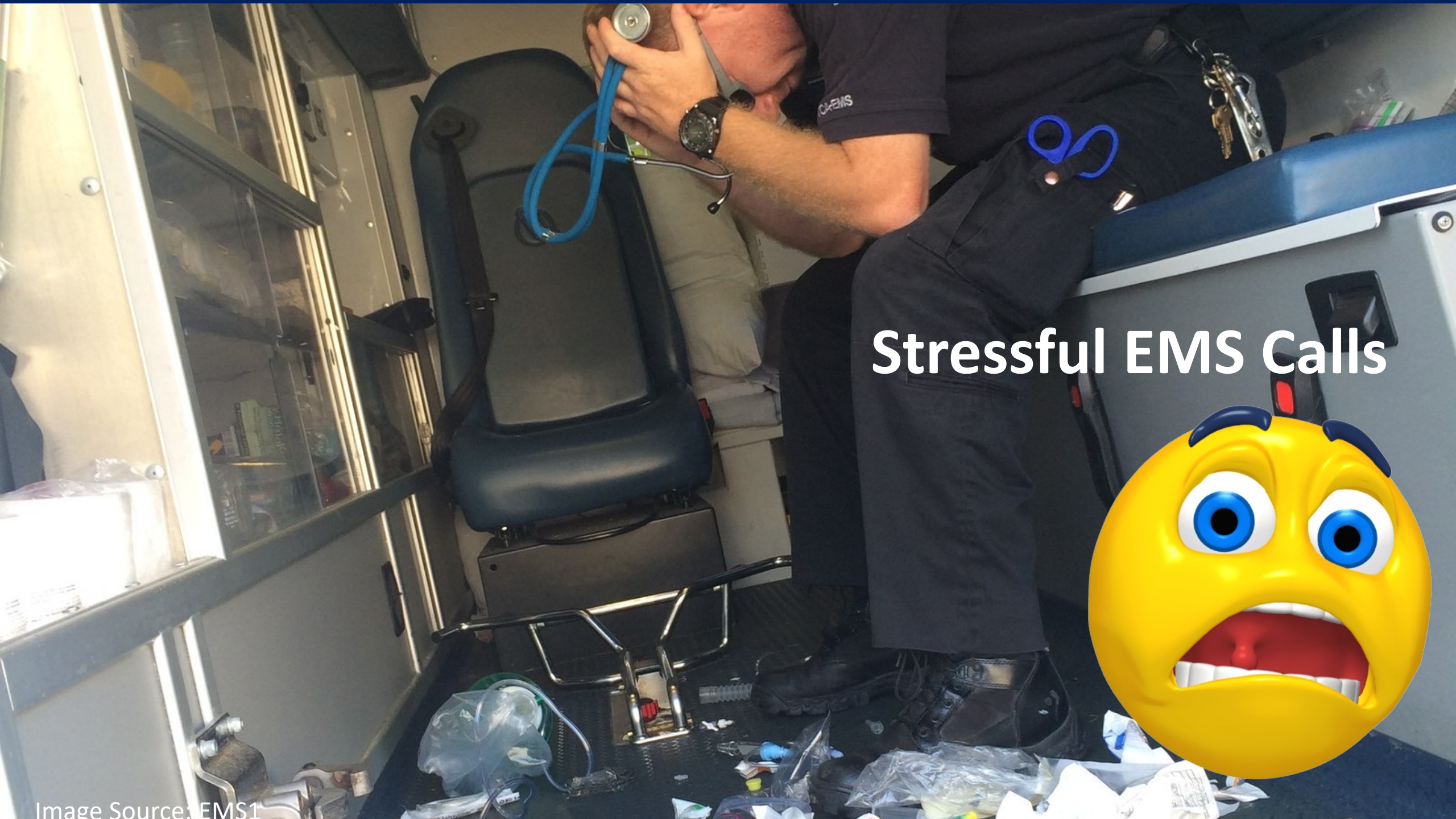


Basics of Prehospital Care of the Pregnant Patient

Jenna M. B. White, MD, FAEMS

UNM EMS Consortium

UNM Center for Rural & Tribal EMS



Stressful EMS Calls



TURN THAT FROWN



UPSIDE DOWN



Goals

- Identify patients currently or recently pregnant
- Questions to ask pregnant patients
- Anatomic and Physiologic Considerations of Pregnancy
- Pregnancy as a High-Risk Time
- Key Messages for Medical and Trauma Emergencies in Pregnancy
- Postpartum Phase

A graphic consisting of a thick red circular border. Inside the circle, the word "step" is written in a black, cursive font. Below "step", the number "1" is written in a bold, red, sans-serif font.

step
1

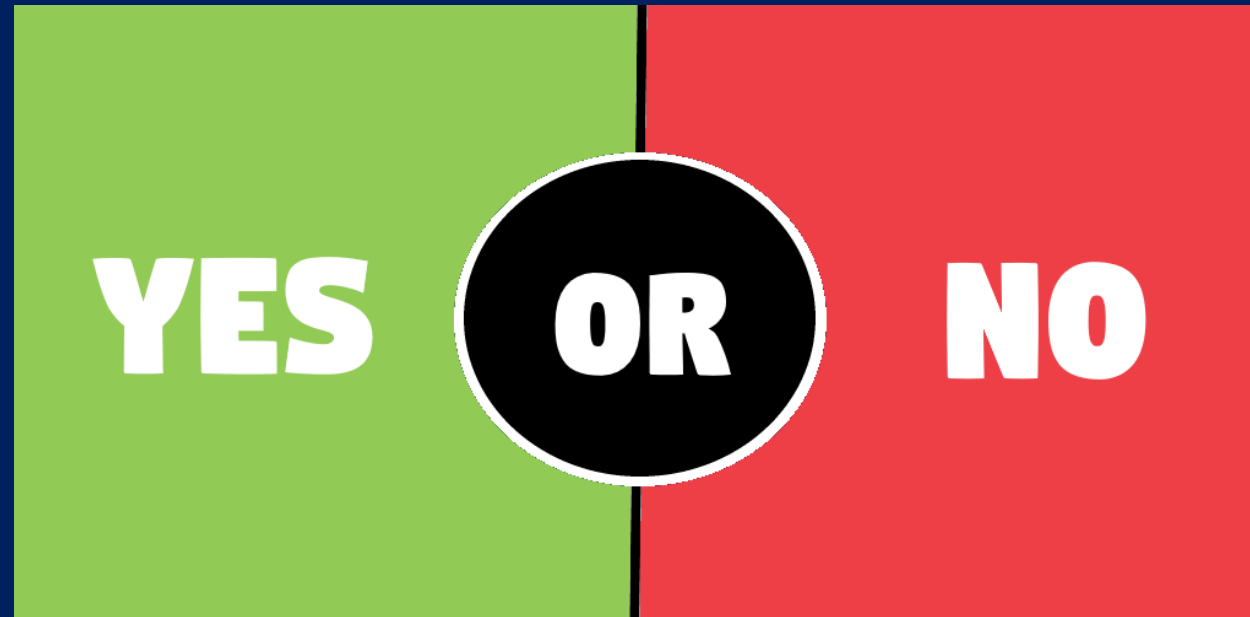
**Identify patients who
are pregnant or who
have been pregnant
in the last 12
months***

Ask any patient who could possibly be pregnant:

Are you pregnant, or have you been pregnant in the last 12 months?

**Be discreet. If possible, ask privately or quietly.
Also, a weighty question in states where abortion is illegal.**

A person's medical complaint may be related to current or recent pregnancy.



...as discreetly as you can in the circumstances.

Questions to ask Pregnant or Recently-Pregnant Moms

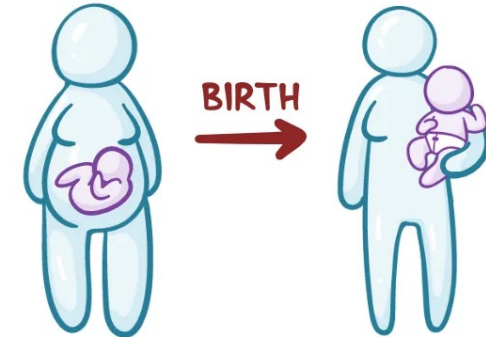


- Pregnancy Outcomes:
Gravida/Parity (Gs and Ps)

Gs and Ps

"SO YOU'VE had 4 PREGNANCIES,
2 PASSED 37 WEEKS, 1 PRETERM,
1 LOST before 20 WEEKS, &
3 CHILDREN?"

(4G, 2T, 1P, 1A, 3L)



GRAVIDITY (# PREGNANCIES)

TERM (# PREG. carried to 37+ WKS)

PRETERM (# PREG. b/w 20-36 6/7 WKS)

ABORTION (# LOSSES before 20 WKS)

LIVING (# LIVING CHILDREN)



