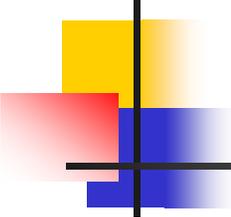


Obstetrics / Gynecology

*** CME Version ***

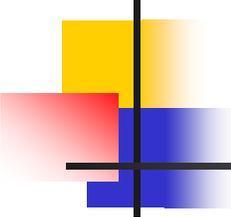
Aaron J. Katz, AEMT-P, CIC

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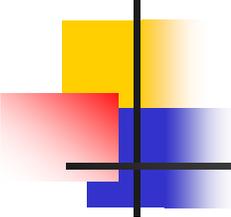
Agenda for today

- Important Terms/Anatomy & Physiology ("A&P")
- Labor
- Pre-delivery emergencies
- The delivery process
- During-delivery emergencies
- Post-Delivery emergencies
- ALS considerations
- Exam



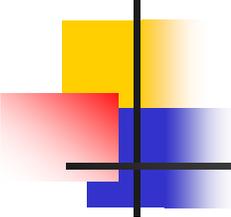
Reality Check for us all

- Childbirth should **NOT** be taking place “in the field!”
- Never makes us look like heroes!
- Does not happen often enough for sufficient experience
- **THEREFORE, MUST LEARN THE PROCESS AND ASSOCIATED POTENTIAL EMERGENCIES...**



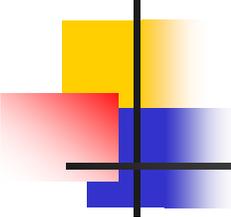
A & P - 1

- Fetus
 - Unborn infant growing in the uterus
- Uterus (womb)
 - Muscular organ where fetus grows
- Birth canal
 - Cervix (“neck” of the uterus) & vagina
- Mucous plug
 - Seals uterine opening
 - Protects against infection



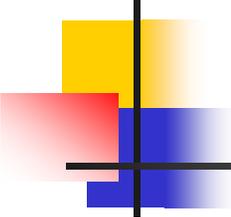
A & P - 2

- Bloody “Show”
 - Release of the mucous plug
 - Often the beginning of the first stage of labor
- Perineum
 - Area of skin between the vagina and anus
- Placenta (“after birth”)
 - Body which attaches to the inner lining of the uterus – the source of fetal nourishment



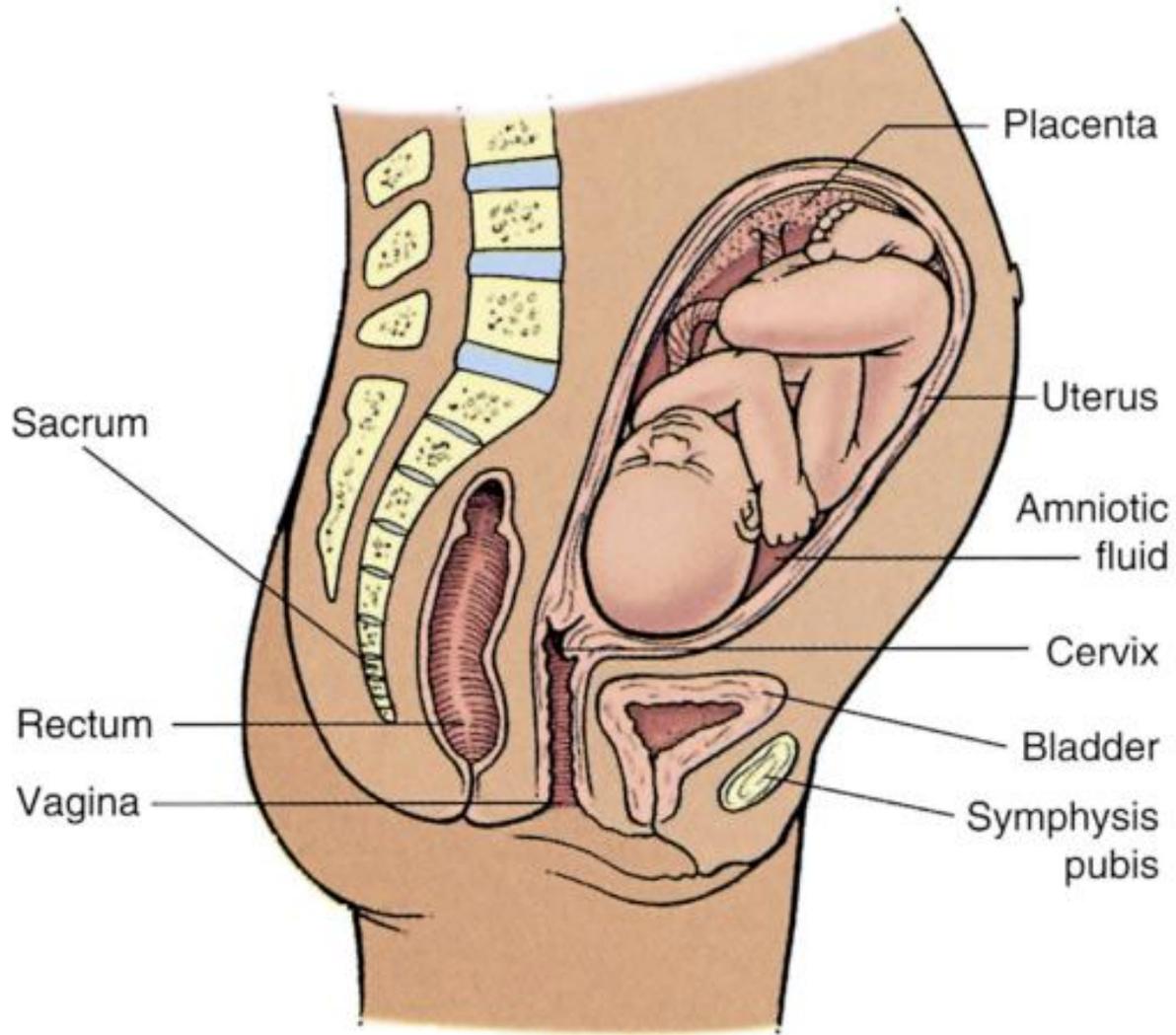
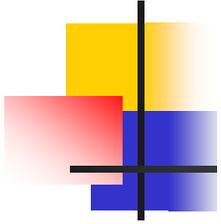
A & P - 3

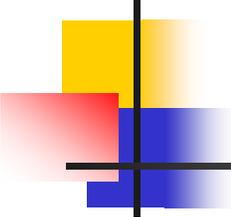
- Umbilical cord
 - Connects the mother and fetus through the placenta
 - Has two arteries and one vein
 - **Vein carries blood to the fetal heart**
 - Arteries carry blood away from the fetal heart
 - O₂ and nutrients from mother through the vein
 - CO₂ and wastes back to mother
 - **Mother's and fetal blood never mix**



A & P - 4

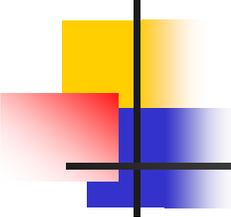
- Amniotic sac (“Bag of waters”)
 - 500 – 1000ml of amniotic fluid
 - Fetus develops in this fluid
 - Provides cushioning
 - **Usually** released in a gush at the onset of labor
- Full Term
 - 36 – 40 weeks from LMP
- Premature
 - < 36 weeks from LMP





