



Obstetric Anesthesia Overview and Our Role in Peripartum Birth Trauma

September 24, 2026

9:10-10:10 a.m. ET

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Navy Lt. Cmdr. Zachary Janik, M.D.



LCDR Zachary Janik attended the United States Naval Academy and graduated with a Bachelor of Science in Systems Engineering (Honors) in 2015. He was selected for the Health Professions Scholarship Program (HPSP) and graduated from the Johns Hopkins University School of Medicine in 2019.

Upon medical school graduation, LCDR Janik completed his intern year in Internal Medicine at Mercy Medical Center in Baltimore, Maryland and in 2020, he returned to Johns Hopkins for Anesthesiology residency. He then pursued subspecialty training in Obstetric Anesthesiology and completed a fellowship in 2024 at Johns Hopkins.

Throughout his education and training, LCDR Janik has presented at numerous national/international conferences and remains an active member of the Society for Obstetric Anesthesia and Perinatology. LCDR Janik is now stationed at Walter Reed National Military Medical Center where serves as the Obstetric Anesthesia Service Chief and an Assistant Professor of Anesthesiology at the Uniformed Services University.



Air Force Maj. Courtney Hood, M.D., M. Ed.



Maj Courtney Hood is an anesthesiologist based in Fort Sam Houston, TX, specializing in obstetric anesthesiology. She completed her medical degree at the University of Arizona College of Medicine in 2018, followed by an anesthesiology residency at the San Antonio Uniformed Services Health Education Consortium from 2018 to 2022.

She pursued a fellowship in obstetric anesthesiology from 2022 to 2023 at the University of North Carolina Hospitals. She is currently stationed as a Major in the Air Force at Brooke Army Medical Center where she holds the positions of Obstetric Anesthesia Section Chief and Assistant Professor at Uniformed Services University.



Disclosures



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- LCDR Janik has adapted some slides from a presentation given by Dr. Dave Berman (permission secured for use and modification).



Learning Objectives



At the conclusion of this activity, participants will be able to:

1. Describe the role of an obstetric anesthesiologist.
2. Discuss options for labor analgesia provided by anesthesiologists.
3. Explain goals with anesthesia for cesarean delivery.
4. Identify risks associated with labor analgesia and anesthesia for cesarean delivery.



What does it mean to be an Obstetric Anesthesiologist?



- Four years of medical school + four years of Anesthesiology residency + one year of Obstetric Anesthesia fellowship = nine years of training
- Forty-five programs in U.S. with 51 fellows (2024-2025)
- Leadership and education opportunities
- Expert in:
 - Challenging neuraxial anesthesia
 - Maternal and fetal physiology
 - Critical care of pregnant patient (including point-of-care ultrasound)
 - Antepartum, intrapartum, and postpartum consultation
 - Fetal anesthesia

(Long & Gross, 2026)



What can we offer?

