Bleeding news

Evaluating the Association Between Fibrinogen and Rotational Thromboelastometry and the Progression to Severe Obstetric Hemorrhage

Mary Yurashevich, Morgan Rosser, Maria Small, Chad Grotegut, Nancy Kota, John Toffaletti, and Terrence Allen.

Clinical and Applied Thrombosis/Hemostasis 2023;29:1-10

Author of the comment: : *Dra. Raquel Ferrandis Comes.* *Anesthesiology and Resuscitation. Hospital Universitari i Politècnic La Fe, Valencia. Member of the SEDAR-COVID working group.*

Obstetric hemorrhage is still one of the main causes of maternal death, in spite of the breakthroughs over the last few years. One of the aspects where there is room for improvement is early diagnosis, on account of the difficulty it involves, given the complexity of the scenario, particularly in the group of patients developing a massive hemorrhage.

One of the parameters that have already been described in the literature is fibrinogen levels, with a positive predictive value of 100% in terms of progression to massive obstetric hemorrhage (MOH) when it falls below 200 mg/dl. At the same time, the value of ROTEM FIBTEM A5 can be used as a predictor of progression to MOH, but the value of the remaining parameters in the viscoelastic test remains unknown.

Following a retrospective study, the authors analyze the data in 155 patients with massive hemorrhage, of which 108 patients progressed to MOH, defined as a drop of 4 points or more of hemoglobin, or the transfusion of at least 4 packed red blood cells. According to a univariate analysis (due to a lack of sample), the cutoff points with a significant difference between both groups, measured at the start of the bleeding, were 289 mg/dl for fibrinogen, 62 s for CFT (clot formation time), 19 mm for FIBTEM A10, 17 mm for FIBTEM A20, 72^{o} for the alpha angle, 57 mm for EXTEM A10, and 65 mm for EXTEM A20.

Having parameters of the viscoelastic test as predictors of a progression to MOH may bring about an earlier response, and therefore, more efficient. It must be noted that the ROTEM parameters described are within a normal range for a pregnant patient. Thus, further studies would be required to help building new risk prediction models including both laboratory and clinical parameters of an optimal management of obstetric hemorrhage.

Bleeding news

Postpartum haemorrhage in high-resource settings: Variations in clinical management and future research directions based on a comparative study of national guidelines

PLM de Vries, C Deneux-Tharaux, D Baudios, KK Chen, s donati, F Goffinet, m caballero, R D'Souzah, Suéteres M, T van den Akker

BJOG. 2023 May 31. doi: 10.1111/1471-0528.17551.

Author of the comment: *Dra. Pilar Marcos.* *Intensive Care Medicine. Hospital Germans Trias i Pujol, Badalona, Barcelona.*

Introduction

Mortality due to postpartum hemorrhage (PPH) has decreased in countries with abundant resources, following the implementation of national clinical practice guidelines (CPG), but it is still one of the main causes of maternal death.

The goal of this review was to bring to light the discrepancies between these different guidelines in terms of definitions (PPH, bleeding measurement) and treatments (1st- and 2nd-line uterotonics, non-pharmacological management and fluid resuscitation, blood products and blood derivatives), thus proving the need to carry out more robust studies.

MATERIAL AND METHODS

A comparison is drawn between CPGs from 8 countries with abundant resources (France, Italy, United Kingdom, Germany, The Netherlands, Australia – New Zealand, Canada, and the US). Following the AGREE II criteria, the guidelines considered to have the highest scientific quality are those of France, Italy, and the United Kingdom.

AGREE II TOOL

DOMAINS (Score 0-100)
1. Reach and goal
2. Participation of stakeholders
3. Rigour in the preparation
4. Clarity of the presentation
5. Applicability
6. Editorial independence

Overall qualification (0-100 score)

Would you recommend using this guideline?

AGREE II tool. Adapted from Brouwers MC, et al. AGREE II: advancing guideline development, reporting and evaluation in health care. CMAJ. 2010;182(18):E839–42.

Bleeding news

RESULTS

Definition of postpartum

- ☒ The *most* widely accepted definition of **PPH** is a blood loss > 500 mL.
- ☒ *German and Canadian PCGs* **define PPH** based on the **delivery method** → which is absurd from a pathophysiological standpoint, since the hemodynamic repercussion is secondary to the amount of blood loss, no to the way it is lost.
- ☑ *Canadian, Italian, and English PCGs* recommend assessing **clinical parameters** reflecting the maternal pathophysiological response to bleeding → highly recommended in the usual clinical practice.
- ☑ *English PCGs* are the ones that best define the **severity of PPH,** facilitating massive transfusion. Thus, **moderate PPH** is defined as bleeding > 1000-2000 mL, and **severe** PPH as bleeding > 2000 mL.

Measurement of bleeding

- ☒ A *third of PCGs* recommend **measuring blood losses** by means of collectors, weight in gauze, or both.
- ☑ *Canadian, Italian, and English PCGs* rather **measure bleeding** through clinical variables reflecting its **hemodynamic repercussion** → Highly recommended in the usual clinical practice.
- ☑ Only *French and English PCGs* recommend **measuring blood losses** right after birth.

CSL Behring

Bleeding news

Prevención de la HPP

- ☑ *All guidelines* recommend as a **first choice** an **oxytocin** prophylactic bolus in case of vaginal delivery:
  - ☒ They disagree as to the route of administration. Currently, the available evidence recommends the **intramuscular route.**
  - ☒ They disagree as to the dose, ranging from 3 to 10 UI.
  - ☒ *Some* PCGs recommend a perfusion of oxytocin after the bolus, although they disagree on the dose.
- ☒ *German, Canadian, and Australian PCGs* suggest using **carbetocin** as an alternative uterotonic prophylaxis to oxytocin, in case of C-section.
- ☒ *French and German PCGs* do not recommend **performing controlled cord traction.**
- ☒ Only *half of PCGs* mention **manual extraction of the placenta**, and they recommend it 30 to 60 minutes after delivery.