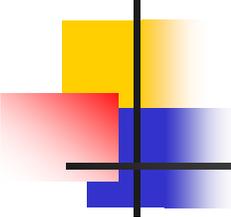
Labor – 3 stages

- Stage one
 - End with complete dilation of the cervix
 - Takes an average of 16 hours for **first** child
 - Time becomes progressively shorter with each delivery
- Stage two
 - Ends with the delivery of the baby
 - ***Decision time for us!***
- Stage three
 - Ends with delivery of the placenta



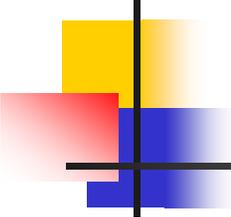
Pre-delivery emergencies

- Ectopic pregnancy
- Preeclampsia
- Eclampsia
- Supine hypotensive syndrome
- Abruptio placenta
- Placenta previa



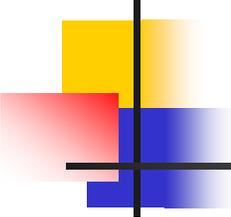
Ectopic pregnancy

- Fetus develops outside the uterus
 - Usually in the fallopian tubes
- In early weeks of pregnancy
 - *Patient may not even know they are*
- **Major risk:**
 - **Death due to internal bleeding from rupture**



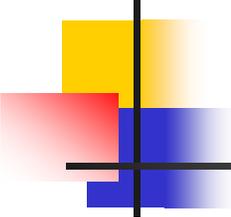
Ectopic pregnancy

- Signs/Symptoms
 - Sudden stabbing pain in lower abdomen
 - *Sometimes* referred pain to right shoulder
 - *Sometimes* vaginal bleeding
- Treatment
 - ABCs
 - Treat for shock PRN
 - **Rapid transport**
- *** To be treated as a “major trauma” ***



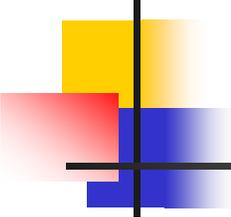
Ectopic pregnancy

Any female of child-bearing age with lower abdominal pain is assumed to have an ectopic pregnancy until ruled out



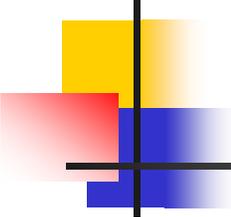
Preeclampsia

- AKA “pregnancy induced hypertension”
- Usually > 20 weeks
- Related to excess protein
- S/S include
 - Headache
 - Visual disturbances
 - Seeing spots
 - Edema of the hands and feet
 - Anxiety
 - Hypertension
 - Upper abdominal pain



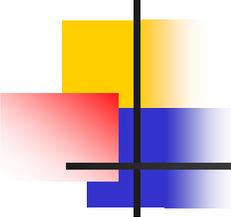
Eclampsia

- Preeclampsia **and seizures**
- Treat with:
 - ABCs
 - Call for ALS for **BOTH Pre-E and Eclampsia**
 - To treat the seizures
 - Transport promptly AND **QUIETELY**
- **“Nice to know”**: Will not respond to **“routine” seizure treatments**



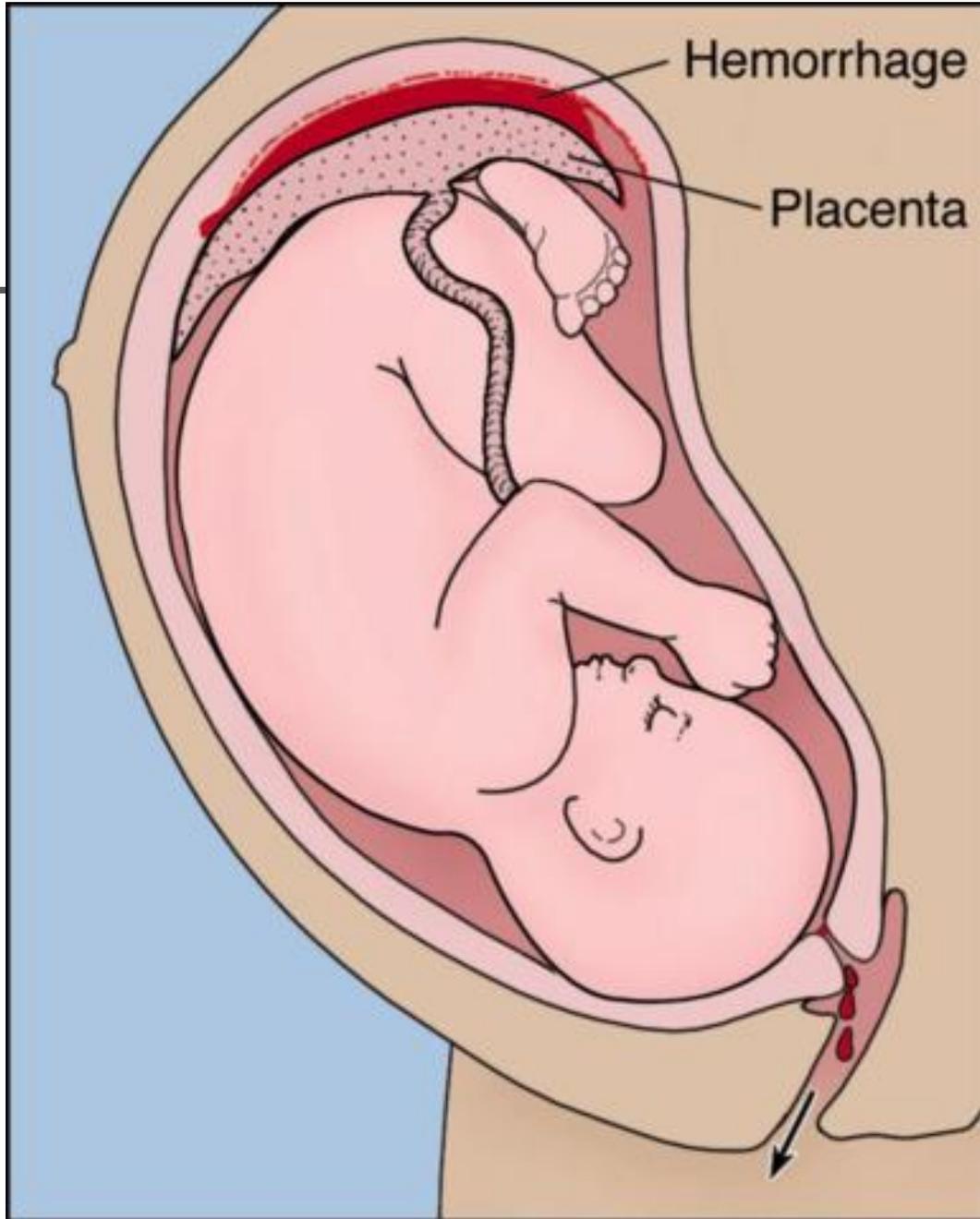
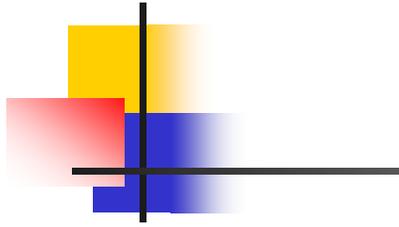
Supine hypotensive syndrome

