What's New in Obstetric Anesthesia?

SFOAI 2024

Happy Tammsvik, Sweden

Michaela K. Farber MD MS

Chief, Division of Obstetric Anesthesiology

Brigham and Women's Hospital

Associate Professor of Anesthesia

Harvard Medical School

Boston, MA

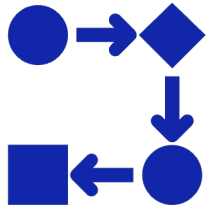
Disclosures

- **HemoSonics:** *Medical Advisory Board*
- **Octapharma:** *Medical Advisory Board*
- **Flat Medical:** *Research Support*
- **Wolters Kluwer:** *Royalties*

Presentation Format

What We Know

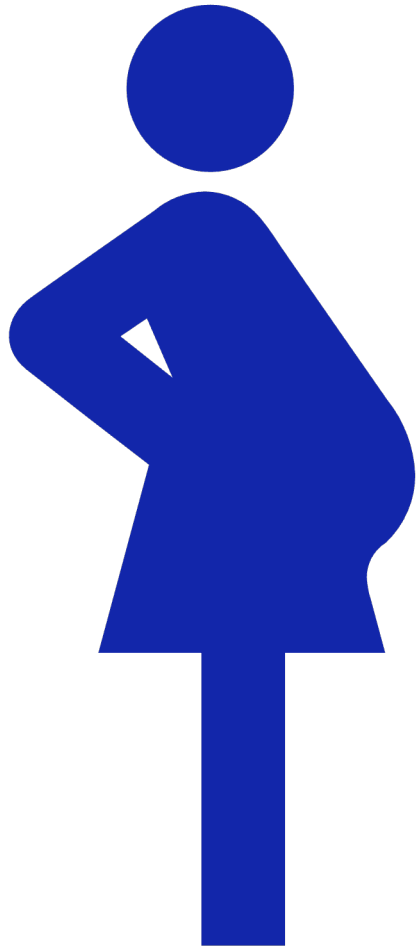
What the Article(s) Showed



How it **WILL** Change Your Practice!

Outline

1. Postdural puncture headache
2. Oral Intake in Labor
3. Opioid use disorder
4. Thromboprophylaxis
5. Litigation risk
6. General anesthesia
7. Oxytocin dosing
8. Placenta accreta
9. Tranexamic acid
10. Maternal mortality



What we Know: Postdural Puncture Headache

Labor epidural use: 73% in US
→ 2.8 million / y
→ 1% wet tap = 28,000 / y
→ 60-80% → PDPH

22,000 / y

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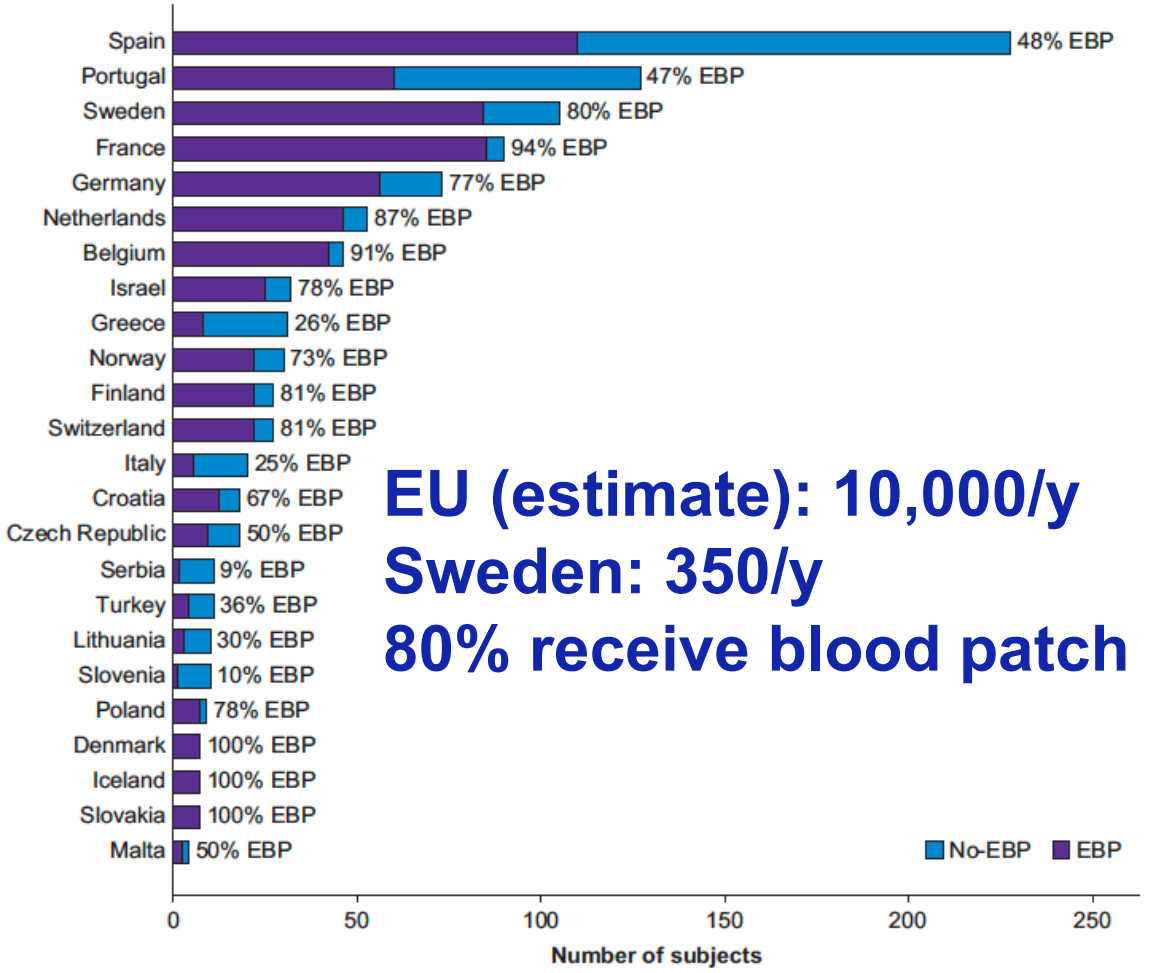


EU (estimate): 10,000/y
Sweden: 350/y
80% receive blood patch

Gupta A et al. Br J Anesth 2020; 125(6): 1045-55.
Gupta A et al. Br J Anesth 2022; 129(5): 758-66.

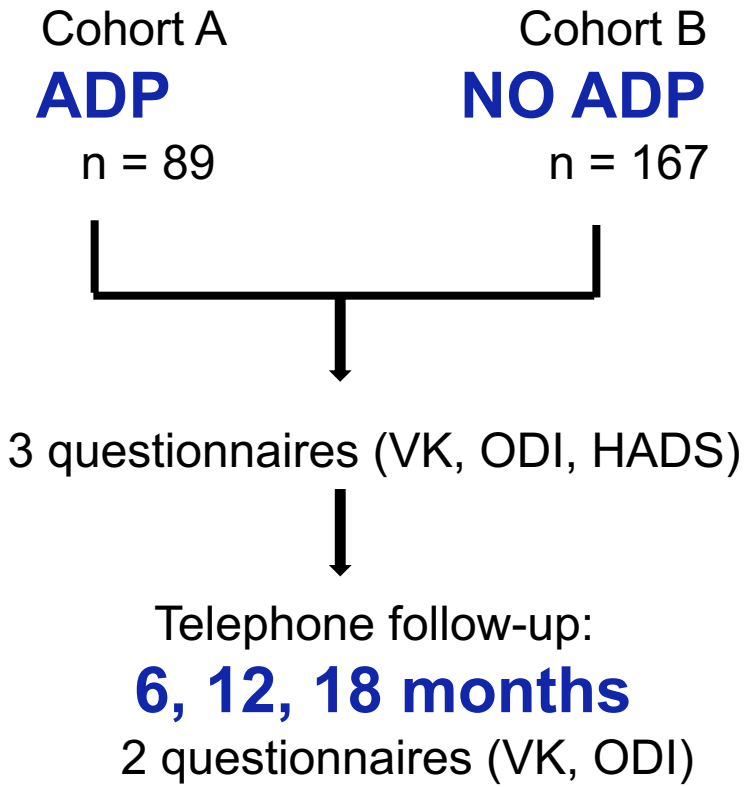
What we Know: Postdural Puncture Headache

1st author and journal	Study type	Latest Follow-Up	Chronic headache?
Orbach-Zinger S. Eur. J Anesthesiol	Retrospective case-matched	50 months	**PDPH 33%** **No PDPH 15%**
Binyamin Y. Acta Anaesth Scand	Prospective case-control	24 months	**PDPH 16-20%** **No PDPH 0%** No Epidural 0%
Ansari J. Br J Anaesth	Prospective observational	6 months	**PDPH 56%** **No PDPH 25%**

Spinal headaches are not always isolated, benign headaches.

Persistent headache and low back pain after accidental dural puncture in the obstetric population: a prospective, observational, multicentre cohort study

- Prospective observational multicenter cohort
- 9 centers, UK
- **Primary outcome: persistent headache at 18 months**



✅ **Large, well-powered study**

Adjusts for:

- chronic headache
- back pain
- depression

Niraj G et al. Anaesthesia. 2021 Aug;76(8):1068-1076.

Persistent headache and low back pain after accidental dural puncture in the obstetric population: a prospective, observational, multicentre cohort study

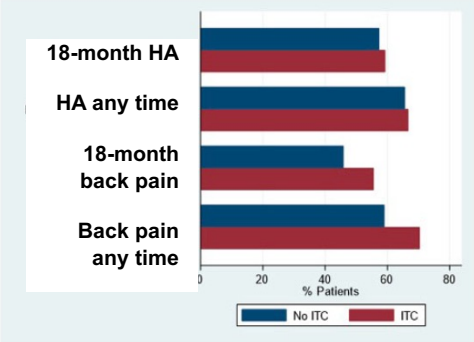
PDPH: in 79%
EBP: 53% of cases

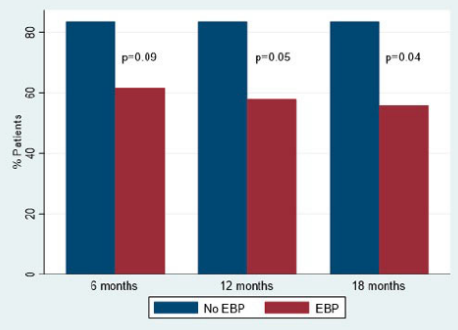
	Adjustments	ADP group n = 89	Control group n = 172	Odds ratio* (95%CI)	p value
Headache 6 months	None	53 (59.6%)	34 (19.8%)	10.6 (4.6–23.8)	< 0.001
	Headache history, HADS			10.4 (4.4–24.2)	< 0.001
Headache 12 months	None	52 (58.4%)	35† (20.8%)	6.01 (3.1–11.5)	< 0.001
	Headache history, HADS			6.38 (3.1–12.8)	< 0.001
Headache 18 months	None	52 (58.4%)	29‡ (17.4%)	13·5 (5.5–33.0)	< 0.001
	Headache history, HADS			18.4 (6.0–56.7)	< 0.001

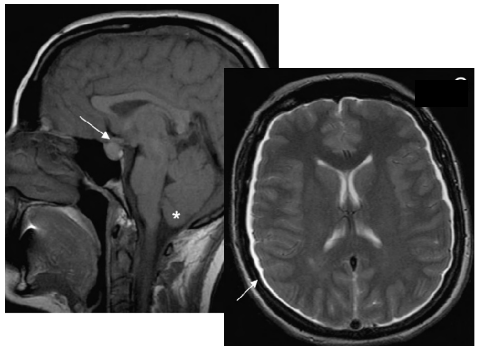
After accidental dural puncture at delivery, chronic headache occurred in 58.4% at 18 months compared to 17.4% of controls.