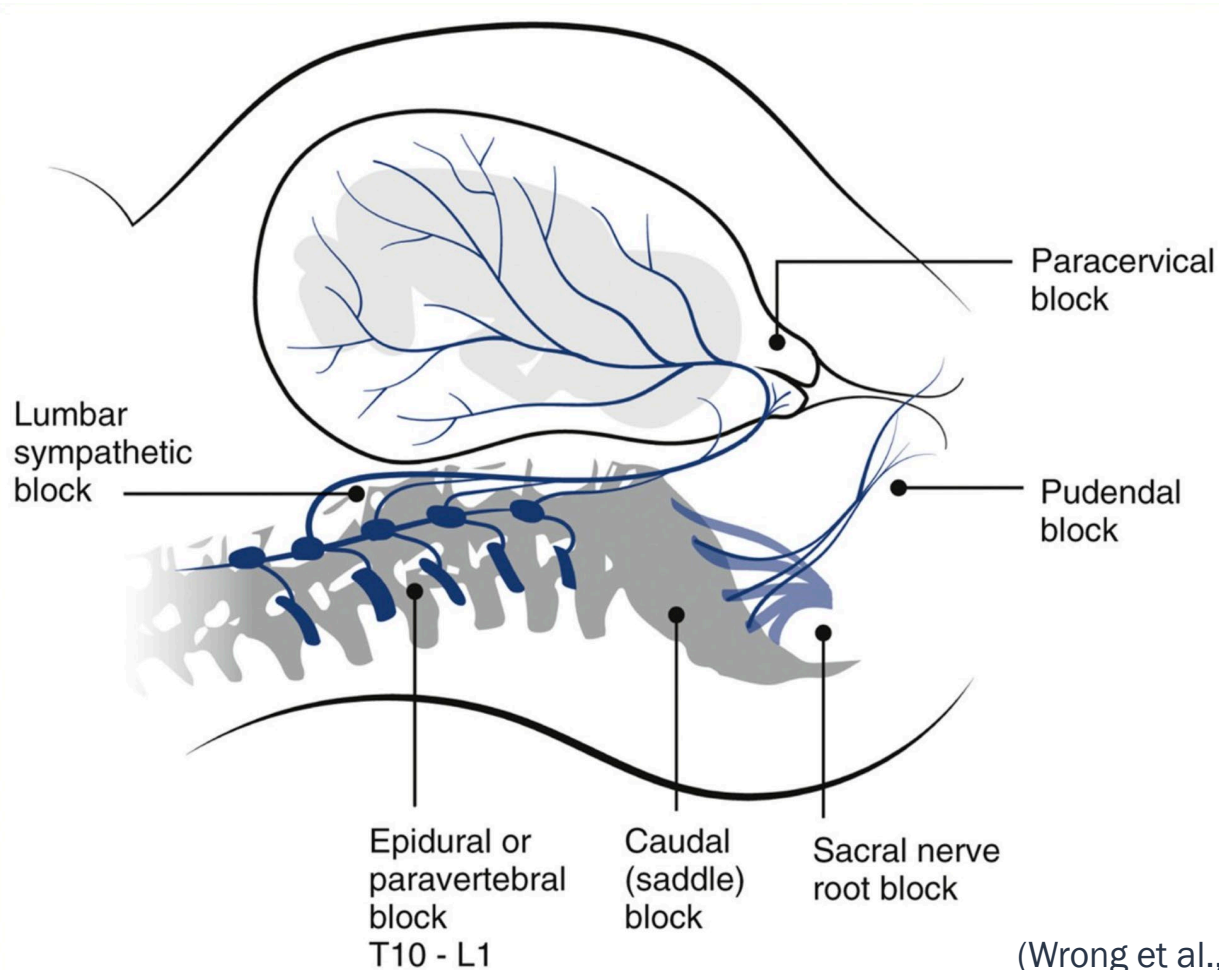


Labor

- Remifentanyl Patient-Controlled Analgesia (PCA)

C section

- Epidural
- Dural Puncture epidural
- Spinal
- Combined spinal epidural
- Nitrous oxide
- Spinal catheter
- General anesthesia
- Sedation
- Truncal blocks



(Wrong et al., 2025)



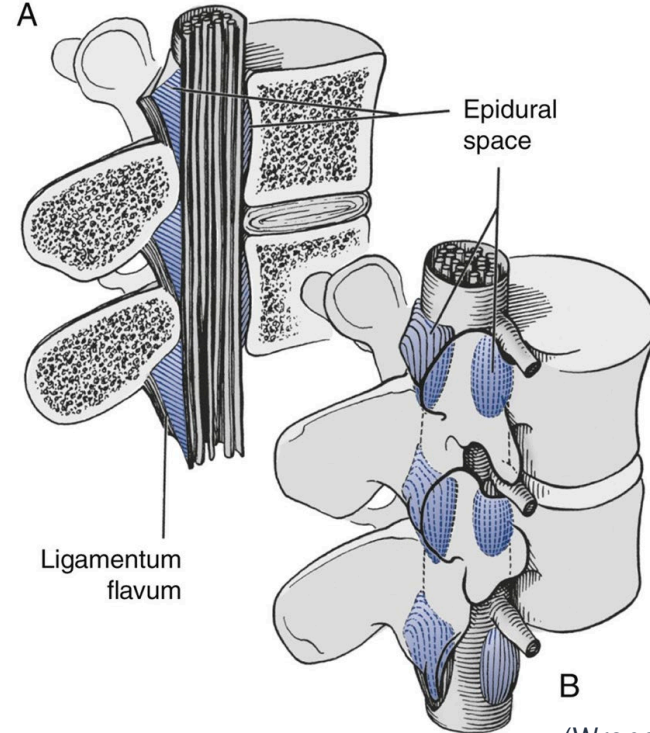
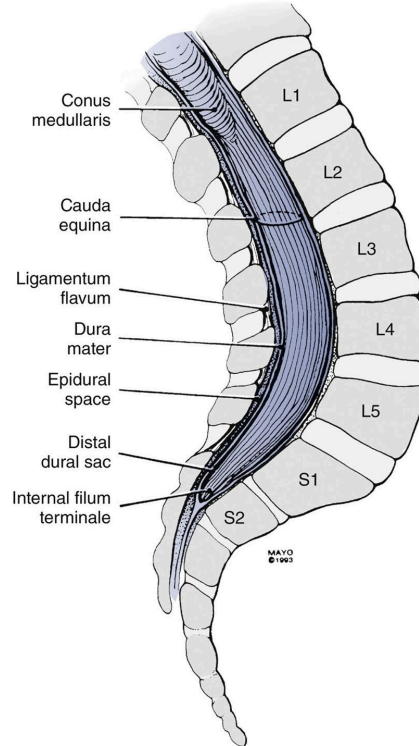
Remifentanil PCA



- Ultra-short acting opioid
- Metabolized by plasma and tissue esterases
- Remifentanil vs epidural analgesia:
 - Six trials showed remifentanil provided:
 - ✓ inferior labor analgesia at 30, 60, 120, and 180 minutes
 - ✓ greater sedation, nausea, and vomiting
- Remifentanil vs nitrous oxide:
 - median decrease in pain score ($p = 0.01$):
 - ✓ remifentanil = 1.5
 - ✓ nitrous oxide = 0.5
- Optimal remifentanil PCA regimen has not yet been determined



Neuraxial Analgesia for Labor



(Wrong et al., 2025)