2nd-line uterotonics

- ☑ *TII PCGs* recommend **several 2nd-line uterotonics** if oxytocin fails.
- ☑ All PCGs recommend **intravenous prostaglandins** (sulprostone or carboprost):
  - ☒ *All PCGs* concur on the dose and administration of sulprostone.
  - ☒ There is no uniform opinion on the doses and administration of carboprost.
  - ☒ *Half of PCGs* recommend using misoprostol (rectal or sublingual), whereas the *other half (French, Dutch, German, and Italian)* do not recommend it at all.
- ☑ *All PCGs* recommend using **ergot alkaloids** (ergometrine and methylergometrine), except for the *French and German PCGs,* which recommend them against them for their serious adverse effects.

CSL Behring

Bleeding news

Non-pharmacological measures

- ☑ *All PCGs* recommend **uterine tamponade** when 2nd-line uterotonics fail:
  - ☒ There is no consensus on which is the best method: uterine balloon, vaginal packing with hemostatic agents.
  - ☑ *Some PCGs* specify it is a “bridge” measurement to a final treatment.
- ☑ *All PCGs* recommend **arterial embolism** when 2nd-line uterotonics fail, before resorting to more radical measures, such as hysterectomy.
- ☑ *All PCGs* recommend **any surgical method** that preserves the mother's fertility before resorting to hysterectomy (compression sutures or vascular ligations).
- ☑ *All PCGs* recommend **hysterectomy** as the last-resort therapeutic option.

Resuscitation and transfusion

- ☑ *Most PCGs* recommend early resuscitation with **crystalloids,** guided by hemodynamics.
- ☑ *Half of PCGs* recommend **PRBC and FFP transfusion** following fixed or lab test-based transfusion ratios, and *the other half* recommend guiding transfusion by viscoelastic tests.
- ☑ Even *French and English PCGs* recommend **POCT to measure hemoglobin.**
- ☑ *Most PCGs* recommend maintaining a **platelet** level between 50x10^9/L and 100x10^9/L.
- ☑ *All PCGs,* except the *American ones*, recommend supplementing **fibrinogen** to maintain levels between **1.5 and 2.5 g/L.** *English PCGs* recommend supplementing it with cryoprecipitates, and *Italian PCGs* favor fibrinogen, cryoprecipitate or FFP.
- ☑ **TXA** is recommended in *half of PCGs*, with similar timing and dosing.
- ☑ *All PCGs* recommend against using **rFVIIa,** given its high cost and risk of thrombosis.

  Using it would only be accepted if the hemorrhage compromises the life of the mother despite all measures.

PRBC: Packed Red Blood Cells, FFP: Frozen fresh plasma; POCT: Point of Care Testing; TXA: Tranexamic acid

Bleeding news

Managing the coagulopathy of postpartum hemorrhage: an evolving role for viscoelastic hemostatic assays

Sarah F Bell, Lucy de Lloyd, Nicholas Preston, Peter W Collins

PMID: 37019365 DOI: 10.1016/j.jtha.2023.03.029

Author of the comment: *Dra. Sonia María Veiras.* *Hospital Clínico Universitario de Santiago de Compostela. Head of Section at the Anesthesia and Resuscitation Department. A Coruña Province.*

Postpartum hemorrhage (PPH) is still the main cause of maternal mortality worldwide.

In the most privileges healthcare systems, it accounts for 80% of maternal morbidity, including the transfusion of blood products, ICU admissions, hysterectomies, and long-term psychological effects.

The incidence of PPH has increased due to risk factors such as obesity and C-section births.

As the classic teaching goes, in the etiology of PPH we must remember the four Ts: tone, tissue, trauma, and thrombin.

PPH management guidelines range between empiric transfusion and goal-directed therapy. None of them conveys a clear role for viscoelastic tests, and these are in fact not present in many maternity units because of their cost and a lack of sound evidence for their usefulness.

The authors have used over 12 years and have developed a binary algorithm for both ROTEM and TEG, to guide the replacement of fibrinogen and plasma.

Using the description of three clinical cases of PPH—the first one with normal coagulation, the second one with dilutional coagulopathy, and the third one with acute-onset obstetric coagulopathy,—the authors seek to shed some light on the heterogeneity in the presentation and management of coagulation in this obstetric emergency.

Trauma-induced coagulopathy has often been taken as a model for treatment in other hemorrhage scenarios, and this is a mistake, since in most cases obstetric hemorrhage hemostatic parameters stay within a normal range, on account of the physiological increase of coagulation factors during pregnancy. The continuation of an obstetric bleeding can however lead to a dilutional coagulopathy, and plasma replacement would become necessary in that case.

VETs should be present to reassure physicians in terms of the hemostatic situation and any deficiency to be corrected.

Bleeding news

Regardless of the underlying mechanism to the PPH, an early administration of tranexamic acid is recommended, as backed by the WOMAN trial, and fibrinogen should be replaced.

To ensure an optimal outcome in PPH scenarios, an early identification of the condition is fundamental, based on the quantification of blood loss, to trigger the alert for multidisciplinary treatment and the performance of VET to determine the best hemostatic therapy.

Bleeding news

CONCLUSIONS

The review if these eight CPGs lays bare the discrepancies between them in terms of PPH management. The aspect where they most concur is resuscitation with crystalloids and the use of blood products and blood derivatives, although half of the guidelines recommend guiding the treatment through lab tests, and the other half, through viscoelastic tests. More robust studies should be carried out.