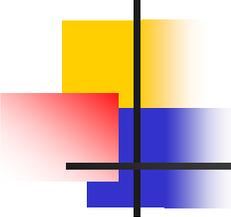
- Hypotension caused by a large uterus leaning on the inferior vena cava
- Most often found in supine patient
- Diminishes blood flow returning to heart
- **Simple treatment!**
 - Place patient on her left side
 - Use a folded blanket under right hip
 - Oxygen
- **All late stage pregnant women are to be transported this way**



Abruptio placenta

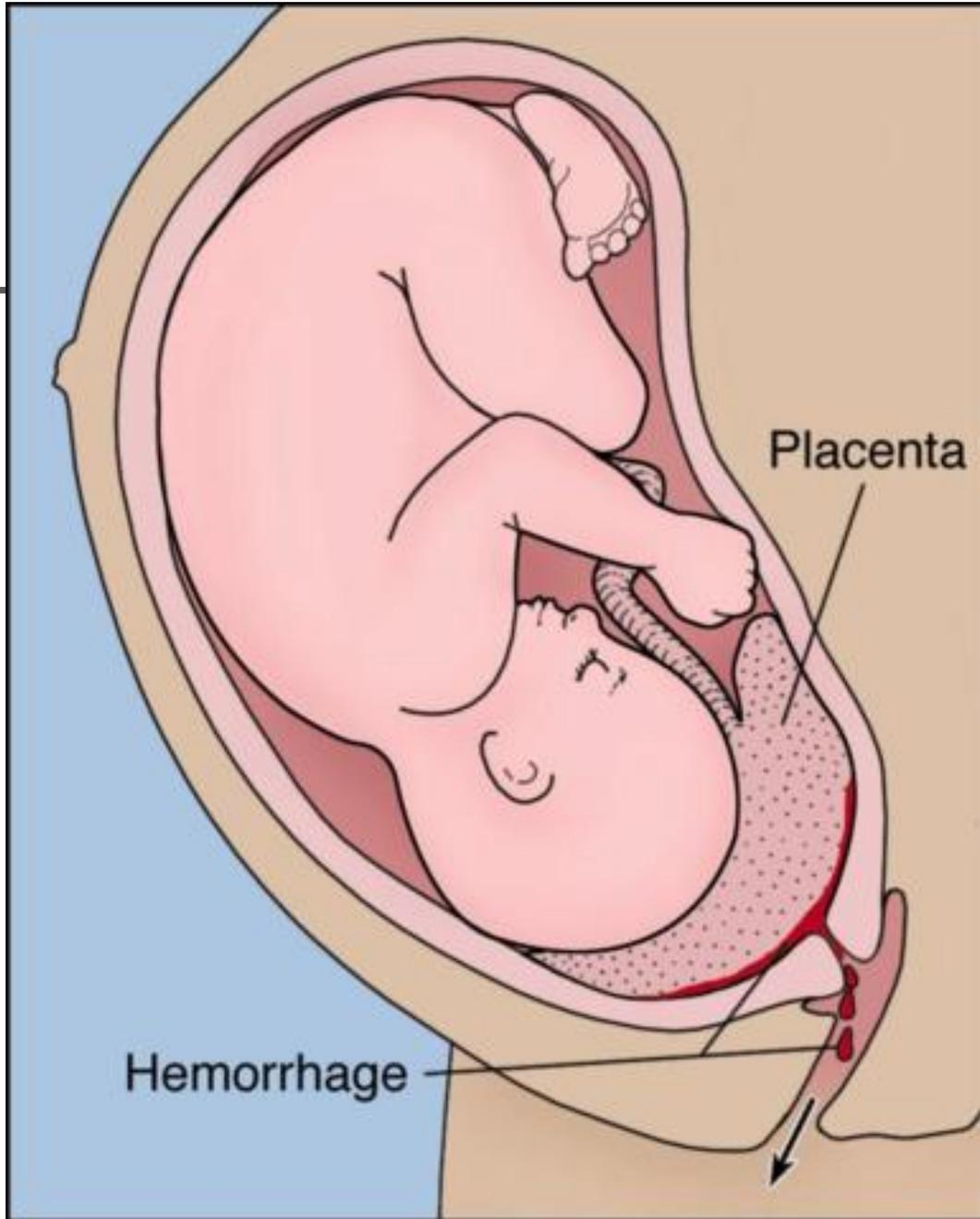
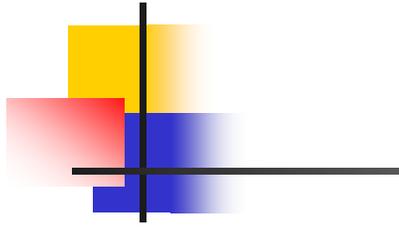
- Placenta prematurely separates from uterine wall causing...
- **Loss of oxygen and nutrients to fetus**
- **Major internal bleeding**
- May or may not see any vaginal bleeding
- **A true emergency!**

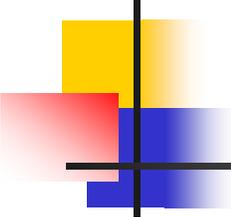




Placenta previa

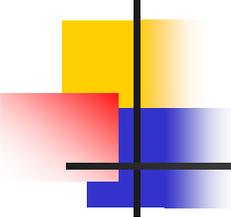
- Placenta develops over and covers the cervix
- May or may not see any vaginal bleeding
- **A true emergency!**
- **→ Woman *may* know from a recent ultrasound ←**





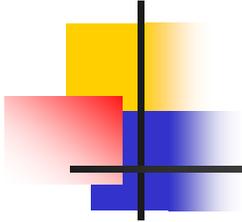
Do you know the answer?

- **Question:** *Why might* you suspect Abruptio Placenta if the patient is pain free?
- **Answer:** “Shocky” vital signs
- **Moral of the story:** “Repeated V/S are critical – for all patients”



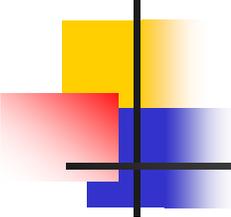
Vaginal bleeding during pregnancy

- **Any vaginal bleeding at any time during pregnancy is considered abnormal and must be transported**
- Treat with:
 - ABCs
 - Treat for shock PRN
 - Position on left side
 - Transport promptly



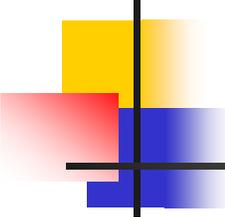
- Emergency childbirth and resuscitation
- Stabilization of the newborn

- **General Rules:**
 - For imminent delivery, request ALS
 - Do not wait for ALS
 - **NEVER** delay or restrain delivery under normal circumstances
 - **ALS MUST BE REQUESTED FOR PREMATURE, MULTIPLE BIRTHS OR MECONIUM STAINED AMNIOTIC FLUID!**



