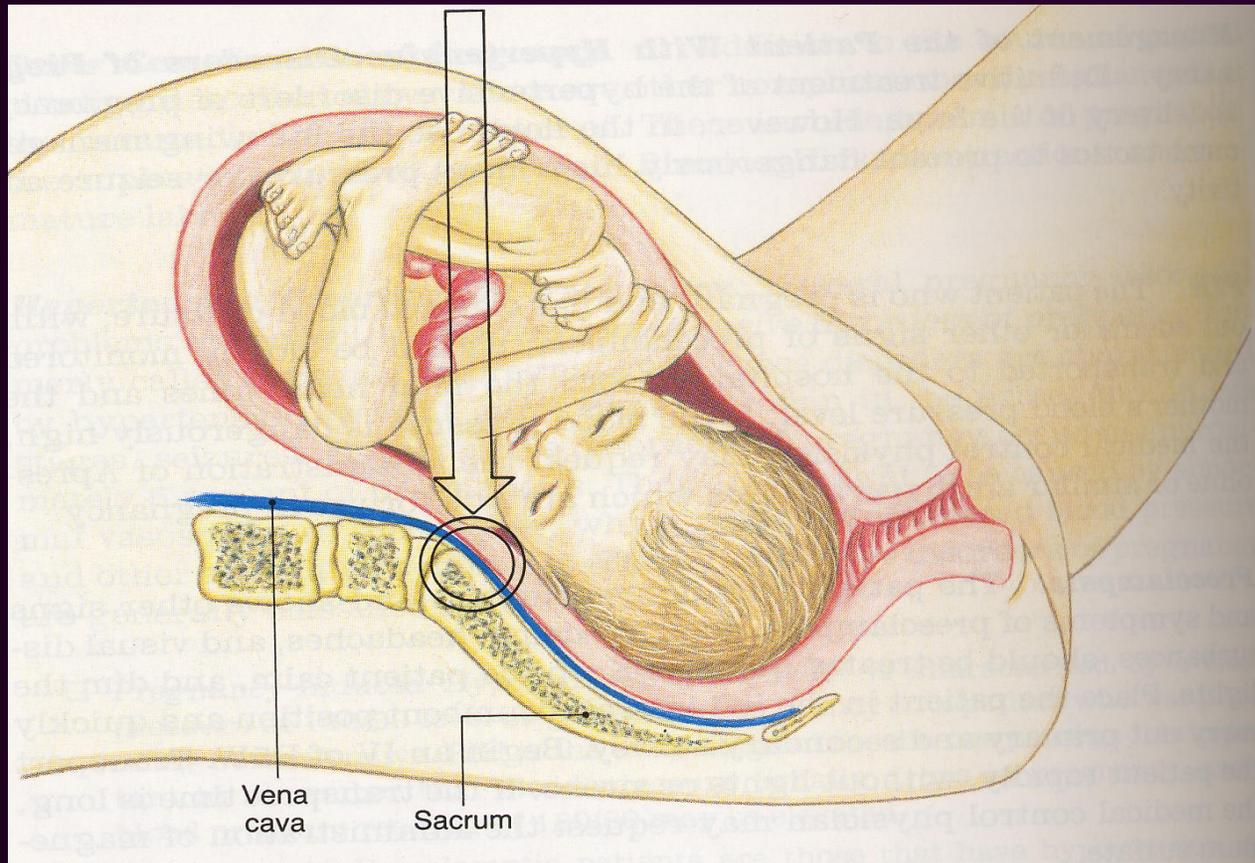
- Compression of the inferior vena cava
- Compression of the descending aorta
- Failure of the abdominal collaterals
  - Potential 20% + drop in cardiac output
  - Bradycardia, pallor, diaphoresis, dizziness