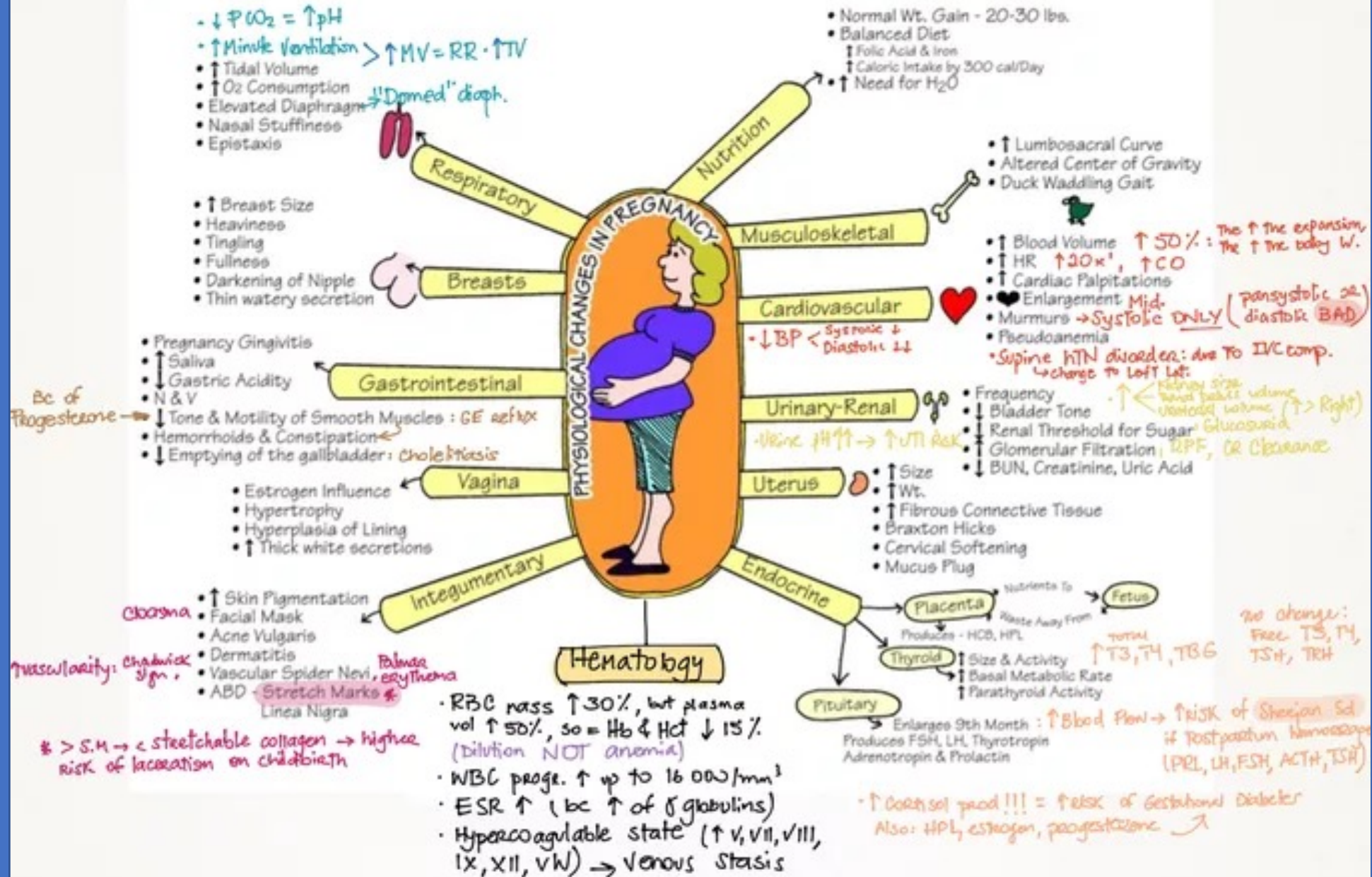


Questions to ask Pregnant or Recently-Pregnant Moms

- Pregnancy Outcomes: Gravida/Parity (Gs and Ps)
- Prenatal Care
- Estimated Gestational Age
- Fetal Movement
- Vaginal Bleeding
- Loss of Fluid from the vagina
- Contractions or Abdominal/Pelvic Pain

Anatomic and Physiologic Considerations in Pregnancy

Physiologic changes in pregnancy



**Vital signs are vital
-and different-
in pregnancy**

Cardio-Respiratory Changes in Pregnancy

Respiratory

- Increased tidal volume
- Only slight increase in respiratory rate, if at all
- Increased oxygen consumption
- Decreased lung capacity

Cardiac

- Increased blood volume
- Increased heart rate
- Blood pressure decrease during first two trimesters; increase *slightly* during the third

Lower Threshold for Hypoxia in Pregnancy



Oxygen Saturation should be 96% or above in pregnancy!

Airway Management Challenges

	Anatomical and Physiological Changes	Clinical Consequences
Airway	Weight gain in pregnancy Increased breast size Increased vascularity and oedema of the airway mucosa	Difficulty with positioning Difficulty with laryngoscope insertion Increased risk of airway bleeding and potential difficulty with tracheal intubation
Respiratory	Reduced functional residual capacity	Increased rate of oxygen desaturation
Metabolic	Increased oxygen consumption secondary to increased metabolic demand	Increased rate of oxygen desaturation
Gastrointestinal	Decreased lower oesophageal sphincter tone Delayed gastric emptying	Increased risk of gastric regurgitation and pulmonary aspiration

Heart Rates Higher Later in Pregnancy

- Relative Sinus Tachycardia *may* be normal in later weeks of pregnancy
- 100-110 beats per minute *in absence of concerning symptoms*



Blood Pressure in Pregnancy

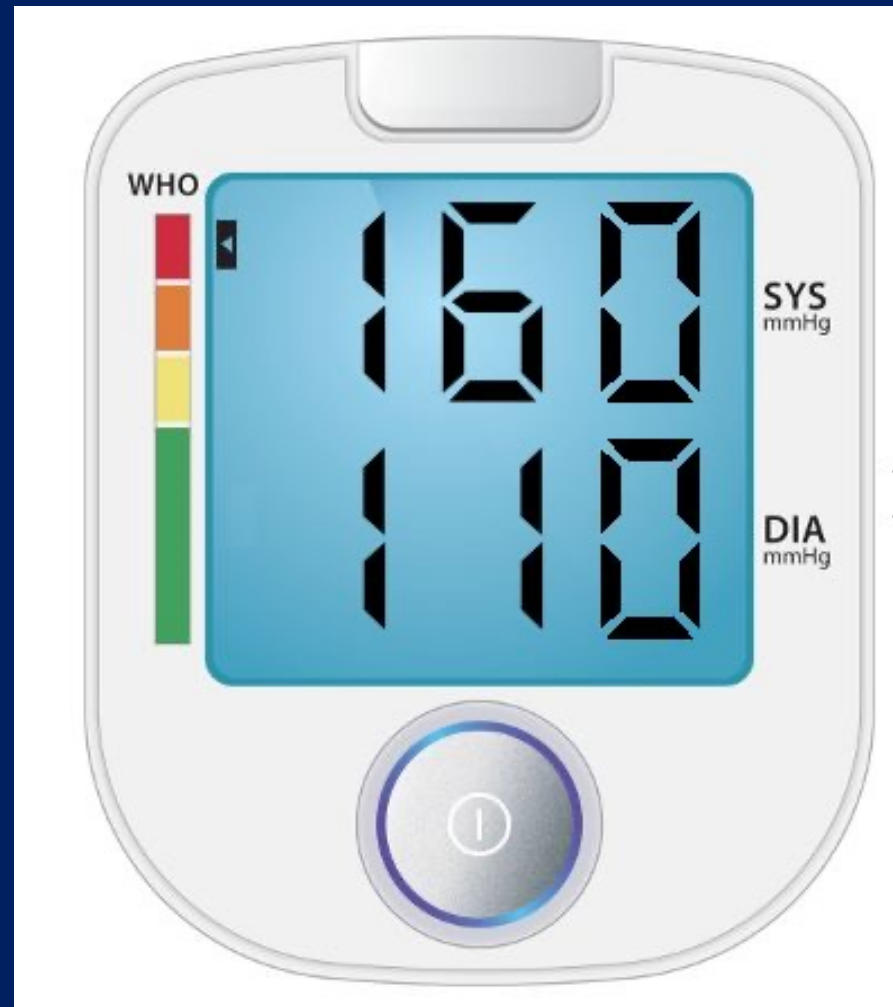
Blood pressures that would not normally cause alarm in non-pregnant individuals can be extremely dangerous in pregnant patients and may indicate a serious medical problem.