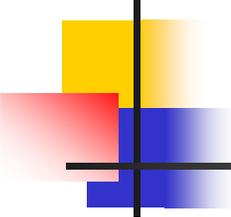
Scenario

- At 7:30, you are dispatched to a summer home in the Catskills. After looking around and admiring the beautiful home, you find your 21 YO female patient in obvious labor and in great distress.
- Pt tells you:
 - I am 27 weeks pregnant
 - This is my second child
 - I have been bleeding over night
 - I have had “intermittent” severe abdominal pain all night. No N/V and nothing I did provided relief.
- **Questions:**
 - What are your treatment priorities?
 - What will your treatment include?
 - What possible complications must you anticipate?
- ➔ **Stay Tuned** ←



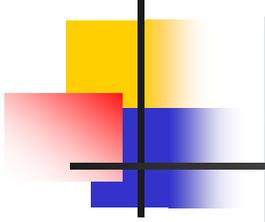
Childbirth – general approach

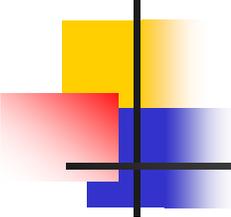
- Assure that mother's ABC's are OK!
- **Assess and treat for shock PRN**
- Obtain a quick history to determine if mother's in labor:
 - Length of term
 - Number of previous pregnancies
 - Number of prior live births
 - History of problem deliveries
 - Frequency & duration of uterine contractions
 - Recent vaginal discharge or bleeding
 - **Presence of urgency to move bowels**
- **Do not allow mother to go to the bathroom!**



Childbirth – general approach

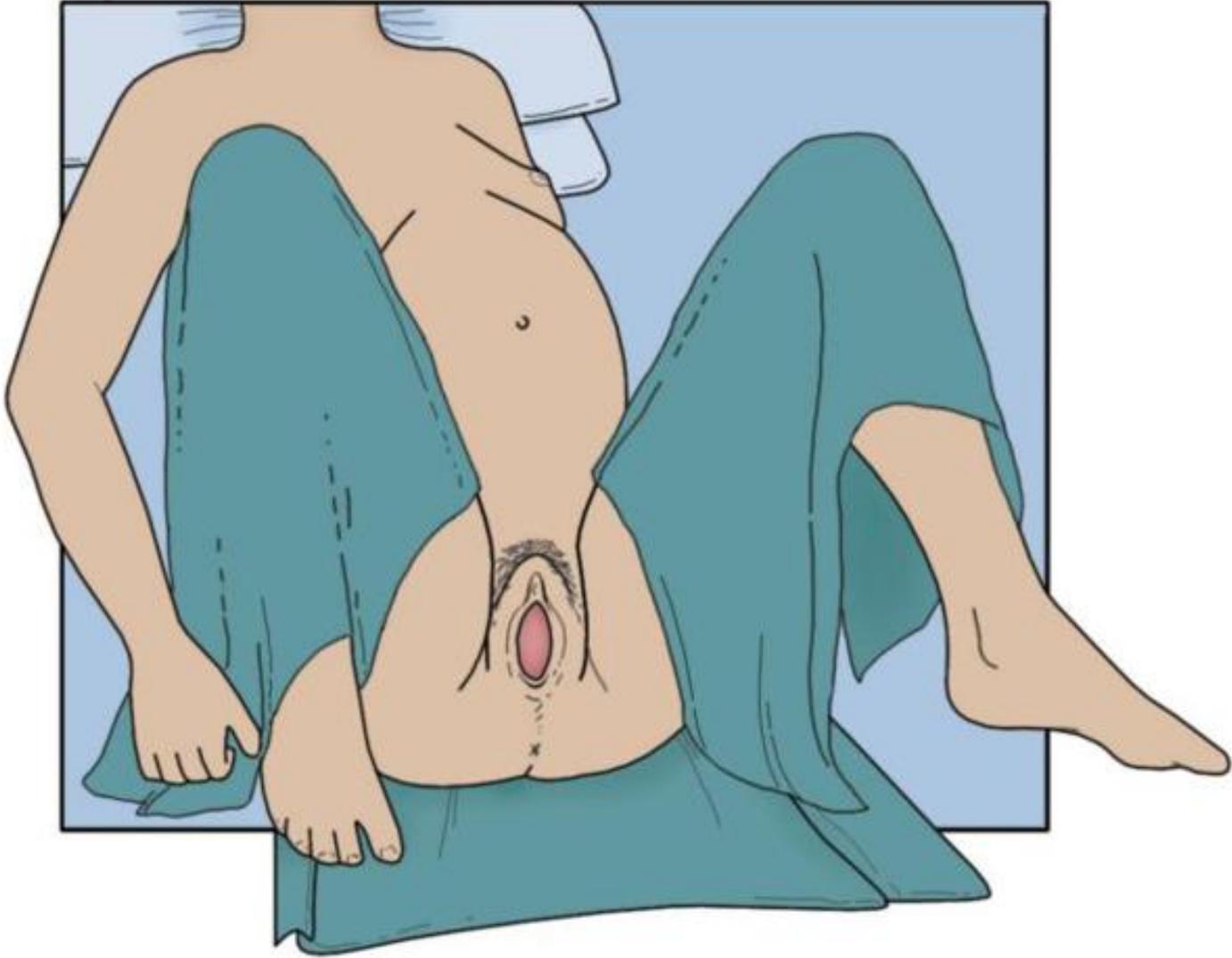
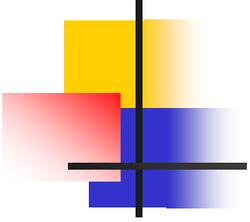
- **Determine if mother is having contractions**
- Perform a **visual** inspection looking for bulging of the peritoneum or **crowning**
- If contractions are 2 – 3 minutes apart lasting 60-90 seconds **and/or**
- Crowning of the head the size of a half dollar is present between contractions **then...**
- **Prepare for immediate delivery...**