Niraj G et al. Anaesthesia. 2021 Aug;76(8):1068-1076.

Persistent headache and low back pain after accidental dural puncture in the obstetric population: a prospective, observational, multicentre cohort study







INTRATHECAL CATHETER at time of ADP	EPIDURAL BLOOD PATCH at time of ADP	MRI in 25 patients with chronic headache
No lower rate of chronic headache or backache	Less frequent, less severe chronic headache	No evidence of intracranial hypotension

Niraj G et al. Anaesthesia. 2021 Aug;76(8):1068-1076.

PAIN

Chronic headaches related to post-dural puncture headaches: a scoping review

Questions:

- *What is the relationship between dural puncture and chronic headache?*
- *Can we understand the pathophysiology?*
- *How can we best follow-up and treat these patients?*

Study Design:

- Scoping Review, through 4/2022
- 32 publications reporting headache ≥ 1 month after neuraxial
  - → 5 prospective, 7 retrospective
  - → 20 case reports
- Risk of bias assessment, data extraction

Zhang Q et al. Br J Anaesth 2022; 129(5): 747-57.

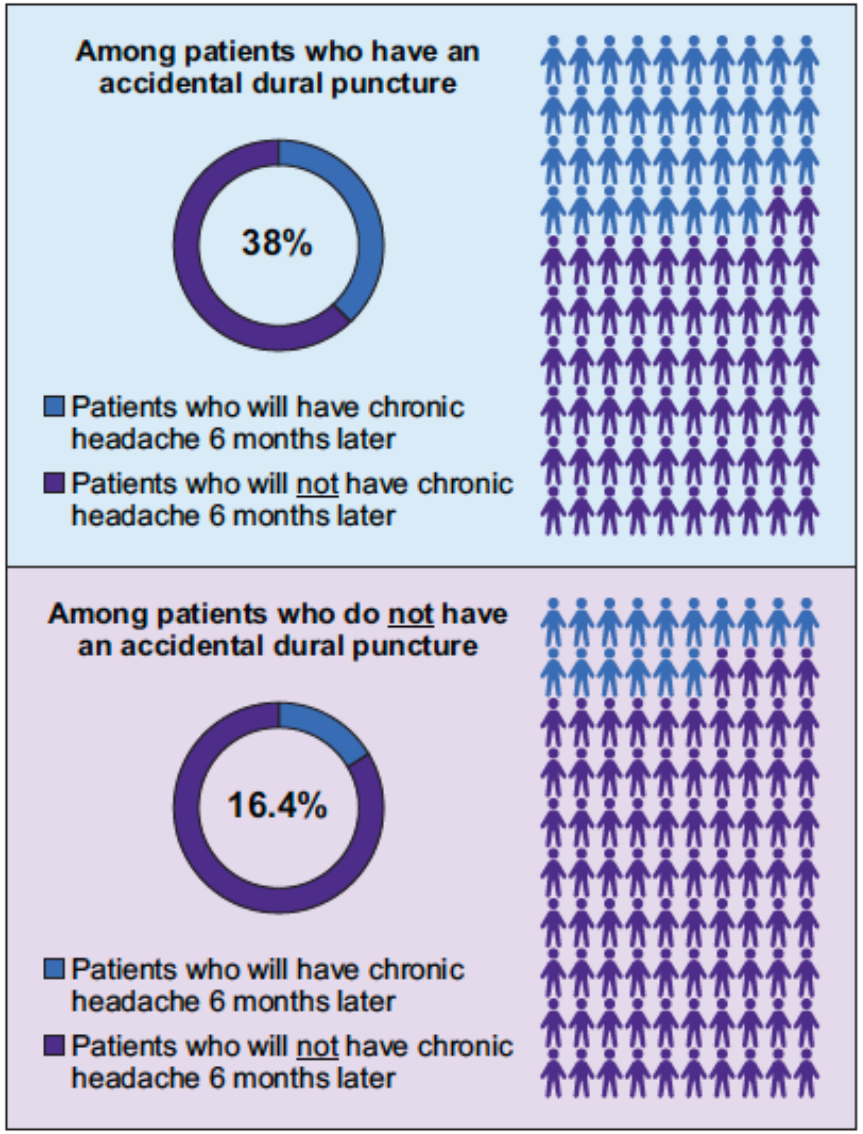
Findings

- **Chronic HA:** more common after accidental dural puncture than after uneventful epidural

- **Epidural blood patch** and chronic HA?
  – results are mixed

- **Symptoms at hospital discharge:**
  – 91% w/chronic HA were *asymptomatic*

- We do not understand patient or technique-related risk factors, or optimal treatment



Zhang Q et al. Br J Anaesth 2022; 129(5): 747-57.

Change your Practice: Postdural Puncture Headache

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POSTDURAL PUNCTURE HEADACHE:

***not always* a self-limited condition**

Informed Consent:

- The complication of dural puncture is rare
- If it happens, **chronic headache and backache may occur**

Treatment

- Track long term sequelae
- Advance therapies to mitigate

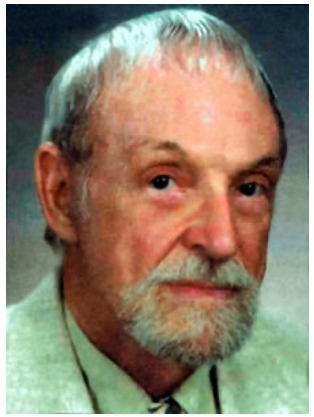
Prevention:

- Optimize staffing models/skill
- Utilize lumbar ultrasound
- Refine simulation training

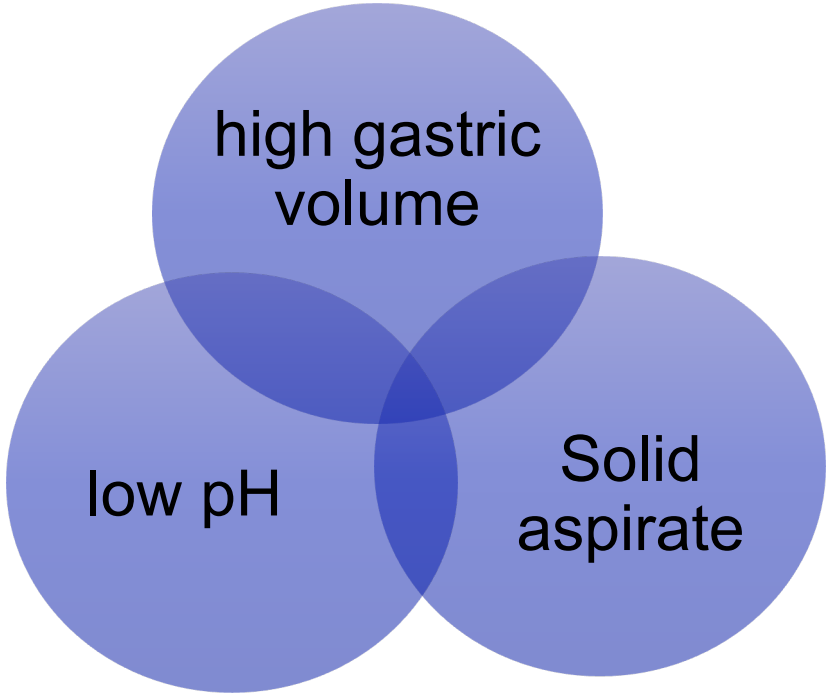
Aspiration Risk in Obstetric Anesthesia

MENDELSON, C. L.: The Aspiration of Stomach Contents into the Lungs During Obstetric Anesthesia. Am. J. Obst. & Gynec. 52: 191–205 (Aug.) 1946.

- 44,016 deliveries, 1932-1945
- Operative delivery
- Nitrous oxide and ether via face mask
  - 66 (0.15%) aspirated
  - 2 deaths



Curtis Mendelson



Peripartum aspiration is a great concern

What we Know: Gastric Emptying in Labor

Practice Guidelines for Obstetric Anesthesia

*An Updated Report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia and the Society for Obstetric Anesthesia and Perinatology**

Solids.

- Solid foods should be avoided in laboring patients.

NO SOLID FOOD IN LABOR!

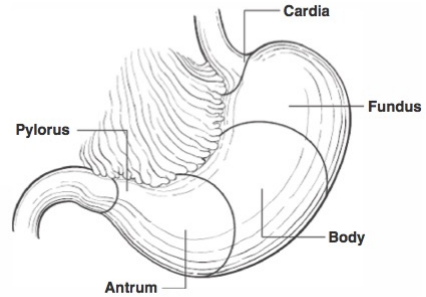
US aspiration rate?

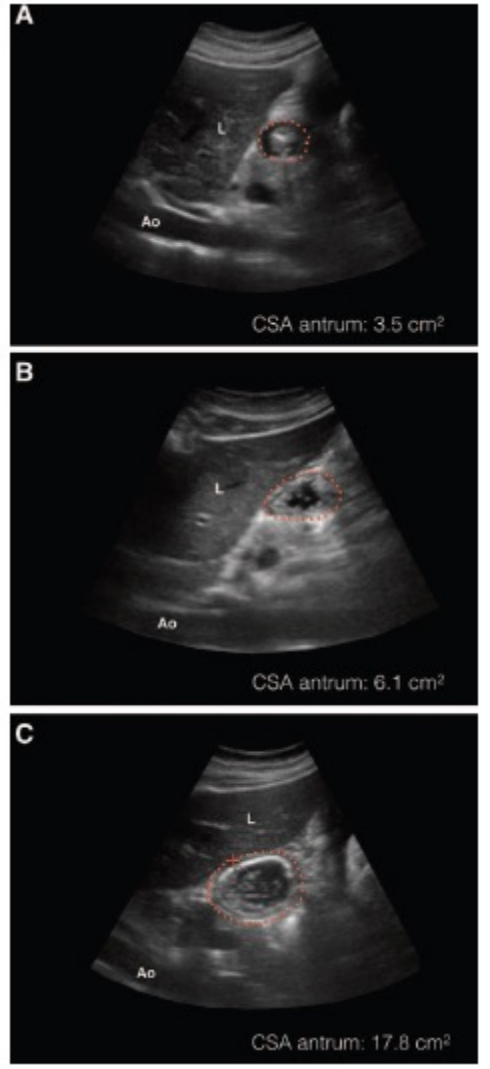
< 1 in 1 million pregnancies

CLEAR FLUIDS ARE OK.

What we Know: Gastric Emptying in Labor

- It can slow with pain and opioid administration
- Gastric volume is larger in women allowed solid food
- It is normal in non-laboring, fasted patients
- Ultrasound of the gastric antral cross-sectional area is a reliable way to evaluate gastric volumes in labor





Arzola C et al Anesth Analg. 2015 Sep;121(3):752-758.