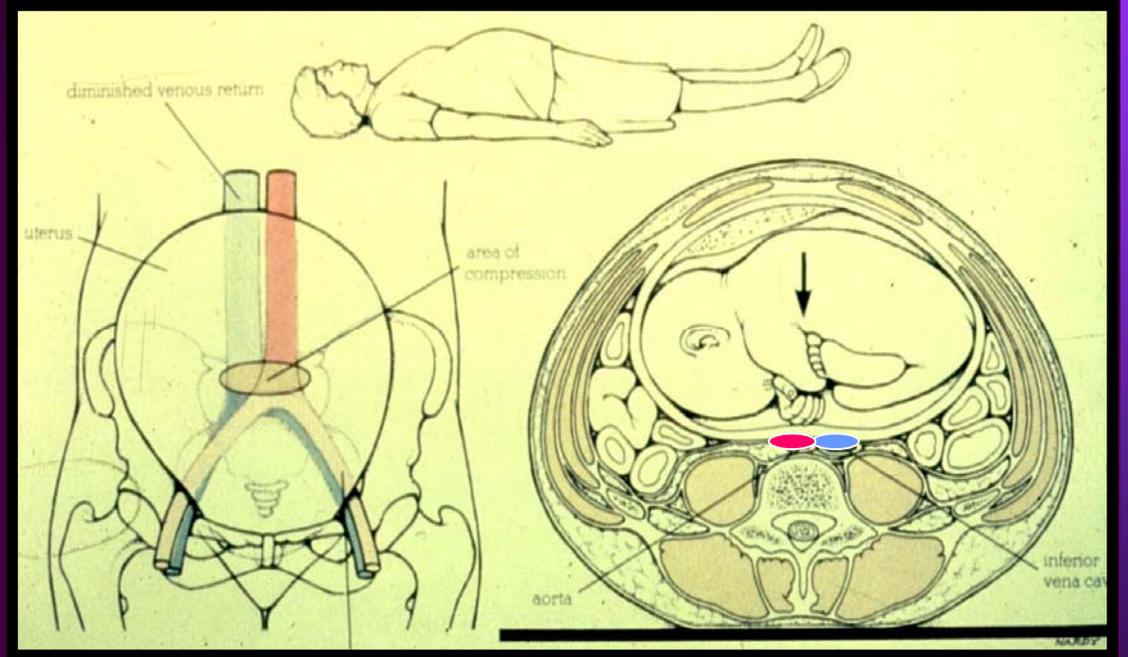
# *Supine Hypotensive Syndrome*

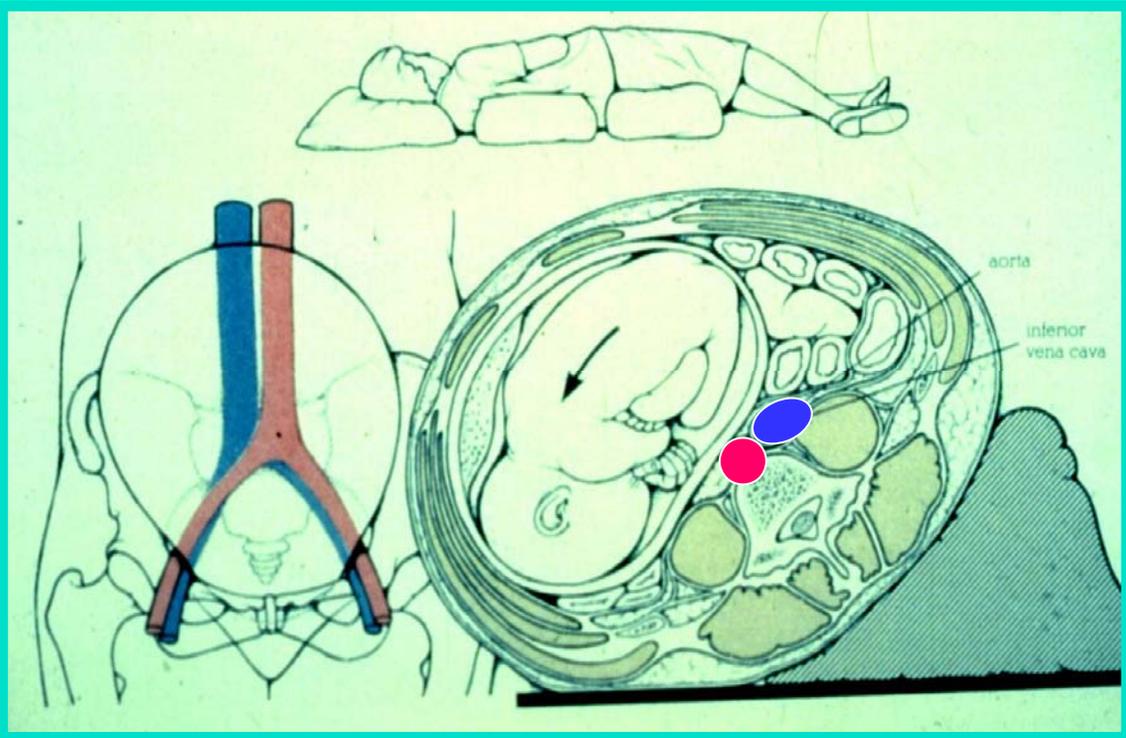
- Prevention
  - **NEVER** transport a women in late ( $\pm$  20 weeks) pregnancy flat on her back
  - Consider transport sitting up, semi-sitting, or left side
  - Tilt backboard by  $15^{\circ}$
  - Uterine displacement by  $15^{\circ}$