Un-Magic Numbers



Un-Magic Numbers

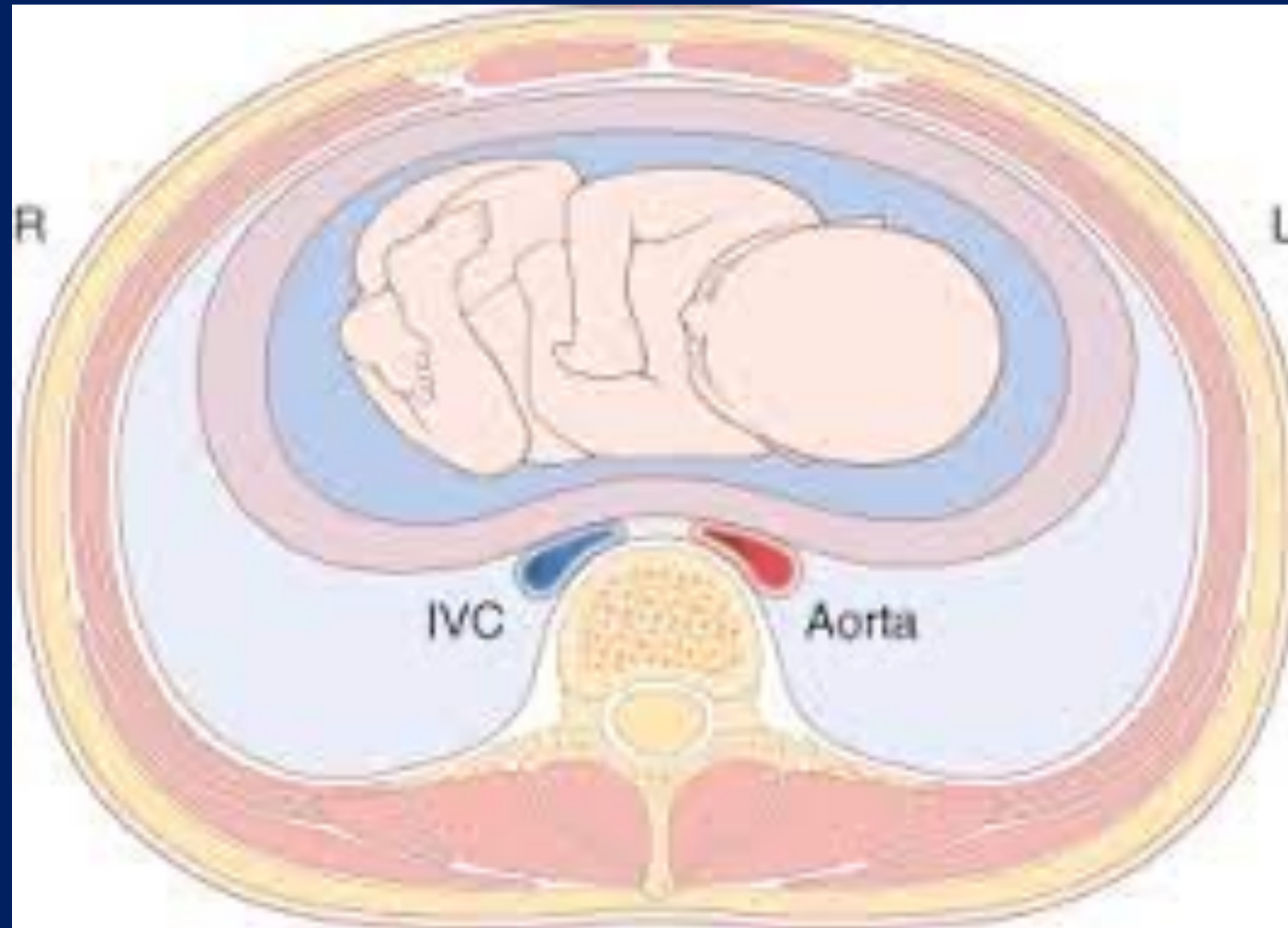


Hypertensive Disorders of Pregnancy

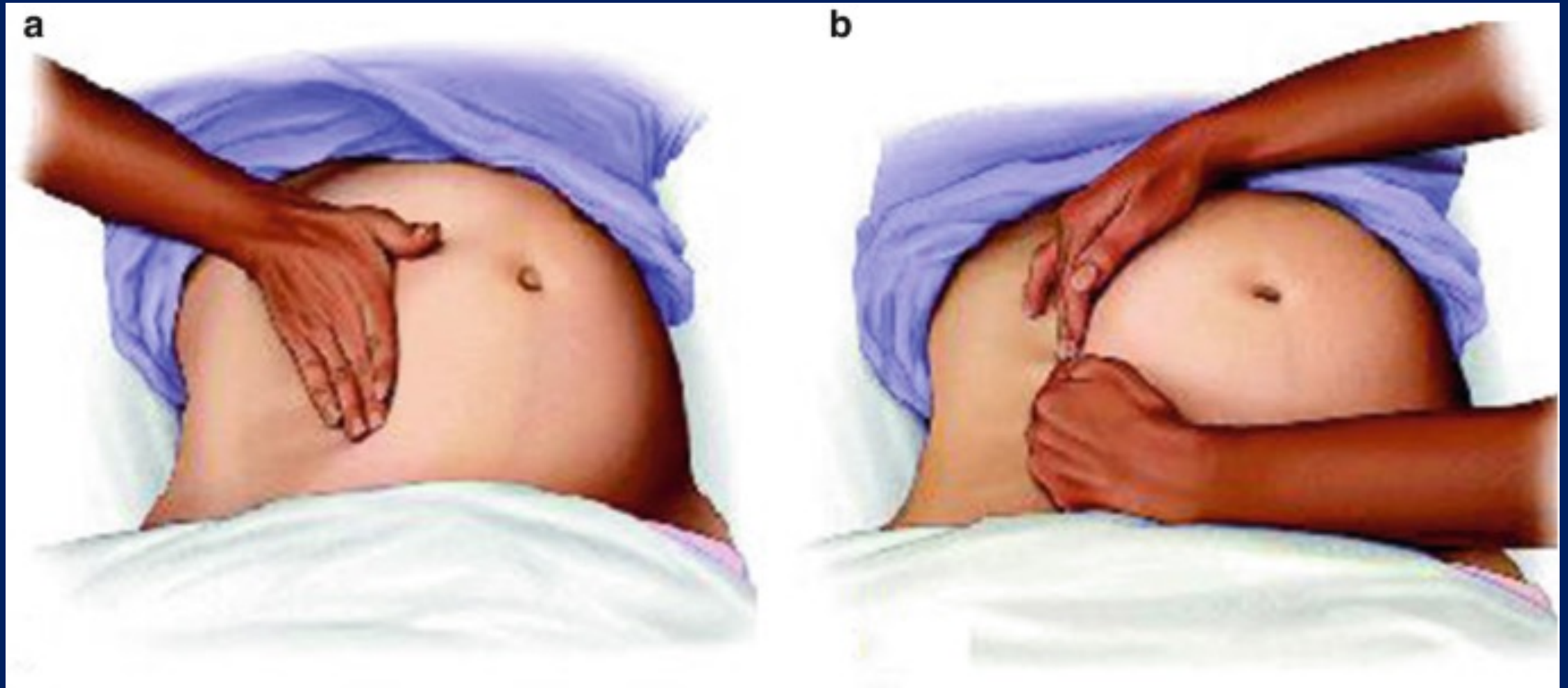


- Chronic Hypertension in a now pregnant patient
- Gestational Hypertension
- Preeclampsia
- Eclampsia

Aorto-Caval Compression



Manually Displace Uterus off the IVC and Aorta



Pregnancy as a High-Risk Time



Pregnancy as a High-Risk Time



Pregnant Patients have Higher Risk of:

- Stroke
- Myocardial Infarction (Heart Attack)
- Aortic/Vascular catastrophes
- Sepsis
- Mental health deterioration
- Intimate Partner Violence (IPV)
- Falls

Pregnancy as a High-Risk Time



Some Common Things Can Be Very Benign OR Very Dangerous

- Swelling
- Vomiting
- “Heartburn”
- Sleep disturbances

CDC finds listening to expectant moms is key!



Maternal Early Warning Signs (MEWS)

URGENT MATERNAL WARNING SIGNS



Headache that won't go away or gets worse over time



Dizziness or fainting



Thoughts about hurting yourself or your baby



Changes in your vision



Fever



Trouble breathing



Chest pain or fast-beating heart



Severe belly pain that doesn't go away



Severe nausea and throwing up (not like morning sickness)



Baby's movements stopping or slowing



Vaginal bleeding or fluid leaking *during* pregnancy



Vaginal bleeding or fluid leaking *after* pregnancy



Swelling, redness, or pain of your leg



Extreme swelling of your hands or face



Overwhelming tiredness

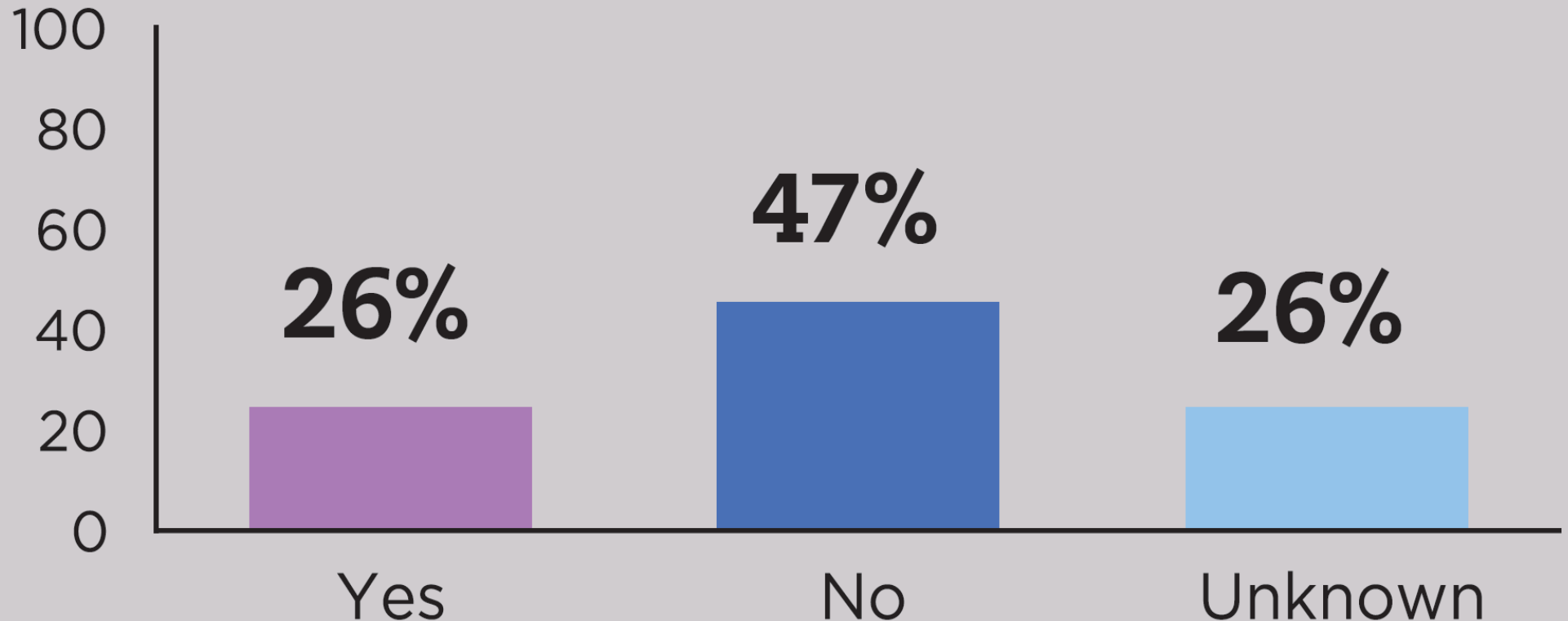
Trauma Considerations in the Pregnant Patient

- MVCs
- Falls
- Assault and Intimate Partner Violence
- What is good for the mother is good for the fetus
- Direct trauma to gravid abdomen highest risk for injury to fetus
- Even low-energy mechanisms can be dangerous and require patients to seek evaluation
 - 4-hour tocometry and FHT

Motor Vehicle Crashes (MVCs)