Contraindication to Neuraxial Analgesia

- Absolute contraindications:
 - lack of patient consent or inability to cooperate
 - increased intracranial pressure secondary to a mass lesion
 - skin or soft tissue infection at the site of needle placement
 - coagulopathy
 - uncorrected maternal hypovolemia (hemorrhage)
- Relative contraindications:
 - anatomical abnormality
 - disease of the central nervous system
 - severe cardiac valvular disease (especially stenotic lesions)
 - sepsis
 - allergy to the local anesthetic

Neuraxial technique	Advantages	Disadvantages
Epidural	-Continuous analgesia -No dural puncture required -Ability to extend analgesia to anesthesia for c section	-Slow onset of analgesia -Larger drug doses required when compared with spinal techniques -Greater risk for maternal local anesthetic systemic toxicity -Greater fetal drug exposure
Combined spinal epidural (CSE)	-Continuous analgesia -Low doses of local anesthetic and opioid -Rapid onset of analgesia -Rapid onset of sacral analgesia -Complete analgesia with opioid -Decreased incidence of failed epidural	-Increased incidence of pruritus -Possible higher risk for fetal bradycardia
Single-shot spinal	-Technically simple -Rapid onset of analgesia -Immediate sacral analgesia -Low drug doses	-Limited duration of analgesia -Possible higher risk for fetal bradycardia
Dural puncture epidural (DPE)	-Confirmation of positioning -Increase in speed of analgesia and efficacy	-Dura is punctured
Continuous spinal	-Continuous analgesia -Low doses of local anesthetic and opioid -Rapid onset of analgesia -Analgesia to anesthesia for c section	-Large dural puncture increases risk for post-dural puncture headache -Possibility of overdose and total spinal anesthesia if the spinal catheter is mistaken for an epidural catheter

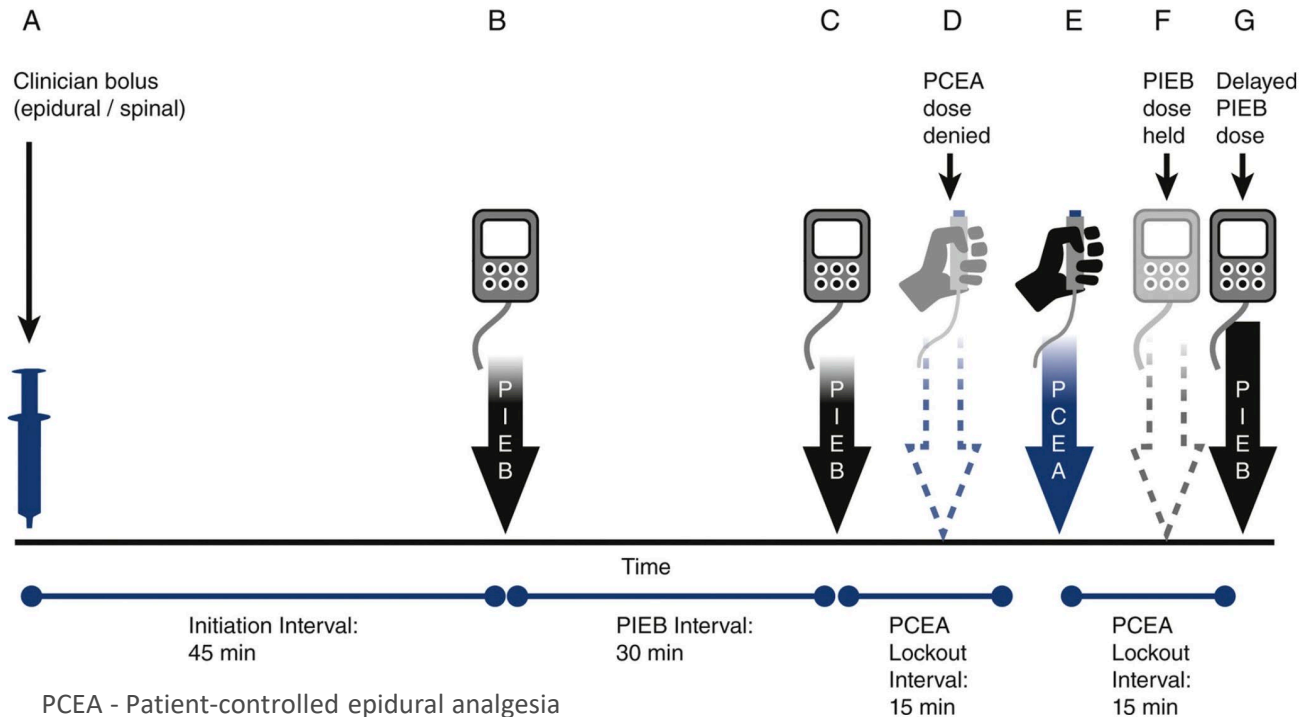


How do we use neuraxial techniques?

