

[Episode 159: Postpartum hemorrhage with Juanita Henao](#)

On this episode: Dr. Jed Wolpaw and Dr. Juanita Henao

In this 159th episode I welcome Dr. Juanita Henao to the show to discuss prevention and management of postpartum hemorrhage.

One CORRECTION: At about minute 4:30 Dr. Henao states that in women with PPH the mortality rate is 10% but what she meant to say is that PPH accounts for 10% of maternal deaths in the United States.

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Dr. Juanita Henao's Bio

0:00 – 2:48

- From Columbia in South America; went to medical school in Bogota
- Moved to United States for anesthesia residency at University of Miami Jackson Memorial Hospital → stayed for fellowship in obstetrical anesthesia
- Picked obstetrical anesthesia because a lot of women didn't have access to labour analgesia in 3rd world countries; able to provide relief for patients; get appreciation from patients
- Committed to women's health care

What is Postpartum Hemorrhage?

2:49 – 5:34

- Postpartum hemorrhage is excessive bleeding that occurs in first 24 hours after birth; could occur up to 12 weeks post-partum
 - o Traditionally, defined as >500mL of blood loss after vaginal delivery or >1000mL of blood loss after C-section
 - o In 2017, ACOG redefined as >1000mL of blood loss after birth or within 24 hours of birth regardless of mode of delivery
 - o Retained products of conception causing bleeding in later stages, not most common cause of post-partum hemorrhage
- Incidence varies around world
 - o Accounts for ~30% of maternal mortality in poorer countries
 - o In US, 3% incidence of post-partum hemorrhage; accounts for 10% of maternal deaths

Causes & Risk Factors

5:35 – 8:29

- Causes of post-partum hemorrhage:
 - o Uterine atony (most common cause; 70-80%)
 - Uterine atony = failure of uterus to contract after delivery of neonate
 - o Retained products of conception
 - o Laceration of uterus, cervix
 - o Vaginal tears
 - o Uterine rupture
 - o Abnormal placentation (eg. placenta previa, placenta accreta)
 - o Placenta abruption
 - o Coagulopathy
 - Risk factors for uterine atony: delivery via C-section, induced labour, augmentation with oxytocin, multiple gestations, macrosomic babies, polyhydramnios, high parity, prolonged labour, chorionitis
 - o Augmentation with oxytocin is risk factor because receptors desensitized with higher doses → when give more oxytocin, do not achieve same effect aka Tachyphylaxis
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Oxytocin Dosages

8:30 – 11:10

- Optimal oxytocin dose regimen for prophylaxis has a lot of controversy
 - o 20-30 units in 1L bag of NS or LR is appropriate → >40 units of diluted oxytocin will not achieve added effect because of receptor desensitization and attenuation
- Oxytocin has short half-life of 6 min → important to titrate slowly
- Oxytocin has structural similarities to vasopressin → high doses could cause water toxicity → risk of hyponatremia and seizures

Prevention

11:11 – 13:27

- Prevention and early recognition of risk factors are key
- Preparation with large bore IV access; fluid warmers in OR; blood type, screened and ordered
- Oxytocin is 1st line for prophylaxis and treatment
- ACOG recommends hospitals have protocols in place to coordinate response to post-partum hemorrhage including team responses, accurate estimation of blood loss, recognition of early signs of hypovolemic shock

Treatment

13:28 – 21:10

- Establish more IV access and administer IV fluids
- 1st line medications for uterine atony: oxytocin
- 2nd line medications for uterine atony:
 - o **Methylergonovine**
 - Unknown MOA; alpha adrenergic receptor stimulation
 - Causes hypertension → cannot be given to patients with severe preeclampsia
 - o **Prostaglandin F2 α** (other names: carboprost, hemabate)
 - Prostaglandin F2 α increases production of oxytocin → uterine contraction
 - Causes reactive airways → contraindicated in patients with asthma
 - Side effects: nausea and vomiting, fever, diarrhea
 - o **Prostaglandin E1** (other names: misoprostol)
 - Not as effective as Methylergonovine or Prostaglandin F2 α
- All volatile agents except nitrous oxide could cause uterine atony → if doing a general anesthetic for a C-section, decrease volatile agent, supplement with nitrous oxide and use propofol
- Other options (performed by obstetrician):
 - o Placement of intra-uterine balloon tamponade
 - o Compression sutures; most common type is B-Lynch suture
 - o Surgical ligation of uterine arteries
 - o Hysterectomy (last resort) → very morbid as vessels around uterus are engorged

What's On the Horizon?

21:11 – 25:45

- Carbetocin for prophylaxis → synthetic oxytocin with 40 min half-life
 - o Used in UK
 - o Administered as single dose without need for infusion
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- Side effects: hypertension, tachycardia, nausea
 - Tranexamic acid for treatment
 - WOMAN trial → biggest randomized, controlled, double-blinded trial in OB anesthesia
 - Results showed tranexamic acid may decrease maternal mortality associated with post-partum hemorrhage → recommend it's use within 3 hours of hemorrhage
 - Embolization of uterine arteries may be alternative if have time to bring patient to interventional radiology suite → problem is patient is often not stable enough to be transported
 - Used in certain institutions for high risk patients as preventative measure
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References

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