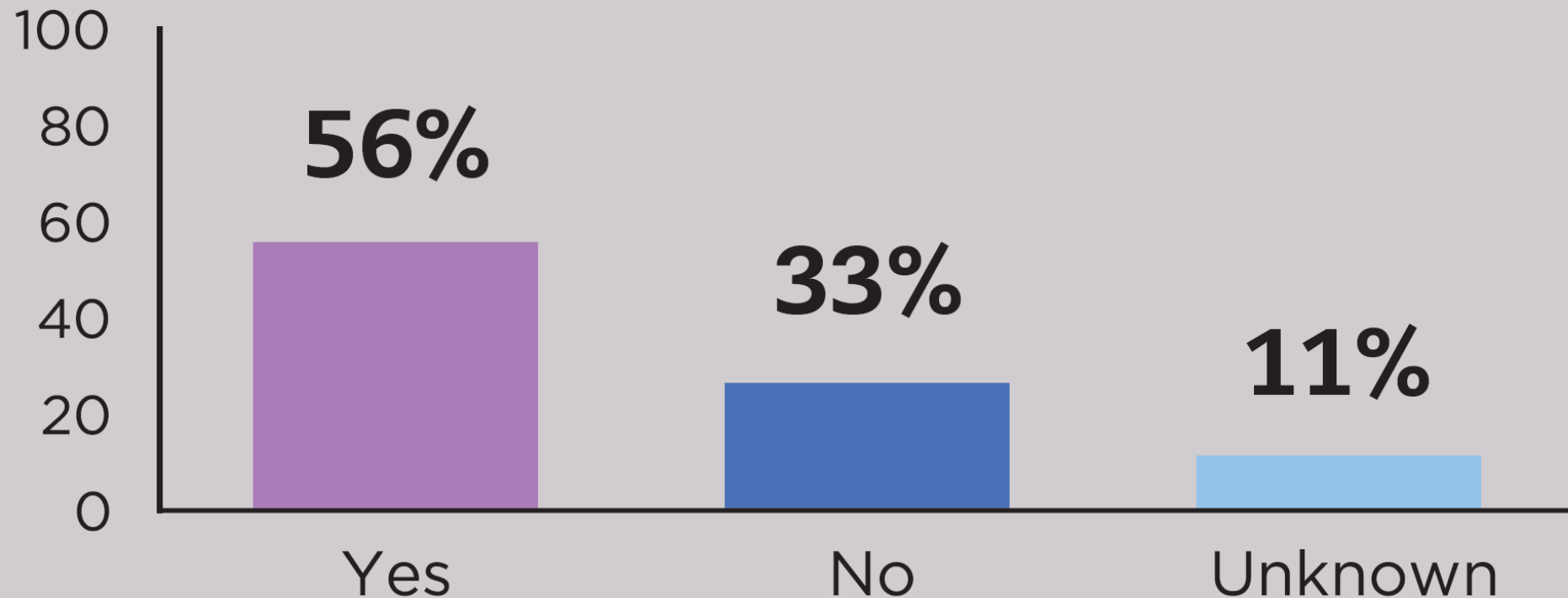
MVCs a Major Cause of Maternal Death

Seat belt use of decedent at time of MVC

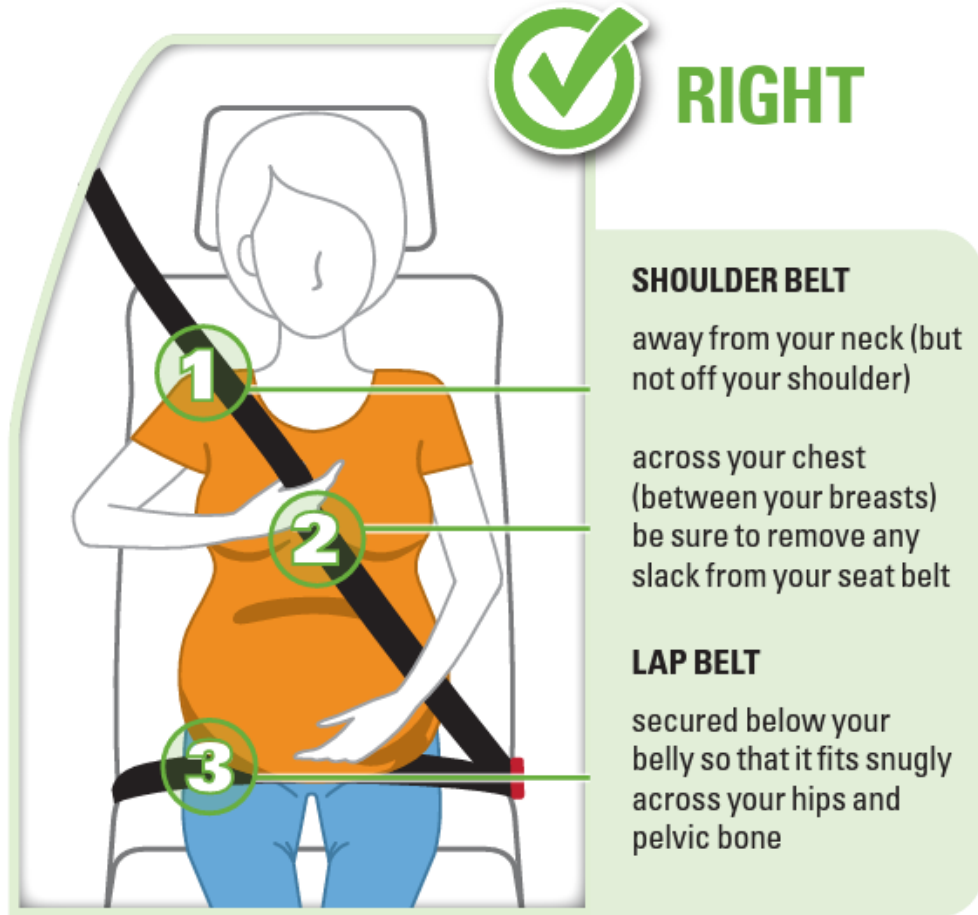


Lack of Safety Restraint Use in All Occupants

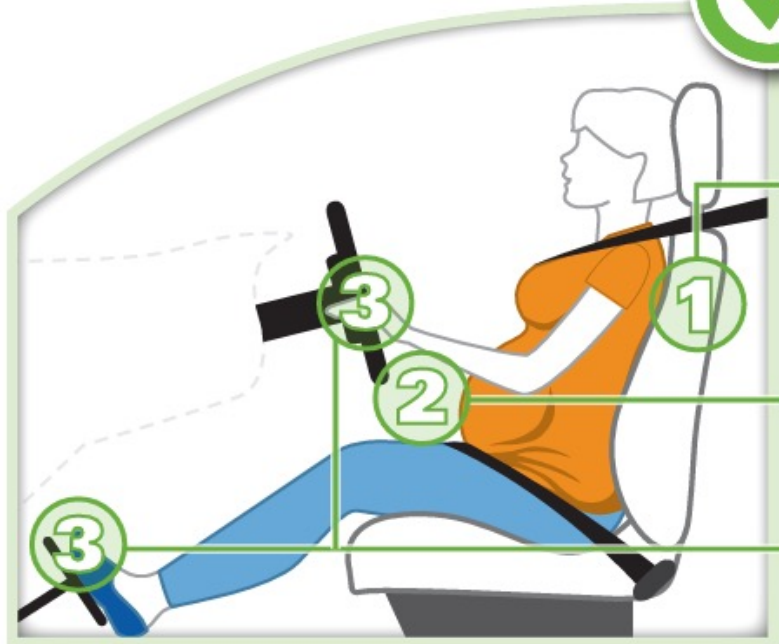
Unrestrained children in vehicle
among crashes with a child in vehicle (N=9)



WHAT'S THE RIGHT WAY TO WEAR MY SEAT BELT?



SHOULD I ADJUST MY SEAT?



ADJUST SEAT

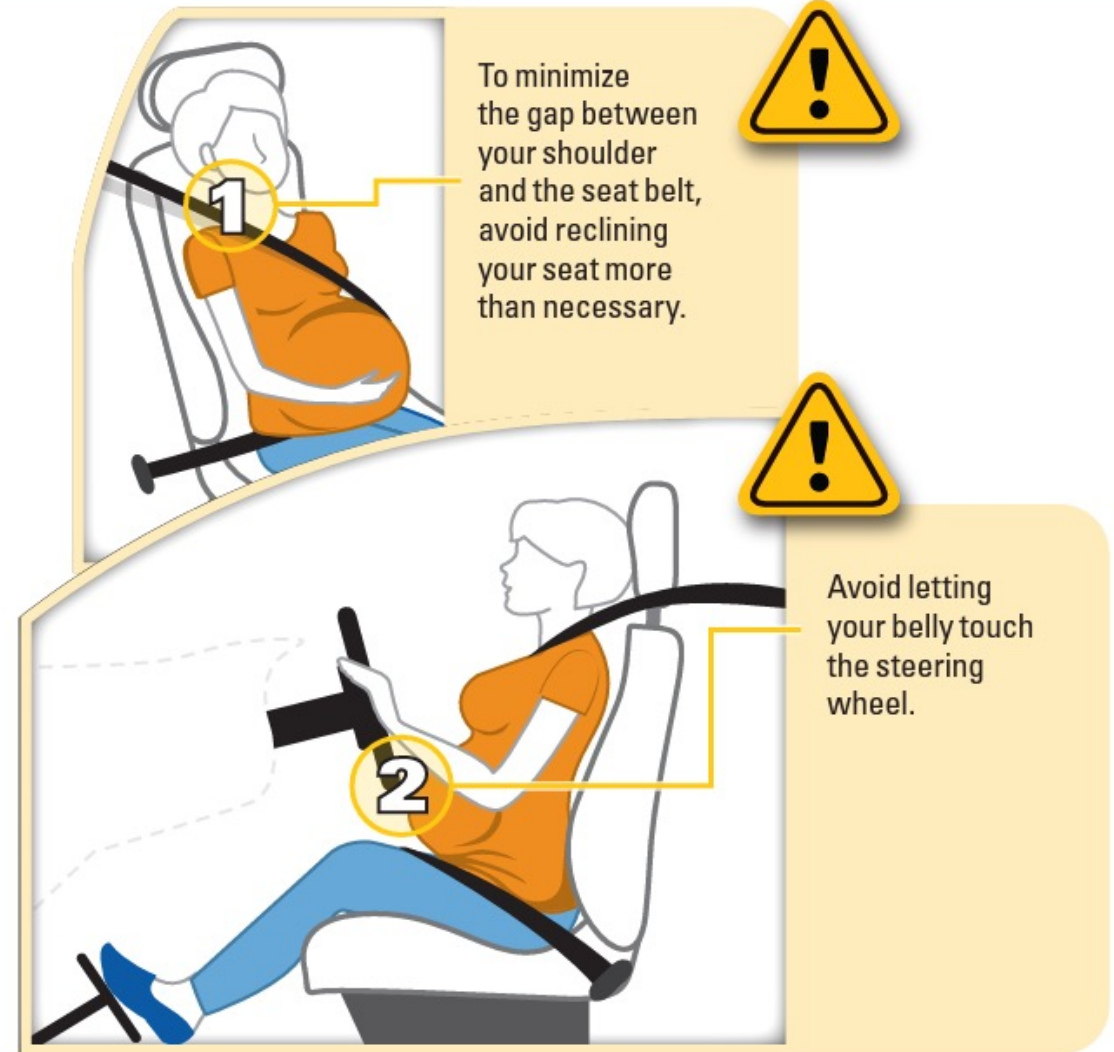
comfortable,
upright position

keep as much
distance as
possible between
your belly and the
steering wheel*

comfortably reach
the steering wheel
and pedals**

* If you need additional room, consider adjusting the steering wheel or having someone else drive, if possible.

** If you're a passenger, move your seat back as far as possible.



To minimize
the gap between
your shoulder
and the seat belt,
avoid reclining
your seat more
than necessary.



Avoid letting
your belly touch
the steering
wheel.

WHAT IF MY CAR OR TRUCK HAS AIR BAGS?

You still need to wear your seat belt properly.

Air bags are designed to work with seat belts, not replace them.

Without a seat belt, you could crash into the vehicle interior, other passengers, or be ejected from the vehicle.



