TRAUMA IN PREGNANCY

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EPIDEMIOLOGY

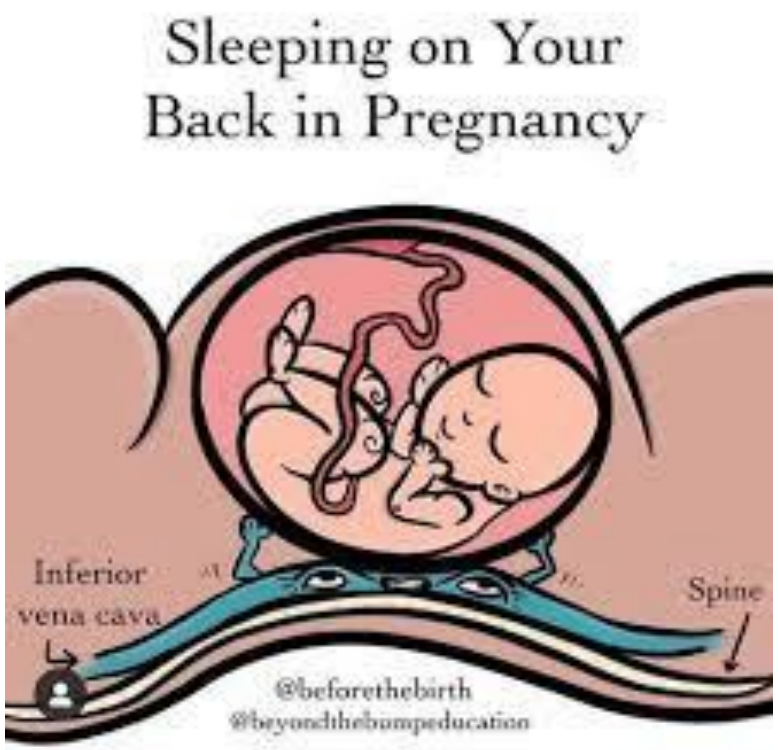
- **Almost 7% of all pregnancies get trauma**
- Trauma is the leading non-obstetric cause of maternal death

- Rates of RTIs men (63%) almost similar to women (60%).
- Among pregnant injured patients, 66.7% are RTIs
- Motorcycle crash being the most common mechanism.

