

SOAP NEWSLETTER

Official Newsletter of the Society for Obstetric Anesthesia and Perinatology



PRESIDENT'S MESSAGE BUILDING WHAT MATTERS



Grace Lim, MD, MSc, MBA

President, Society for Obstetric Anesthesia and Perinatology

SOAP has always been an incredible community of extraordinary clinicians, scientists, educators, and leaders. As we look ahead, our opportunity is now to ensure that the strength of this community translates into measurable impact: for our patients, for our specialty, and for the people who will lead it next.

We are already beginning to see that impact. SOAP membership is at an all-time high. Since 2023, SOAP and FAER have supported 2

Mentored Research Training Grant recipients and 5 Diversity & Inclusivity Mentored Grant partnerships. Since 2010, 45 investigators have received Gertie Marx Research Competition Awards, and since 2011, 16 recipients have taken SOAP-supported expertise into international settings through the SOAP/Kybele International Outreach Grant. Together, these Endowment Fund investments are building the pipeline of investigators and leaders, advancing the evidence that guides our practice, and extending SOAP's

(cont'd. - President's Message)

WHAT'S NEW AT SOAP:

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Dr. Grace Lim

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PRESIDENT'S MESSAGE - CONTINUED

impact well beyond the boundaries of our annual meeting.

We are also investing in what comes next. Our Presidential Task Force on Obstetric Anesthesia Quality & Safety is bringing together SOAP leaders and partners across the broader anesthesiology community to move from evidence to standards — and ultimately, from standards to better care. At the same time, our growing focus on philanthropy will help us expand the research, education, mentorship, and innovation that SOAP can support now and in perpetuity.

These numbers matter. But what matters even more is what they represent: people developed, ideas advanced, partnerships built, and care improved.

Our ambition should be greater than maintaining an outstanding professional society. SOAP has the expertise and the community to help define what excellent obstetric anesthesia care looks like, and to ensure that excellence reaches every patient who needs us.

Thank you for building that future together!



Grace Lim, MD, MSc, MBA

President, Society for Obstetric Anesthesia and Perinatology



EDITOR'S NOTE



Fall brings a natural shift in perspective, it's a powerful moment to reflect on our goals, realign our focus, and channel our energy into finishing the year strong and designing our steps ahead together. Serving as a great reminder of the power of preparation and patience, the achievements we are celebrating are a direct result of the seeds we planted earlier. In this Fall edition of the SOAP Newsletter, Dr. Lim builds a vision for the future, advancing care for our patients, elevating our specialty, and nourishing our future leaders.

Bringing the latest news to the forefront, we highlight the September 2026 announcement from Jehovah's Witnesses and a patient-centered approach forward for blood product transfusion. Dr. Ron George presents a timely perspective of the general anesthesia paradox facing obstetric anesthesiologists globally.

With the return of *How We Do It*, the Fall SOAP Newsletter features two complementary articles. Drs. Guidugli, Kowalczyk, and Farber first describe fibrinogen detection in postpartum hemorrhage and Drs. Boyd, Farber, and Kowalczyk provide an evidence-based approach to fibrinogen replacement.

As Chair of our SOAP Centers of Excellence Subcommittee, Dr. Ruth Landau outlines key components for the designation of excellence in obstetric anesthesia care. Serving as a guide for institutions, the article aims to update SOAP members on the evidence-based best practice criteria making the 2026 application cycle list.

We also honor and celebrate the legacy of Dr. Joanne Douglas.

I look forward to connecting soon.

Sincerely,



Kristen L. Fardelmann
Editor, SOAP Newsletter



WHAT CHANGED?

Jehovah's Witnesses announced (September 18, 2026) that decisions about accepting donor red blood cells, white blood cells, plasma, or platelets are now considered matters of **individual religious conscience** for each Jehovah's Witness.

For details, please see the primary Jehovah's Witness resources, as this includes specific guidance on how individuals view each product.



WHAT HAS NOT CHANGED?

The religious position against transfusion of **whole blood** remains unchanged.



THIS IS NOT BLANKET ACCEPTANCE OF BLOOD PRODUCTS.

Individual patients may accept or decline some or all blood components based on their personal religious beliefs and conscience.

IMPLICATIONS FOR OBSTETRIC ANESTHESIA PRACTICE



ASK

Discuss blood product preferences directly with each patient. Avoid assumptions.



CLARIFY

Understand which specific components and related therapies are acceptable, ideally antenatally when hemorrhage risk is anticipated.



DOCUMENT

Record the patient's individual preferences for each blood product in the medical record.



RECONFIRM

Revisit and confirm preferences as needed, including if clinical circumstances or institutional policies change.



Patient-centered care means respecting the informed preferences of each individual patient.

EDUCATION
COLLABORATION
ADVOCACY
SAFER CARE FOR MOTHERS



Learn more: [Jehovah's Witnesses official announcement](#) | [Medical information for clinicians \(JW.org\)](#) | [soap.org](#)

SAVE THE DATE



PERSPECTIVES

THE GENERAL ANESTHESIA PARADOX: WHAT A CASE IN FRONT OF THE SUPREME COURT OF CANADA MEANS FOR OBSTETRIC ANESTHESIOLOGISTS



Ron George, MD

A case currently awaiting judgment from the Supreme Court of Canada deserves the attention of obstetric anesthesiologists well beyond Canada. *Hemmings v. Peng* raises important questions about causation and the judicial assessment of clinical decision-making. But for our specialty, it also exposes a particularly difficult tension: when does an appropriate desire to avoid general anesthesia (GA) become an inappropriate reluctance to use it?

In 2009, a patient underwent an urgent cesarean delivery (CD) under neuraxial anesthesia (NA). Shortly after the incision, they became severely distressed, repeatedly stating that they could not breathe and moving on the operating table. The anesthesiologist, attempted reassurance and sedation and ultimately converted to GA. Intubation proved difficult. Following intubation, the patient suffered a cardiac arrest and sustained a permanent brain injury.

At trial, the anesthesiologist was found negligent in both the decision to convert to GA and aspects of

airway management. The Ontario Court of Appeal subsequently concluded that the finding of negligent intubation was inadequately supported, but it upheld liability based on the decision to convert. Central to that finding was the conclusion that they converted to GA before attempting and exhausting “all reasonable options” to avoid it. In this patient living with significant obesity and therefore increased anesthetic and airway risk, the Court accepted expert evidence that GA should be avoided if reasonably possible.

The anesthesiologist has challenged that conclusion, arguing before the Supreme Court that they were confronted with an unexpectedly distressed patient moving during an open surgical procedure and exercised reasonable clinical judgment in deciding that GA was necessary to safely proceed. The appeal raises broader questions about whether the lower courts adequately

(cont'd. - Anesthesia Paradox)

established that the decision to convert caused the subsequent injury. It also questions whether the actual injury suffered was “reasonably foreseeable” which is the established test for legal causation. The Supreme Court heard the case on February 10, 2026, and has reserved judgment.

Why should SOAP members care?

This case is not, strictly speaking, a case about intraoperative pain. The patient's behavior was characterized primarily as profound anxiety or panic rather than inadequate surgical anesthesia. That distinction matters, but the reasoning in the case intersects directly with one of the more challenging issues facing obstetric anesthesia, pain and intolerable distress during CD under NA.

We have spent decades appropriately reducing GA for CD. Difficult airway management, aspiration, maternal awareness, neonatal depression and other complications provide compelling reasons to favor neuraxial techniques. GA rates have consequently become an important quality metric. But every quality metric has the potential to create unintended incentives.

Evidence suggests that pain during CD is neither rare nor benign. The *ASA Statement on Pain During Cesarean Delivery* cites prospective data in which failure to achieve pain-free surgery occurred in approximately 6% of spinal anesthetics and substantially more often when existing labor epidural analgesia was extended for CD. Importantly, the statement emphasizes that clinicians should acknowledge the patient's experience, treat inadequate anesthesia, pause surgery when feasible and “be willing to convert to GA if needed.” Delayed or dismissive management may contribute to significant psychological morbidity.

Here lies the paradox.

An anesthesiologist who converts to GA may subsequently be asked, *why did you not try something else first?*

An anesthesiologist who does not convert may later be asked, *why did you allow the patient to continue experiencing pain or psychological distress?*

GA is a treatment, not a failure

The answer to these questions cannot simply be that GA must always be avoided. Perhaps one unintended consequence of our success in reducing GA has been the development of a culture in which conversion to GA can feel like anesthetic failure.

That framing deserves reconsideration as our goal is not NA at all costs. I believe our goal is safe, humane and effective anesthesia. When a patient reports pain during CD, the competing harms are real. Conversion to GA carries physiologic and airway risks. But continuing surgery while repeatedly administering systemic medications that do not adequately control pain also carries risk, including psychological trauma, loss of trust and potentially profound suffering.

The appropriate question therefore is not, “*Have I exhausted every possible alternative to GA?*” It is, “*What is the safest and most humane anesthetic for this patient at this moment?*”

That distinction is important, because “all reasonable options” cannot sensibly mean every conceivable intervention, sequentially attempted while an awake patient remains distressed beneath the surgical drapes. What is reasonable depends upon the degree of pain or distress, surgical stage and urgency, airway risk, response to initial treatment, patient preference, and the likelihood that further supplementation will succeed.