ANESTHESIOLOGY

Pregnancy and Labor Epidural Effects on Gastric Emptying: A Prospective Comparative Study

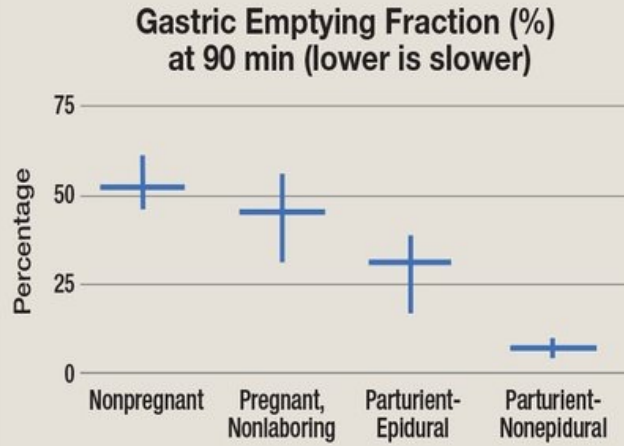
A prospective, comparative study in 40 parturients and nonpregnant women

Hypothesis:
Gastric emptying is delayed in parturients (with or without epidural analgesia) compared to nonlaboring and nonpregnant controls

10 subjects per group:
- Nonpregnant control
- Nonlaboring pregnant control
- Parturient-No-Epidural
- Parturient-Epidural

Study design:
- Baseline gastric ultrasound after fasting
- Ingestion of 125 g yogurt
- Serial ultrasound measurements of the antrum at 15, 60, 90, and 120 min

Primary outcome:
Antral cross-sectional area at 15 and 90 min after ingestion

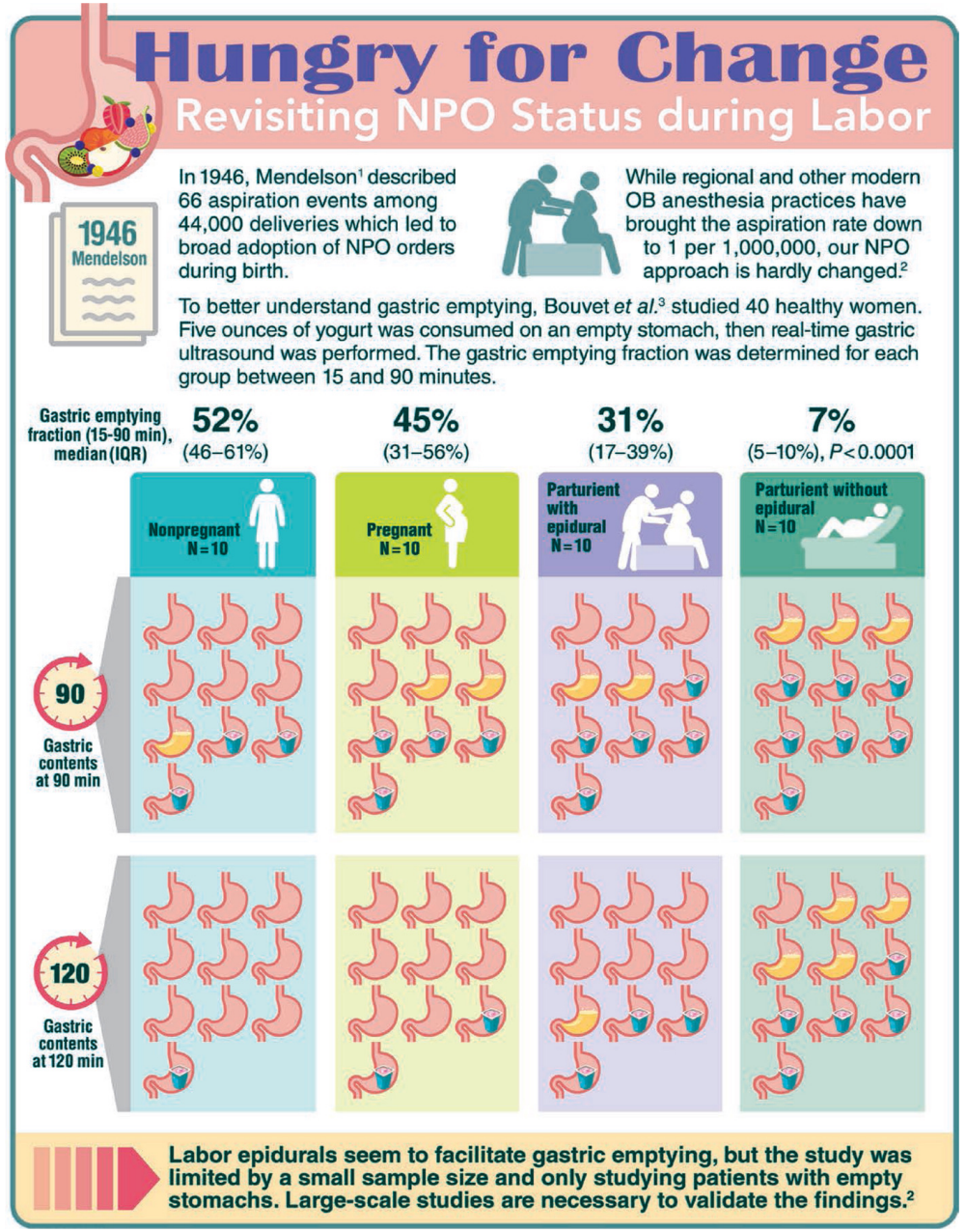


Gastric emptying in parturients was delayed. Labor epidural analgesia appears to facilitate gastric emptying.

Bouvet L et al. Anesthesiology 2022; 136: 542-50.

Gastric Emptying in Labor

- Is faster in non-pregnant women
- Is faster in nonlaboring pregnant women
- Is facilitated (not slowed) by epidural analgesia



Bouvet L et al. Anesthesiology 2022; 136: 542-50.

Change your Practice: Gastric Emptying in Labor

Is it time to rethink our current recommendations for oral intake during labor and delivery?

Not at this time!

-this study confirmed delayed gastric emptying in labor

-only patients with baseline empty stomach were studied

Clear liquids remain ok
Caution for food in labor remains warranted
Gastric ultrasound may be a useful tool to stratify risk or liberalize eating in labor

Bouvet L et al. Anesthesiology 2022; 136: 542-50.

What we Know: Opioid Use Disorder & Pain Management

- Opioid Use Disorder increases the risk of overdose death
- Overdose is the rising leading cause of maternal death in the US
- A 2018 Swedish naloxone initiative lowered overdose death in men, but not women
- Evidence-based recommendations are lacking

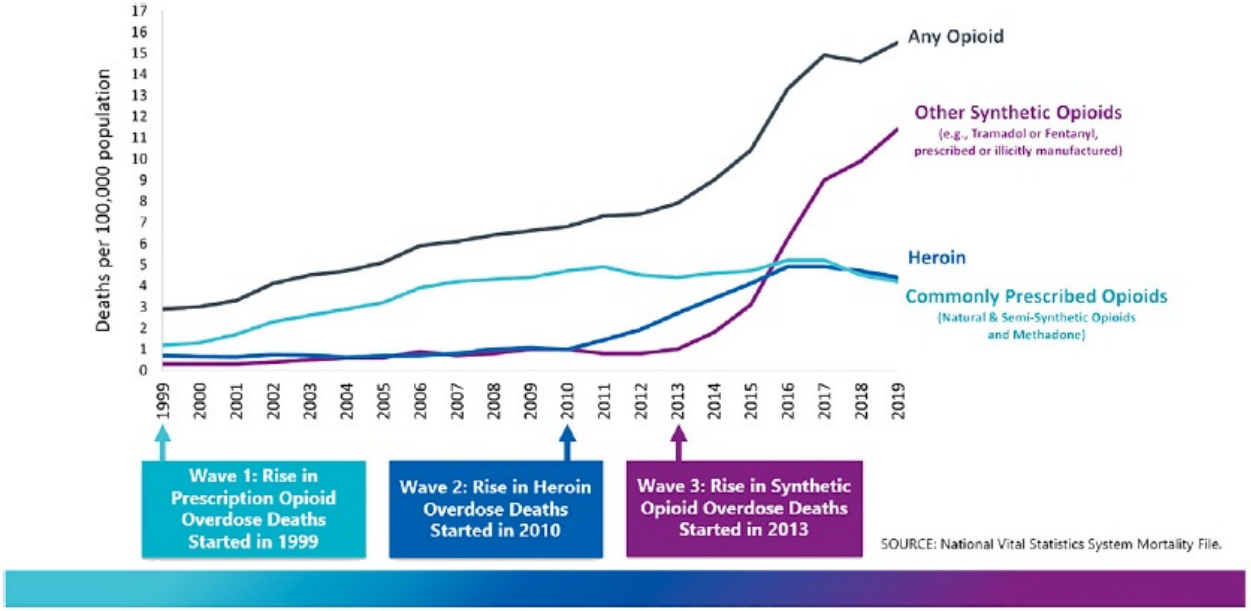


Fig. 1. Three waves of the rise in opioid overdose deaths.

Sanjanwala AR et al. Obstet Gynecol Clin N Am 2023; 50:229-40

Overdose deaths before/after naloxone program, Sweden

	Deceased	Women	
Period	n	n	(%)
2013–2017	211	34	16.1
2019–2021	96	23	24.0

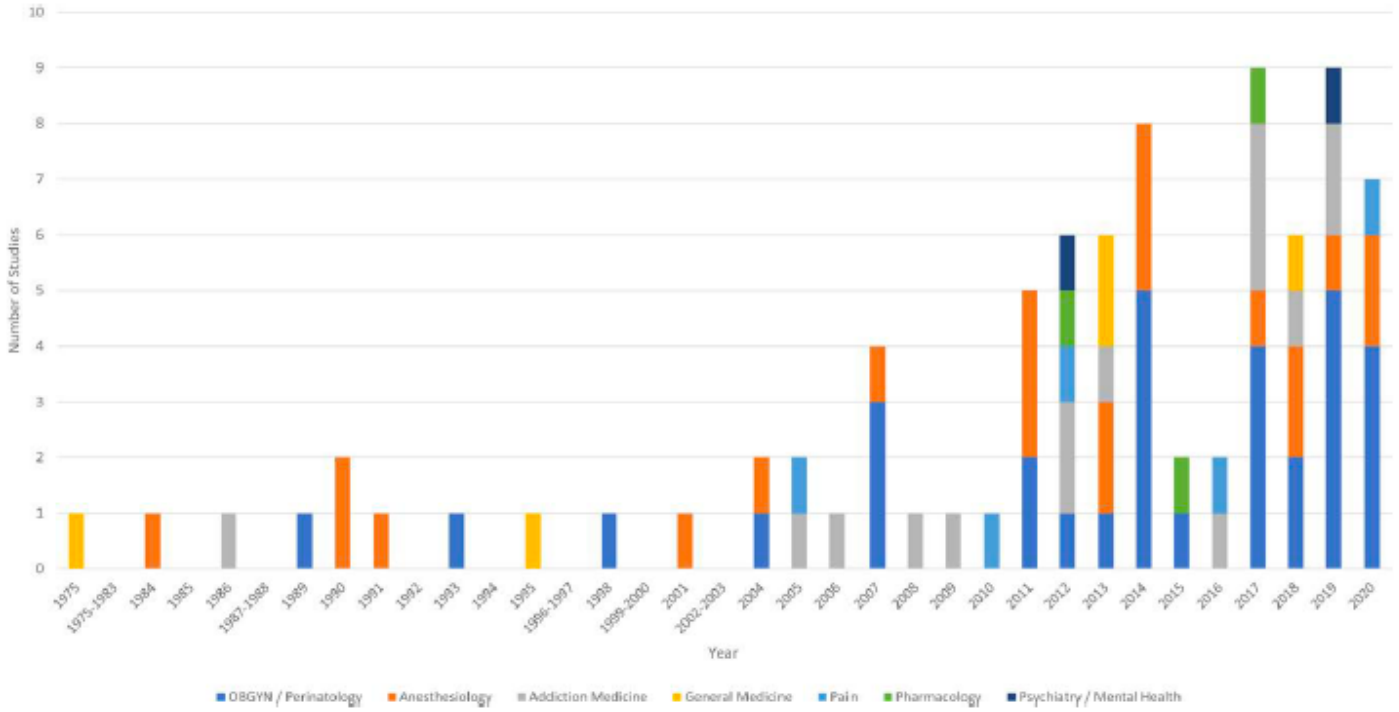
Håkansson A, et al. BMJ Open 2024;14:e074152.