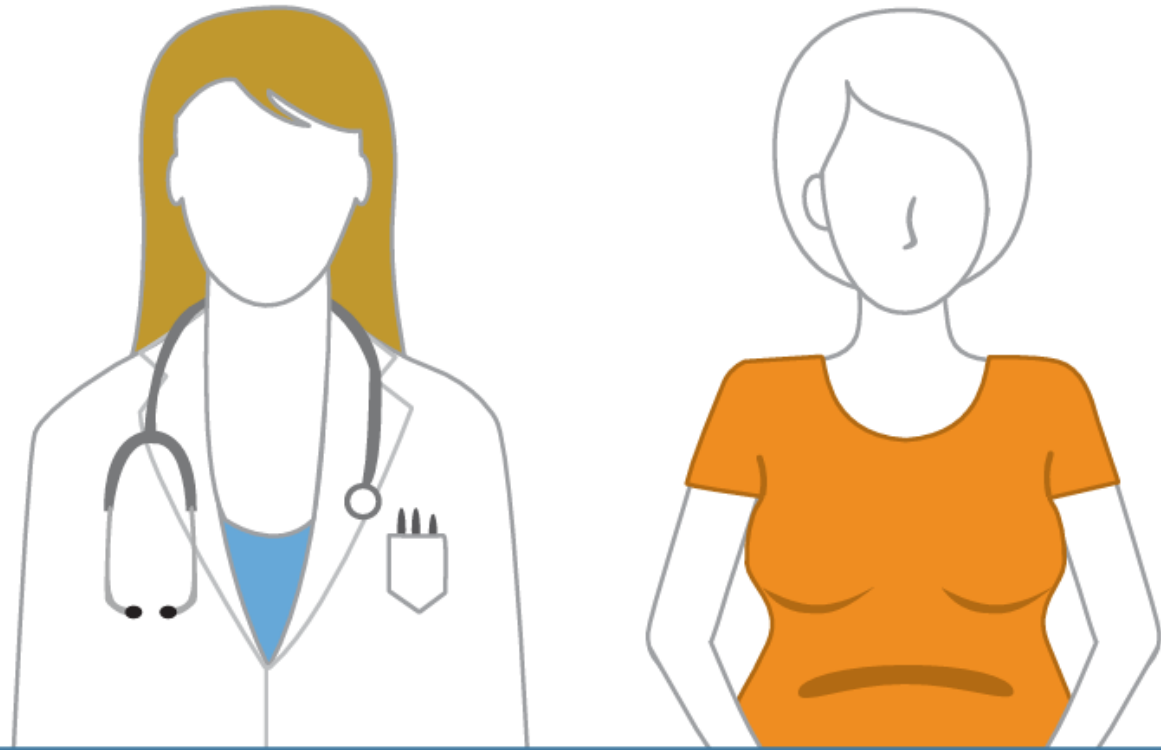
MY CAR HAS AN ON-OFF AIR BAG DISABLING SWITCH. SHOULD I TURN IT OFF?

NO. Doctors recommend that pregnant women wear seat belts and **leave air bags turned on.**

Seat belts and air bags work together to provide the **best protection for you and your unborn child.**

WHAT SHOULD I DO IF I AM INVOLVED IN A CRASH?

Seek immediate medical attention, even if you think you are not injured, regardless of whether you were the driver or a passenger.



FOR MORE INFORMATION,
VISIT [SAFERCAR.GOV](https://www.safercar.gov)



Motor Vehicle Safety in Pregnancy

- Encourage pregnant patients to wear seatbelts properly and to keep airbags turned on.
- Restrain a pregnant patient properly in ambulance
- Avoid after-market seat-belt adjustment devices.
- Any pregnant patient in an MVC should be evaluated.
- Unrestrained kids associated with higher adult occupant poor outcomes

Ambulance Safety in Pregnancy

- Ensure stretcher straps do not directly cross the gravid abdomen
- One strap across pelvis below the gravid abdomen
- Chest straps
- Some commercially-marketed strap adaptations available

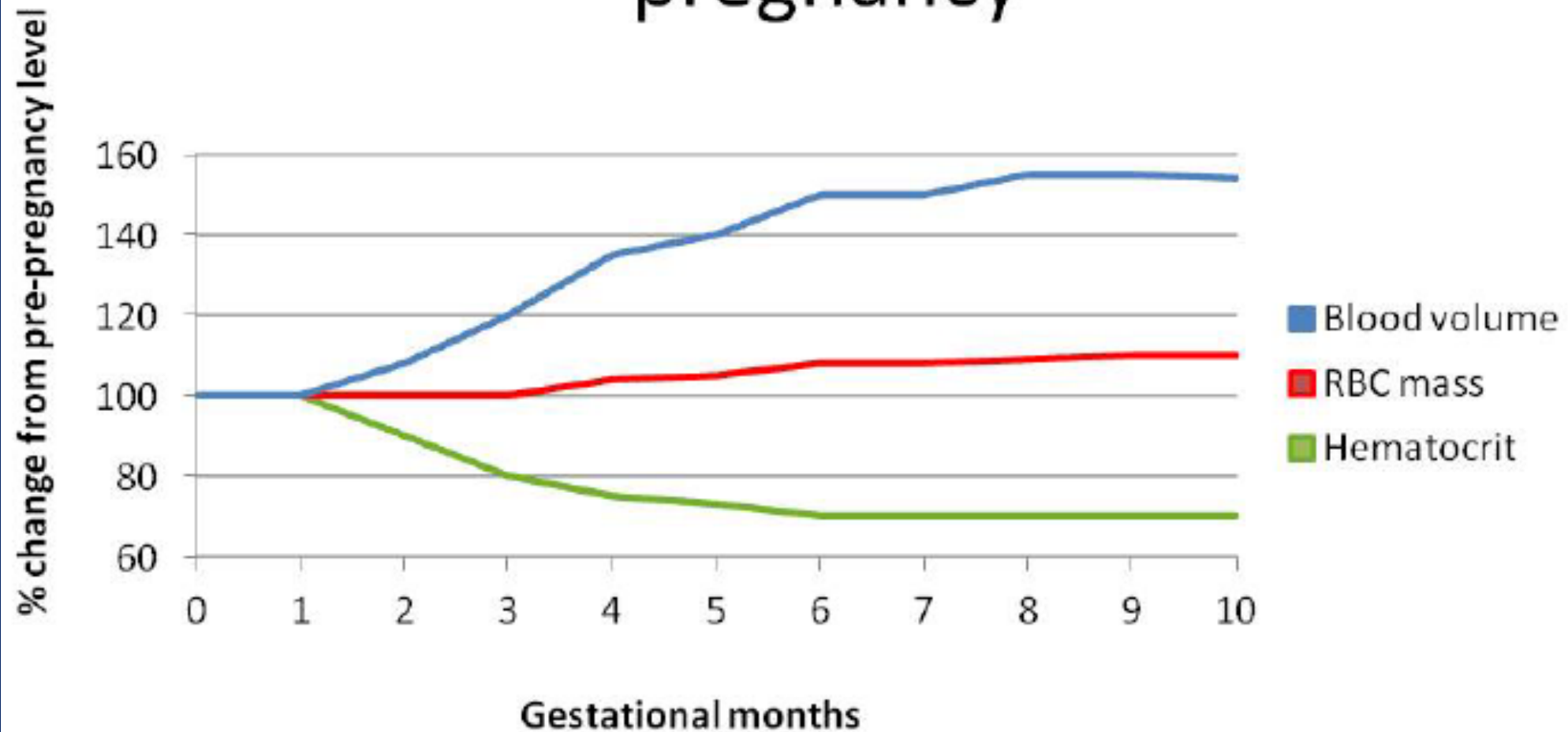
Further Considerations Regarding the Pregnant Trauma Patient



Further Considerations Regarding the Pregnant Trauma Patient

- May see increased blood loss due to decrease in cell volume of maternal blood

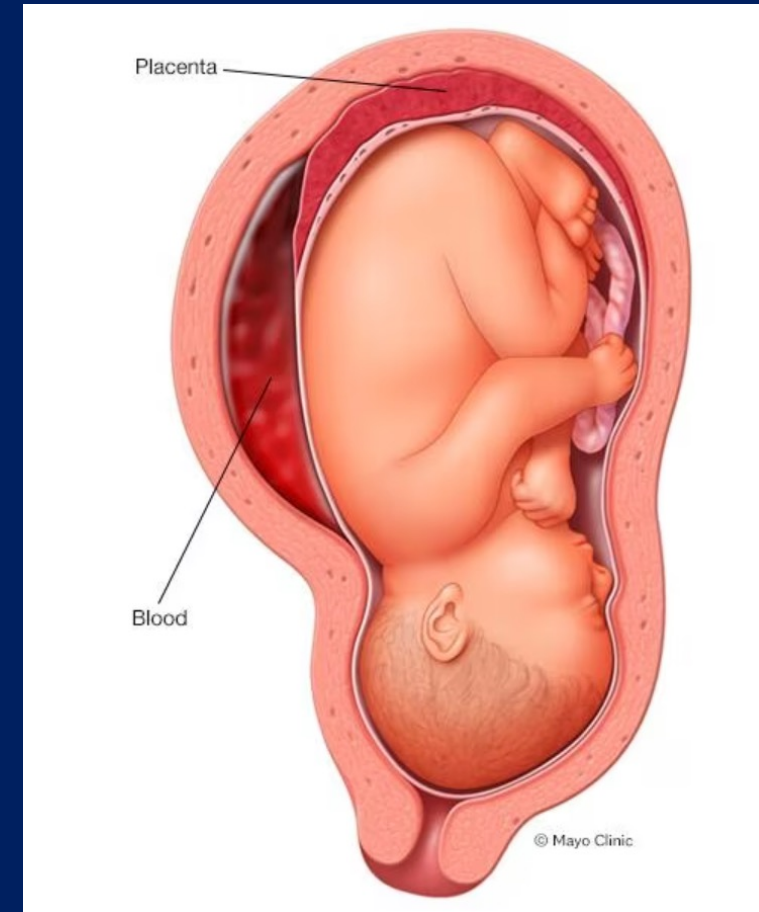
Hematologic changes during pregnancy



Further Considerations Regarding the Pregnant Trauma Patient

- May see increased blood loss due to decrease in cell volume of maternal blood
- Alternatively, pregnancy may “hide” serious injuries better on account of greater total blood volume. Don’t be fooled
- Even minor maternal trauma can result in severe injuries or fetal death

Placental Abruption After Minor Trauma



Further Considerations Regarding the Pregnant Trauma Patient

Left lateral displacement of the uterus

Every pregnant patient gets checked out after (even minor) trauma,
every time.