(cont'd. - Anesthesia Paradox)

Contemporary guidance reflects precisely this approach: recognize the problem, believe the patient, ask the surgeon to pause, when possible, rapidly assess whether neuraxial or systemic supplementation is likely to work, communicate options with the patient, and safely convert to GA when adequate conditions cannot otherwise be achieved.

The implications extend beyond obstetric anesthesia

There is a broader lesson in this case for anesthesiologists practicing in every setting. Our specialty is built upon decisions between competing risks. We routinely choose between proceeding and delaying, extubating and ventilating, regional and general anesthesia, intervention and observation. These decisions are made prospectively, under varying degrees of uncertainty. Legal litigation inevitably examines them retrospectively, after the outcome is known.

That makes clinical reasoning important, and it should be captured more easily. Our documentation should capture more than drugs, doses and airway devices. In difficult cases, the record should explain what the patient was experiencing, what alternatives were considered, how the patient responded, why continuing the existing anesthetic was or was not acceptable, the risks associated with conversion, and why the eventual decision was clinically appropriate at that moment.

For obstetric anesthesiologists, the same principle should inform institutional quality metrics. We should continue to examine GA rates, but not in isolation. A very low GA conversion rate is not necessarily evidence of excellent care if it coexists with unrecognized or inadequately treated intraoperative pain. Measures of pain-free CD, rescue analgesia, conversion to GA, patient experience and postoperative follow-up belong alongside one another.

A decision worth watching

The Supreme Court of Canada may ultimately decide *Hemmings* primarily on technical questions of causation and appellate review rather than establish a new anesthetic standard of care. Nevertheless, the case should prompt reflection within our specialty.

We should resist two equally problematic absolutes: resorting to GA too readily and avoiding it at all costs.

The modern challenge is to occupy the space between them. Our commitment to reducing unnecessary GA has unquestionably improved maternal safety. But the next phase of obstetric anesthesia quality must ensure that this success does not inadvertently create reluctance to provide GA when it has become the appropriate rescue technique. A patient experiencing severe pain or intolerable distress should not bear additional suffering because the anesthesia team is trying to preserve a neuraxial technique, or a favorable GA statistic.

Sometimes the safest decision is to remain awake.

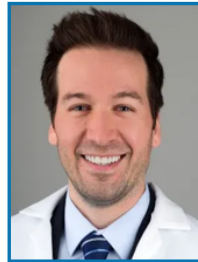
Sometimes the safest and most compassionate decision is to go to sleep.

Knowing when to cross that line remains one of the most consequential judgments we make.



HOW WE DO IT

FIBRINOGEN DETECTION IN POSTPARTUM HEMORRHAGE: WHEN IS LOW TOO LOW?



From left to right:
Tyler J. Guidugli, DO,
John J. Kowalczyk, MD, and
Michaela K. Farber, MD MS

5 Key Points

1. Not all postpartum hemorrhage leads to depletion of fibrinogen. Low plasma fibrinogen concentration is associated with progression to severe PPH and complications.
2. Plasma fibrinogen concentration (Clauss fibrinogen) is useful and often slow to result.
3. Viscoelastic Hemostatic Assays (VHAs) such as TEG, ROTEM, and Quantra can identify the deficit earlier.
4. Practical triggers to initiate VHA testing during PPH include: QBL >1500 mL, blood transfusion, or ongoing clinical bleeding.
5. VHA-based algorithms can simplify interpretation and reduce cognitive burden during emergency PPH management.

Introduction

Postpartum hemorrhage (PPH) remains a leading cause of maternal morbidity and mortality in the United States, and prior reviews suggest that

70–90% of hemorrhage-related maternal deaths may be preventable.¹ Significant work has been done to better identify patients at risk for PPH and provide tailored treatment if coagulopathy occurs. The high plasma fibrinogen concentration of term pregnancy provides substantial hemostatic reserve during bleeding. Low fibrinogen early in PPH is strongly associated with progression to severe PPH. However, in PPH, hypofibrinogenemia is not universal and is not always predictable. Fibrinogen assessment is therefore critical as an early warning sign and therapeutic target of worsening PPH. Viscoelastic Hemostatic Assays (VHAs) such as Thromboelastography (TEG), Rotational Thromboelastometry (ROTEM), and SEER Sonorheometry (Quantra) allow for rapid fibrinogen assessment compared to traditional testing. In this article, we aim to discuss the impact of VHAs in PPH as well as strategies for practical implementation.

(cont'd. Fibrinogen Detection)

Fibrinogen as an Early Warning Sign

The role of fibrinogen in coagulation is substantial in both pregnant and non-pregnant patients. Fibrinogen plays a critical role in platelet aggregation, enhancing mesh formation, which is then cross-linked by irreversible covalent bonds. In this way, fibrinogen strengthens the clot in a concentration-dependent manner even in the context of thrombocytopenia.² Fibrinogen is a well-established marker of coagulation in pregnancy, with normal levels ranging from 400-600 mg/dL; however, it is the first coagulation factor that declines during PPH, especially in clinical scenarios of placental abruption, amniotic fluid embolism and disseminated intravascular coagulation.³ Intrinsic physiologic changes of pregnancy lead to a procoagulant state through increased concentrations of factors I, VII, VIII, IX, XII, vWF and fibrinogen. Charbit et al first established the critical prognostic threshold of 200 mg/dL in early PPH; in that cohort, it had a 100% positive predictive value for progression to severe PPH.⁴ However, recognizing when the critical fibrinogen threshold is approaching during PPH can be challenging. In the Welsh national cohort, fibrinogen impairment was present in approximately 5% of severe PPH (>2 L) and 17% of massive PPH (>2.5 L), and 26% for blood loss >3 L.⁵ Although blood loss alone is an imperfect predictor, the probability of hypofibrinogenemia rises as hemorrhage becomes more severe.

Rapid Fibrinogen Assessment with VHAs – Impact to Date

Traditionally, PT/INR, aPTT, fibrinogen, and platelet count have been utilized to assess coagulation.⁶ Limitations include long turnaround times and assessment of factors in isolation instead of global coagulation status. The Clauss fibrinogen assay is commonly used for fibrinogen assessment and can take 45-60 minutes to result, limiting its utility to guide therapy in critical scenarios.³ Fibrinogen assessment with VHAs yields clinically actionable results within 10 - 15 minutes.

VHAs: Decoding the Language

The two most common commercially available VHA devices are thromboelastography (TEG 6s; Haemonetics, Boston, MA) and rotational thromboelastometry (ROTEM sigma; Werfen, Bedford, MA). A third device utilizes Sonic Estimation of Elasticity via Resonance (SEER) Sonorheometry (Quantra; HemoSonics, Durham, NC), which is FDA-cleared for use in obstetric bleeding and PPH. Each device uses unique nomenclature for parameters of coagulation assessment (Figure 1). Fibrinogen contribution to clot strength by TEG 6s is shown by both maximum amplitude citrated functional fibrinogen (MA-CFF; < 13 mm indicates hypofibrinogenemia) and the calculated functional fibrinogen level (FLEV), an estimate derived from MA-CFF and reported in familiar fibrinogen concentration units.³ With ROTEM Sigma, fibrinogen contribution is assessed via FIBTEM A5 with dual platelet inhibition, where a level <8 mm suggests hypofibrinogenemia.⁷ With Quantra, a fibrinogen clot stiffness (FCS) < 2.0 hPa indicates hypofibrinogenemia.⁸ All devices display graphical and numeric representation of clot assessment over time via the device at the point of care or by real-time transmission to the electronic medical record. The TEG 6s device can be programmed to recommend institution-specific transfusion thresholds and replacement products. Growing evidence suggests that these devices, when used at the point of care, can enable faster identification and treatment of coagulopathy.⁶ Of note, original TEG 5000 and ROTEM Delta VHA devices required hand-micropipette techniques, utilized oscillating cup and torsion wire or optic rod and sensor systems, respectively, and were less user-friendly for point-of-care assessment. The newer generation devices (TEG 6s, ROTEM Sigma and Quantra) are cartridge-based, less prone to user error, and easier to use.³

(cont'd. Fibrinogen Detection)

Evidence for Protocolized VHA Use

With increasing utilization of VHAs during PPH and increasing ease-of-use, VHA-guided PPH algorithms have been proposed (Figure 1). Such algorithms are dynamic and should be considered live documents, to be altered over time as VHA-related research in PPH refines thresholds for treatment.

Implementation studies of VHA-guided PPH protocols have been associated with lower plasma and overall blood-product exposure and, in some cohorts, decreased progression to severe hemorrhage, hysterectomy, TACO, and ICU admission.⁹⁻¹¹ These studies are largely observational and bundle-based, so they do not establish that VHA testing alone improves maternal outcomes.