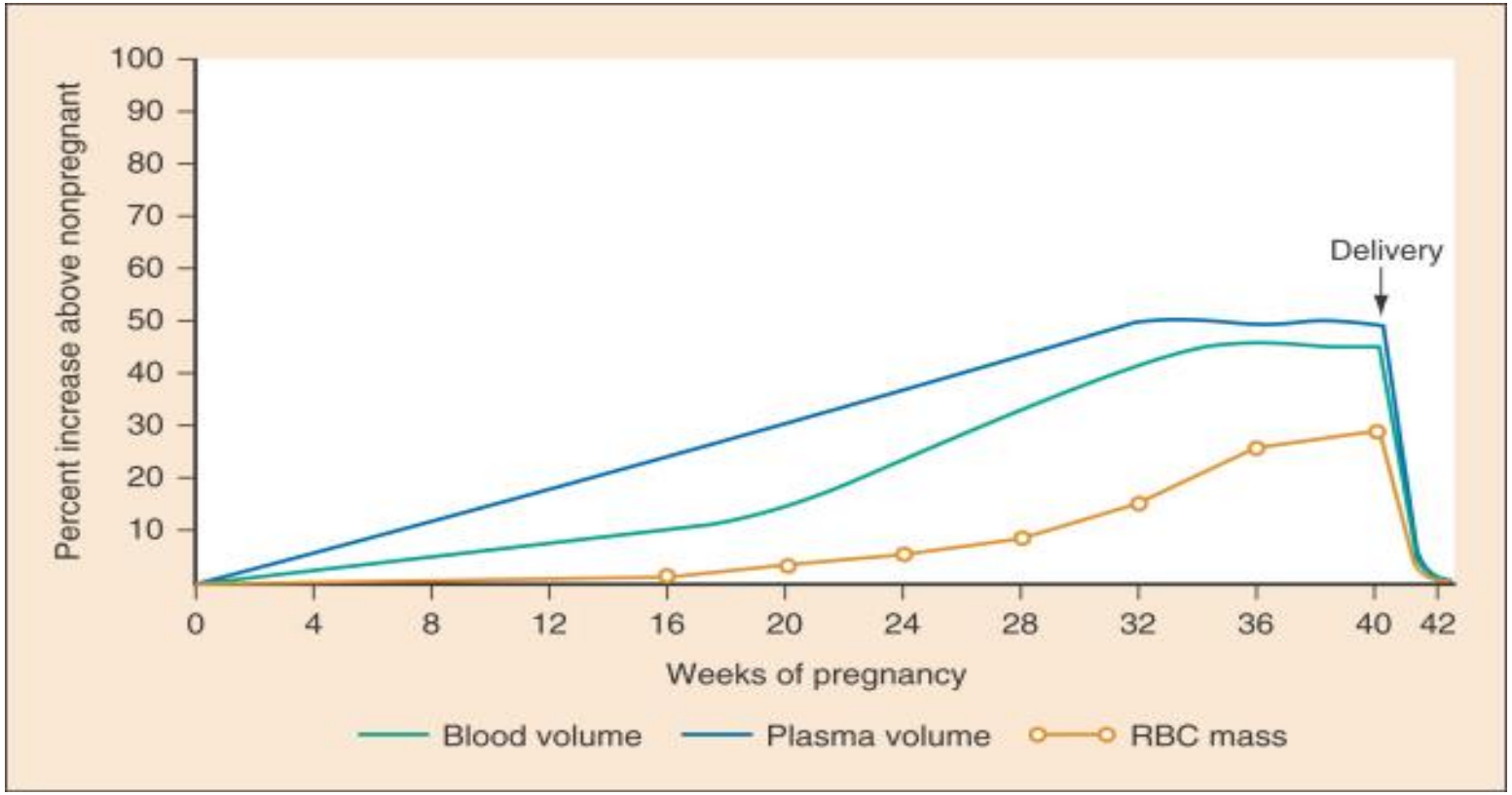
- About 15% of injuries are intentional
- Many intimate partner violence injuries (24%) are pregnant females
- Lower extremities second to head injuries