Assault and Intimate Partner Violence



Intimate partner violence (IPV) is the leading cause of female homicide and injury-related deaths **during pregnancy.**

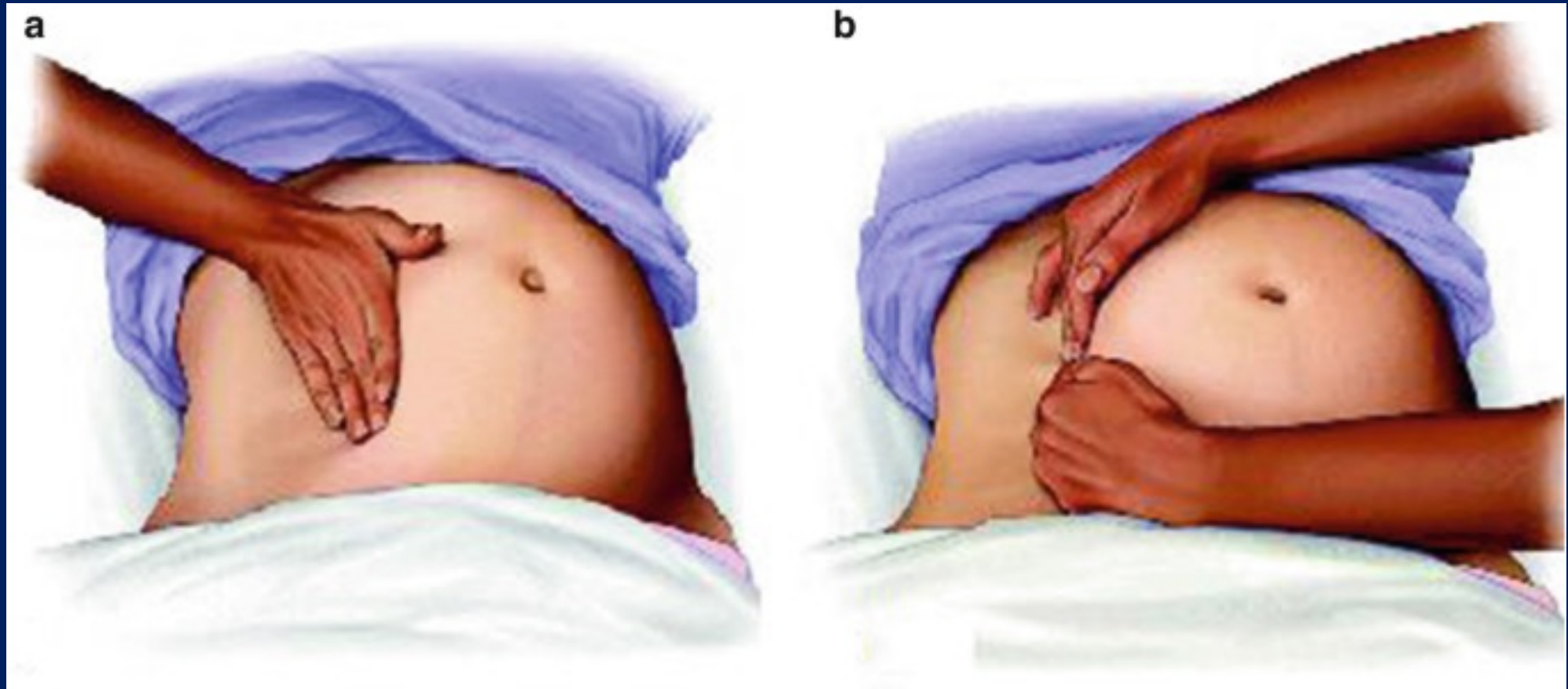
DOMESTIC VIOLENCE AWARENESS | **KNOW THE FACTS**
Learn more at [lssnetworkofhope.org/choices/](https://www.lssnetworkofhope.org/choices/)

Resuscitating a Pregnant Trauma Patient

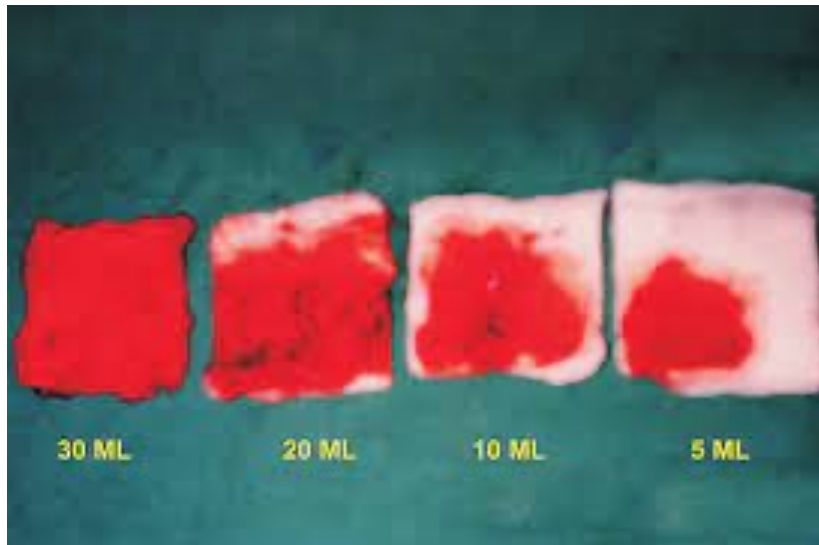
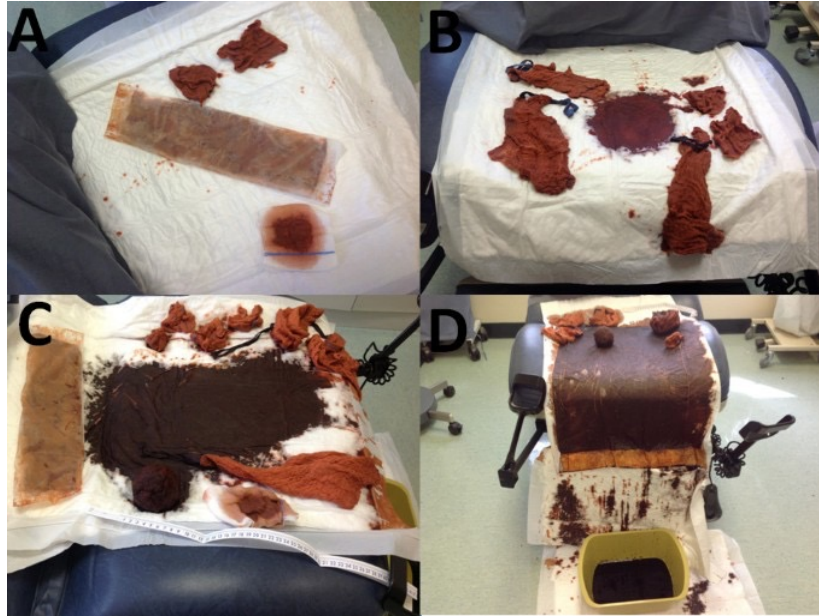
The best thing you can do for a pregnant patient and their baby when you are resuscitating Mom from trauma is to largely forget about the baby...

Resuscitating a Pregnant Trauma Patient

....except for...



Quantitative Blood Loss



Maternal Cardiac Arrest

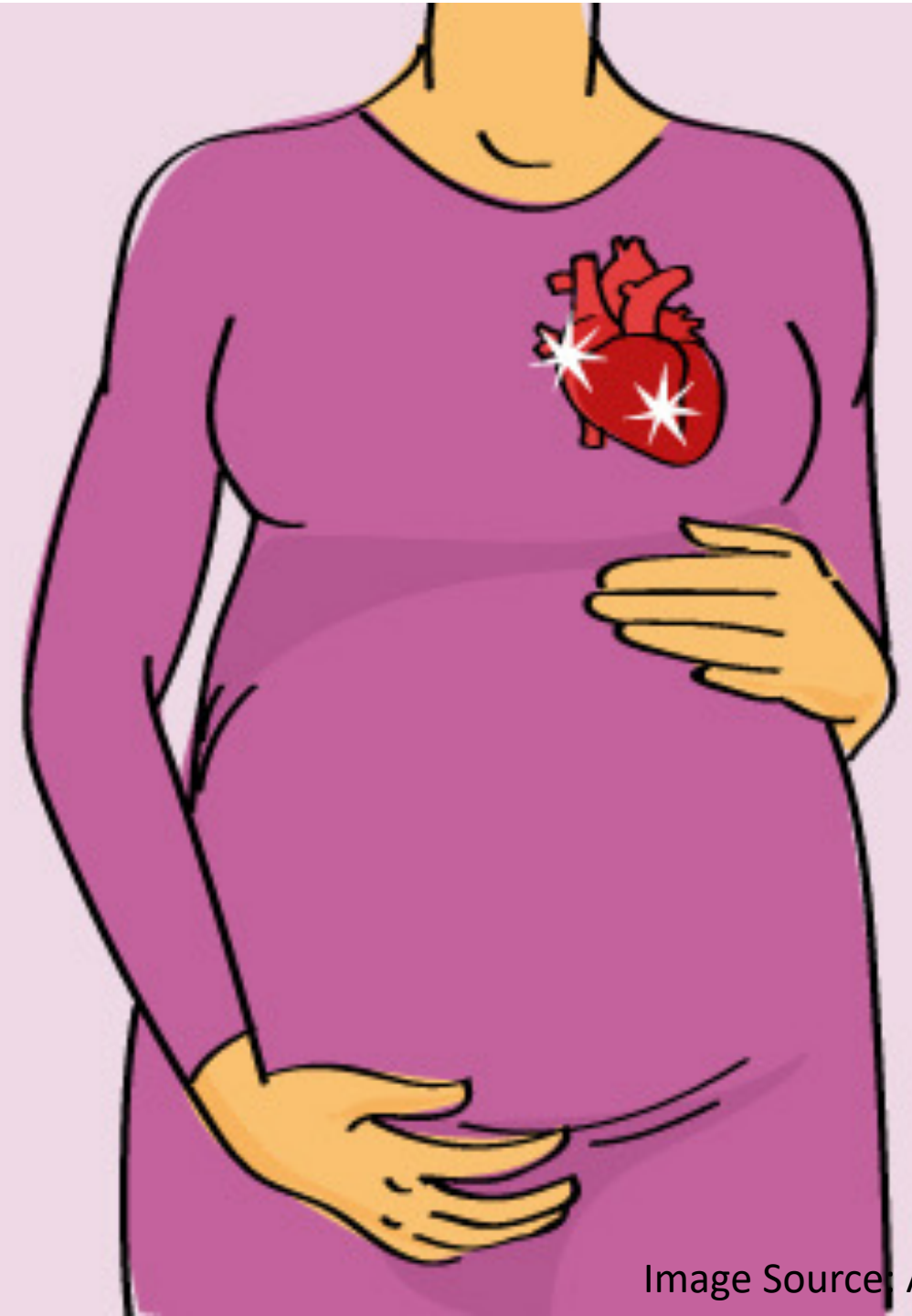
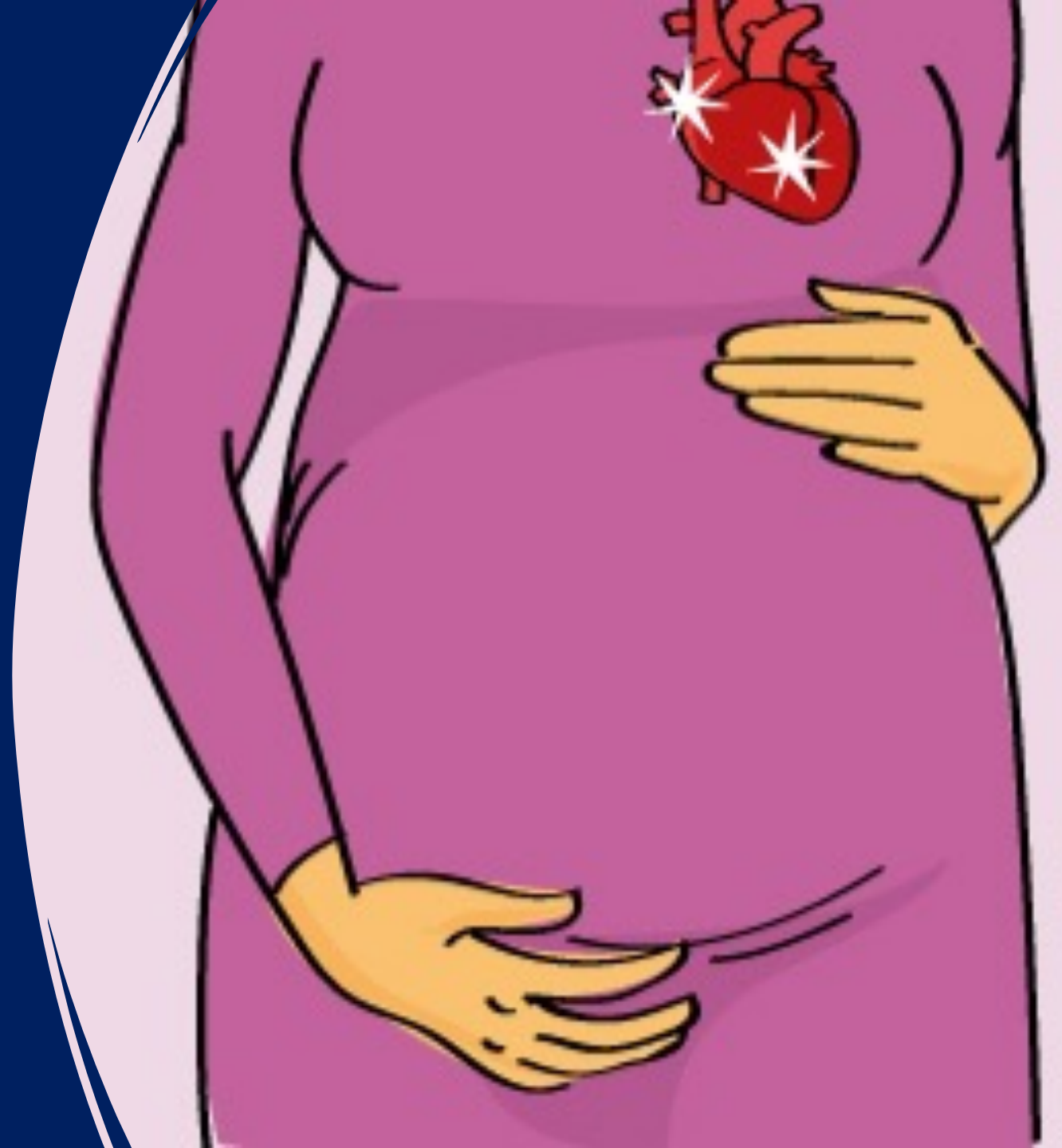