Summary

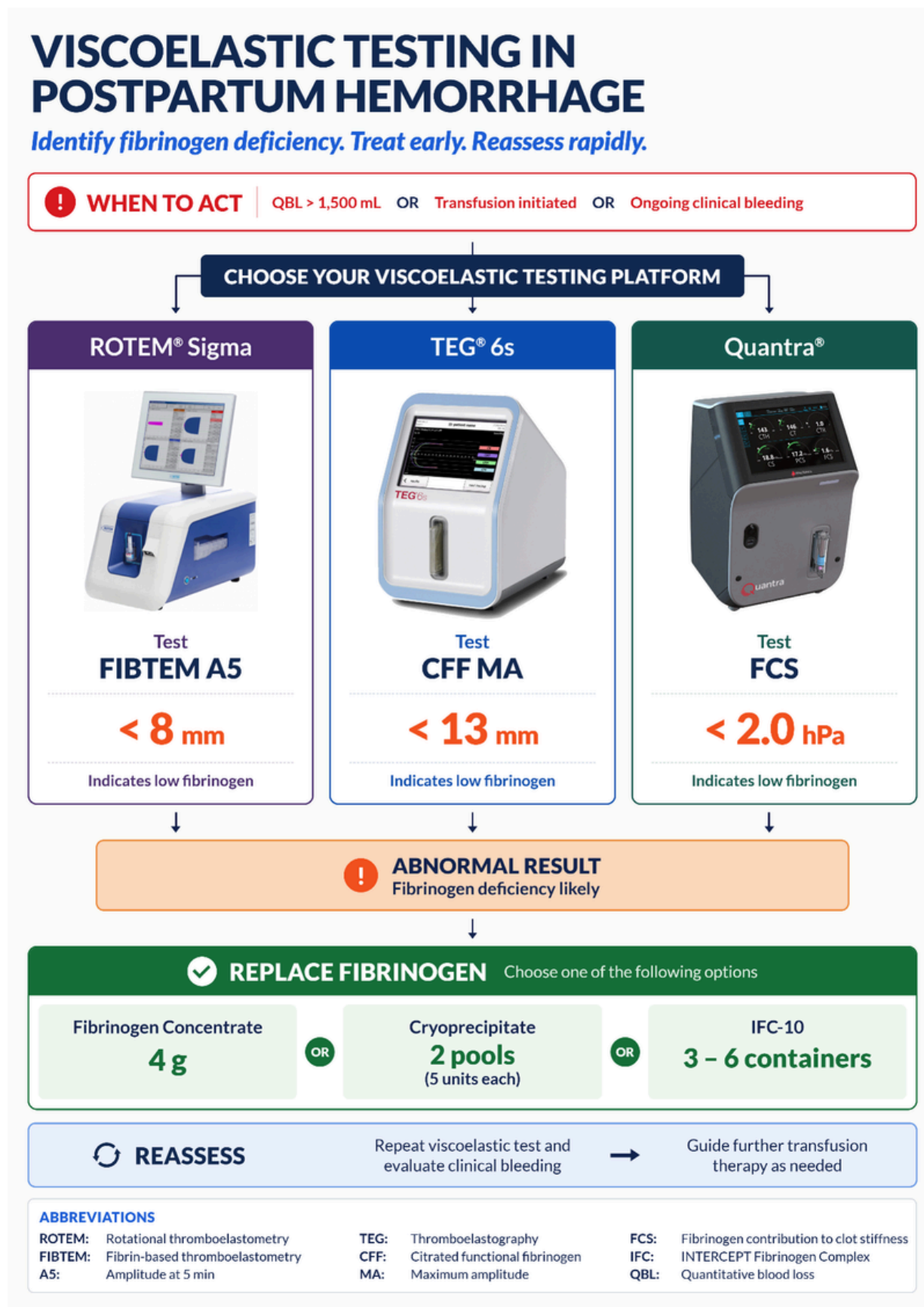
In summary, early fibrinogen assessment and surveillance in PPH is critical as it is the first coagulation factor to decline and is associated with progression to severe PPH. When deficiency is identified, the companion article in this issue discusses targeted replacement. Assessment of fibrinogen with VHAs allows for rapid identification of coagulation abnormalities and goal-directed component therapy. Practical triggers to initiate VHA testing during PPH include: approaching a QBL >1500 mL, blood transfusion, or ongoing clinically significant bleeding. Regular reassessment of coagulation with VHAs should occur after goal-directed therapy to ensure adequate response to treatment.

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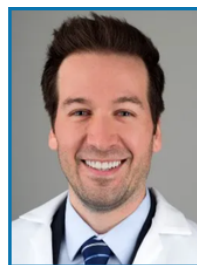
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(cont'd. Fibrinogen Detection)

Figure 1: Viscoelastic Testing in Postpartum Hemorrhage. Image data created by MKF, TJG, JJK, compiled by AI, and verified by authors.



FIBRINOGEN REPLACEMENT IN POSTPARTUM HEMORRHAGE: WHAT SHOULD WE GIVE AND WHEN?



From left to right:
Emily M. Boyd, MD,
Michaela K. Farber, MD, MS
and John J. Kowalczyk, MD

Once fibrinogen is low during postpartum hemorrhage (PPH), the next questions come quickly: Does every patient need replacement? Which product should we use? How much should we give, and how do we know it worked? This article focuses on those treatment decisions. The companion article in this issue reviews laboratory and viscoelastic approaches to identifying that deficit.

Not Every Patient With PPH Needs Fibrinogen

Fibrinogen depletion is important in severe PPH. The clinical management is not universal. In a national Welsh cohort, hypofibrinogenemia was documented in only 17% of patients with massive PPH.¹ In other words, even among patients with very large hemorrhage, most did not have a fibrinogen deficit.

Randomized trials reinforce why fibrinogen should not be given simply because PPH is occurring. FIB-PPH and FIDEL tested pre-emptive fibrinogen concentrate in largely fibrinogen-replete patients and found no clinical benefit.^{2,3} These trials argue against routine pre-emptive fibrinogen administration and support targeting replacement to patients with an actual deficit.

Plasma Is Not an Effective Fibrinogen Replacement Product

When the fibrinogen level is low, cryoprecipitate or fibrinogen concentrate should be used, not fresh frozen plasma (FFP). FFP contains only approximately 250 mg/dL of fibrinogen.⁴ Because

the concentration is close to common treatment targets, progressively larger volumes are required as the patient's fibrinogen approaches the concentration of the transfused plasma. Correcting a substantial fibrinogen deficit with FFP alone requires large volumes, resulting in dilutional anemia and volume overload. FFP use in PPH is also independently associated with higher rates of TACO, TRALI, and VTE.⁴

Although it is not an effective fibrinogen replacement strategy, FFP retains a role when other clotting factors are shown to be depleted. This concern is not merely theoretical. Even in massive hemorrhage, marked prolongation of PT or aPTT occurred in only 3% of patients.¹ In a recent cohort of transfused patients with PPH and INR ≤ 1.5 , 37% still received FFP, and nearly two-thirds received it before the INR result was available.⁵ FFP exposure remained associated with higher composite morbidity, ICU admission, and prolonged LOS, after adjusting for confounders.

Cryoprecipitate and Fibrinogen Concentrate Both Replace Fibrinogen and Differ

Once repletion is warranted, cryoprecipitate and fibrinogen concentrate are both reasonable options, although with different pros and cons. Cryoprecipitate also contains factors VIII, XIII, von Willebrand factor, and fibronectin, requires thawing, must be used within four to six hours, and its

(cont'd. Fibrinogen Replacement)

FIBRINOGEN REPLACEMENT - CONTINUED

fibrinogen content is variable, which can lead to imprecise dosing. Fibrinogen concentrate is lyophilized, shelf-stable at room temperature for up to two years, reconstituted and administered in about 10 minutes, virally inactivated, provides a standardized fibrinogen dose, has a higher cost and does not carry the other clotting factors that cryoprecipitate does.⁴ Table 2 presents this comparison.

Product	Distributed As	Typical Fibrinogen Content	Volume	Recommended Starting Dose	Pros	Cons
Plasma (FFP/FP)	One unit	0.5–0.75 g (~200–300 mg/dL)	250 mL	--- (Not recommended as primary fibrinogen source)	<ul style="list-style-type: none"> • Widely available • Contains all coagulation factors 	<ul style="list-style-type: none"> • Low fibrinogen concentration makes targeted replacement inefficient • Large volume required • Contributes to dilutional anemia • Increased risk of thrombosis, transfusion reaction, TRALI, and TACO
Cryoprecipitate	One pool of 5 units (pre-pooled, exact formulation may vary)	~3 g (ARC: ~600 mg/unit; AABB minimum is only ≥150 mg/unit) (750–3,000 mg/dL)	100–150 mL	2 pools (5 units each)	<ul style="list-style-type: none"> • Concentrated fibrinogen • Also contains factor VIII, XIII, vWF, and fibronectin 	<ul style="list-style-type: none"> • Highly variable fibrinogen concentration • Requires 30 min to thaw • High waste: Once thawed must be given within 4–6 h • Increased thrombotic potential • Not available in most of Europe
Fibrinogen Concentrate (FC)	1- or 2-g vial, depending on product	1 or 2 g (2,000 mg/dL)	50 mL/g	4 g	<ul style="list-style-type: none"> • Predictable dose; highest concentration of fibrinogen • Rapidly reconstituted and administered in ~10 min; stored at room temperature • Shelf life of 2 years; 24 h after reconstitution • No risk of transfusion reaction or infection 	<ul style="list-style-type: none"> • High cost • May not be available in all hospitals • Does not replace deficiencies of other coagulation factors

Table 2. Fibrinogen-containing products for repletion in PPH. INTERCEPT Fibrinogen Complex (IFC), not shown, is available at some centers. An FC10 container contains a mean of 740 ± 166 mg of fibrinogen; dosing should specify the container configuration (e.g., FC10, FC15) and number of containers rather than using “units” alone. Abbreviations: PPH, postpartum hemorrhage; FFP, fresh frozen plasma; FP, frozen plasma; ARC, American Red Cross; AABB, Association for the Advancement of Blood & Biotherapies; vWF, von Willebrand factor; FC, fibrinogen concentrate; TRALI, transfusion-related acute lung injury; TACO, transfusion-associated circulatory overload; IFC, INTERCEPT Fibrinogen Complex.