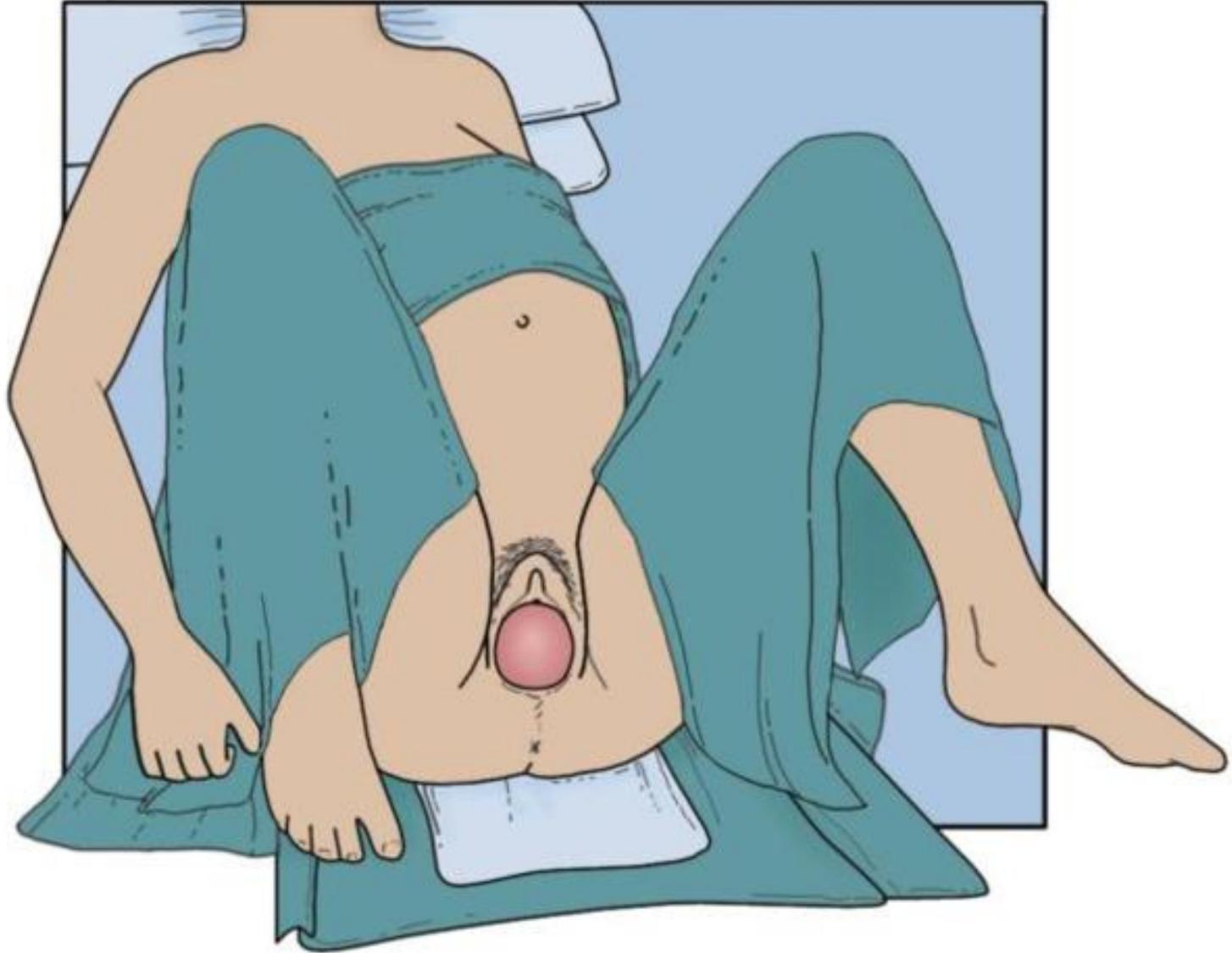
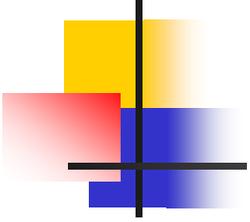


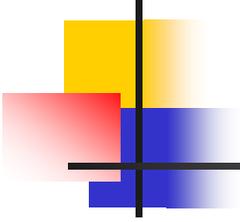


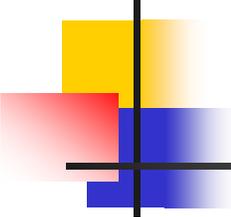
Prepare for delivery

- **Inform the mother of the need for immediate delivery**
- Secure a private/sanitary environment
- Position and drape the mother
- Place the OB kit within easy reach
- Warm several towels, if possible



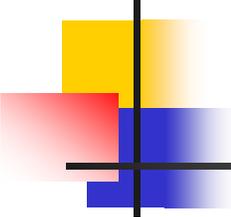






Uncomplicated delivery - 1

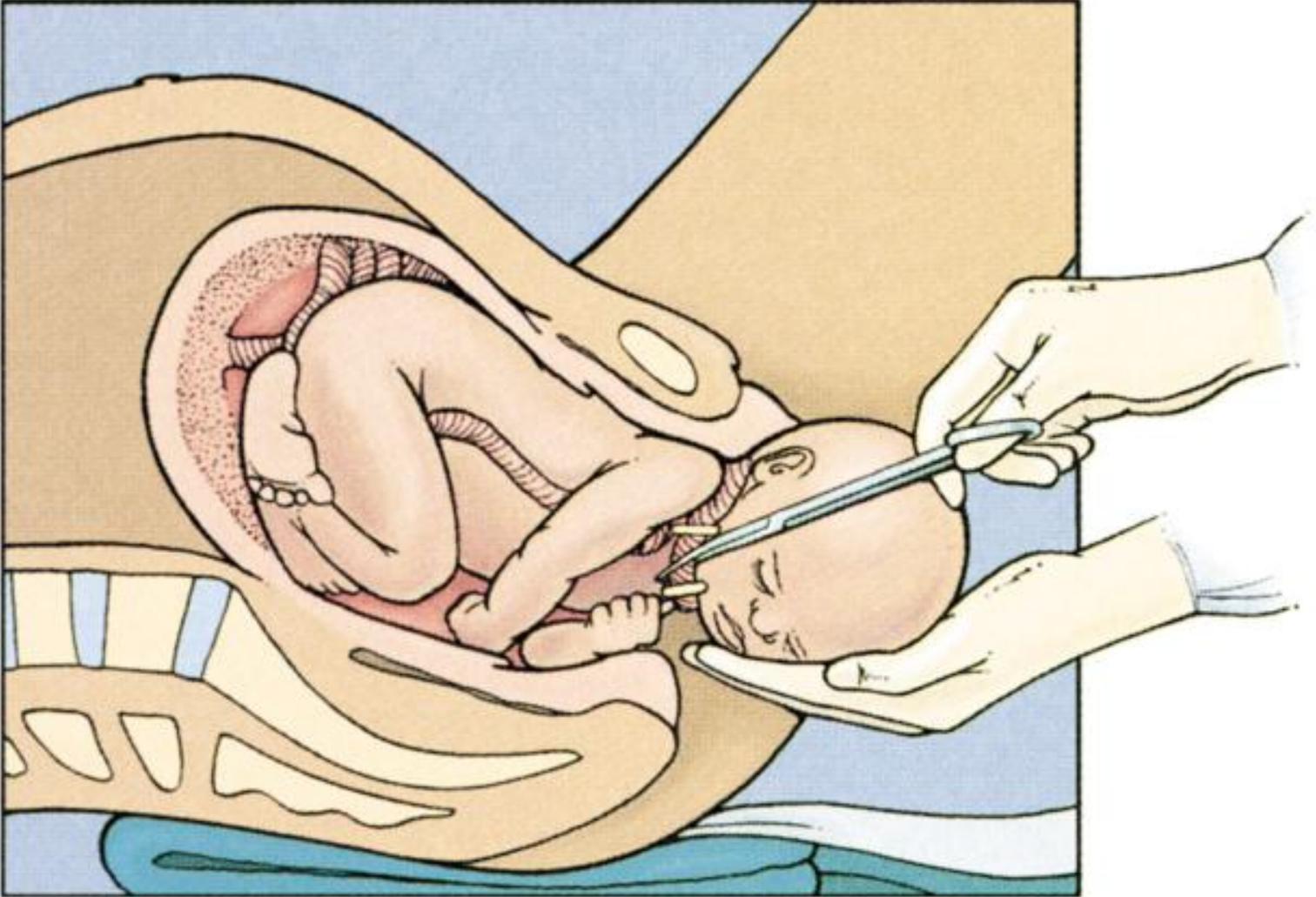
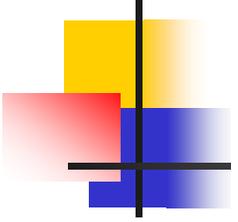
- Support the infant's head with one hand while gently guiding it out – **to prevent an explosive delivery**
- Attempt to prevent the head from touching fecal material
- **If the amniotic sac has not yet ruptured:**
 - Puncture it with a gloved hand
 - Move the head away from the gushing fluid
 - Suction PRN