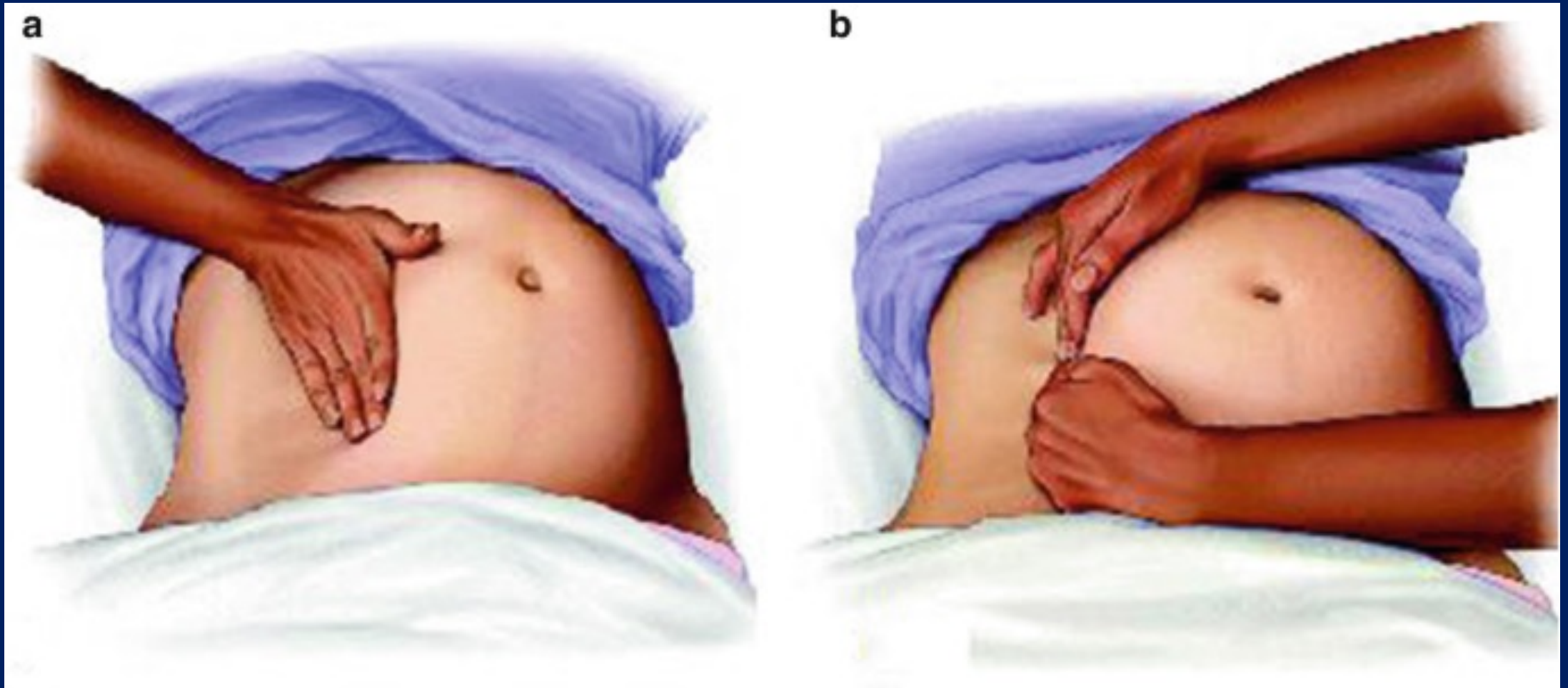
Image Source: AHA

Maternal Cardiac Arrest

- Chest Compressions Good
- Mechanical CPR devices not recommended
- Apneic oxygenation good
- Ventilations: proceed as you otherwise would
- Airway management may be harder
- LLUD good; don't wedge; perform chest compression supine



Left Lateral Uterine Displacement



Maternal Cardiac Arrest

Recommendations

1. **If resources are available, EMS response to a maternal cardiac arrest should include the appropriate complement of staff to ensure that BLS and ACLS actions can be performed, including chest compressions, LUD, defibrillation when indicated, and management of the difficult airway (Class I; Level of Evidence C).**
2. **If available, transport should be directed toward a center that is prepared to perform PMCD, but transport should not be prolonged by >10 minutes to reach a center with more capabilities (Class IIb; Level of Evidence C).**
3. **EMS and the receiving emergency department must establish optimal communication and an action plan for the transport of a maternal cardiac arrest patient. The emergency department should be able to rapidly mobilize the maternal cardiac arrest team, and specialized equipment should be available from the time the patient arrives in the emergency department (Class I; Level of Evidence C).**