Pathogen-reduced cryoprecipitate is an emerging middle-ground option. It carries a standardized fibrinogen concentration, can be pre-thawed and stored for up to 5 days at room temperature, and

minimizes the infectious risk that otherwise diminishes cryoprecipitate's cost advantage.¹ It is not yet universally available, and it is a reasonable option to discuss with the blood bank.

Target the Measured Deficit

Even in massive PPH, fibrinogen deficiency is not universal. In the Welsh national cohort, hypofibrinogenemia occurred in about 17% of massive PPH, while marked prolongation of PT/aPTT and severe thrombocytopenia were substantially less common.¹

This supports a targeted approach rather than assuming that every patient with major hemorrhage needs empiric coagulation-product replacement.

When a fibrinogen deficit is identified, the severity of that deficit can also help determine the replacement dose. Contemporary viscoelastic algorithms operationalize this approach by linking fibrinogen-specific clot strength to a fibrinogen dose. For example, the Cardiff TEG 6s pathway uses 4 g of fibrinogen concentrate for a moderately reduced CFF A10 and 6 g for a more severe deficit.⁶ These thresholds are protocol-specific rather than universal obstetric dosing cutoffs, and they illustrate the key principle: replace fibrinogen when it is low and match the dose to the magnitude of the deficit.

Targeted replacement assumes that testing can keep pace with the hemorrhage. During truly exsanguinating bleeding, initial management should prioritize source control and damage-control resuscitation rather than waiting for laboratory results; as bleeding slows and results become actionable, transition back to targeted replacement.

Dose Adequately, Then Verify the Response

Giving an appropriate initial dose does not guarantee the expected increase in fibrinogen.

Traditional dosing equations assume relatively

predictable recovery and pregnancy with active hemorrhage may alter that relationship. In a paired in vitro model using blood from term pregnant patients with simulated dilutional coagulopathy, 4 g of fibrinogen concentrate was substantially more reliable than 2 g at restoring fibrinogen above the modeled 200-mg/dL threshold.⁷ During actual PPH, ongoing blood loss, consumption, and dilution may make the response even less predictable.

After replacement, recheck the laboratory fibrinogen level or viscoelastic fibrinogen parameter. If fibrinogen remains low during ongoing hemorrhage, redose rather than assuming that the expected increment occurred.

The practical principle is simple: give an adequate dose, measure the response, and let the response guide what comes next.

The take-home message is straightforward: not every PPH needs fibrinogen, and not every bleeding patient needs plasma. When fibrinogen is truly low, use a concentrated fibrinogen product, let laboratory or viscoelastic pathways guide the rest of the resuscitation, and check that the dose actually worked. Target the deficit, treat it adequately, and reassess.

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(cont'd. Fibrinogen Replacement)

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CELEBRATING A LEGACY: DR. M. JOANNE DOUGLAS AND THE SOAP MEDAL OF ENDURING LEGACY



Ron George, MD

At the 2026 SOAP Annual Meeting in Montréal, the Society for Obstetric Anesthesia and Perinatology was proud to recognize Dr. Joanne Douglas as the inaugural recipient of the SOAP Medal of Enduring Legacy.

The Medal was created to recognize individuals whose influence has fundamentally shaped obstetric anesthesiology and whose impact continues to be felt across generations. In presenting the award, SOAP emphasized a simple but important idea: a legacy is not only something we honor in others, it is something each of us can create.

Few individuals embody that idea more completely than Joanne.

Her contributions to obstetric anesthesia span decades and virtually every dimension of our specialty: clinical care, research, education, leadership, scholarship, and mentorship. She has been deeply involved with SOAP since the 1980s, serving as a Board member, Treasurer, Vice President, President, and Past President, while also contributing repeatedly as a speaker, moderator, scientific judge, meeting organizer, and mentor. Her influence extends well beyond SOAP. Joanne helped shape the development of obstetric anesthesia in Canada and contributed substantially to the integration of evidence-based practice into everyday maternity care. Her academic record includes more than 100 peer-reviewed publications, major textbook contributions, editorial leadership, and scholarship addressing many of the central clinical challenges in obstetric anesthesiology.

Yet the defining feature of Joanne's legacy may be less about what she published or the titles she held and more about the people she helped develop.

She established and nurtured one of Canada's most influential obstetric anesthesia fellowship programs, supporting generations of trainees and junior faculty who went on to become leaders in programs across Canada and internationally. Even after retiring from clinical practice, she continued to mentor fellows, contribute to research, support junior colleagues, and remain actively engaged in education.

Those who have worked with Joanne consistently describe the same qualities: generosity with her time, high standards, intellectual curiosity, humility, collegiality, and an instinctive desire to help others succeed. Her impact is visible not only in individual careers, but also in the programs, professional relationships, and culture she helped create. As one

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of her nominators observed, an enduring legacy is not simply a record of personal accomplishment—it is what continues because of the groundwork someone has laid for others.

Her contributions have been recognized at the highest levels. Joanne received the Canadian Anesthesiologists' Society Gold Medal, SOAP's Distinguished Service Award, and was appointed a Member of the Order of Canada for her contributions to obstetric anesthesia and for helping make childbirth safer for women and newborns.

But the SOAP Medal of Enduring Legacy is intended to represent something larger than a single award recipient. Joanne's career provides an opportunity for all of us to reflect on what it means to build something that lasts.

A professional legacy can take many forms. It may be the trainee you mentor, the research program you help establish, the educational opportunity you create, the standards of care you improve, or the community you strengthen. It can also include ensuring that the organizations that have helped advance our specialty remain strong for the generations that follow us.

That is the purpose of the SOAP Endowment Fund.

The Endowment is an investment in SOAP's long-term future. Contributions help create a sustainable foundation from which the Society can continue supporting the priorities that have defined SOAP for decades, education, research, mentorship, professional development, and the advancement of safe, high-quality care for pregnant and postpartum patients. At the Annual Meeting, SOAP specifically linked the Medal with the growing Endowment and the launch of IMPACT Partners, emphasizing the importance of creating pathways for members to sustain the work of the specialty across generations.

Importantly, creating a philanthropic legacy does not require a single transformational gift. For many members, the most meaningful approach may simply be to make support for SOAP a regular part of their professional life.

Members can contribute to the SOAP Endowment Fund through monthly or annual donations, allowing even modest gifts to accumulate over time and collectively create substantial impact. Regular giving also provides an opportunity for members at every career stage to participate in building SOAP's future.

For those interested in making a longer-term commitment,

IMPACT as legacy donors by including SOAP in their estate planning. A planned gift provides an opportunity to extend an individual's connection with SOAP well beyond a professional career and to support future generations of obstetric anesthesiologists, educators, investigators, and leaders.

Joanne Douglas built her legacy through decades of service, scholarship, mentorship, and generosity. Her influence continues through the people she trained, the programs she strengthened, the knowledge she helped create, and the professional culture she helped shape.

The SOAP Medal of Enduring Legacy celebrates that extraordinary contribution, but it also carries a message for the entire SOAP community: A legacy is not defined only by what we accomplish during our careers. It is also defined by what we help make possible for those who come after us.

Through mentorship, service, and support of the SOAP Endowment Fund, whether through monthly giving, an annual contribution, or joining SOAP IMPACT as a legacy estate donor, each of us has an opportunity to help sustain the future of our specialty.

Honor a legacy. Create your own. Invest in the future of SOAP. ♦



The **SOAP Speaks! Database** has a new home within the Education Committee's Clinical Resources Subcommittee! Founded in 2022 by Dr. Caitlin Sutton, the SOAP Speaks! Database has the power to connect SOAP members: dedicated *SPEAKERS* who are passionate about their topics of interest/expertise, and visiting or virtual lecture *HOSTS* looking to diversify and grow their OB anesthesia-specific curriculum.

- Want to be a speaker listed in the database?**
- Looking for a speaker to cover a particular topic?**

Click on this link for instructions on how to apply as a speaker, or to find a speaker on the recently updated database: <https://www.soap.org/find-a-soap-speaker>

The database contains 66 lecture topics and growing. Don't pass up this opportunity to apply as a speaker and broaden your network. The Clinical Resources Subcommittee will be reviewing new applications this Fall, and will send a member-wide blast of the updated database in December!