PHYSIOLOGICAL/ANATOMICAL CHANGES IN PREGNANCY COMPLICATING TRAUMA MANAGEMENT

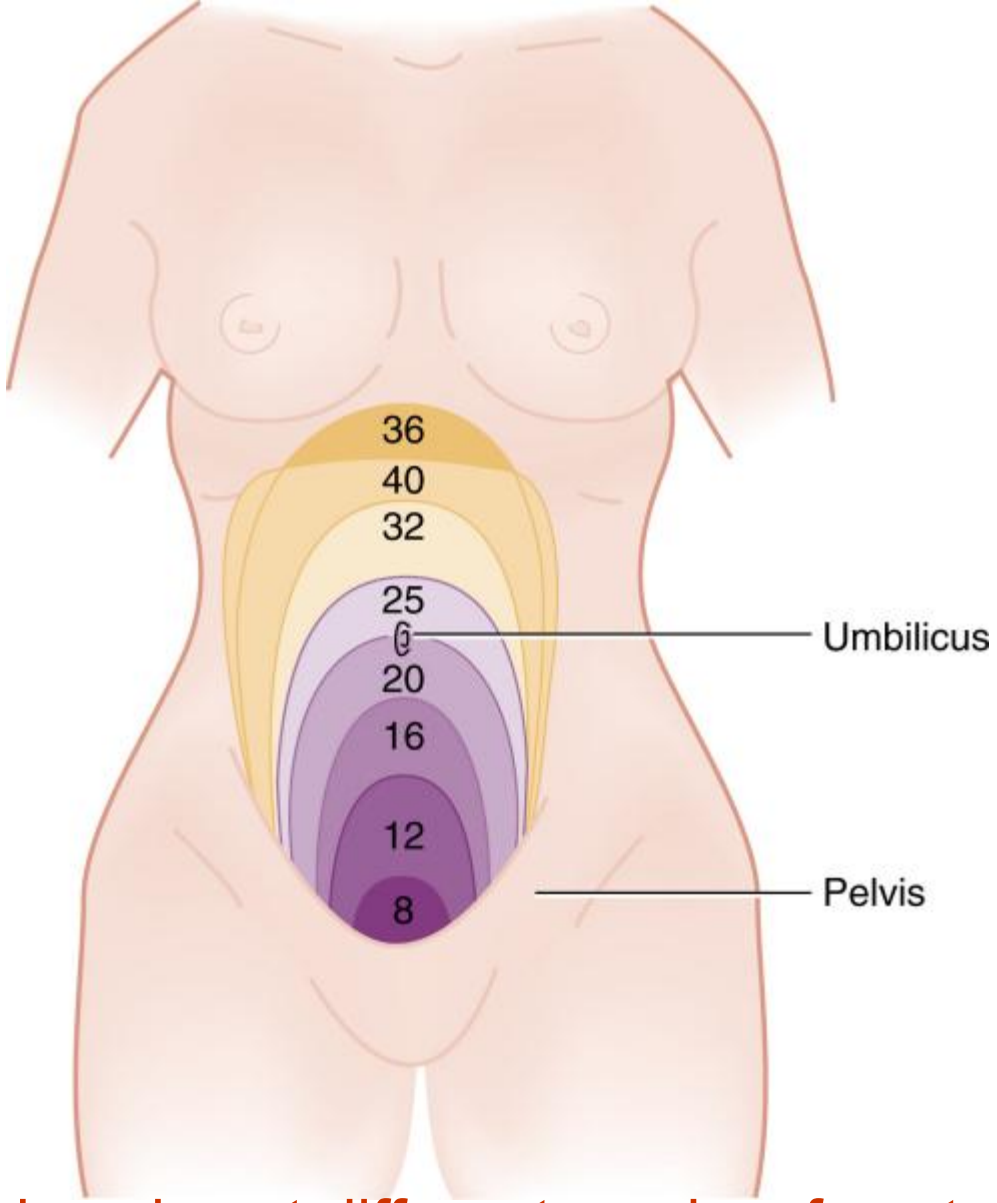
- Usual course of trauma management is altered by pregnancy
  - Some mimic shock
  - Others hide shock
  - Others exacerbate bleeding
  - Increased thromboembolism risk
  - Reduced oxygen reserve/increased demand
  - Aspiration risk
  - Abdominal anatomy changes



Physiological changes in pregnancy



Changes in blood volume during pregnancy. *Modified from Scott DE: Anemia during pregnancy. Obstet Gynecol Annu 1:219, 1972.)*