# *Supine Hypotensive Syndrome*



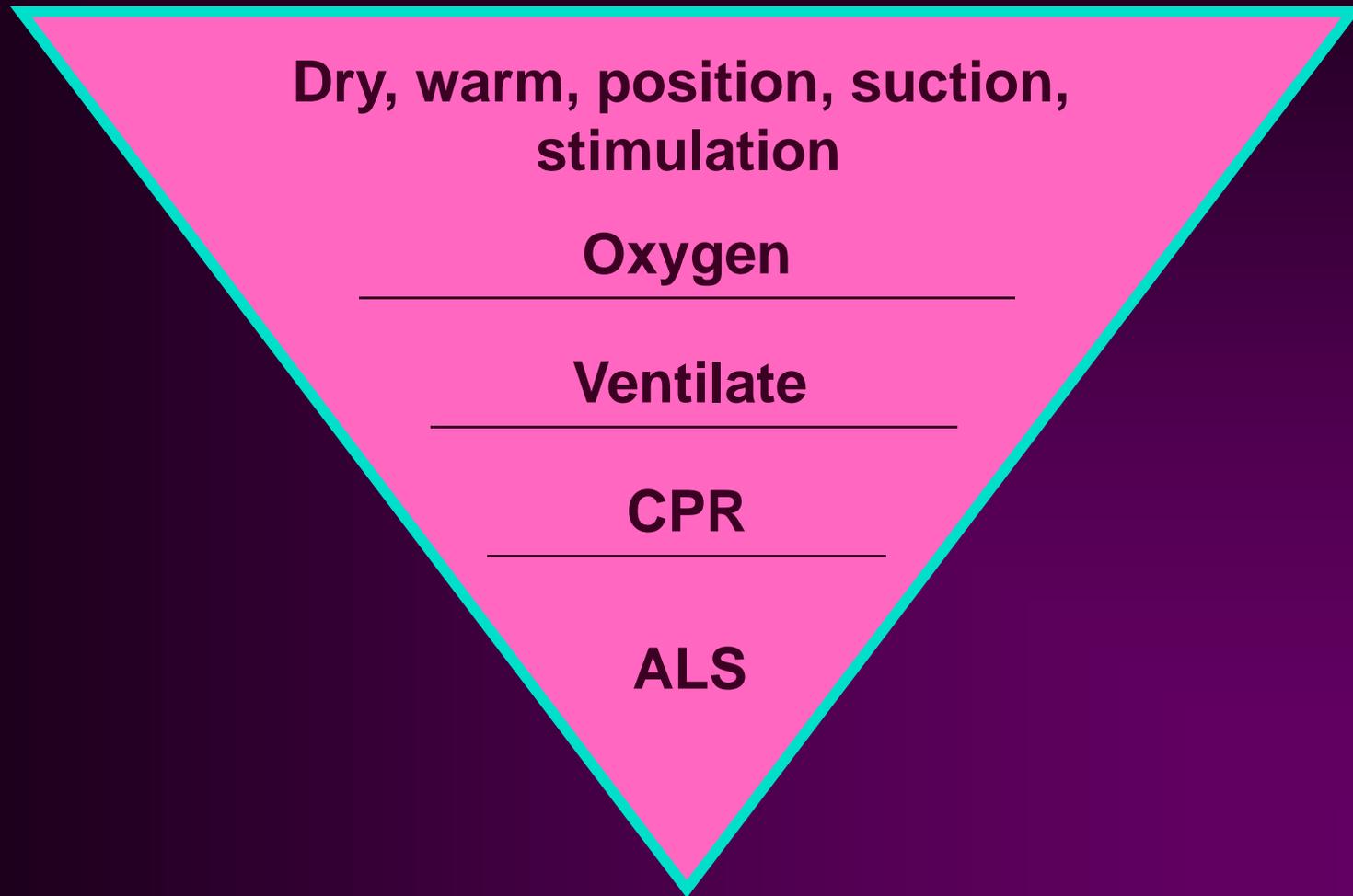




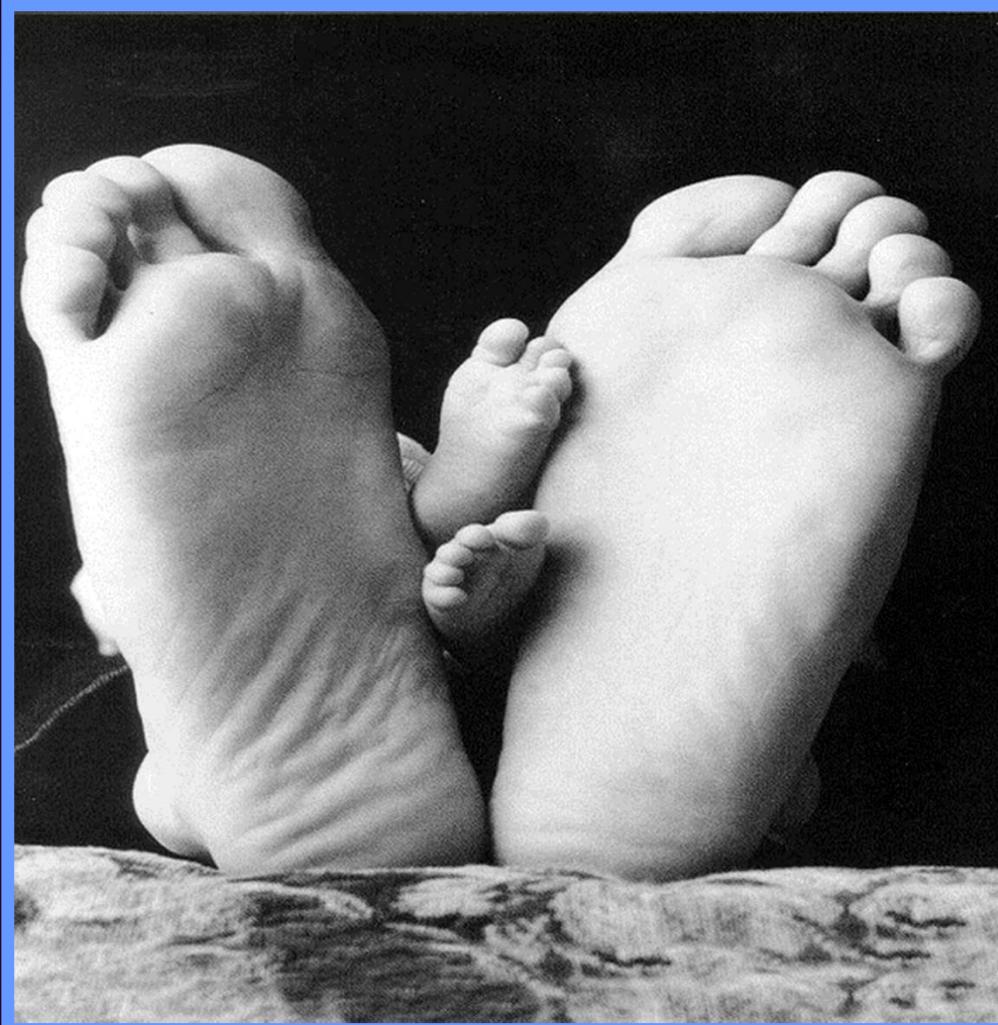
# *Summary*

- High degree of suspicion and concern
  - Anticipate the worst
- Full and complete assessment
- Plan ahead
- Prevent complications
  - Oxygen
  - Fluids
- Positioning
- Rapid transport to a prepared facility