Michaela K. Farber

On behalf of the Clinical Resources Subcommittee of the SOAP Education Committee

SOAP 2026 CENTERS OF EXCELLENCE: DEFINING EXCELLENCE IN OBSTETRIC ANESTHESIA CARE

Ruth Landau, MD

Chair, Centers of Excellence Subcommittee

Excellence in obstetric anesthesia refers to delivering the highest standard of anesthesia care to pregnant patients before, during, and after childbirth, ensuring a safe and positive experience for patients and their families.¹

Key components of excellence in obstetric anesthesia care include:

1. **Appropriately qualified personnel and 24/7 dedicated staffing**, including board-certified (or equivalent) anesthesiologists with specialized training in obstetric anesthesia
2. **Labor analgesia and cesarean delivery care** that is patient-centered, safe, and tailored to individual needs (e.g. enhanced recovery

protocols, protocols for patients with opioid-use disorder)

3. **Effective management of obstetric emergencies** to reduce maternal and neonatal morbidity and mortality (e.g. postpartum hemorrhage (PPH) protocols)
4. **Comprehensive institutional protocols and policies** that are regularly updated and based on the latest evidence and expert consensus, including implementation of best practice recommendations and guidelines (e.g. Alliance for Innovation on Maternal Health (AIM) Patient Safety Bundles, Society for Obstetric Anesthesia and Perinatology (SOAP) consensus statements, and the American Society for Anesthesiologists (ASA) statements)

(cont'd. Centers of Excellence)

5. **State-of-the-art equipment and resources** to ensure optimal patient safety and effective pain management
6. **Simulation and team training** to prepare staff for obstetric emergencies and enhance multidisciplinary collaboration
7. **Quality assurance programs and patient follow-up systems** to monitor outcomes, drive continuous improvement, and ensure patient satisfaction (e.g. postdural puncture headache (PDPH) protocol)

Achieving excellence also means promoting a culture of multidisciplinary teamwork, ongoing education, and process improvement to ensure that all patients, including those with complex or high-risk pregnancies, receive optimal and safe care.

For centers that cannot provide the highest level of maternal care (Level IV) as defined by the American College of Obstetricians and Gynecologists (ACOG), clear triggers to refer and transfer pregnant patients, and ensure they receive the specialized care required for their condition, are essential.

Achieving excellence also means implementing guidelines and recommendations from leading organizations, including SOAP, the ASA, and AIM. Achieving excellence means incorporating these statements into clinical practice.

Since 2014, SOAP has produced eight consensus statements and clinical practice recommendations: the 2014 SOAP Consensus Statement on the Management of Cardiac Arrest in Pregnancy,² the 2018 SOAP Consensus Statement on the Anesthetic Management of Pregnant and Postpartum Women Receiving Thromboprophylaxis or Higher Dose,³ the 2019 SOAP Consensus Statement: Monitoring Recommendations for Prevention and Detection of Respiratory Depression Associated with Administration of Neuraxial Morphine for Cesarean Delivery Analgesia,⁴ the 2021 SOAP Interdisciplinary

Consensus Statement on Neuraxial Procedures in Obstetric Patients With Thrombocytopenia,⁵ the 2021 SOAP Consensus Statement and Recommendations for Enhanced Recovery after Cesarean,⁶ with 2025 updates,⁷⁻⁹ the 2023 Society of Anesthesia and Sleep Medicine and the SOAP Consensus Guideline on the Screening, Diagnosis, and Treatment of Obstructive Sleep Apnea,¹⁰ the 2024 Multisociety Clinical Practice Guidelines on Postdural Puncture Headache,^{11,12} and the 2024 Multisociety Consensus Statement on Pain Management for Pregnant Patients with Opioid-Use Disorder.¹³

The ASA has produced several important statements that form the basis for best practices in obstetric anesthesia care. These include the 2016 ASA Practice Guidelines for Obstetric Anesthesia,¹⁴ the 2023 ASA Statement on Pain during Cesarean Delivery,¹⁵ the 2024 ASA Statement on the Use of Adjuvant Medication and Management of Intraoperative Pain during Cesarean Delivery,¹⁶ and the 2024 ASA Statement on Providing Psychological Support for Obstetric Patients.¹⁷

AIM has eight Patient Safety Bundles providing key recommendations for obstetric practice: Obstetric Hemorrhage,¹⁸ Severe Hypertension in Pregnancy,¹⁹ Safe Reduction of Primary Cesarean Birth,²⁰ Cardiac Conditions in Obstetric Care,²¹ Substance Use Disorder,²² Postpartum Discharge Transition, Perinatal Mental Health Conditions,^{23,24} and Sepsis in Obstetric Care.²⁵

The SOAP Centers of Excellence Designation:

In 2017, the SOAP Centers of Excellence (COE) subcommittee established benchmarks and criteria through expert consensus and evidence-based recommendations.¹ The criteria are reviewed annually and incorporate new evidence when available.

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The first SOAP COE (n=32) received the designation in 2018 and will be expected to renew this year. These centers were mostly academic centers in the United States (U.S.), though over the years, a wide variety of centers have received the SOAP COE designation, reflecting both the diversity and breadth of institutions committed to high standards. To-date, the designation has been awarded to over 100 centers, including low- to high-volume academic medical centers, tertiary referral centers, regional hospitals, community hospitals, and international centers.

The COE designation is not limited by hospital size, volume, or location, but rather is awarded to any institution that meets the comprehensive, evidence-based criteria for excellence in obstetric anesthesia care.

This document serves as a guide and reference when applying for the SOAP COE designation or renewing a designation. Renewal is expected every four years.

Specific attention should be given to **Essential Elements**, as these are considered of paramount importance in obtaining the SOAP 2026 COE designation. This document can also serve as a blueprint for all institutions as they strive towards excellence in obstetric anesthesia care.

Metrics

Obstetric anesthesia metrics and benchmarks derive from expert consensus or published guidelines, including the ASA Quality Metrics.²⁶

There are currently three specific metrics: the neuraxial labor analgesia replacement rate (expected rate 3-6%), the unintended dural puncture rate (expected rate <2%), and the general anesthesia rate for cesarean deliveries (expected rate <5%). Tracking and reporting of these rates is essential (see descriptions for how to calculate and

report these rates in the sections below).

Reporting the incidence of intraoperative pain and analgesic supplementation are future metrics; we therefore recommend that centers prepare for all processes that are needed to collect these data.

Essential Element: To promote accountability, tracking, and monitoring of data, institutions must have an electronic medical record (or equivalent) to document all obstetric anesthesia care.

Recommendation: It is recommended that institutions create quarterly electronic dashboards that allow review of outcomes and trends. These should be regularly reviewed as part of ongoing Quality Assurance programs.

Personnel, Staffing, Models of Care, and Coverage

- Leadership

Anesthesia leadership in the Labor and Delivery Unit must be provided by an experienced obstetric anesthesiologist.

Essential Element: The obstetric anesthesia lead must be a U.S. or international board-certified attending anesthesiologist who has completed an ACGME-accredited obstetric anesthesia fellowship or has “equivalent expertise” in obstetric anesthesia.

If “equivalent expertise,” the basis for this must be clearly delineated (e.g. specific training in obstetric anesthesia, many years of practice with a focus on obstetric anesthesia, and/or evidence of expertise based on academic contributions).

- Staffing and Models of Care

(cont'd. Centers of Excellence)

Clinical demands on Labor and Delivery Units are variable and unpredictable.²⁷ It is expected that centers have adequate numbers of specialists to staff the Labor and Delivery Unit on nights and weekends as well as weekdays.

Increased access to neuraxial labor analgesia is a dramatic step towards reducing in-hospital maternal morbidity and mortality and improving health care disparities.^{28,29}

The higher ACOG Levels of Maternal Care (Levels III and IV) require 24/7 on-site anesthesia coverage directed by a board-certified anesthesiologist with obstetric anesthesia expertise.³⁰

Essential Element: Centers must have adequate staffing, in number and expertise, to cover the clinical workload.³¹

There is mounting evidence suggesting that maternal and neonatal outcomes are improved if obstetric anesthesia care is provided by specialists rather than generalists.^{32,33} Obstetric anesthesia specialists are anesthesiologists who are fellowship-trained obstetric anesthesiologists or part of a core group of anesthesiologists who specialize in obstetric anesthesia.

- Supervision of Anesthesia Medical Trainees

Involved supervision of all anesthesia medical trainees (residents/fellows) is expected.

Essential Element: For neuraxial labor analgesia, the supervising anesthesiologist must be informed of all patients on the Labor and Delivery Unit, be involved in all medical decision-making, plus review and approve provision of neuraxial labor analgesia. It is expected that the supervising anesthesiologist is present for all neuraxial procedures, regardless of the level of the trainee.

At international centers, where the training period is longer and regulations differ, “structured independence” for unsupervised neuraxial procedures may be acceptable in the later years of training.

In this case, there must be a specific process or policy to notify the supervising anesthesiologist in the event of a difficult procedure or other complication, such as unintended dural puncture and requirements for epidural catheter replacement.