A Systematic Scoping Review of Peridelivery Pain Management for Pregnant People With Opioid Use Disorder: From the Society for Obstetric Anesthesia and Perinatology and Society for Maternal Fetal Medicine

What are the knowledge gaps for peri-delivery management of patients with opioid use disorder?

→ 84 papers identified, 1975-2020

Pain Management Publications:
(1) pre-delivery
(1) in labor and delivery
(2) post-cesarean delivery



Lim G et al. Anesth Analg 2022; 135: 912-25.

A Systematic Scoping Review of Peridelivery Pain Management for Pregnant People With Opioid Use Disorder: From the Society for Obstetric Anesthesia and Perinatology and Society for Maternal Fetal Medicine

Urgent research priorities

- How to optimize psychological and psychosocial comorbidities
- Alternate nonopioid and nonpharmacologic analgesia methods
- Whether to use opioids for severe breakthrough pain
- How to prescribe opioids post-discharge
- Monitoring for respiratory depression
- Optimal neuraxial dosing and adjuncts
- Benefits of abdominal wall fascial plane blocks

Lim G et al. Anesth Analg 2022; 135: 912-25.

Change your Practice: Opioid Use Disorder & Pain Management

FOCUS ON YOUR OUD PATIENTS!

1. Opioid-induced hyperalgesia
→ may need higher doses for analgesia

2. Psychosocial stress can trigger relapse
→ address stress, fear, coping plans, support

3. Closely monitor recovery
→ Poor pain control can be a risk factor for relapse

4. Continue MAT – buprenorphine, methadone
→ These will NOT cover delivery-related pain

5. Consider adjuncts to MAT
→ Neuraxial; TAP; IV acetaminophen; gabapentin

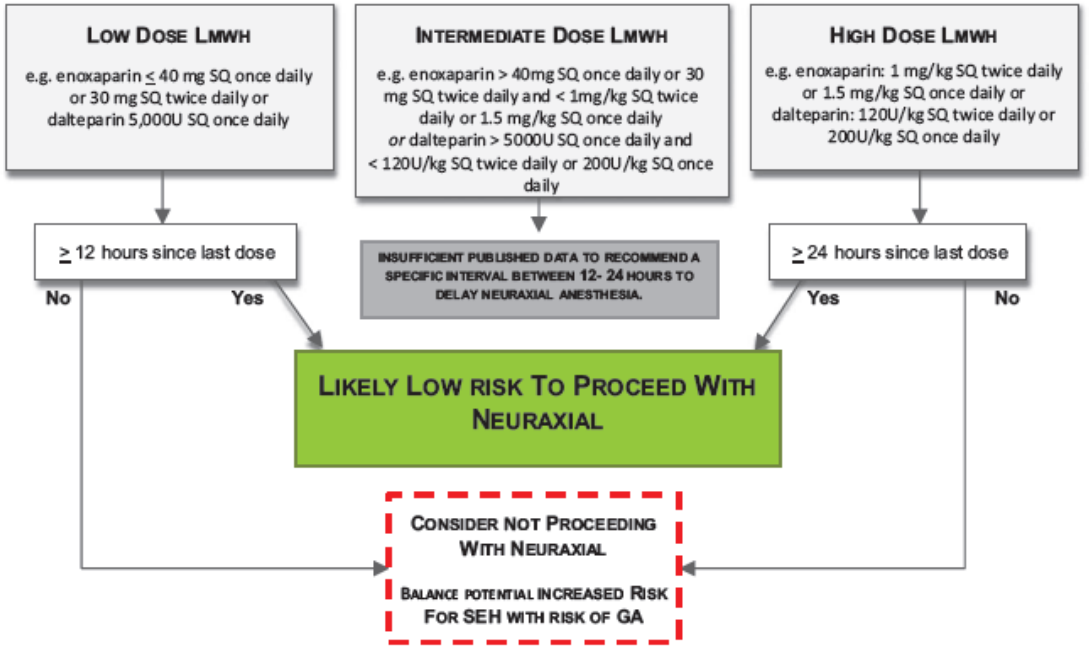
6. Avoid partial opioid agonists
(nalbuphine, butorphanol, pentazocine)
→ may precipitate withdrawal

What we Know: Thromboprophylaxis

Venous thromboembolism in pregnancy

- Deep-vein thrombosis, pulmonary embolism
- Prior history? 2-10% risk without prophylaxis
- Major source of maternal morbidity, mortality
- Uncertainty across guidelines: low vs. intermediate dose for prophaylaxis

The Society for Obstetric Anesthesia and Perinatology Consensus Statement on the Anesthetic Management of Pregnant and Postpartum Women Receiving Thromboprophylaxis or Higher Dose Anticoagulants



Leffert L et al. Anesth Analg 2018 Mar; 126(3): 928-44

Intermediate-dose versus low-dose low-molecular-weight heparin in pregnant and post-partum women with a history of venous thromboembolism (Highlow study): an open-label, multicentre, randomised, controlled trial

The Highlow Study: 70 hospitals, 9 countries

- **1110 women with history of VTE**
  - → weight-adjusted intermediate dose LMWH
  - → fixed low-dose LMWH

- **No difference in incidence of VTE between groups**
  - → low-dose LMWH thromboprophylaxis is appropriate

"Stop dose at first signs of labor, or 24h prior to planned delivery"

Bistervels IM et al. Lancet 2022; 400: 1777-87

Onset of labor and use of analgesia in women using thromboprophylaxis with 2 doses of low-molecular-weight heparin: insights from the Highlow study

The Highlow study recommendation for women with VTE history:

Administer low-dose LMWH thromboprophylaxis and stop at the onset of labor or 24h prior to planned delivery.

	All women with unplanned labor onset (n = 460)	Intermediate-dose LMWH (n = 205)	Low-dose LMWH (n = 255)	Risk difference in % (95%CI)
Eligible for neuraxial procedure	334 (73%)	125 (61%)	209 (81%)	-22.6 (-30.4 to -14.8)

Interpretation: 19% and 39% were ineligible to receive neuraxial techniques due to anticoagulation

Bistervels IM et al. J Thromb Haemost 2023; 21(1): 57-67.