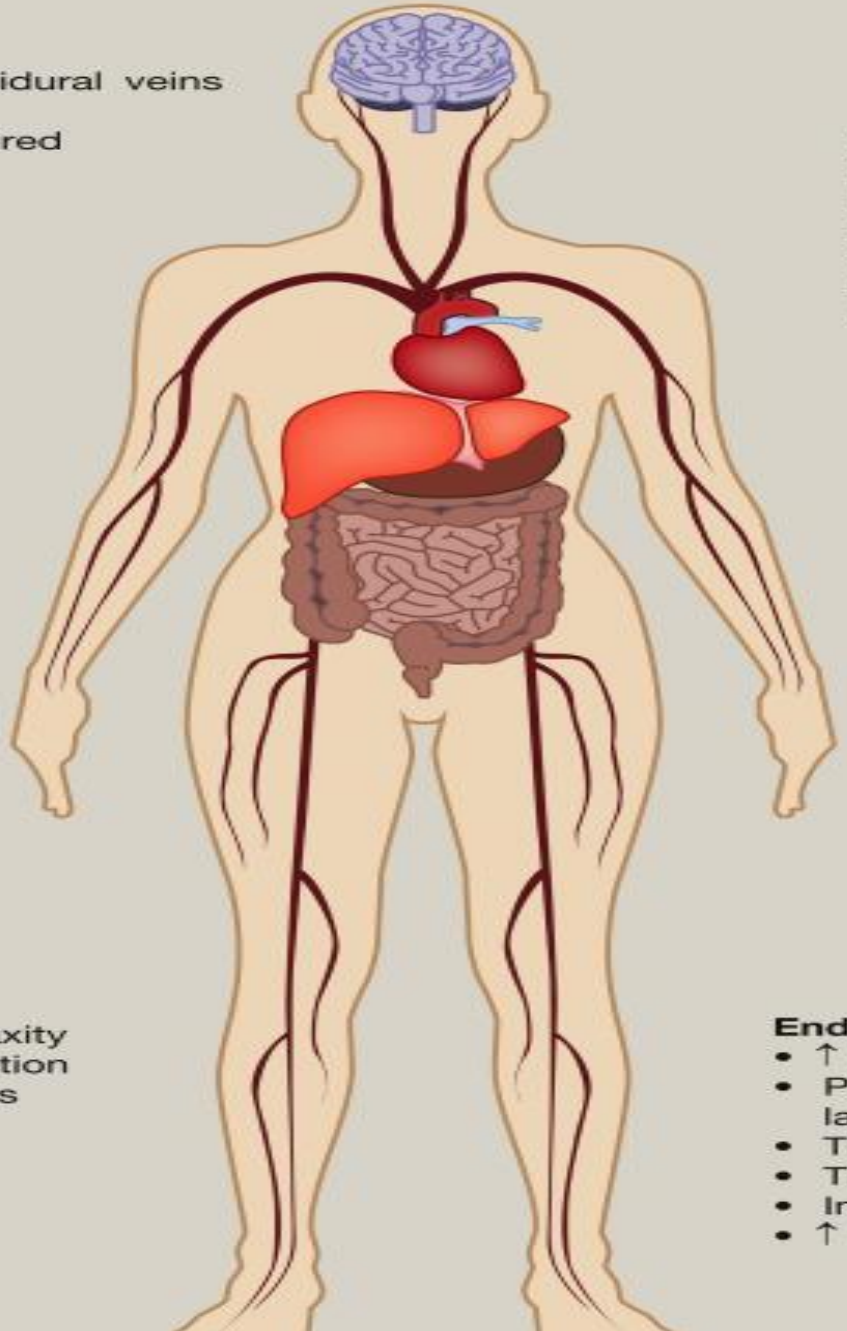


Uterine size at different weeks of gestation

Summary of physiological changes of pregnancy

Neurological
- ↑ CSF pressure
- Engorgement of epidural veins
- ↓ MAC
- ↓ LA volumes required

Respiratory
- ↑ MV (↑TV and ↑RR)
- ↓ $PaCO_2$
- ↑ PaO_2
- ↓ FRC



Cardiac
- ↑ CO
- ↑ SV
- ↑ HR
- Left ventricular hypertrophy
- Regurgitant murmurs
- ↓ SVR

Gastrointestinal
- ↓ Lower oesophageal sphincter tone
- Reflux
- ↑ Risk of aspiration
- Liver enzymes (AST, ALT, GGT) ↓
- ↑ ALP

Renal
- ↑ Renal blood flow
- ↑ GFR
- ↓ Plasma urea and creatinine
- ↑ Urinary protein and glucose
- ↑ Risk of UTI