Essential Element: For cesarean delivery anesthesia, the supervising anesthesiologist must be present during all neuraxial procedures (placement or replacement), or intubation in the case of general anesthesia. The supervising anesthesiologist must be informed and immediately available for assessment of adequate block, delivery of the neonate, assessment of adequate uterine tone, management of obstetric hemorrhage, and emergence from general anesthesia.

There should be a specific process or policy for when to notify the supervising anesthesiologist in case of intraoperative complications such as hemorrhage, intraoperative pain, cardio-respiratory decompensation, and any condition necessitating conversion to general anesthesia.

- Supervision of Nurse Anesthetists and Certified Anesthesia Assistants

Appropriate medical supervision of Certified Registered Nurse Anesthetists (CRNAs) and Certified Anesthesia Assistants (CAAs) is expected in order to ensure that the Anesthesia Care Team model is maintained within the Anesthesiologist Provided Care model.

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Essential Element: The supervising anesthesiologist must be in-house and have situational awareness of patients admitted to the Labor and Delivery Unit. The supervising anesthesiologist must be involved in any medical decision-making before the provision of anesthesia care. Neuraxial labor analgesia must be approved by the supervising anesthesiologist before the procedure.

There must be a specific process or policy in place to notify the attending anesthesiologist in the event of a difficult procedure or other complication, such as unintended dural puncture or requirement for epidural replacement.

Essential Element: For cesarean delivery anesthesia, the supervising anesthesiologist must be present during all neuraxial procedures (placement or replacement), or intubation in the case of general anesthesia. The supervising anesthesiologist must be informed and immediately available for assessment of adequate block, delivery of the neonate, assessment of adequate uterine tone, management of obstetric hemorrhage, and emergence from general anesthesia. The supervising anesthesiologist must be in-house and immediately available.

Essential Element: There must be a specific process or policy for when to notify the supervising anesthesiologist in case of complications such as hemorrhage, intraoperative pain, cardio-respiratory decompensation, and any condition necessitating conversion to general anesthesia.

- Coverage

Recommendation: The supervising anesthesiologist should attend daily multidisciplinary rounds and sign-outs and

should be alerted about medically complex patients present or imminently transferred to the Labor and Delivery Unit.

Essential Element: The obstetric anesthesia service must be covered by at least one board-certified (eligible, or equivalent for international centers) supervising anesthesiologist, providing dedicated coverage 24/7 without additional responsibilities for non-obstetric patients.

In low-volume centers with <1,500 deliveries per year, non-dedicated coverage with minimal additional responsibilities may be acceptable.

Likewise, in high-volume centers with >5,000 deliveries per year, solo dedicated coverage may not be adequate unless there are adequate numbers of trainees/CRNAs to support the clinical load, and a readily available backup anesthesiologist.

- Back up

Recommendation: The ability to mobilize additional anesthesia personnel, within a 30-minute timeframe, in case of obstetric emergencies or high clinical volume beyond the capacity of in-house staff assigned to the obstetric anesthesia service is recommended.

Neuraxial Labor Analgesia

The current U.S. average labor epidural rate is >70%, with regional variability.^{1,34}

Recommendation: It is recommended to have a high neuraxial labor analgesia rate as it is associated with reduced maternal morbidity and mortality.³⁵⁻³⁷

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- **Standardization**

One of the primary objectives of neuraxial labor analgesia is to provide optimal pain relief with minimal motor block and side effects.

Essential Element: Centers must use high-volume, low-concentration local anesthetic solutions ($\leq 0.1\%$ bupivacaine or $\leq 0.15\%$ ropivacaine) with lipophilic opioid.

Dilute local anesthetic solutions ($\leq 0.1\%$ bupivacaine or $\leq 0.15\%$ ropivacaine) reduce motor block, operative vaginal deliveries and duration of second stage of labor.^{38,39}

Recommendation: It is recommended to have these solutions provided pre-mixed by the pharmacy to reduce the likelihood of medication errors and to reduce variability among providers.

Recommendation: It is recommended to use background programmed intermittent epidural boluses (PIEB) with patient-controlled epidural analgesia (PCEA) for neuraxial labor analgesia, rather than continuous epidural infusion with PCEA.⁴⁰⁻⁴²

- **Responsiveness to the Request for Labor Analgesia**

Recommendation: It is recommended to track the response time from patient's request for neuraxial labor analgesia and the anesthesia team's response (arrival). The ASA Quality Metrics recommend a response time <30 min.²⁶

- **Labor Analgesia Assessment**

Active management of labor epidural analgesia with regular assessment of the adequacy of neuraxial labor analgesia is expected; it improves patient satisfaction and contributes to lower rates of general anesthesia in the setting of intrapartum

cesarean delivery. The functionality of the indwelling epidural catheter and the medication delivery system must be rigorously assessed, to ensure adequate labor epidural analgesia and to facilitate conversion to epidural anesthesia for intrapartum cesarean delivery.⁴³

Essential Element: Pain scores must be documented by nursing staff (e.g. every 1-2 hours) and anesthesia provider rounds with evaluations of the level of comfort and analgesia must occur regularly (e.g. every 2-4 hours).

Essential Element: There must be a standardized approach for managing breakthrough pain with epidural "top-up" doses according to the stage of labor, and if labor epidural analgesia is not achieved with "top-up," the patient is offered replacement of the epidural catheter.

Essential Element: Centers must track the neuraxial labor analgesia replacement rate. The expectation is 3-6%.

This is the first of three current metrics, and the expected rate of poorly functioning epidural catheters, when proceeding with appropriate procedural technique and after troubleshooting, is 3-6%. Replacement of poorly functioning epidural catheters as part of active management of labor epidural analgesia is expected.⁴⁴ This reduces the likelihood of poor labor analgesia and patient dissatisfaction, and the risk of failed epidural anesthesia in case of intrapartum cesarean delivery. Robust quality assurance is required to track neuraxial failure rates.⁴⁵

(cont'd. Centers of Excellence)

To calculate the neuraxial labor analgesia replacement rate, centers report on:

- The annual number of neuraxial labor analgesia procedures
- The annual number of replacement procedures during labor (in the labor room)

Unintended Dural Puncture, Postdural Puncture Headache, Epidural Blood Patch

The second of three current metrics is the unintended dural puncture rate.

Essential Element: Centers must track the unintended dural puncture rate. The expectation rate is <2%.

To calculate the unintended dural puncture rate, centers report on:

- The combined annual number of epidurals, combined spinal-epidurals (CSEs), and dural puncture epidurals (DPEs) (for neuraxial labor analgesia or cesarean delivery anesthesia, or other procedures)
- The annual number of unintended dural punctures (“wet tap”)

Essential Elements: Centers must implement recommendations from the 2024 Multisociety Evidence-based clinical practice guidelines on postdural puncture headache.¹² Centers must track the PDPH rate, and the epidural blood patch (EBP) rate, with appropriate follow-up.

Essential Element: Centers must use small-diameter (25G or smaller) pencil-point needles for all neuraxial procedures with intended dural puncture (CSE, DPE, spinal).¹² (In some clinical circumstances, 24G pencil-point needles may be used).

Routine use of cutting-edge spinal needles is not recommended.^{46,47}

To calculate the PDPH rate and the EBP rate, centers report on:

- The combined annual number of spinals, epidurals, CSEs, and DPEs (for neuraxial labor analgesia or cesarean delivery anesthesia, or other procedures including cerclage)
- The annual number of patients with PDPH
- The annual number of patients receiving an EBP

Cesarean Delivery Management

General Anesthesia

The general anesthesia rate for cesarean delivery is the last of three current metrics.

Essential Element: Centers must track the overall general anesthesia rate for all cesarean deliveries, including surgically complex cases (e.g. cesarean hysterectomy), with the goal to be <5%.

Additionally, centers must track the general anesthesia rates for scheduled cases (i.e. planned, booked, elective) versus unscheduled cases (i.e. intrapartum, urgent/stat).

Ideally, the rate of failed conversion from labor epidural analgesia to epidural anesthesia for intrapartum cesarean delivery, further converted to general anesthesia, should be tracked and reported (this will become a future metric).

Essential Element: Centers must review all general anesthesia cases in a quality assurance review to reduce avoidable general anesthesia.