Change your Practice: Thromboprophylaxis

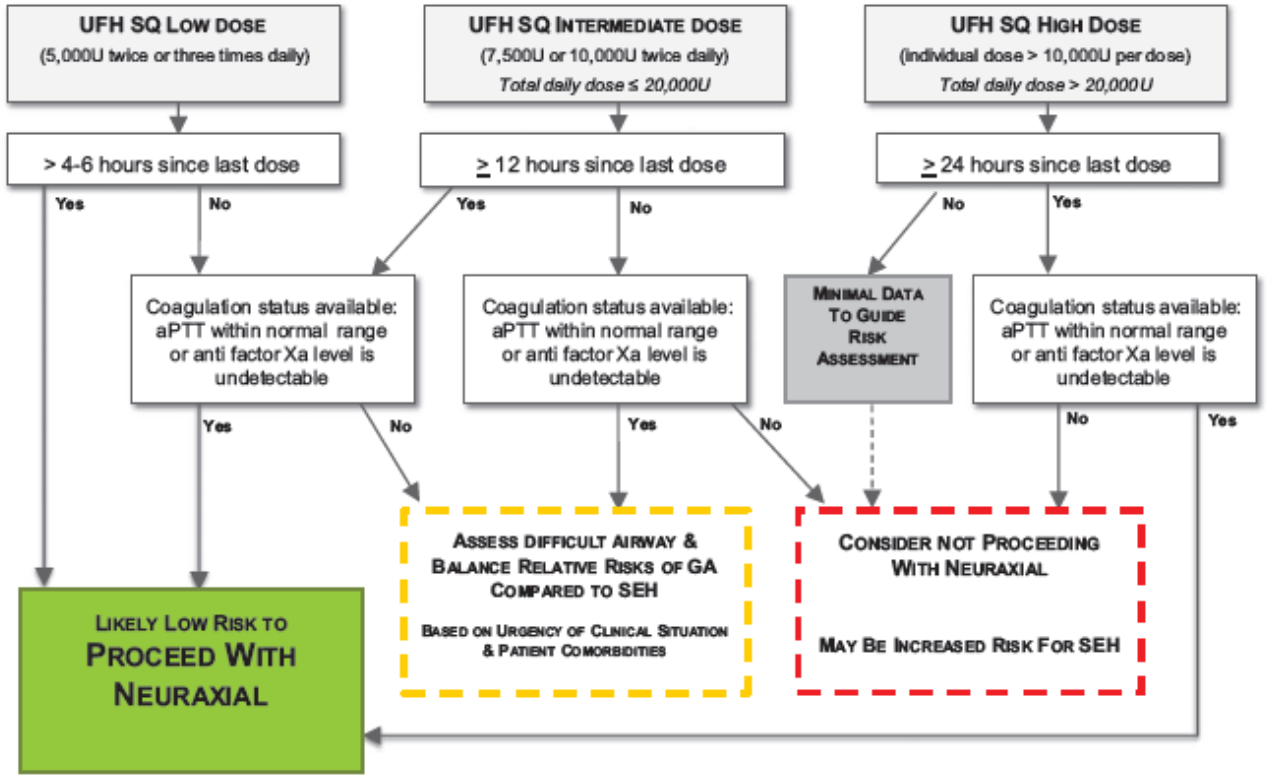
- **Communicate with your OB teams**

  → *Is their management changing based on the Highlow study?*

- **VTE history on anticoagulation?**

  → high-risk anesthesia consultation

  → consideration of unfractionated heparin prior to onset of labor



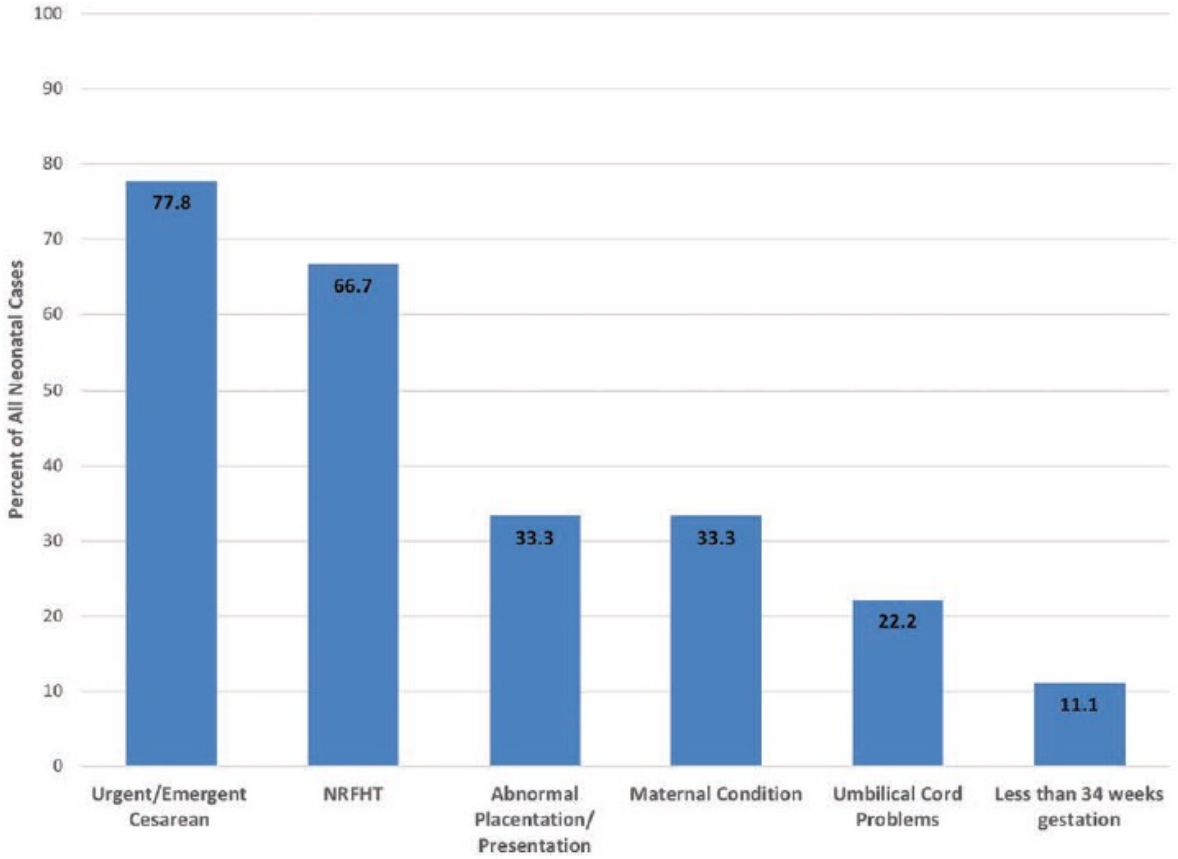
Leffert L et al. Anesth Analg 2018 Mar; 126(3): 928-44

What we Know: Litigation and OB Anesthesia

ASA Closed Claims/OB Anesthesia

Newborn Death and Brain Injury, 1990-2011

- 19-32% settlements *against* anesthesiologist



Newborn death and brain injury claims

- Delays in care
- Inadequate communication
- Poor training for newborn resuscitation

Ross BK. Anesthesiol Clin N America 2003; 21: 183-97.
Davies JM et al. Anesthesiology 2009; 110:131-9.
Kovacheva VP et al. Anesth Analg 2019; 128:1199-207

Learning from the law: a review of 21 years of litigation for anaesthetic negligence resulting in peripartum hypoxic ischaemic encephalopathy

Common Themes

(1) Anesthetic Delay – induction; response time; availability; choice of anesthesia

(2) Poor Communication – with the OB; the patient's perception

(3) Hypotension after neuraxial anesthesia

(4) Poor documentation

A must-read for all obstetric anesthesiologists!

McCombe K and Bogod DG. Anaesthesia 2022; 77:919-28.

Change your Practice: Litigation and OB Anesthesia

- TEAMWORK
- RESOURCES
- PROTOCOLS
- SIMULATION
- EXPERIENCE
- COMMUNICATION
- COMMUNICATION
- COMMUNICATION

BWH OBSTETRIC STAGE 1 VARIANCE PROTOCOL

Q: Who calls it? ⟶ any team member can initiate it

Q: How do you call it? ⟶ ask the Unit Coordinator to activate a Stage 1 variance

Q: Why call it? ⟶ to get support, improve care, and prevent Stage 2

Q: Who responds to it? ⟶ Primary OB/Midwife, Anesthesia TL, and NIC

Q: When should it be called? ⟶ For any concern, and any trigger below:

Blood Pressure/Well-Being

- SBP 160mmHg or DBP >110mmHg*
- HR < 50 bpm*
- Severe headache or shortness of breath
- Administration of IV antihypertensives
- Oliguria < 35 mL/h for >2h
- Respiratory rate < 10 or > 30 per minute
- O2 saturation < 95% on room air
- Maternal agitation, confusion, unresponsiveness

Blood Loss

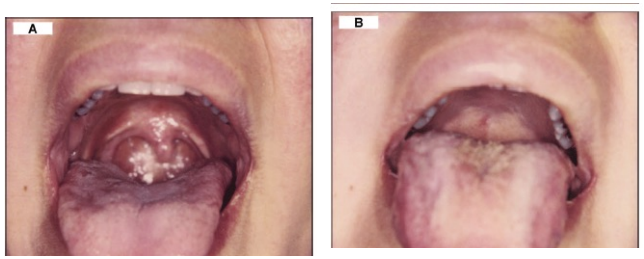
- Operative vaginal delivery
- Perineal repair, more than a simple 2nd degree
- Retained placenta
- ≥ 500 mL QBL after vaginal birth (an automated trigger is sent to anesthesia and NIC if the Triton QBL is used)
- ≥ 1000 mL QBL after cesarean delivery
- SBP < 90mmHg*
- HR > 120 bpm*

** if the patient is symptomatic, or the abnormal VS is refractory to treatment. For severe sustained hypertension, call a Stage 1 variance if BP ≥ 160/110 10 min after 1st antihypertensive dose*

B Barbieri, DA Carusi, MK Farber, K Manganaro, E Reiff, B Stabile, V Sweeney v. 2.2022

What we Know: General Anesthesia for Cesarean Delivery

- **The airway changes in labor and delivery**
- 61 women: MP score in early labor, postpartum
  - 33% increased MP score by 1
  - 5% increased MP score by >1



- **Difficult and failed intubation rates are higher in pregnancy**

- **Reported rates may be outdated**
  - Higher neuraxial rate
  - Use of video laryngoscopy

Kodali BS et al. Anesthesiology 2008; 108: 357-62

ANESTHESIOLOGY

Frequency and Risk Factors for Difficult Intubation in Women Undergoing General Anesthesia for Cesarean Delivery: A Multicenter Retrospective Cohort Analysis

General Anesthesia for Cesarean Delivery

- Multicenter retrospective cohort
- MPOG database
- Age 15-44y, 2004-2019
- General anesthesia for cesarean delivery
- 2 primary outcomes:

Difficult Intubation
- Cormack-Lehane $\geq$ 3
- $\geq$ 2 intubation attempts
- Rescue airway
- Surgical airway

Failed Intubation
- Attempt with failed endotracheal tube placement

Reale SC et al. Anesthesiology 2022; 136: 697-708

ANESTHESIOLOGY

Frequency and Risk Factors for Difficult Intubation in Women Undergoing General Anesthesia for Cesarean Delivery: A Multicenter Retrospective Cohort Analysis

General Anesthesia for Cesarean Delivery

- n = 14,748 cases
- n = 295 difficult intubation (1:49) – 2.03%
- n = 18 failed intubation (1:808) - 0.12%
- Logistic regression: 16 associated risk factors

Increased odds of Difficult Intubation
High Body Mass Index
Mallampati Score III or IV
Small hyoid-to-mentum distance
Limited jaw protrusion
Limited mouth opening
Cervical spine limitation

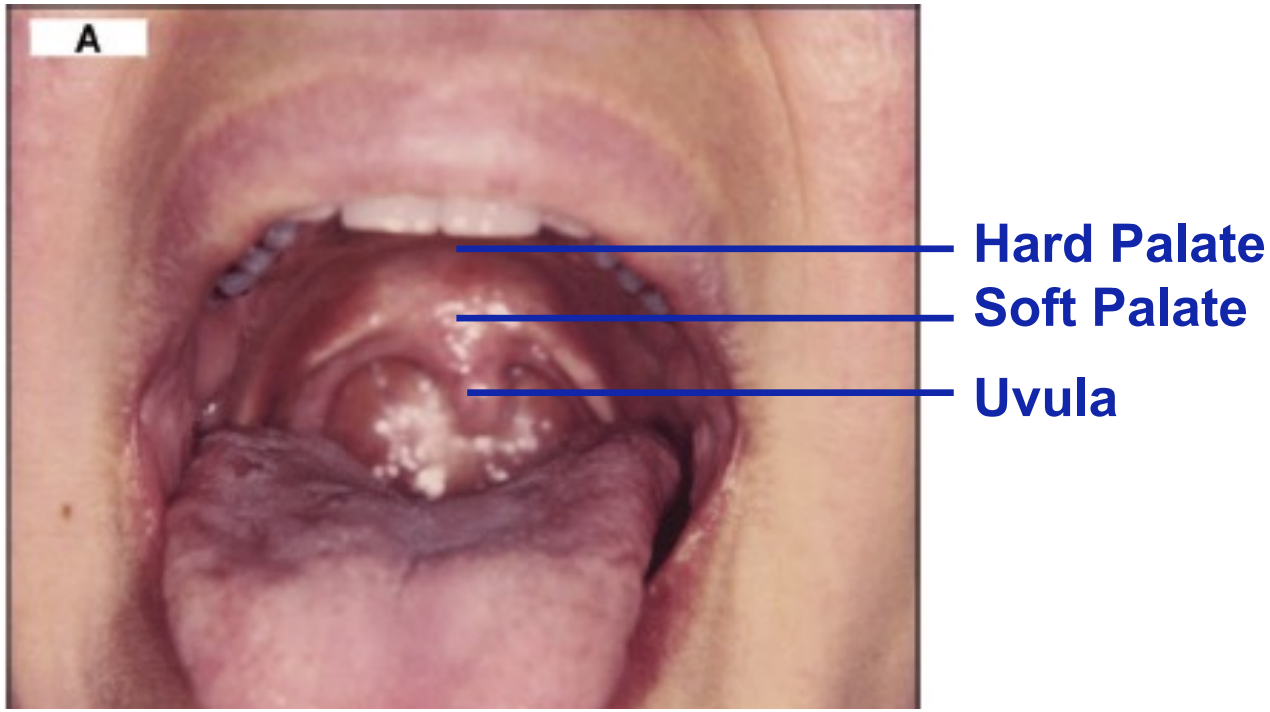
Complications
Dental injury
Pharyngeal injury
Aspiration
Cardiac arrest
Intraoperative death

Reale SC et al. Anesthesiology 2022; 136: 697-708

Change your Practice: General Anesthesia for Cesarean Delivery

Stay Vigilant!

- Examine the airway
- Anticipate worsening airway
- Anticipate urgent cesarean cases
- Place early labor epidurals
- Make sure they are working!



Kodali BS et al. Anesthesiology 2008; 108: 357-62

Change your Practice: General Anesthesia for Cesarean Delivery

Every second counts!
-practice, drill, discuss, rehearse, repeat

Table 1 – proceed with surgery?