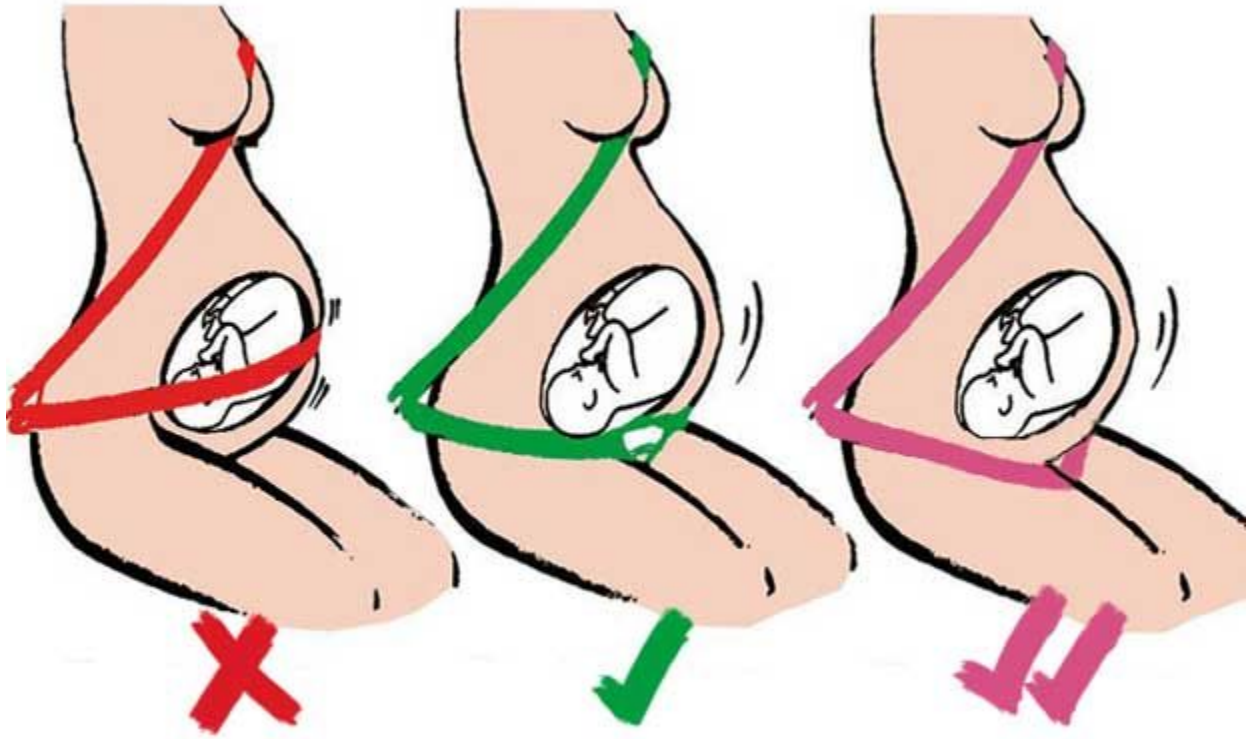
Musculoskeletal
- ↑ Ligamentous laxity
- ↑ Risk of dislocation
- ↑ Lumbar lordosis

Endocrine
- ↑ Progesterone and oestrogen
- Placenta secretes relaxin, human placental lactogen and human chorionic gonadotrophin
- Thyroid hyperplasia
- Transient hyperthyroidism
- Insulin resistance
- ↑ Cortisol secretion by adrenal glands

THE APPROACH IN THE EMERGENCY SETTING

KEY HISTORY QUESTIONS

- Remember AMPLE history then
  1. Mechanism of injury?
  2. If motor vehicle (seat belt use)
  3. Intimate partner violence
  4. Blood group/RH
  5. Obs/Gyn history