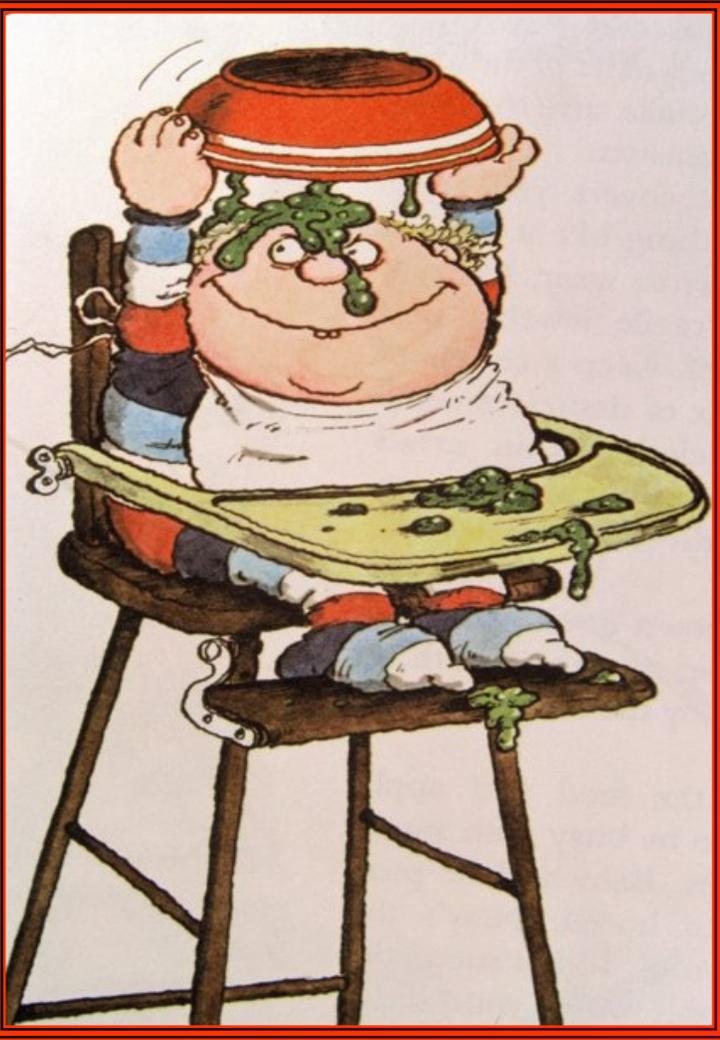
# ***Inverted Resuscitation Pyramid***



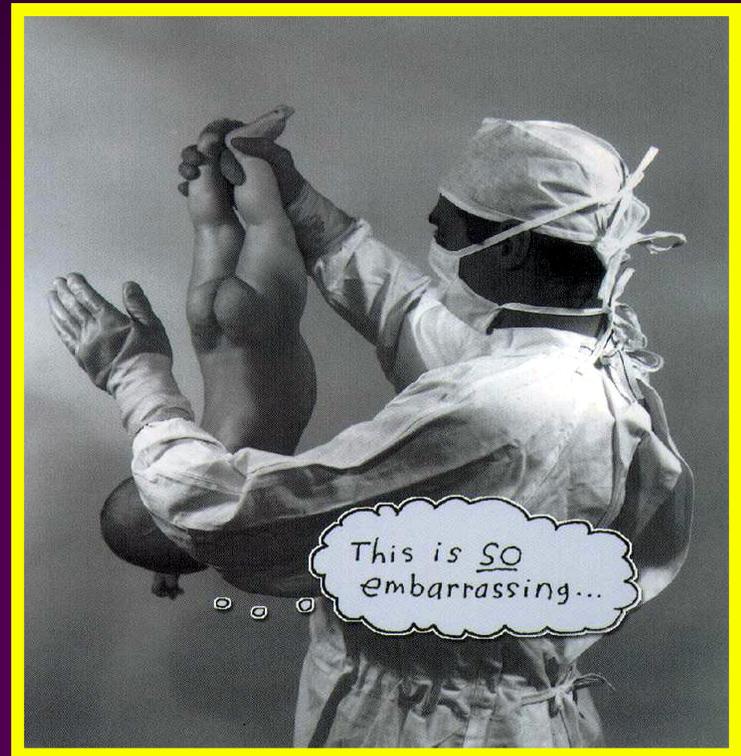
# *Conclusion*



Thank you and have  
a good day !



Now the fun begins !!



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