- Test dose: reliably identify intrathecal or intravascular catheter
 - Intrathecal: lidocaine 45 mg
 - Intravascular: epinephrine 15 mcg
- Initiation: Rapid onset with minimal hypotension
 - High volume/low concentration bolus (ex: 15 mL 0.125% bupivacaine)
- Maintenance: Achieve desired analgesia with minimal motor blockade
 - High volume/low concentration local anesthetic combined with lipophilic opioid (ex: 0.1% bupivacaine w/ 2 mcg/mL fentanyl)



Programmed Intermittent Epidural Bolus (PIEB) vs Continuous Epidural Infusion (CEI)



(Wrong et al., 2025)



Complications of Neuraxial Anesthetic Techniques



- Epidural failure
- Unintentional dural puncture (UDP, “wet tap”)
- Intravascular injection of local anesthetic → LAST
- High spinal
- Neuraxial hematoma
- Infection



Anesthesia for Cesarean Delivery

- Preferred method: neuraxial (**single shot spinal**, CSE, epidural)
- Typical spinal cocktail:
 - 12 mg hyperbaric bupivacaine
 - 15 µg fentanyl
 - 150 µg morphine
- Neuraxial anesthesia used for ~95% of elective and 80% of emergent cesarean deliveries in US
- General anesthesia is typically used as back up
 - Complications: aspiration, failed/difficult intubation, recall (approximately 1%), postoperative nausea and vomiting



Medications Commonly Used during Cesarean Delivery



Spinal dose • Bupivacaine • Fentanyl • Morphine • Adjuvants: epinephrine, dexmedetomidine	Vasopressor • Needed to counteract sympathectomy • Phenylephrine infusion (rarely norepinephrine)	Antiemetics • Ondansetron • Dexamethasone • Metoclopramide	Antibiotics • Cefazolin +/- azithromycin	Post-C/S analgesics • Neuraxial morphine ("Duramorph") • Nonsteroidal anti-inflammatory drug (NSAIDs) • Acetaminophen
	Uterotonics • Oxytocin (1st line) • Methergine • Hemabate • Cytotec • Calcium	Postpartum Hemorrhage (PPH) • Tranexamic acid • Packed red blood cells • Fresh frozen plasma • Cryoprecipitate • Platelets	Analgesics & Amnestics • Fentanyl • Ketamine • Midazolam • Nitrous oxide	



Conversion of Epidural from Labor Analgesia to Cesarean Anesthesia



- NOT INSTANTANEOUS – the more time anesthesia has the better
- Risk factors for failed conversion:
 - Increasing number of clinician boluses during labor (OR = 3.2)
 - Greater urgency for cesarean delivery (OR = 40.4)
 - Non-obstetric anesthesiologist providing care (OR = 4.6)
- Chloroprocaine vs lidocaine for extension
- Aspiration prophylaxis: Bicitra
- IV access: consider a second IV (if increased risk for PPH)

(Bauer et al., 2012)



Cesarean Delivery: General Anesthetic Medications



Induction (Rapid)

- Propofol
- Succinylcholine

Maintenance

- Propofol
- Nitrous oxide +/- halogenated anesthetic
- Sometimes vasoactive med

Post-delivery

- Midazolam
- Fentanyl
- Antiemetics

Antibiotics

- Typically cefazolin +/- azithromycin

Post-C/S analgesics

- Neuraxial morphine (“Duramorph”)
- Truncal block
- NSAIDs
- Acetaminophen



Key Takeaways



- Obstetric Anesthesia is small but growing subspecialty with an outsized impact on patient safety and satisfaction
- Labor pain can be managed by numerous modalities, but lumbar epidural analgesia provides superior analgesia and has added safety benefits
- Choice of anesthetic technique is largely governed by indication for cesarean delivery
- Obstetric anesthesiologists mitigate many of the associated risks with anesthesia; however, many risks remain



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September 24, 2026

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Learning Objectives



At the conclusion of this activity, participants will be able to:

1. Describe the prevalence and consequences of pain during cesarean delivery.
2. Create quality improvement initiatives aimed at decreasing the incidence of peripartum birth trauma.



Terminology Consideration



- Maj Hood will discuss quality improvement initiatives at Brooke Army Medical Center (BAMC). BAMC uses the Department of Behavioral Health terminology. This terminology has been maintained in this presentation, as behavioral health is the current accurate pathway for ordering and referring. If “mental health” is employed at your location, please bear this in mind.



The Problem: Pain During Cesarean Delivery

- **The goal:** all patients have a pain-free cesarean delivery, remain awake for the birth of their child, systemic medications to the neonate are limited, and a support person is present in the operating room if desired.
- **The reality:** 1:6 patients experience pain during cesarean delivery, and 4% experience post-partum posttraumatic stress disorder (PTSD), or peripartum birth trauma.

(Charles et al., 2025); (Yildiz et al., 2017)



The Problem: Pain During Cesarean Delivery





The Problem: Pain During Cesarean Delivery



- Patients are worried about this.
- In a survey of 100 pregnant patients, *49% ranked intraoperative pain as the least desirable anesthetic outcome related to their cesarean delivery*, ahead of postoperative pain, vomiting, nausea, and itching.

(Carvalho et al., 2005)



The Problem: Pain During Cesarean Delivery

- 34 studies (21 randomized)
- Defined intraoperative pain as any discomfort or pain *reported by the patient*
- Pooled incidence of 17% for patient-reported intraoperative pain, more than 1:6
- An adverse event with an incidence greater than one in ten is classified as “very common.”