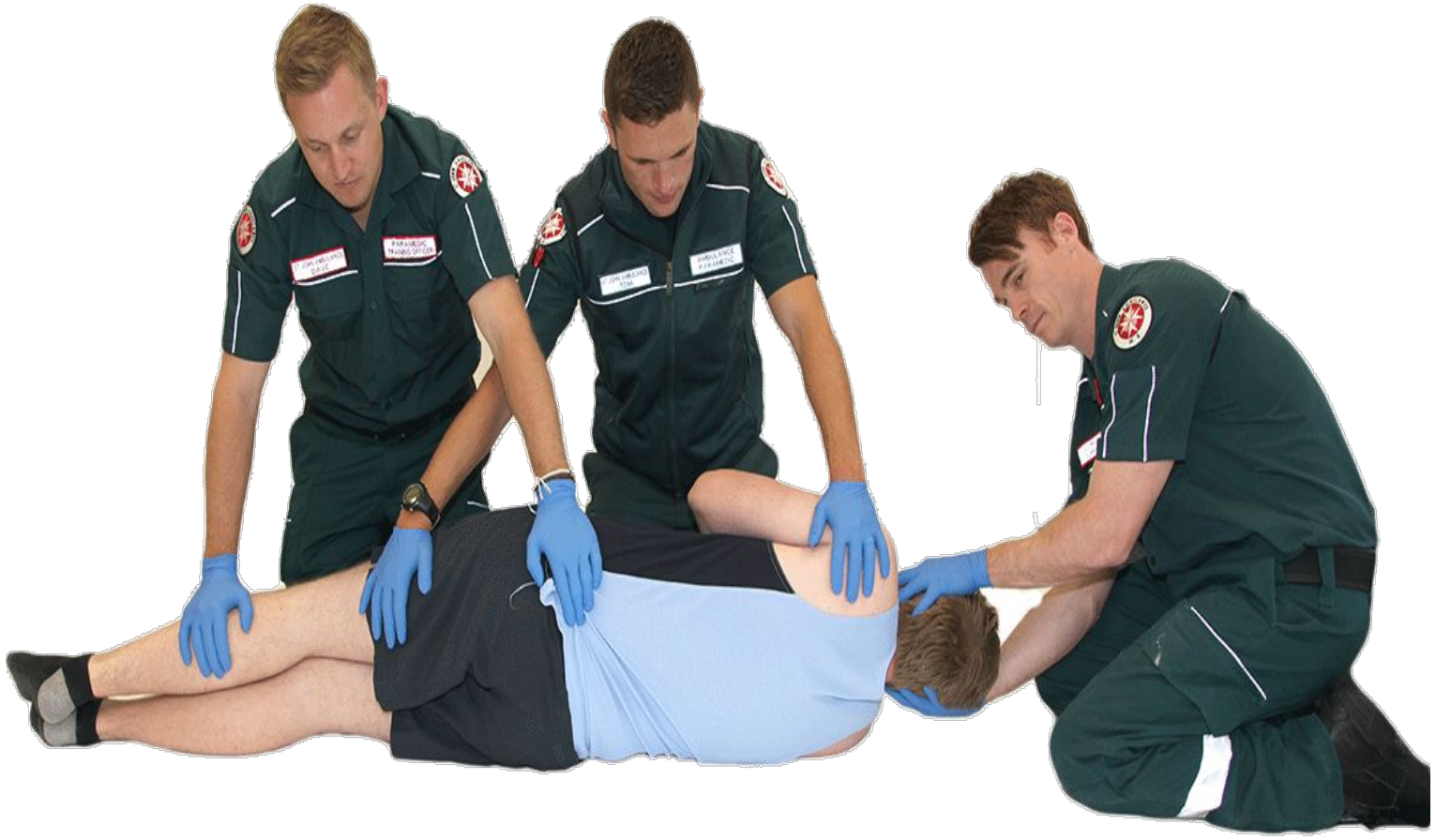
PRIMARY SURV

- Remember ABCDE approach
  1. Identify complications
  2. Manage/fix
  3. Monitor
  4. Re-assess

Figure 4. Patient in a 30° left-lateral tilt using a firm wedge to support pelvis and thorax.

SECONDARY SURVEY

- Head-to-toe exam:
  - More detailed
  - Identify any other issues
  - Log roll



WHEN TO DELIVER???????

- Mother and Fetus Stable: Wait!
  - Mother records fetal movements and deliver when ready as usual.
- Mother Stable, Fetus Unstable: Deliver as guided by gestational age if there is:
  - Fetal distress
  - Uterine rupture
  - Fetal malpresentation during premature labor
  - Uterus mechanically limits maternal repair.

Fetal death is not an indication for cesarean section because spontaneous labor usually occurs within 1 week

When to deliver???????:
Mother Unstable, Fetus Unstable

- Restore of normal maternal physiology first
- Emergency cesarean section if tolerable
- Explore intraperitoneal organ damage at C/S

Perimortem Cesarean Section

- If there is no response to ACLS, do perimortem C/S.
- Uterine size exceeds the umbilicus/fetal heart tones are present
- No need for consent for delivery.
- 70% survive if delivered in less than 5 minutes of emergency of arrival
- Pediatric team needed