Data Source: AHA

Substance Use Disorder in Pregnancy

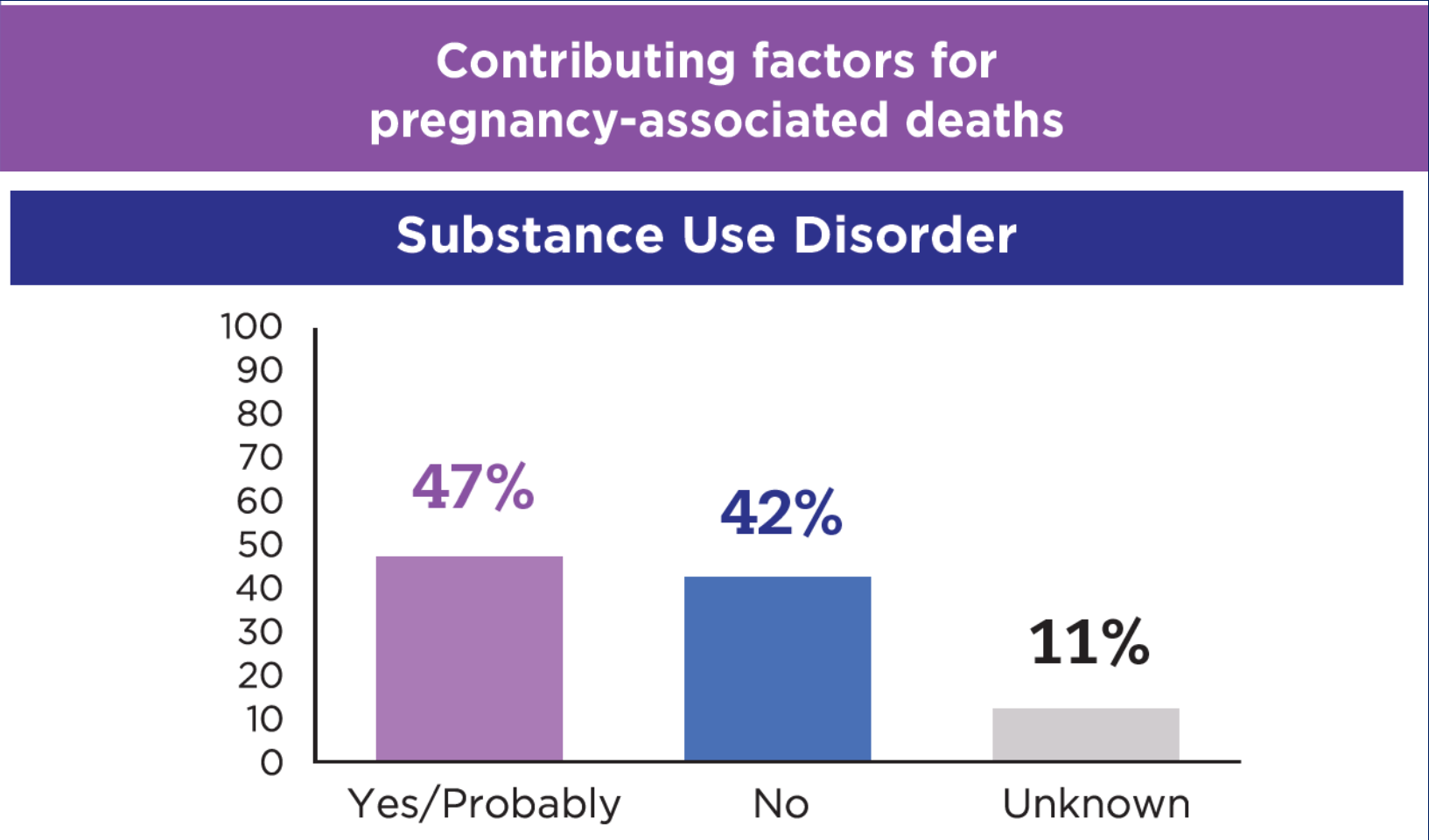


Photo Credit: Larry Clark

Substance Use Disorder in Pregnancy

- Opiate Use Disorder
 - Prescription opiates
 - Fentanyl
 - Heroin
- Methamphetamine and Cocaine
- Alcohol
- Tobacco

Substance Use Disorder in Pregnancy



Data Source: NM Maternal Mortality Review Committee Report on Maternal Deaths in New Mexico, 2015-2018

Naloxone can be used in pregnancy (FDA Category C)



Substance Use Disorder in Pregnancy

Highly stigmatized patient population

- Doesn't mean the patient doesn't want/love/care about their baby
- Doesn't automatically mean the fetus will not survive the pregnancy

Alcohol and drug withdrawal potentially harmful to mother and fetus

Treatment is available

- Medication-assisted therapy

Pregnant patients
battle substance
use disorder too.

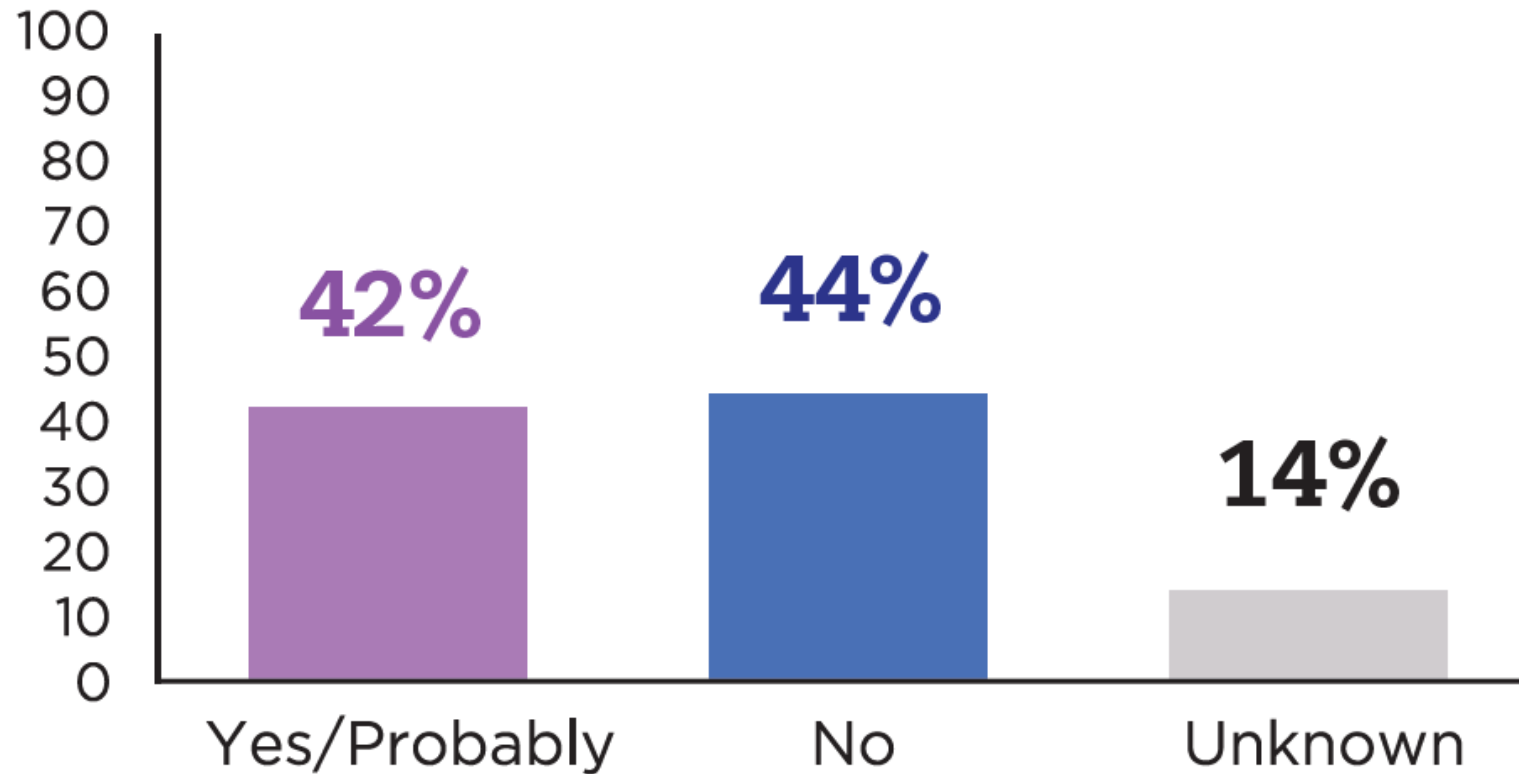
Be compassionate.

Maternal Mental Health

- Postpartum Depression
- Perinatal Anxiety
- Postpartum PTSD
- Postpartum Psychosis

Contributing factors for pregnancy-associated deaths

Mental Health Condition



Maternal Mental Health: Assessing for Depression

Edinburgh Postnatal Depression Scale (EPDS)



Cox JL, Holden JM Sagovsky R (1987) Detection of postnatal depression: development of the 10-item Edinburgh postnatal depression scale. Brit J Psychiatry 150 782-86. Reproduced with permission.

Name: _____ Date: _____

We would like to know how you have been feeling in the past week. Please indicate which of the following comes closest to how you have been feeling over the past seven days, not just how you feel today. Please tick one circle for each question that comes closest to how you have felt in the **last seven days**.

Here is an example already completed.

I have felt happy:

- Yes, all of the time
- Yes, most of the time
- No, not very often
- No, not at all

This would mean: 'I have felt happy most of the time during the past week'.

Please complete the other questions in the same way.

1. I have been able to laugh and see the funny side of things

- As much as I always could
- Not quite so much now
- Definitely not so much now
- Not at all

2. I have looked forward with enjoyment to things

- As much as I ever did
- Rather less than I used to
- Definitely less than I used to
- Hardly at all

3. I have blamed myself unnecessarily when things went wrong

- Yes, most of the time
- Yes, some of the time
- Not very often
- No, never

4. I have been anxious or worried for no good reason

- No, not at all
- Hardly ever
- Yes, sometimes
- Yes, very often

5. I have felt scared or panicky for no very good reason

- Yes, quite a lot
- Yes, sometimes
- No, not much
- No, not at all

6. Things have been getting on top of me

- Yes, most of the time I haven't been able to cope at all
- Yes, sometimes I haven't been coping as well as usual
- No, most of the time I have coped quite well
- No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping

- Yes, most of the time
- Yes, sometimes
- Not very often
- No, not at all

8. I have felt sad or miserable

- Yes, most of the time
- Yes, quite often
- Not very often
- No, not at all

9. I have been so unhappy that I have been crying

- Yes, most of the time
- Yes, quite often
- Only occasionally
- No, never

10. The thought of harming myself has occurred to me

- Yes, quite often
- Sometimes
- Hardly ever
- Never

Postpartum Support is Available



POSTPARTUM SUPPORT
INTERNATIONAL

EMS-delivered Postpartum Support

- How are you doing?
- Do you have support?
- What things have been hard lately?
- MIHC Opportunity
- EMS Spidey sense



Affirmation

No one sees and knows
patients' lives in their
homes (or lack of home)
better than EMS





Postpartum: 6 Weeks? More like 56 weeks....

- “Postpartum” is longer than we commonly imagine
- FOREVER, really – but 12 months in most emergent, clinically-relevant care

Data from 9 MMRCs

Figure 1. Distribution of Pregnancy-Related Deaths by Timing of Death in Relation to Pregnancy



38%

While
pregnant



45%

Within
42 days



18%

43 days
to 1 year

In New Mexico...

Pregnancy-associated deaths by timing of death



Data Source: NM Maternal Mortality Review Committee Report on Maternal Deaths in New Mexico, 2015-2018

Postpartum Conditions Causing Maternal Morbidity and Mortality

- Hypertensive Disorders of Pregnancy
- Stroke
- Postpartum Cardiomyopathy
- Myocardial Infarction (Spontaneous Coronary Artery Dissection)
- Mental Health Conditions
- Substance Use Disorders
- Intimate Partner Violence and other Trauma

A graphic consisting of a white circle with a thick red border. Inside the circle, the word "step" is written in a black, cursive font, and the number "1" is written in a bold, red, sans-serif font below it.

step
1

**Identify patients who
are pregnant or who
have been pregnant
in the last 12
months***

Listening to **postpartum** moms is key!



Maternal Early Warning Signs (MEWS)

URGENT MATERNAL WARNING SIGNS



Headache that won't go away or gets worse over time



Dizziness or fainting



Thoughts about hurting yourself or your baby



Changes in your vision



Fever



Trouble breathing



Chest pain or fast-beating heart



Severe belly pain that doesn't go away



Severe nausea and throwing up (not like morning sickness)



Baby's movements stopping or slowing



Vaginal bleeding or fluid leaking *during* pregnancy



Vaginal bleeding or fluid leaking *after* pregnancy



Swelling, redness, or pain of your leg



Extreme swelling of your hands or face



Overwhelming tiredness

Questions? Discussion?

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