ANESTHESIOLOGY®

Intraoperative Pain during Cesarean Delivery under Neuraxial Anesthesia: A Systematic Review and Meta-analysis

Elinor A. Charles, M.B.B.S., Hester Carter, Mb.Ch.B.,
Susanna Stanford, B.Sc., Lindsay Blake, Ed.D.,
Victoria Eley, Ph.D., Brendan Carvalho, M.B.Bc.H.,
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ANESTHESIOLOGY 2025; 143:156–67



(Charles et al., 2025)



The Problem: Pain During Cesarean Delivery

- Incidence varies by anesthetic type:
 - Spinal = 14%, 1:7
 - CSE = 18%, 1:5
 - Epidural top-up = 33%, 1:3
- 2/7 studies that used numerical scales for pain *reported a median pain score of 6 of 10*, which is considered a moderate to severe level of pain

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(Charles et al., 2025)



The Consequences → Birth Trauma

- 44% of women perceived their childbirth experience as traumatic
- 4% prevalence of postpartum PTSD

Meta-Analysis > [J Affect Disord.](#) 2017 Jan 15;208:634-645. doi: 10.1016/j.jad.2016.10.009.
Epub 2016 Oct 27.

The prevalence of posttraumatic stress disorder in pregnancy and after birth: A systematic review and meta-analysis

[Pelin Dikmen Yildiz](#) ¹, [Susan Ayers](#) ², [Louise Phillips](#) ¹

Affiliations + expand

PMID: 27865585 DOI: [10.1016/j.jad.2016.10.009](#)

(Yildiz et al., 2017)



The Consequences → Birth Trauma



Long-Term Sequelae

- Maternal depression
- Impaired maternal-infant bonding
- Low birth weight infants
- Lower rates of breastfeeding



(Charles et al., 2025)
(Vogel & Homitsky, 2020)



Some Possible Solutions

★ Raised awareness

- *Quality initiatives aimed at:*
 - 1) Educating patients on the risk of experiencing pain intraoperatively, set boundaries for general anesthesia
 - 2) Providing tools to prevent, recognize, and treat (Anesthesia, Gynecologic Surgery and Obstetrics [GS&O], Nursing)
 - 3) Capturing patients who experienced intraoperative pain and birth trauma
 - 4) Providing resources for birth trauma treatment



Some Possible Solutions



Statement on Pain During Cesarean Delivery

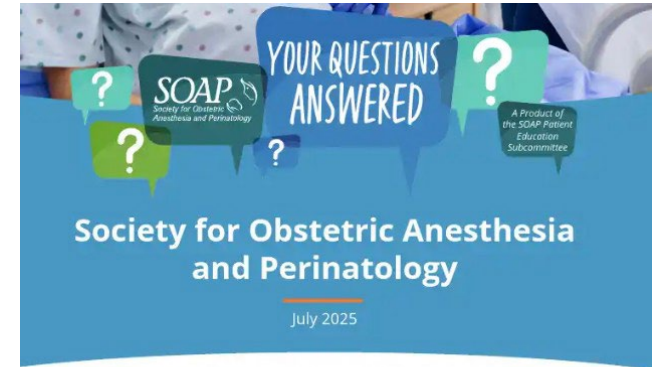
Developed by: Committee on Obstetric Anesthesia

Original Approval: October 18, 2023

Statement on the Use of Adjuvant Medications and Management of Intraoperative Pain During Cesarean Delivery

Developed by: Committee on Obstetric Anesthesia

Original Approval: October 23, 2024



Peripartum Pain Management Toolkit for Cesarean Delivery

<https://www.soap.org/infographics>



Brook Army Medical Center (BAMC) Quality Initiative (QI)



- November 2024, we started universal post-operative screening for anesthesia-related birth trauma
 - Incorporated into standard anesthesia post-op follow ups as a MHS Genesis dot phrase
- Additional Interventions:
 - Department-wide education on recent intraoperative pain cases
 - Monthly GS&O resident education on birth trauma and their role in prevention
 - MHS Genesis macro updates to include pain scores throughout cesarean delivery (CD)



BAMC QI: Birth Trauma Screen



- Incorporated into standard anesthesia post-op follow ups as a MHS Genesis dot phrase (.OBA_postop)

Cesarean Section Trauma Screen:

1. During your cesarean section, what was the worst pain you experienced INTRAOP on a scale from 0 - 10?
2. During your cesarean section, what was the average pain you experienced INTRAOP on a scale from 0 - 10?
3. Do you have feelings of emotional distress regarding your cesarean section experience? Yes/No
4. Was a Behavioral Health Referral placed for this patient? Yes/No

Note to provider. If screens positive to question three, place a Behavioral Health Referral: +new order > DoW Referral 2.0 > Behavioral Health > Evaluate and Treat.

BAMC uses the Department of Behavioral Health terminology. This terminology has been maintained in this presentation, as behavioral health is the current accurate pathway for ordering and referring. If “mental health” is employed at your location, please bear this in mind.