	Factors to consider	WAKE			PROCEED
Before induction	**Maternal condition**	• No compromise	• Mild acute compromise	• Haemorrhage responsive to resuscitation	• Hypovolaemia requiring corrective surgery • Critical cardiac or respiratory compromise, cardiac arrest
	Fetal condition	• No compromise	• Compromise corrected with intrauterine resuscitation, pH < 7.2 but > 7.15	• Continuing fetal heart rate abnormality despite intrauterine resuscitation, pH < 7.15	• Sustained bradycardia • Fetal haemorrhage • Suspected uterine rupture
	Anaesthetist	• Novice	• Junior trainee	• Senior trainee	• Consultant/specialist
	Obesity	• Supermorbid	• Morbid	• Obese	• Normal
	Surgical factors	• Complex surgery or major haemorrhage anticipated	• Multiple uterine scars • Some surgical difficulties expected	• Single uterine scar	• No risk factors
	Aspiration risk	• Recent food	• No recent food • In labour • Opioids given • Antacids not given	• No recent food • In labour • Opioids not given • Antacids given	• Fasted • Not in labour • Antacids given
	Alternative anaesthesia • **regional** • **securing airway awake**	• No anticipated difficulty	• Predicted difficulty	• Relatively contraindicated	• Absolutely contraindicated or has failed • Surgery started
After failed intubation	**Airway device/ ventilation**	• Difficult facemask ventilation • Front-of-neck	• Adequate facemask ventilation	• First generation supraglottic airway device	• Second generation supraglottic airway device
	Airway hazards	• Laryngeal oedema • Stridor	• Bleeding • Trauma	• Secretions	• None evident

Mushambi MC et al. Anaesthesia 2015; 70:1286-1306.

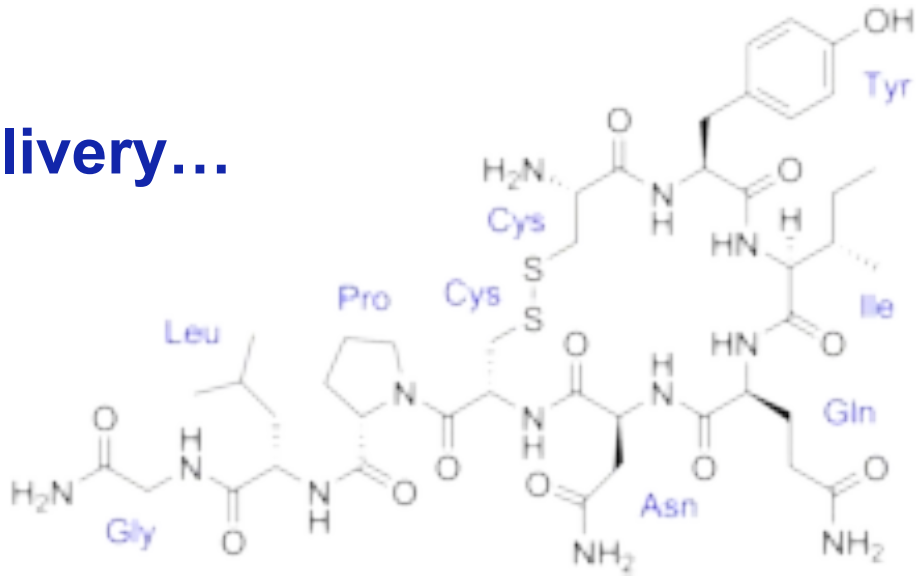
What we Know: Oxytocin Dosing and Preeclampsia

Effective dose in 90%…

- Elective CD 16.2 IU/h
- Laboring CD 44.2 IU/h

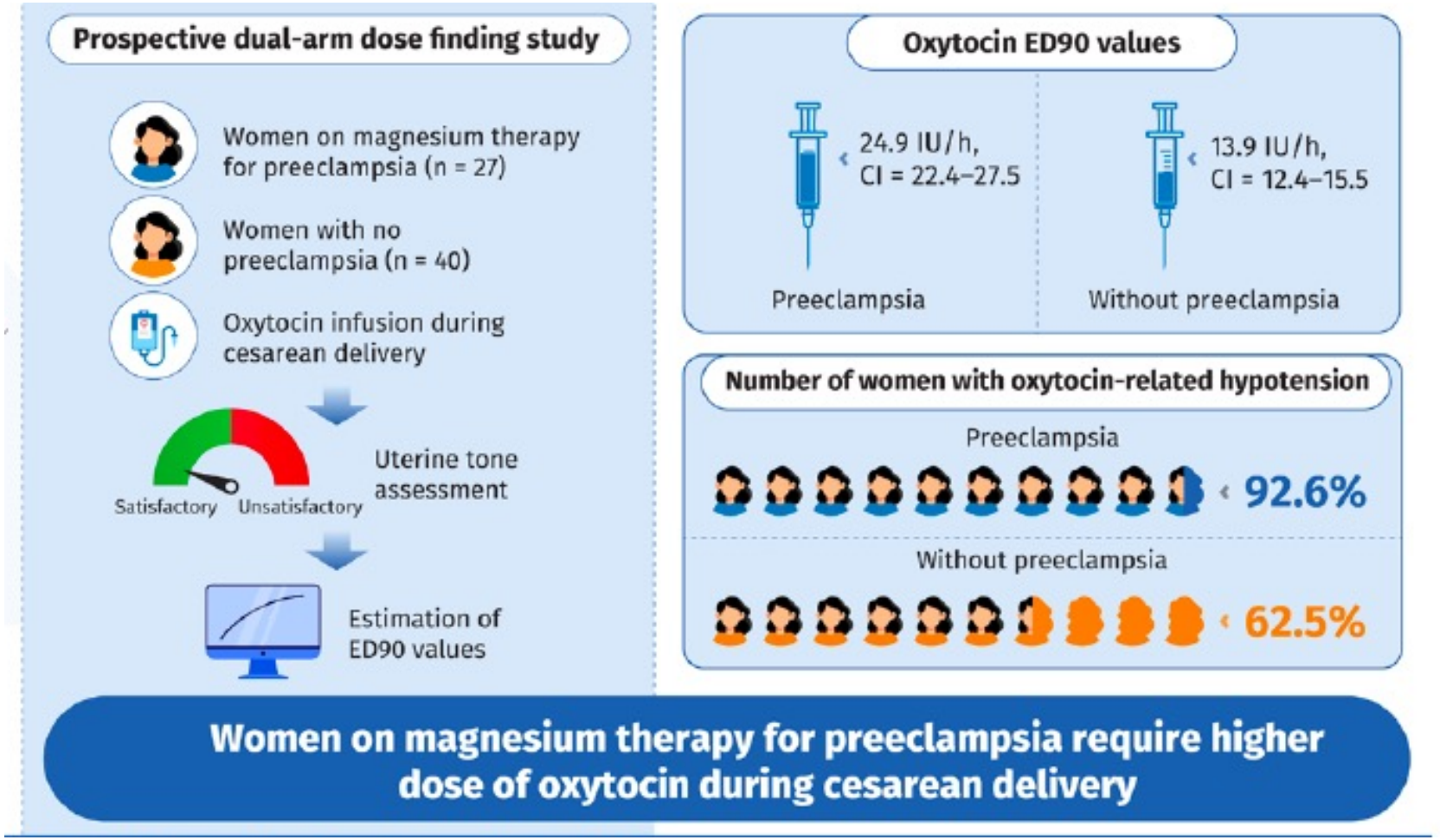
Maximum dose after vaginal delivery…

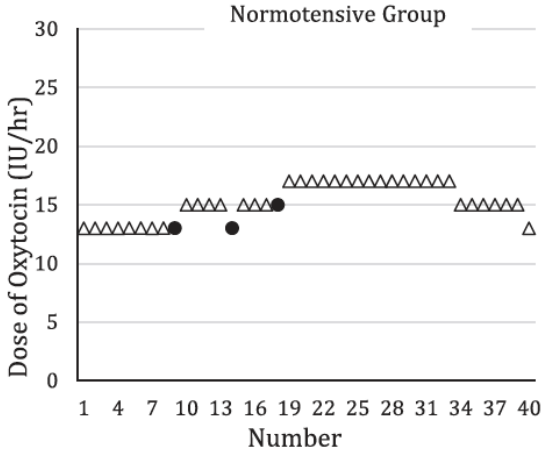
- No magnesium 11.0 mU/m
- On magnesium 13.9 mU/m

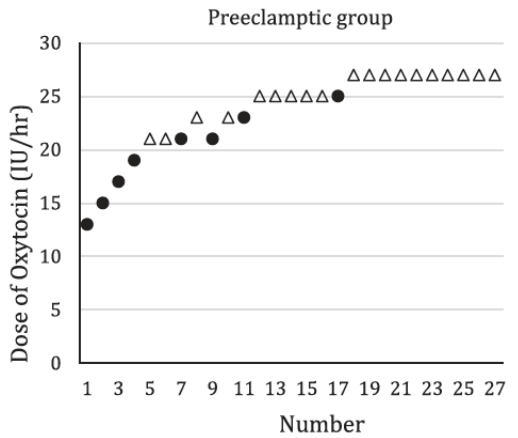


Lavoie A et al. Anesth Analg 2015; 121(1): 159-64.
Witlin AG et al. Am J Obstet Gynecol 199y7; 176: 623-7.

Effective Dose of Prophylactic Oxytocin Infusion During Cesarean Delivery in 90% Population of Nonlaboring Patients With Preeclampsia Receiving Magnesium Sulfate Therapy and Normotensives: An Up-Down Sequential Allocation Dose-Response Study







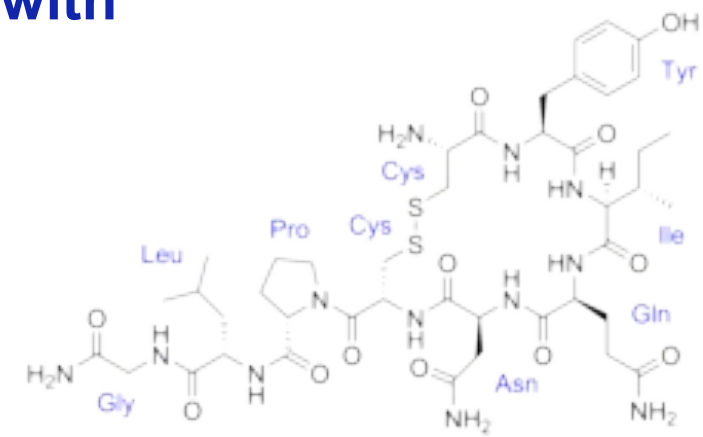
Tyagi A et al. Anesth Analg 2022; 134: 303-11.

Change your Practice: Oxytocin Dosing and Preeclampsia

Elective CD cases

- Control, no Mag 13.9 IU/h
- Preeclamptic, Mag 24.9 IU/h

Consider higher infusion rates for patients with preeclampsia on magnesium therapy.