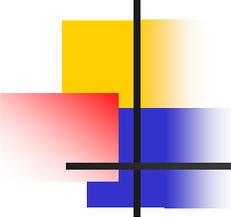


Uncomplicated delivery - 2

As soon as the head delivers:

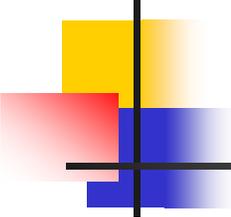
- Continue to support the head with one hand
- **Inspect the infant for an umbilical cord wrapped around its neck**
- **If wrapped loosely, *gently* slip it over the infant's neck**
- **If wrapped tightly:**
 - **Immediately clamp the umbilical cord with two clamps and cut in-between**





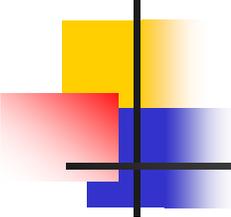
Uncomplicated delivery - 3

- **Suction the oropharynx first**
 - Insert a compressed bulb syringe at most 1.5" into the infant's mouth
 - Suction the infant's oropharynx while controlling the release of the bulb
 - Repeat suctioning PRN



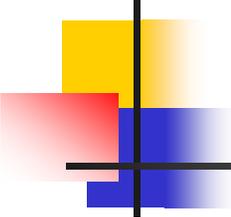
Uncomplicated delivery - 4

- **Suction the infant's nostrils:**
 - Insert a compressed bulb syringe at most 0.5" into the infant's mouth
 - Suction the infant's nostrils while controlling the release of the bulb
 - Repeat suctioning PRN



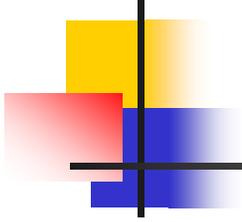
Uncomplicated delivery - 5

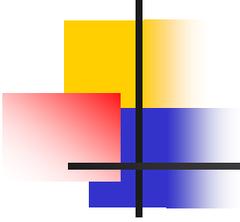
- Once the head delivers, guide the shoulders out... remainder of delivery will generally proceed quickly
- **Dry the infant quickly – note that the infant will be very slippery!**
- **Place on a warm towel in a face up position *with feet higher than the head***
- ***Keep the infant no higher than the mother's level until the umbilical cord is cut***
- Repeat suctioning PRN

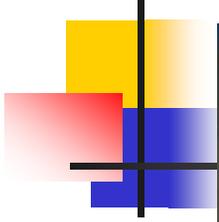


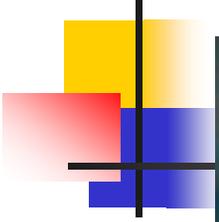
Uncomplicated delivery - 6

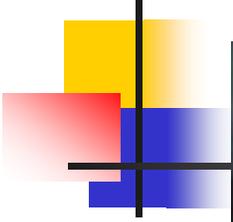
- **Quickly assess the newborn's respiratory status, pulse and general condition**

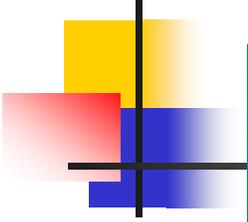


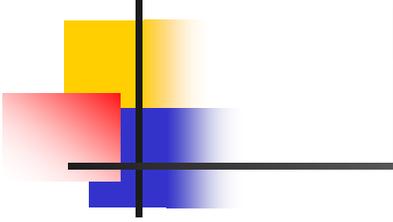


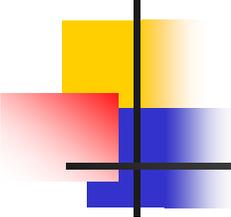






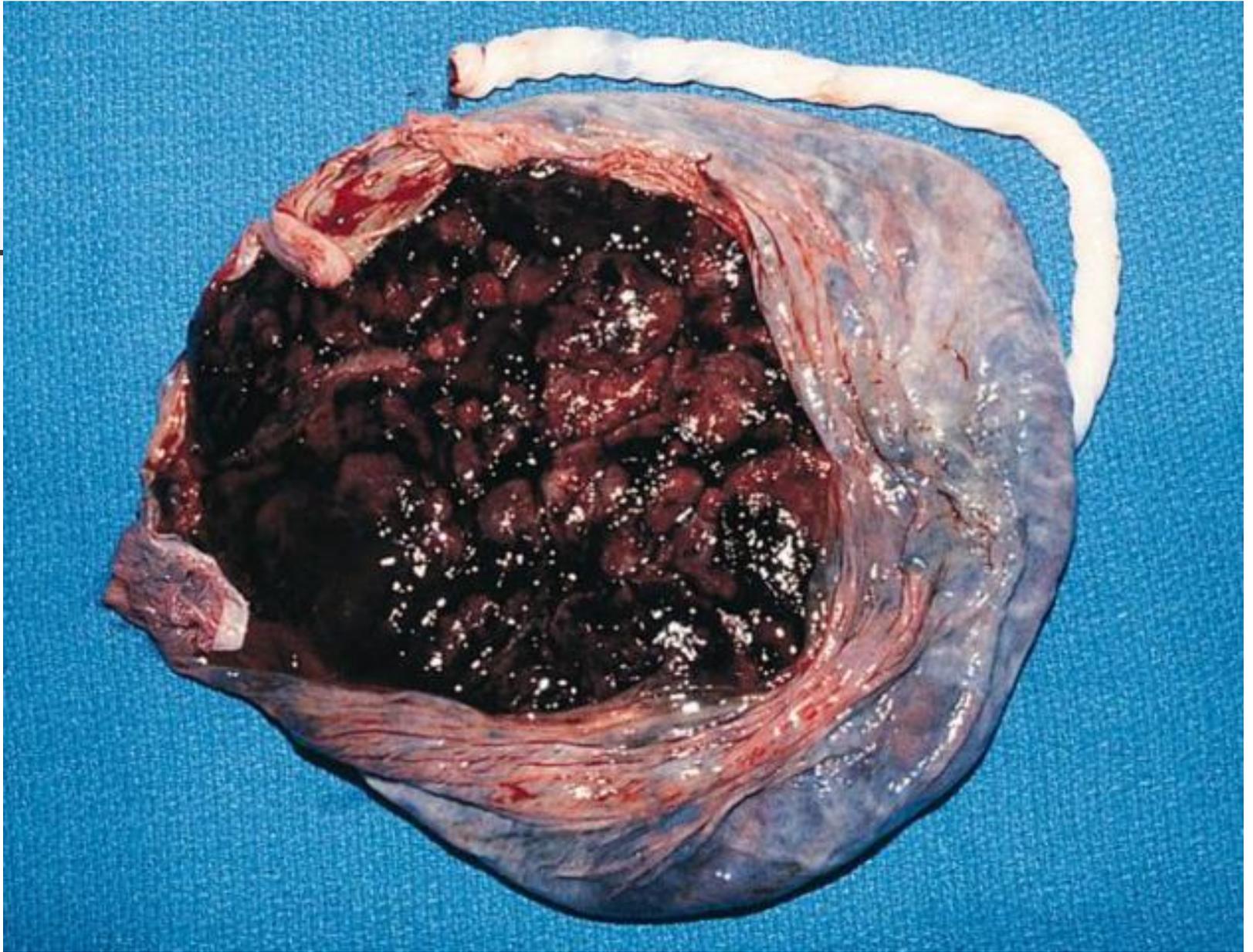
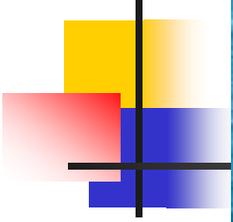