A general anesthesia rate >5% may be acceptable in certain situations; however, understanding what

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is driving the high rate, and a quarterly review to guide processes aimed at reducing this rate (e.g. reducing failed conversions from labor epidural analgesia to epidural anesthesia for intrapartum cesarean delivery, improving communication and intrapartum/preoperative huddles) is expected. Tracking general anesthesia rates for surgically complex cases (hysterectomy for atony or placenta accreta spectrum (PAS)) provides useful information to understand general anesthesia rates. Most centers that provide optimal obstetric anesthesia care can achieve general anesthesia rates below 5%.^{28,29,31,33,34}

To calculate the overall general anesthesia rate, centers report on:

- The annual number of all cesarean deliveries (including complex surgical cases and cesarean hysterectomy)
- The annual number of general anesthetics

To calculate the general anesthesia rate for scheduled cases, centers report on:

- The annual number of scheduled cesarean deliveries (non-laboring, elective cases)
- The annual number of general anesthetics for scheduled cesarean deliveries

To calculate the general anesthesia rate for unscheduled cases, centers report on:

- The annual number of unscheduled cesarean deliveries (intrapartum, urgent/stat)
- The annual number of general anesthetics for unscheduled cesarean deliveries

Essential Element: Centers must have an institutional standardized enhanced recovery protocol or clinical care pathway that is consistent with the 2021 SOAP Consensus Statement and Recommendations for Enhanced Recovery After Cesarean³² and the 2025 Updated Guidelines from the Enhanced Recovery After

Surgery Society Recommendation before,⁹ during,⁷ and after cesarean delivery.⁸

Essential Elements: There are several components of the ERAC protocol that must be implemented by the anesthesia care team, including spinal hypotension prevention/treatment with continuous vasopressor medication, maintenance of normothermia with warming devices, prophylactic antibiotics, antiemetics, optimal uterotonics, intraoperative (lipophilic opioids), and postoperative analgesics (neuraxial opioid, nonsteroidal anti-inflammatory drugs (NSAIDs) and acetaminophen).

Recommendation: Patient education and preparation are recommended, along with reducing unnecessary prolonged fasting before cesarean delivery (consistent with ACOG and ASA guidelines).^{9,14}

Neuraxial Anesthesia

- Spinal Needles

Essential Element: Centers must use small-diameter (25G or smaller) pencil-point needles for spinal procedures, consistent with 2023 ASRA/SOAP evidence-based clinical practice guidelines on PDPH.¹² (In some clinical circumstances, 24G pencil-point needles may be used).

- Spinal Hypotension Prevention and Treatment

Essential Element: Centers must use a prophylactic infusion of phenylephrine (or other vasopressor) to maintain blood pressure within 10% of baseline, with IV boluses as appropriate to treat hypotension, as well as IV fluid co-load during spinal or CSE anesthesia.^{7,43,48}

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Blood pressure monitoring from neuraxial anesthesia administration until delivery of the neonate should be frequent (e.g. every 1-2 minutes). Spinal hypotension prevention and treatment should be based on an institutional protocol with minimal variation among providers.

- **Temperature Management**

Essential Element: Centers must use active warming devices and have a standardized minimum operating room temperature of at least >72F/23C, and/or operating room temperature based on gestational age for cesarean delivery.

Maintenance of normothermia of both the patient and the neonate is recognized as an important aspect of intraoperative care.⁷ Maintaining normothermia in the surgical patient has been shown to reduce infection risk and may help minimize shivering and can be achieved by active warming (fluids and forced- air warming).⁴⁹

- **Appropriate Antibiotic Prophylaxis to Prevent Surgical Site Infection**

Essential Element: Centers must select appropriate antibiotic(s), with immediate access and timely administration to promote reduction of infections.

There should be an institutional protocol for the timely administration of weight-based surgical site infection prophylaxis (e.g. IV cefazolin 2g, or 3g if >120 kg), with intraoperative redosing in case of hemorrhage >1,500 mL, and additional antibiotics for intrapartum cesarean delivery, or in the setting of suspected intra-amniotic infection (e.g. IV azithromycin 500 mg).⁵⁰ An evidence-based approach to patients with reported penicillin allergy is important as secondary antibiotics are inferior to cephalosporins in preventing surgical site infections.

- **Management of Neuraxial-Induced Side Effects**

Essential Element: Centers must have a standardized approach involving at least two prophylactic antiemetic agents routinely administered with an alternative class of antiemetic agent available for additional prophylaxis (e.g. in patients at higher risk for postoperative nausea and vomiting) and for treatment of nausea and vomiting.

Recommendation: Ideally, there should be a standardized approach to the treatment of intraoperative and postoperative shivering.⁵¹

This should be based on an institutional protocol with minimal variation among providers.

- **Multimodal analgesia protocols**

Essential Element: Centers must use a standardized stepwise multimodal analgesic protocol with neuraxial administration of long-acting opioid (intrathecal morphine 100-150 mcg or epidural morphine 2-3 mg, or equivalent) and scheduled administration of both NSAIDs and acetaminophen, consistent with the SOAP Consensus Statement and Recommendations for ERAC,^{7,8} and the ACOG Recommendations for Stepwise Postpartum Pain Management.⁵²

- **Intraoperative Pain**

Essential Element: Centers must use a standardized approach to ensure that neuraxial anesthesia is adequate, to mitigate and manage intraoperative pain during cesarean delivery, and to follow up with patients who have experienced intraoperative pain. Centers must track intraoperative pain during cesarean delivery and must include pain during cesarean delivery in their quality review processes.

Institutional protocols **must** be consistent with the 2023 ASA Statement on Pain during Cesarean Delivery,¹⁵ the 2024 ASA Statement on the Use of Adjuvant Medication and Management of Intraoperative Pain during Cesarean Delivery,¹⁶ and the 2025 SOAP Peripartum Pain Management Toolkit for Cesarean Delivery.⁴³

A standardized approach to recognize, prevent, and manage intraoperative pain for scheduled and intrapartum cesarean delivery is expected.⁵³⁻⁵⁶

Strategies including active management of labor analgesia with regular rounding every 2-4 hours, early replacement of inadequate labor epidural analgesia, testing of the block to ensure that neuraxial anesthesia is adequate before the start of surgery, appropriate administration of epidural medication (if working epidural catheter available) and/or systemic adjuvants are expected. Conversion to general anesthesia when the neuraxial block is inadequate is expected.

Debriefing with the patient and family, and follow-up with maternal mental health services is key to prevent childbirth-related post-traumatic stress disorder.^{17,57}

Opioid-Use Disorder

Essential Element: Centers **must** implement all elements from the 2025 SOAP/SMFM/ASRA Consensus Statement on Pain Management for Pregnant Patients with Opioid-Use Disorder¹³ and the Substance Use Disorder AIM Patient Safety Bundle.²² Early antenatal evaluation is expected. Tailored approaches and protocols for post-cesarean analgesia **must** be available for patients at increased risk of postoperative pain, such as those with a substance use disorder, chronic pain, or chronic opioid use.

Postpartum Management and Neonatal Care

- Management and risk of respiratory depression

The risk of respiratory depression in the pregnant population receiving low-dose neuraxial opioid is extremely rare⁵⁸ and lower than that of the general population.

Essential Element: Centers **must** implement the recommendations in the 2023 Society of Anesthesia and Sleep Medicine (SASM) and the SOAP Consensus Guideline on Obstructive Sleep Apnea in Pregnancy.¹⁰ Because excessive monitoring can interfere with the parent/infant dyad, the institutional protocol for respiratory monitoring **must** risk-stratify according to the 2019 SOAP Consensus Recommendations for the Prevention and Detection of Respiratory Depression Associated with Neuraxial Morphine Administration for Cesarean Delivery Analgesia.⁴ These are less strict than those of the ASA (every 2h for the first 12h after neuraxial morphine), except in high-risk patients.

- Institutional efforts to minimize opioid consumption

Essential Element: In-hospital routine opioid use **must** be limited (e.g. <30 mg oxycodone/24 hours), and the number of prescribed opioid tablets at the time of discharge should be limited (e.g. 10-20 tablets) and ideally individualized, consistent with the 2021 ACOG Clinical Consensus on Pharmacologic Stepwise Multimodal Approach for Postpartum Pain Management.⁵²

Recommendation: It is recommended to track and report on the number (and percentage) of in-hospital patients who receive opioids after cesarean delivery after Post-Anesthesia Care

Unit discharge. This is consistent with the ASA Quality Metrics.²⁶

- Baby-Friendly and Neonatal Resuscitation

Recommendation: Baby-friendly practices are encouraged, and neonatal resuscitation by a dedicated team should be available.

- Postpartum Reproductive Care

Recommendation: It is recommended to ensure postpartum tubal ligation procedures are available. These should be prioritized and performed promptly per ACOG recommendations.^{59,60}

Obstetric Hemorrhage Management

PPH is one of the leading causes of maternal mortality in the U.S. and in the world.⁶¹

- Protocols and policies

Essential Element: Centers must have institutional protocols and policies for obstetric hemorrhage risk stratification, administration of second-line uterotonic drugs, management of obstetric hemorrhage with blood products (ideally goal-directed therapy), access to activate a massive hemorrhage/transfusion protocol, and checklists and system preparedness in the event of a known or unknown PAS, which includes transferring out.¹⁸

Essential Element: Centers must have institutional protocols that incorporate core elements of the AIM Obstetric Hemorrhage Bundle,^{62,63} the California Maternal Quality Care Collaborative Obstetric Hemorrhage Toolkit,⁶⁴ or comparable recommendations to manage obstetric hemorrhage.

Barriers to implementation of validated practice guidelines for PPH management (e.g. bundles) can

be overcome with protocol-driven management, unit-based simulation drills, blood loss quantification, and team huddles and debriefings.⁶⁵

Essential Element: Centers must have a Quality Assurance Review of all severe hemorrhage cases defined at an institutional level (e.g. transfusion of 4 units of blood products and/or hemorrhage >1,500 mL), and all unplanned intrapartum hysterectomies must be part of a Quality Improvement process.