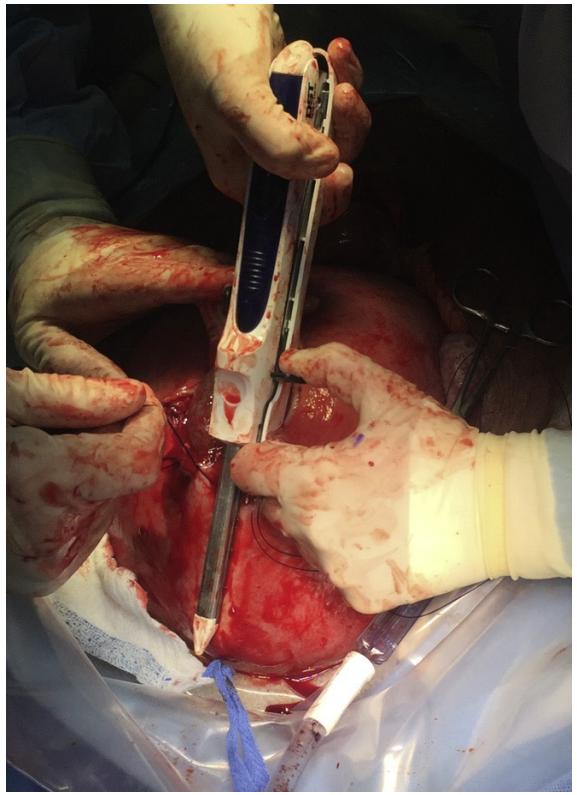
Tyagi A et al. Anesth Analg 2022; 134: 303-11.

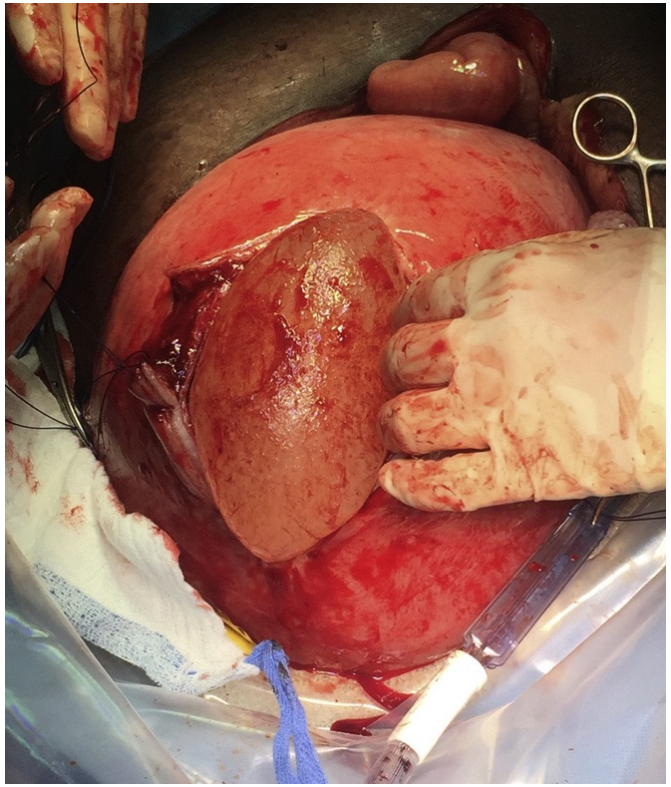
What we Know: Placenta Accreta

There is heterogeneity in anesthesia technique and surgical management

Surgical goals

- control blood loss
- minimize morbidity
- spare fertility





Belfort MA et al. Am J Obstet Gynecol 2017; 216:78.e1-2.

Conservative management or cesarean hysterectomy for placenta accreta spectrum: the PACCRETA prospective study

Prospective cohort

520,114 deliveries/3y

Primary outcome:

transfusion > 4u PRBCs

PAS and CD

n = 148 with either:

Conservative management: n = 86

Caesarean hysterectomy: n = 62

Conservative management associated with:

Less EBL >3L

Transfusion

Organ injury

Severe morbidity ($p<0.02$)

But higher rates of:

Arterial embolization

Endometritis

Readmission

Sentilhes L et al. Am J Obstet Gynecol 2022; 226: 839.e1-24.

Change your Practice: Placenta Accreta

Conduct pre-delivery multidisciplinary planning

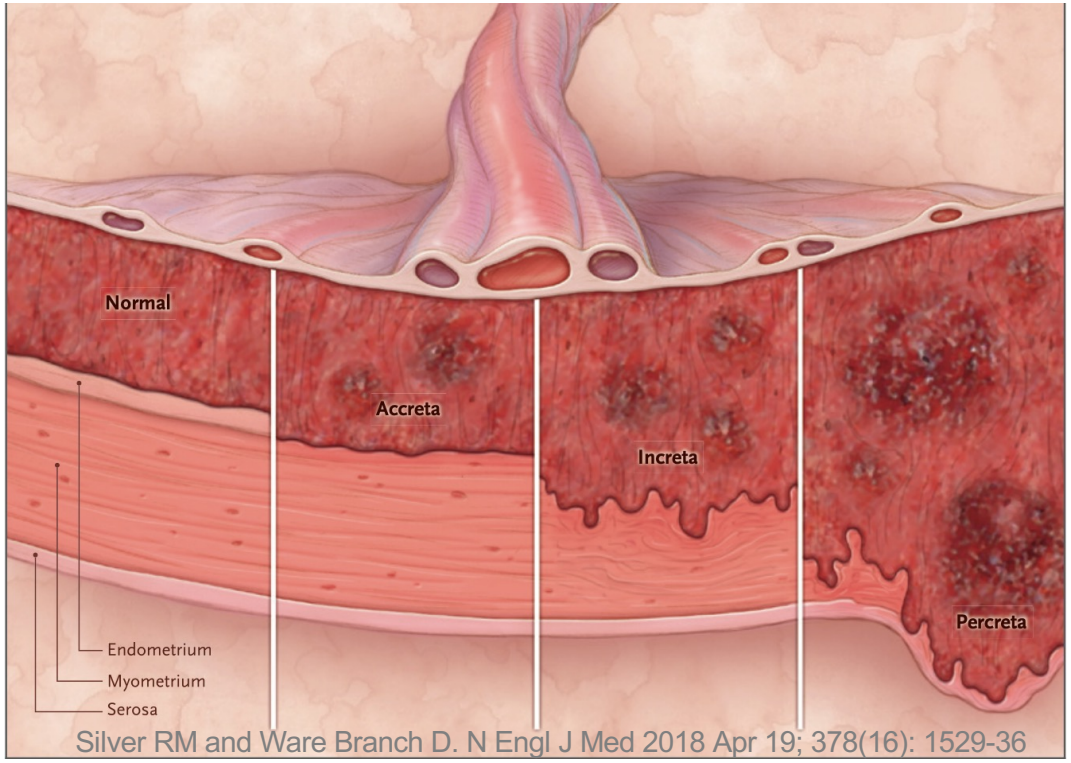
risk assessment
surgical planning
preparation of tools – QBL, ROTEM

Consider emergency maneuvers

unexpected PAS with massive hemorrhage
massive transfusion protocol
aortic compression

Define anesthetic risks and benefits

neuraxial, general, conversion



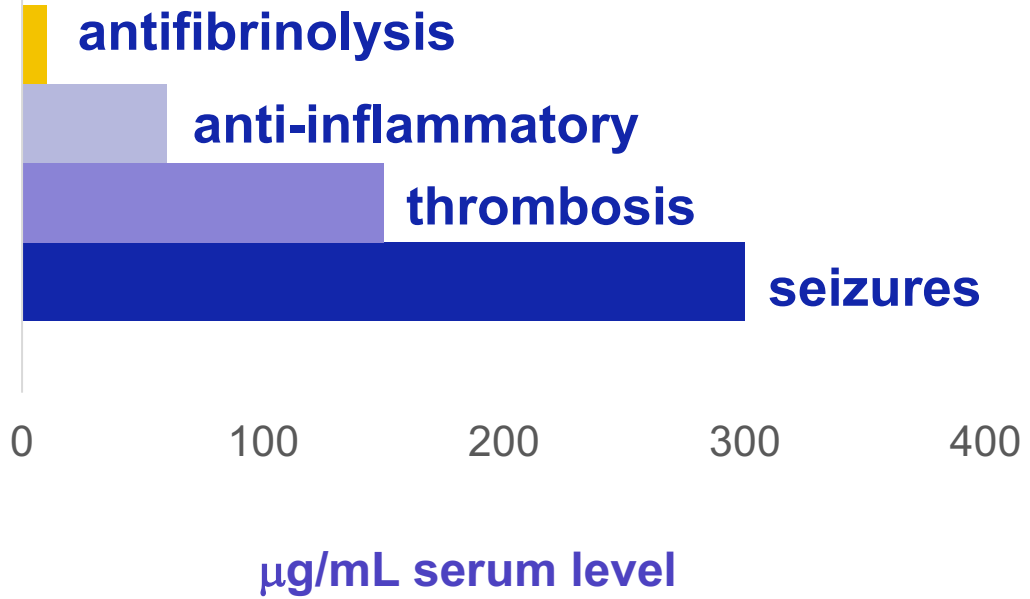
Silver RM and Ware Branch D. N Engl J Med 2018 Apr 19; 378(16): 1529-36

What we Know: Tranexamic Acid

- use TXA in ***all cases of PPH***, regardless of the bleeding source or cause
- use TXA ***within 3h of birth*** and as soon as possible after onset of PPH.

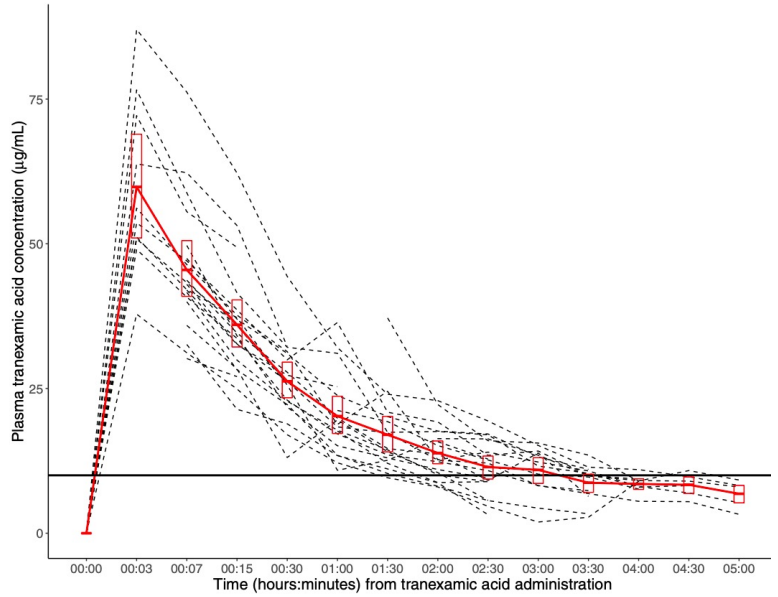
Woman Trial Collaborators. Lancet 2017 May 27; 389(10084):2105-16.

What we Know: Tranexamic Acid



In patients at high risk for PPH having CD, a 1g IV TXA dose yielded:

FIGURE 1
Tranexamic acid plasma concentrations



Values are presented as mean (standard error). The *black line* highlights the 10 µg/mL thresho

Seifert. Tranexamic acid: maternal pharmacokinetics and pharmacodynamics. Am J Obstet Gynecol 2022.

Seifert SM et al. Am J Obstet Gynecol 2022 Jun 6; online ahead of print.