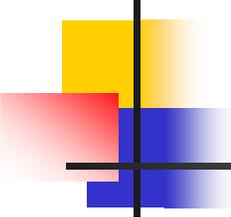




Normal post-delivery - 1

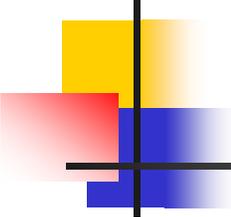
- Infant is breathing spontaneously; crying vigorously with pulse $> 100/\text{min}$ & RR $> 30/\text{min}$:
 - O₂ (avoiding eyes) unless neonate completely pink
 - Clamp the cord
 - First clamp: 8-10" from infant's navel
 - Second clamp: 4 "finger widths" from infant's navel
 - Cut in-between **carefully**
 - If still bleeding, **add** clamp to bleeding side
 - Cover the scalp with a warm covering
 - Wrap the infant in a warm blanket **and** a layer of foil
 - Do **NOT** use foil alone
 - Infant "swaddler"





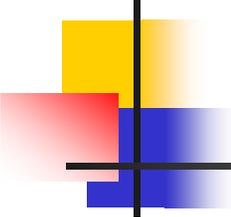
Normal post-delivery - 2

- Reassess/Treat mother for shock
- Once delivery is complete and infant is stabilized, **initiate transport**
 - **Do not wait for placenta to deliver**
 - **Keep infant warm and free from drafts**
 - **Pre-warm ambulance to 80 – 90 degrees**
 - **Repeat vital signs on all patients – OFTEN!**
- Although protocols say to evaluate APGAR score – it is not really important for our treatment



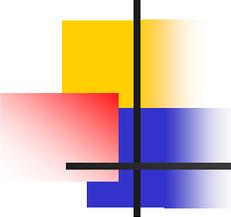
Abnormal post-delivery - 1

- **Initiate Transport**
- Spontaneous respirations should begin within 30 seconds
- **If infant is not breathing spontaneously and crying vigorously:**
 - **If respirations < 30/minute, stimulate**
 - Rub the infant's lower back gently
 - Gently snap the bottom of the infant's feet with the index finger



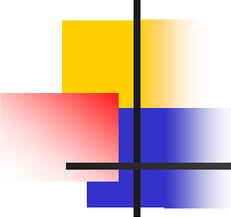
Abnormal post-delivery - 2

- If despite stimulation, respirations remain depressed or absent or infant is cyanotic:
 - Suction
 - Provide hi-con oxygen ASAP
 - Via NRB or “blow by”
 - **Avoid the eyes**



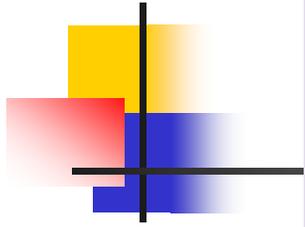
Abnormal post-delivery - 3

- If despite stimulation suctioning and oxygen, respirations remain depressed or absent or infant is cyanotic:
 - Insert an OPA
 - Ventilate with BVM 30 – 60 breaths/min
 - Assure that chest rises every time
 - **Monitor the pulse continuously!**
 - **Pulse will often correlate to quality of respirations**
 - If pulse rate drops below 100/min
 - **BVM @ 30 – 60 breaths/min**



Abnormal post-delivery - 4

- If pulse rate drops below 60/minute or remains between 60 – 80 **but does not rise rapidly despite ventilation**
 - Perform chest compressions @ 120/min at a ratio of 3 compressions to one breath
 - **TRANSPORT IMMEDIATELY, repeating vital signs enroute!**



Assess and Support: Temperature

(warm and dry)

Airway

(position and suction)

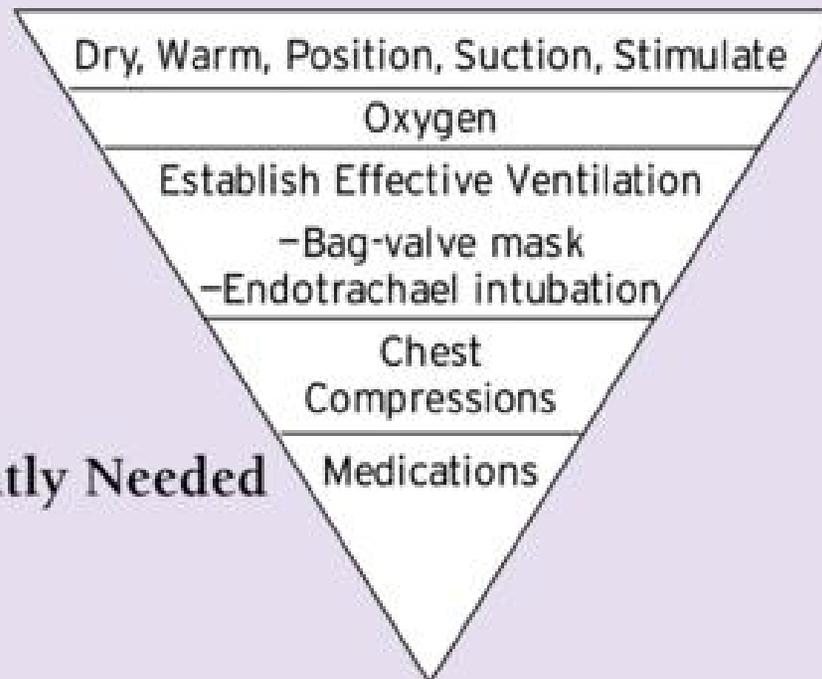
Breathing

(stimulate to cry)

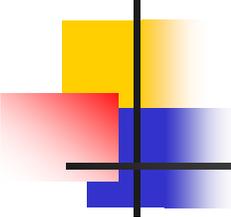
Circulation

(heart rate and color)