- Equipment

Essential Element: Centers must have a rapid infusion device present on the Labor and Delivery Unit.

Recommendation: Ideally, point-of-care testing (including viscoelastic testing) should be available on the Labor and Delivery Unit.⁶⁶ If not available, there should be a mechanism to expedite the processing of laboratory testing in obstetric emergencies.

Essential Element: Centers must have intraoperative cell salvage availability for high-risk scenarios (e.g. patients who do not accept banked blood, unavailable blood due to immunological incompatibility, anticipated major hemorrhage/PAS cases, etc.).

Airway Management and Emergency Resources

- Airway management

Despite the lack of a standardized definition of difficult intubation in obstetric patients, the estimated rate of difficult intubation in the obstetric population currently ranges between 1:25 and 1:50,^{67,68} which is likely lower than in the past,

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due to improvements in equipment and use of videolaryngoscopy.⁶⁹ The Obstetric Anaesthetists' Association (OAA) and Difficult Airway Society (DAS) published guidelines with the aim to standardize airway management for the routine obstetric general anesthetic, as well as give guidance with a series of algorithms and cognitive aids.^{70,71}

Essential Element: Centers must have difficult airway supplies on the Labor and Delivery Unit, along with institutional and/or difficult airway algorithms attached to the difficult airway cart and/or displayed in the operating rooms.

Essential Element: Centers must have immediately available dedicated suction and means to deliver positive pressure ventilation and supplemental oxygen (e.g. bag valve mask device) in accessible locations where neuraxial analgesia/anesthesia and/or general anesthesia are administered, including labor rooms where labor neuraxial analgesia is administered.

- *Emergency resources*

Essential Element: Centers must have lipid emulsion (Intralipid™), along with other supplies to allow a timely response to local anesthesia systemic toxicity (LAST).

Cognitive aids and clinician awareness of resources to manage all emergencies on the Labor and Delivery Unit should be available, and training to facilitate team member awareness of the location and means to retrieve resources to better manage LAST.

Essential Element: Centers must have dantrolene formulations and sterile water vials, along with other supplies to allow a timely response to malignant hyperthermia (MH).

Cognitive aids and clinician awareness of resources to manage all emergencies on the Labor and Delivery Unit should be available, and training to

facilitate team member awareness of the location and means to retrieve resources to better manage MH.

Recommendation: Cognitive aids and clinician awareness of resources to manage all emergencies on the Labor and Delivery Unit should be available, and training to facilitate team members' awareness of the location and means to retrieve resources to better manage anesthetic and obstetric emergencies is recommended.

Multidisciplinary Team-Based Approach and Institutional Resources Education

- *Communication*

Evaluating high-risk patients (e.g. cardiac patients) in high-risk obstetric anesthesia outpatient clinics (pre- delivery) improves communication, preparedness, management, and outcomes.⁷²⁻⁷⁵

Essential Element: Centers must have systems in place to ensure interprofessional communication regarding antepartum patients, patients on the Labor and Delivery Unit, and postpartum patients (e.g., board sign-out at each change shift of anesthesiology staff, pre-procedural time-outs, post-procedural briefings as indicated, twice daily interdisciplinary rounds or huddles to discuss management plans for all patients, and notification of admission of new high-risk patients).

- *Higher level of care*

Recommendation: It is recommended to have the capability for invasive monitoring, and that administration of vasopressors is available on the Labor and Delivery Unit (preferably) or

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in an ICU in conjunction with Labor and Delivery personnel.

Essential Element: For patients requiring a level of care above that available at a given center, there must be a process for transferring out to a higher-level care facility.

Education

- Learning and teaching

Essential Element: The obstetric anesthesia lead and the majority of core faculty members must show evidence of ongoing participation in continuing medical education relevant to the practice of obstetric anesthesia (e.g. SOAP/subspecialty membership – over 80% target for attending specialists being SOAP members - with attendance at annual SOAP meetings or equivalent obstetric anesthesia-focused meetings at least every other year, and can provide examples of professional practice improvement or evidence-based updates to clinical practice).

Essential Element: The attending anesthesiologists providing obstetric anesthesia care must participate regularly in multiprofessional simulation drills to maintain readiness for obstetric emergencies and crisis management skills (ideally annually). Centers must have an active multidisciplinary program with obstetric and anesthetic emergency simulation drills on specific scenarios (e.g. emergent cesarean delivery, maternal cardiac arrest,⁷⁶ difficult/failed intubation, obstetric hemorrhage, and eclampsia). The Joint Commission requirement is for centers to have annual postpartum hemorrhage and maternal severe hypertension/preeclampsia drills.

ACOG recommends that drills be run quarterly, rotating personnel so everyone has an opportunity to participate; monthly drills may be beneficial in

larger/high-volume units. This approach helps maintain readiness for obstetric emergencies, improves team communication and enhances patient safety. Simulation drills for anesthesiology providers only may be acceptable, if no formal multidisciplinary program exists, or to supplement pre-existing drills.

Recommendation: It is recommended to have regular (e.g. every 1-2 months) staff meetings for updates on the clinical service and ongoing education.

Addressing Disparities and Inequities in Clinical Care and in the Workforce

Racial and ethnic disparities exist in obstetric anesthesia, and action is required to minimize them and address all racial and ethnic disparities affecting pregnancy-related outcomes.⁷⁷⁻⁷⁹

Essential Element: Centers must adopt patient-centered, equitable, and compassionate practices throughout the peripartum period and address disparities in obstetric anesthesia care. Resources for non-English speakers (translation and interpretation services 24/7) and access to information and communication in patients' preferred language must be available. All anesthesia team members providing obstetric anesthesia care must attend some form of education on respectful care, patient autonomy, and cultural humility. Centers should actively work to reduce disparities in obstetric anesthesia care, and challenge misconceptions and biases (e.g. implicit bias, micro-aggression) that affect clinical decisions.

A diverse organization creates a culture where the values of inclusion, respect, and appreciation are reinforced. Inclusivity provides equitable access to opportunities and resources for people who might otherwise be excluded or marginalized.⁸⁰

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Essential Element: Centers must foster an inclusive environment with a diverse workforce; this includes dedicated diversity, equity, and inclusivity (DEI) committees, leadership roles for underrepresented groups, and a pipeline for equitable professional development for individuals of underrepresented groups in medicine, according to the SOAP DEI statement.⁸⁰

Recommendations and Guidelines Implementation

- Practice Guidelines for Obstetric Anesthesia by the ASA Task Force

Essential Element: Centers must adhere to the 2016 ASA Practice Guidelines for Obstetric Anesthesia recommendations regarding neuraxial labor analgesia (i.e. there is no need for routine platelet count immediately prior to neuraxial labor procedure in healthy patients; appropriate liquid and diet restrictions should apply; early placement of labor analgesia if requested and “not withhold neuraxial analgesia on the basis of achieving an arbitrary cervical dilation”).¹⁴

- SOAP Consensus Statement on the Management of Cardiac Arrest in Pregnancy

Essential Element: Centers must implement the 2014 SOAP Consensus Statement on the Management of Cardiac Arrest in Pregnancy.²

- SOAP Consensus Statement on Thromboprophylaxis (Anticoagulation)

Essential Element: Centers must adhere to the 2018 SOAP statement on Neuraxial Anesthesia in Obstetric Patients Receiving Thromboprophylaxis (anticoagulation) and provide evidence of implementation.³

- SOAP Consensus Statement on Thrombocytopenia

Essential Element: Centers must adhere to the 2021 SOAP statement on Neuraxial Procedures in Obstetric Patients with Thrombocytopenia and provide evidence of implementation.⁵

- AIM Patient Safety Bundles

AIM is a U.S. nationally funded Quality Improvement initiative formed in 2014 to support best practices that make childbirth safer, to improve maternal health outcomes and save lives.^{81,82} Since 2015, there has been a call to action for anesthesiologists to actively participate and implement Patient Safety Bundles.⁸³ Patient Safety Bundles are a structured way of improving the processes of care and patient outcomes through collections of evidence-informed best practices, developed by multidisciplinary experts, which address clinically specific conditions in pregnant and postpartum patients. Patient Safety Bundles are organized into five domains (the 5Rs): **Readiness, Recognition and Prevention, Response, Reporting and System Learning, and Respectful Care.**

Essential Element: Centers must implement all Patient Safety Bundles according to AIM. In addition to providing evidence of implementation of the Obstetric Hemorrhage and Substance Use Disorder Bundles in their respective sections above, centers must separately provide evidence of implementation of the following four bundles: Hypertension in Pregnancy,¹⁹ Cardiac Conditions in Obstetric Care,²¹ Perinatal Mental Health Conditions,^{23,24} and Sepsis in Obstetric Care.²⁵

Quality Assurance and Patient Follow-Up

Essential Element: All postpartum patients must be evaluated, and protocol criteria fulfilled prior to discharge or transfer from the Labor and

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Delivery Unit. All patients who received an anesthesia or analgesia procedure must be evaluated by the anesthesia team on the postpartum floor prior to hospital discharge.

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