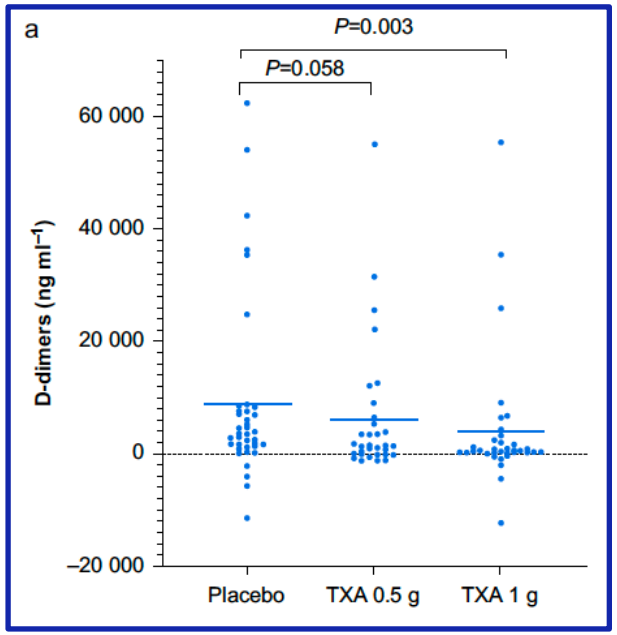
Tranexamic acid dose–response relationship for antifibrinolysis in postpartum haemorrhage during Caesarean delivery: TRACES, a double-blind, placebo-controlled, multicentre, dose-ranging biomarker study

Cesarean delivery
Postpartum hemorrhage

- Placebo n = 57
- 500 mg TXA n = 51
- 1g TXA n = 53

Total: 151 patients with:
hemorrhage during cesarean delivery
AND
at least 2 D-dimer measurements

- Hyperfibrinolysis occurred in the placebo group
  - Increase over baseline D-dimer level at 120 min
  - Increase in PAP level at 30 min
- **D-dimer at 120 minutes:**



Key findings:
In patients with PPH during cesarean delivery:
- TXA is antifibrinolytic with a dose response
- 1g is superior to 0.5g for this effect

Ducloy-Bouthors AS et al. Br J Anaesth 2022; 129(6): 937-45.

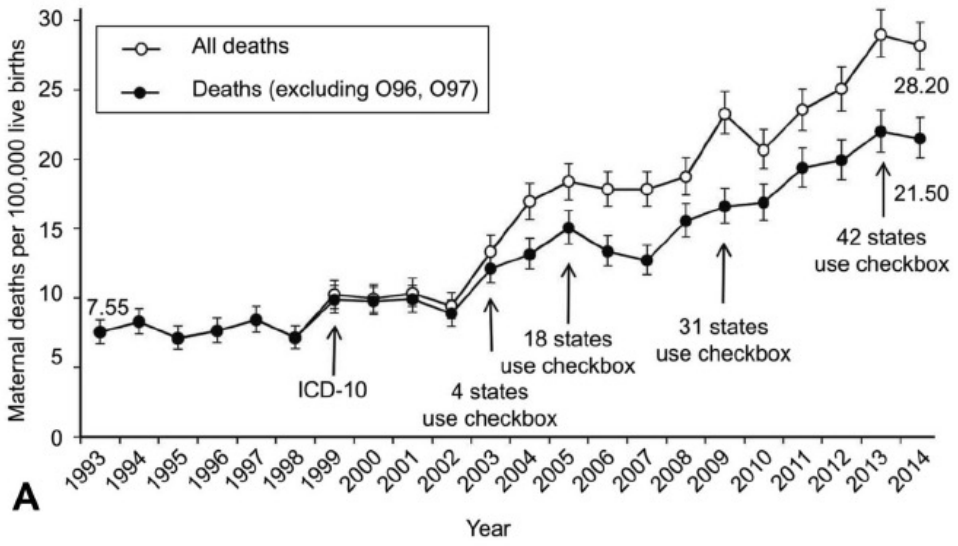
Change your Practice: Tranexamic Acid

- 1g IV dose yields quick, safe serum peak levels
- 1g IV dose causes antifibrinolysis
- For use when PPH occurs
- Not recommended for PPH prophylaxis

What we Know: Maternal Mortality

	2018	2019	2020
Maternal deaths	658	754	861
Live births	3,791,712	3,747,549	3,613,647
Maternal mortality ratio (per 100,000)	**17.4**	**20.1**	**23.8**

	Black	White
2018	**37.3**	**14.9**
2019	**44.0**	**17.9**
2020	**55.3**	**19.1**



Ongoing concerns:

- Coding changes
- Pregnancy checkbox
- Misclassification
- **Increasing *rates* and *inequities***

Pregnancy-Related Deaths: Data from Maternal Mortality Review Committees in 36 US States, 2017–2019

MMRIA MATERNAL MORTALITY REVIEW INFORMATION APP

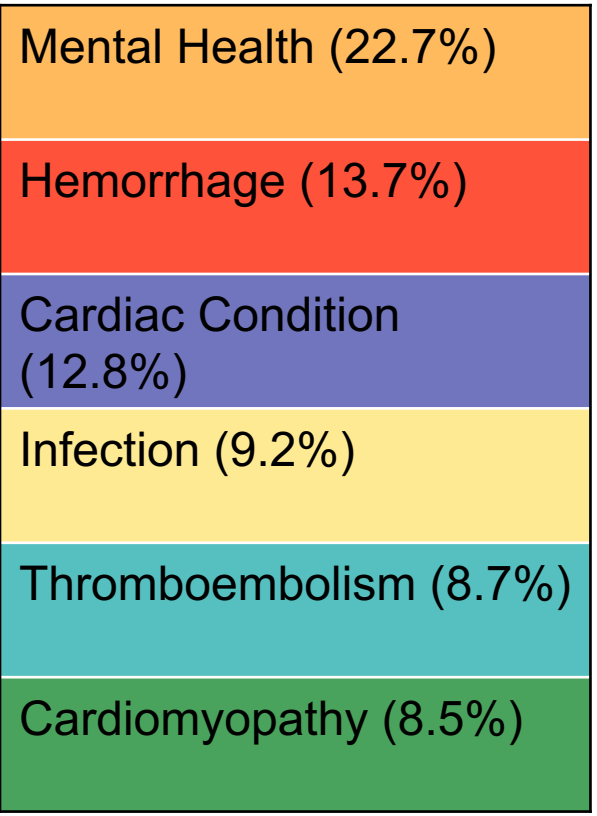
Analysis of 1,018 pregnancy-related deaths over 3 years, 36 states

Key Findings

- The leading cause of pregnancy-related death varied by race and ethnicity.
- Over 80% of pregnancy-related deaths were determined to be preventable.

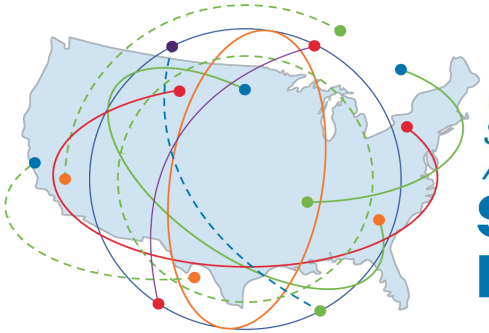
Trost S et al. Atlanta, GA: Centers for Disease Control; 2022

Top Causes of Death by Race and Ethnicity; n = 918

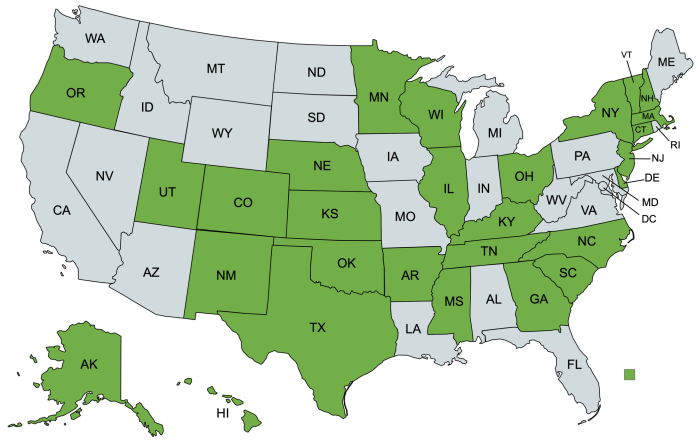


Hispanic n = 144	Non-Hispanic Asian n = 34	Non-Hispanic Black n = 315	Non-Hispanic White n = 467
Mental health 34 (24%)	Hemorrhage 10 (31%)	Cardiac 48 (16%)	Mental health 159 (35%)
Hemorrhage 30 (21%)	Cardiac 7(22%) / AFE 7 (22%)	CMP 42 (14%)	Hemorrhage 53 (12%)
Cardiac 15 (11%) / Infection 15 (11%)	VTE 2 (6%) / CMP 2 (6%)	VTE 36 (12%)	Cardiac 15 (11%) / Infection 15 (11%)

Change your Practice: Maternal Mortality



SOAP
Society for Obstetric Anesthesia and Perinatology
State Representatives Program



Created with mapchart.net

Goal 1: Build a Network and Representation

- Identify a SOAP Rep for every state

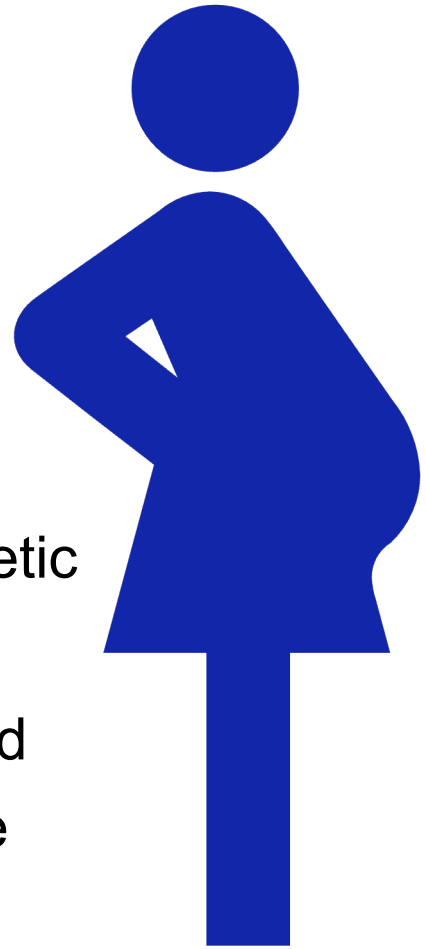
→ Connect with service chiefs in the state

→ Confirm there is an OB anesthesiologist on the state MMMRC

- Needs assessment surveys (incoming!)

CONCLUSIONS

1. **PDPH:** acknowledge the risk of chronic headaches
2. **Oral Intake in Labor:** consider gastric ultrasound to stratify risk
3. **Opioid use disorder:** focus on refining pain management
4. **Thromboprophylaxis:** discuss timing and neuraxial risk
5. **Litigation data:** use it to enhance protocols and communication
6. **General anesthesia:** stay vigilant; avoid it with neuraxial!
7. **Oxytocin dosing:** higher doses in preeclampsia on magnesium
8. **Placenta accreta:** discuss the surgical approach to tailor your anesthetic
9. **Tranexamic acid:** give 1g for hemorrhage; don't lower the dose
10. **Maternal mortality:** recognize causes among different ethnicities and tackle the problem nationally (Sweden) or at the state level (US)



Thank you!

mfarber@bwh.harvard.edu