**Always
Needed**

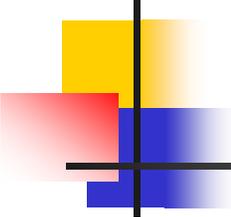


Infrequently Needed



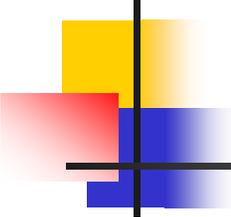
Complete the task

- If the placenta delivers, take it to the hospital
- To minimize “post-partum” bleeding:
 - Massage the uterine area
 - Allow the mother to nurse **after the cord is cut**



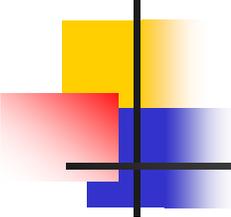
Complicated childbirth

- Breech birth
- Prolapsed umbilical cord
- Multiple births



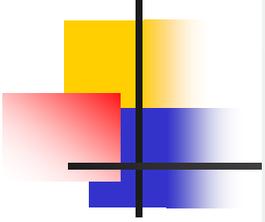
Breech Birth - 1

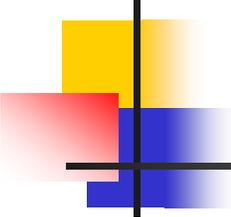
- **Both legs present first**
 - Support the thorax during delivery
- **A full delivery is possible**



Breech birth - 2

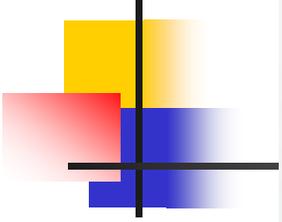
- **Buttocks present first**
- **Cannot be delivered in the field**
 - Hi-con oxygen to mother
 - As the head attempts to deliver, **maintain an open path in the birth canal to the infant's mouth with sterile gloved fingers in a "V" position**
 - Keeps the head off the cord

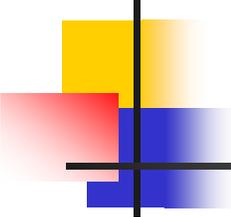




Breech birth - 2

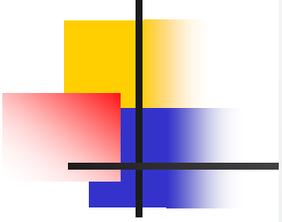
- **Limb presents first**
- **Cannot be delivered in the field**
 - Hi-con oxygen to mother
 - Transport mother immediately in the face-up position with hips elevated

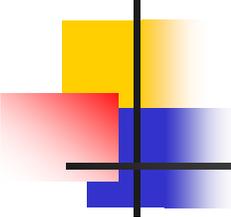




Prolapsed umbilical cord

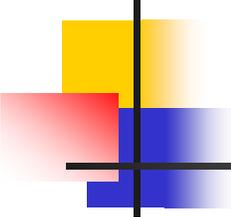
- Hi-con oxygen to mother
 - Place mother in face-up position with the hips elevated
 - Using sterile gloves, push the infant's head back into the uterus an inch or two to take the pressure off the cord – **STOP as soon as soon as a pulse is palpated in the cord.**
 - **DO NOT** insert the cord into the uterus
 - **Wrap** saline-moistened sterile dressings around the cord
 - **Transport immediately**





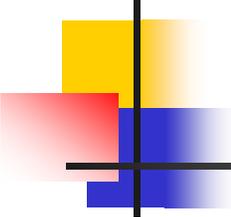
Multiple births

- Not really a complication!
- Deliver each infant according to protocols
- If the anticipated second birth does not occur within ten minutes, **transport immediately**



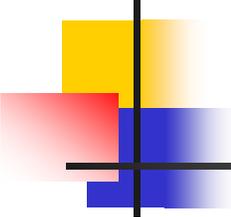
ALS Considerations

- Severe Pre-eclampsia/eclampsia
- Post-partum hemorrhage
- Neonate resuscitation highlights



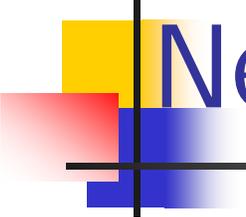
Post-partum hemorrhage

- BLS
- IV/SL “KVO” – use common sense
- Medical Control Options
 - Oxytocin 20mU/min IV Drip – titrated to effect up to maximum of 40mU/min
 - Prepare solution: 5U (0.5ml) Oxytocin into 250ml NS. With 60gtt/ml set: 20mU/min=1gtt/sec.
 - Rapid IV of NS/RL via 1-2 large bore catheters using a macro-drip set. Infuse up to 3L – titrate to maintain systolic BP of 90 mm Hg.
- **WARNINGS:**
 - **Do not use oxytocin if the placenta has not delivered completely; or if s/s of pre-eclampsia or eclampsia are present.**
 - **If Oxytocin does not work, there may be placental remnants or an undelivered twin in the uterine cavity.**
- ***Note: Oxytocin – If new protocol is approved, Oxytocin will no longer be available as an option as of 1/1/2010.***



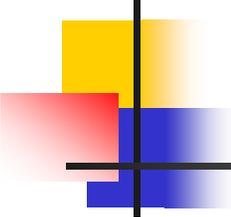
Oxytocin

- Mechanism of action:
 - The uterine myometrium contains receptors specific to oxytocin. Oxytocin stimulates contraction of uterine smooth muscle by increasing intracellular calcium concentrations, thus mimicking contractions of normal, spontaneous labor and transiently impeding uterine blood flow.



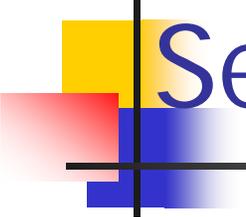
Neonate resuscitation highlights

- BLS followed by ALS (protocol 543 steps 2-5 + MC options) **unless amniotic fluid contains thick meconium AND neonate is limp, apneic or pulseless.**
- → Remember that starting an IV/IO for this protocol requires MC approval and only if “transport is delayed”. A maximum of 2 attempts.
- **Fairly routine resuscitation.**



Neonate resuscitation – The “nightmare scenario”

- For neonates requiring resuscitation whose amniotic fluid contains thick meconium AND who are limp, apneic or pulseless:
 - DO NOT START BLS or routine ALS until the airway is cleared of thick meconium:
 - Intubate and directly suction the ET tube via a meconium adapter while slowly withdrawing the ET tube.
 - Repeat this procedure until the ET tube is clear of thick meconium, up to 2 more times.
 - Once airway is cleared do not replace the ET tube unless the neonate is still limp, apneic or pulseless.
- **→ To start BLS/ALS on such a neonate puts them at great risk for aspiration pneumonitis – difficult to recover.**



Severe Pre-eclampsia/eclampsia

- Severe pre-eclampsia defined:
 - Systolic BP > 160mm Hg
 - Diastolic BP > 110mm Hg
 - And/or:
 - Severe headache; visual disturbances; APE; upper abdominal tenderness
- Treatment:
 - BLS
 - IV/SL NS KVO
 - For pre-eclampsia or eclampsia:
 - Magnesium Sulfate 2 grams in 50-100ml NS drip over 10-20 minutes.
 - If seizures develop, continue or recur: Repeat Magnesium Sulfate 2 grams in 100ml NS drip over 10-20 minutes.