BAMC QI: Genesis Macro Upgrade

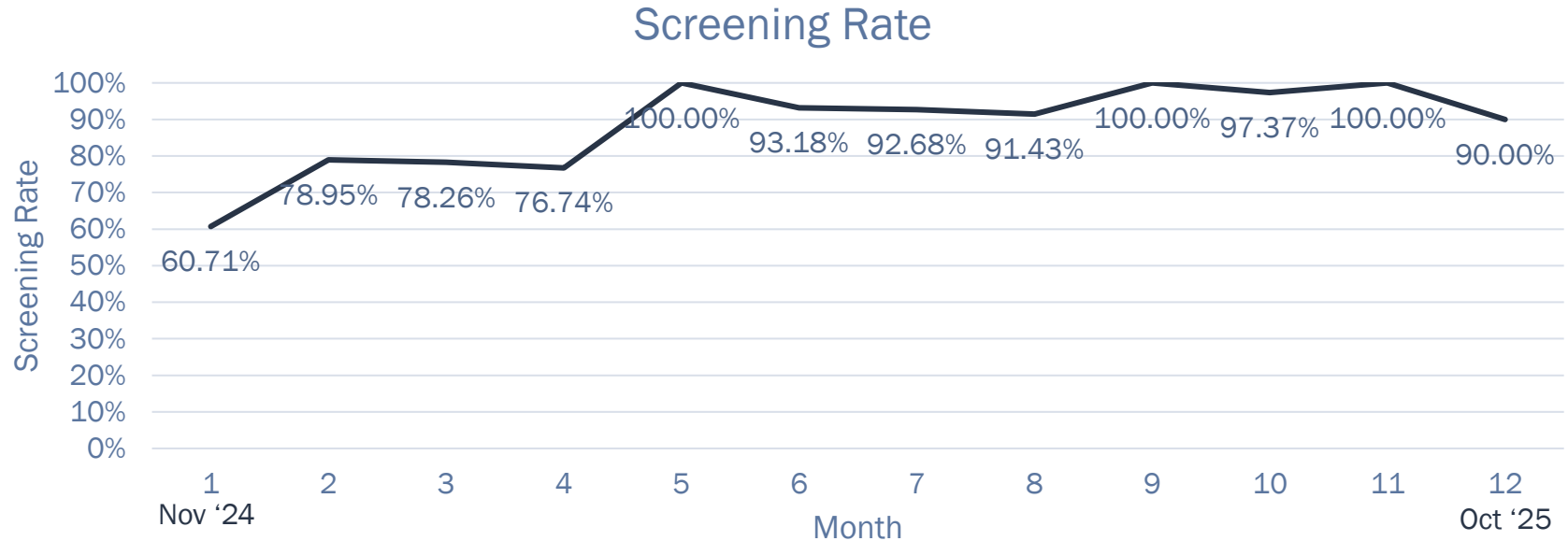


- Pain scores added to CD macros at key points throughout the surgery
- Any local user with macro permissions can edit these at their institution

To Do List		
	Event	Details
Completed	Care Model / Compliance	
	Patient In Room	
	Induction Evaluation	
	Procedure Time Out	Yes, Yes, Yes, Yes, Yes
	Procedure Start	
	Procedure Stop	
	Central Neuraxial Block	Primary Anesthetic, BP, EK
	Position: Supine	Neutral, Pillow, Other, Pad
	O2 Supplementation	
	Warming Measures	Yes, Room Warmed, Hat
To Do	Anes Turnover to Surg (TOTS)	
	Pain Score	
	bupivacaine pf-d5w 0.75%-0.25%	IntraTHECAL
	epinephrine	IntraTHECAL
	fentanyl	IntraTHECAL
	morphine	IntraTHECAL
	Antibiotics	
	azithromycin	
	cefazolin	
	Surgical Time Out	
	Surgery Start	
	Pain Score	
	Uterine Incision	
	Pain Score	
	Delivery Time - Baby A	Note
	Placenta Delivery	
	Pain Score	
	oxytocin	3 unit(s), IV Push (Intravenous)
	oxytocin/Ins	IV Drip (Intravenous)
	tranexamic acid	
	carboprost	250 mcg, IntraMuscular
	methylergonovine	0.2 mg, IntraMuscular
	ketorolac	
	acetaminophen/premix	
	Pain Score	
	CDL Summary - ANES	



BAMC QI: Screening Rates



- 424 screened
- Overall screening rate: 88.9%
- 477 cesarean deliveries

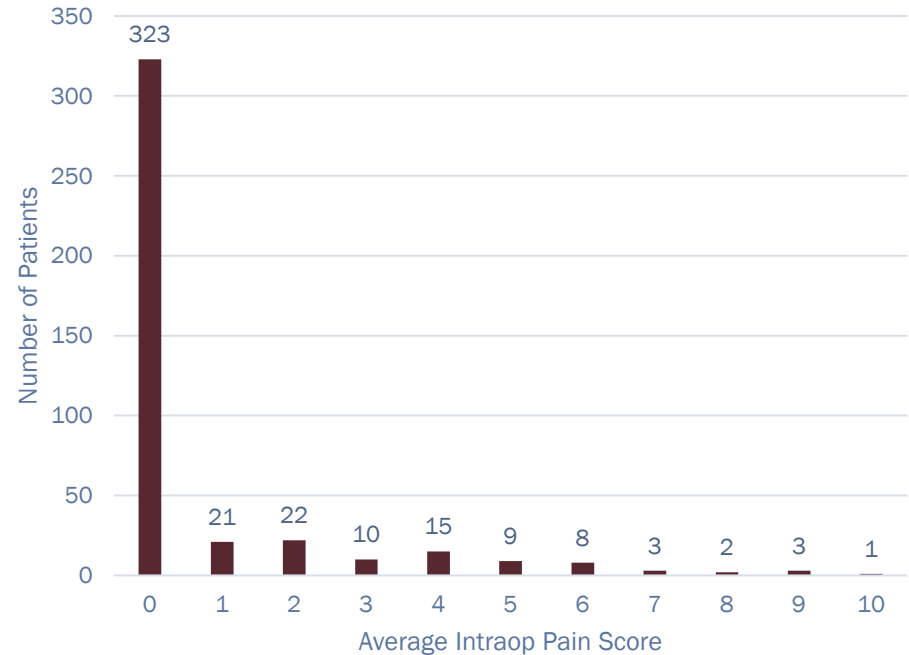


BAMC QI: Pain Scores



- Median (interquartile range) Visual Analog Score (VAS) score:
 - 0 (0-0)
 - Self-reported
- Experienced *any pain*
 - VAS $\geq 1/10$
 - 94 patients (22.5%)
 - ~1:4 patients
- Experienced *severe pain*
 - VAS $\geq 6/10$
 - 17 patients (4.1%)
 - 1:25 patients

Self-Reported Intraop Pain Scores

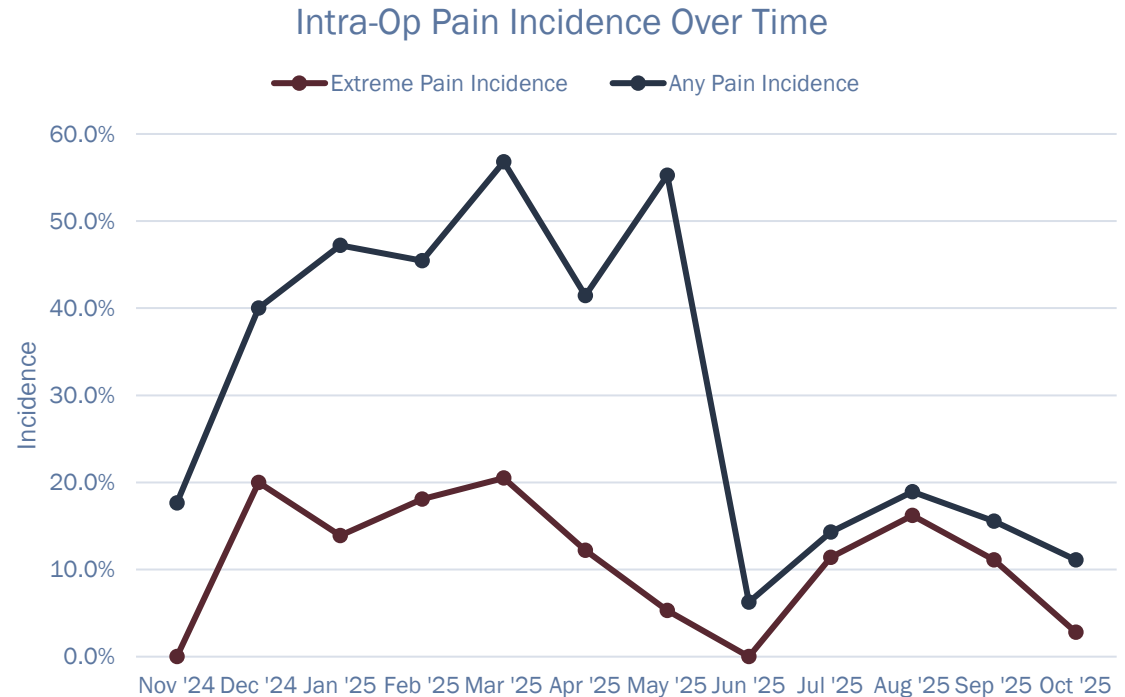




BAMC QI: Pain Over Time



- Decreased rates over time
- Increased staff awareness
- Hawthorne Effect

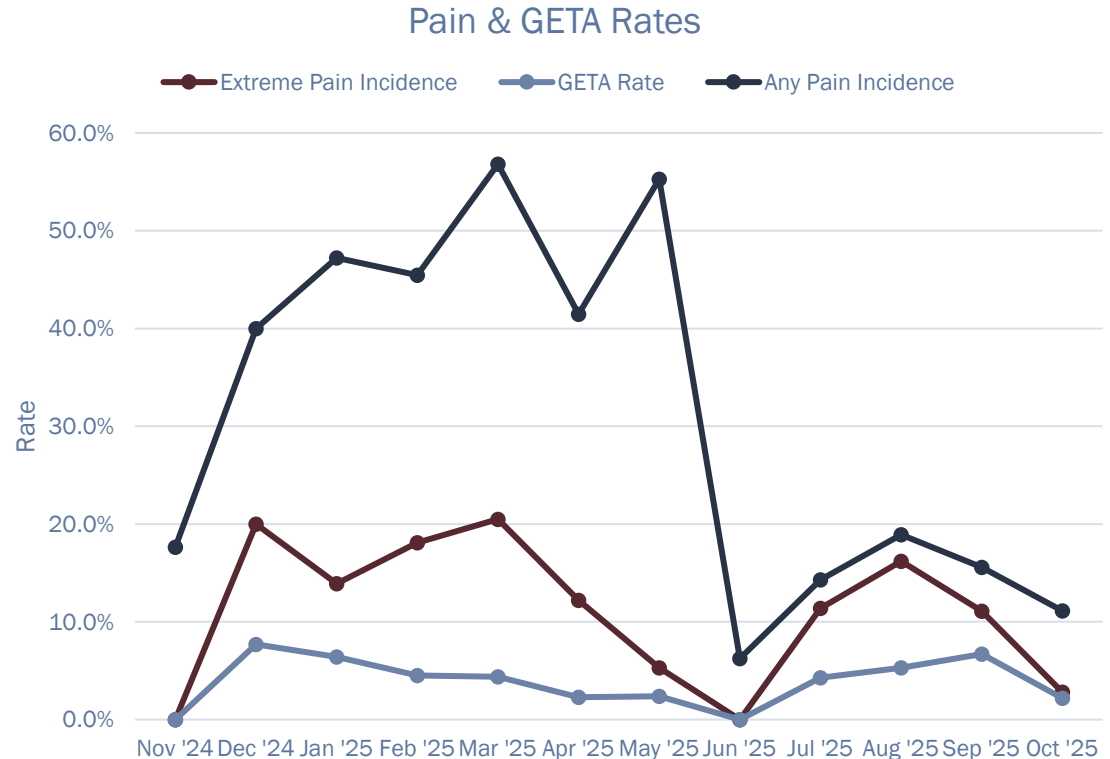




BAMC QI: General Anesthesia



- General endotracheal anesthesia (GETA) rates generally mirrored pain incidence
- GETA rate 3.9% during this time period
- Only 6/17 patients experiencing extreme pain were put to sleep

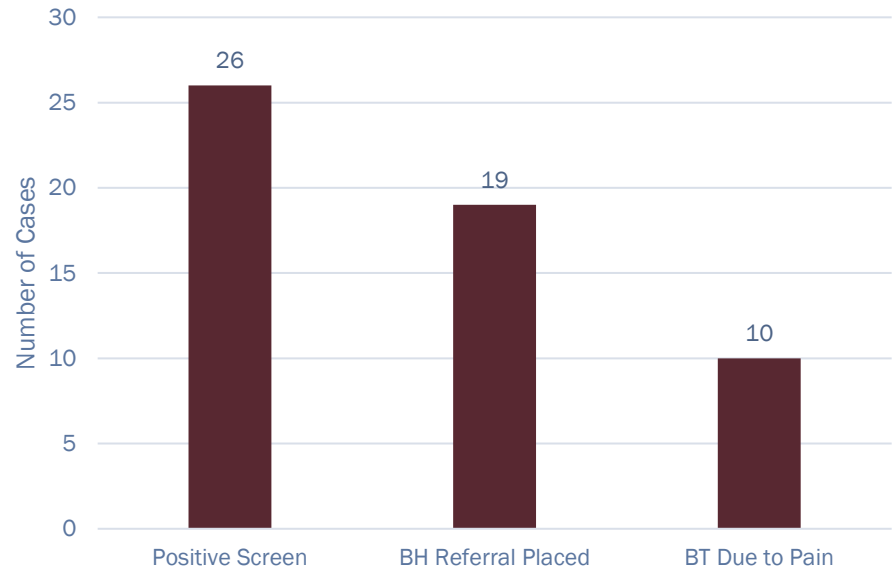




BAMC QI: Screening Outcomes



- Positive birth trauma screens:
 - $n = 26 / 424$
 - 6.1% positive screening rate
- Behavioral Health referrals requested/placed:
 - $n = 19 / 424$
 - 4.5% referral rate
- Pain-related birth trauma (self-reported):
 - $n = 10 / 424$
 - 2.6% positive rate due to pain





BAMC QI: Behavioral Health Utilization



- Nineteen Behavioral Health Referrals placed over 12-month period
- Eleven patients with documented Behavioral Health visits in our system
- Two non-beneficiaries referred off base



Other Birth Trauma Etiologies



- Postpartum Hemorrhage = 2
- Fetal distress/emergency surgery = 2
- Anxiety about pain/fear of pain = 1
- Lack of control = 1
- Difficult neuraxial, high neuraxial = 1
- Unanticipated CS = 4



Key Takeaways



- Birth Trauma is a formidable challenge of Obstetric Anesthesia, but progress is possible.
- Action items for your institution:
 - ☐ Create a Birth Trauma Task Force / Steering Committee
 - ☐ Create a framework for discussing intra-operative pain pre-operatively – SOAP handout
 - ☐ Review Electronic Health Records macros - include pain checks and scores
 - ☐ Create and standardize a post-operative follow up screen for birth trauma
 - ☐ Review QI tracking initiatives
 - ☐ Identify behavioral health resources in your provider network



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Questions?