Educational Modules and Cognitive Aids for Providers Caring for Parturients Suffering from Obstetric Hemorrhage

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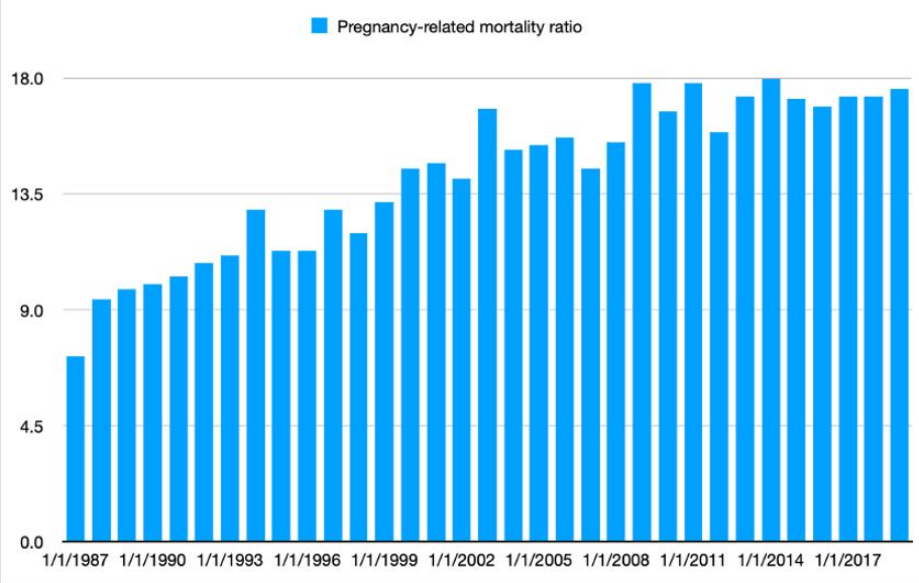
NO CONFLICTS OF INTEREST TO DECLARE

Objectives

- Describe the significance of obstetric hemorrhage in the US and the various factors leading to morbidity and mortality
- Review quantitative data related to provider confidence and knowledge in obstetric hemorrhage management
- Discuss the impact of evidence-based cognitive aids and online educational modules for obstetric care

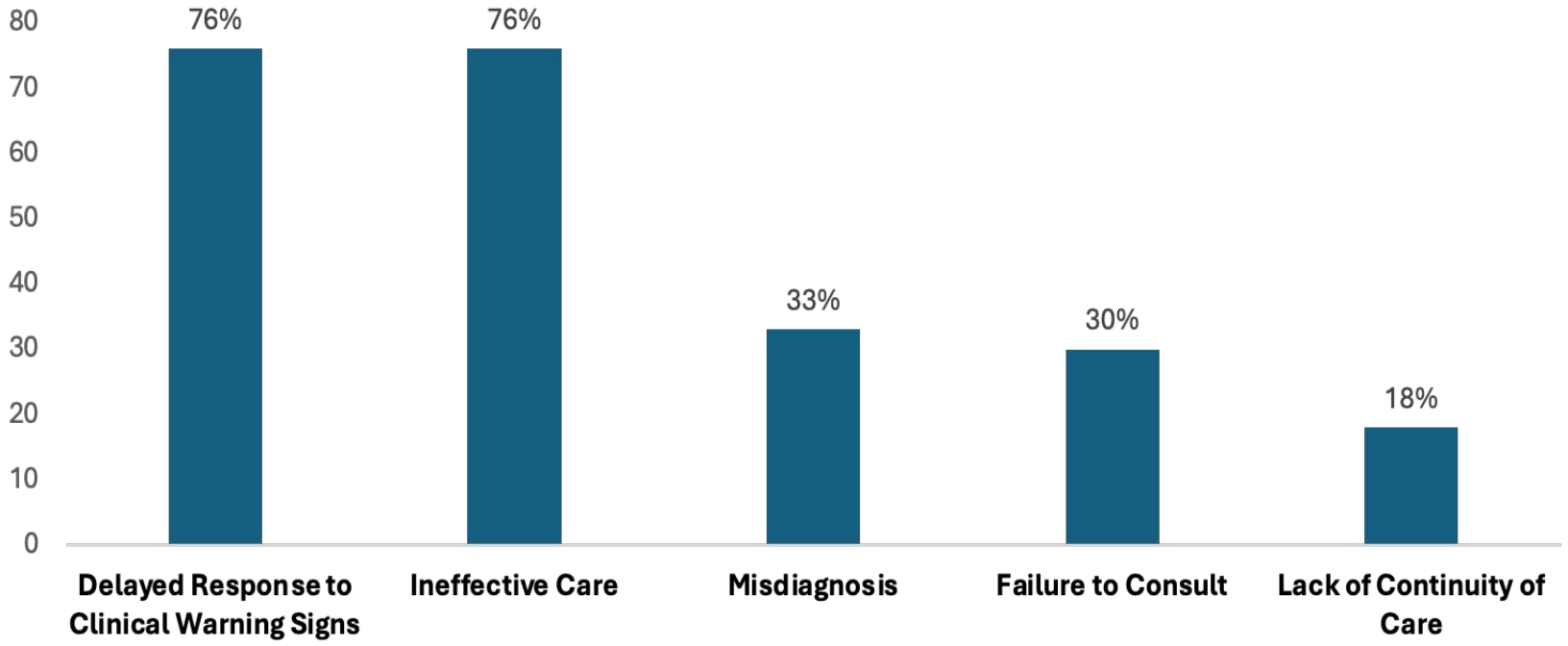
Background

- OBH has accounted for approximately **12% of pregnancy- related deaths each year** (Centers for Disease Control and Prevention [CDC], 2023)
- **Over $250 million per year** is spent on additional maternal costs associated with severe maternal morbidity (Phibbs et al., 2022).
- In Illinois, there are approximately 140,000 births annually, with **one out of every 150 women succumbing to severe maternal morbidity,** including OBH (Illinois Department of Public Health, 2021)
- Approximately **54-93% of maternal deaths due to OBH may be preventable**, suggesting provider identification and treatments were inappropriately delayed



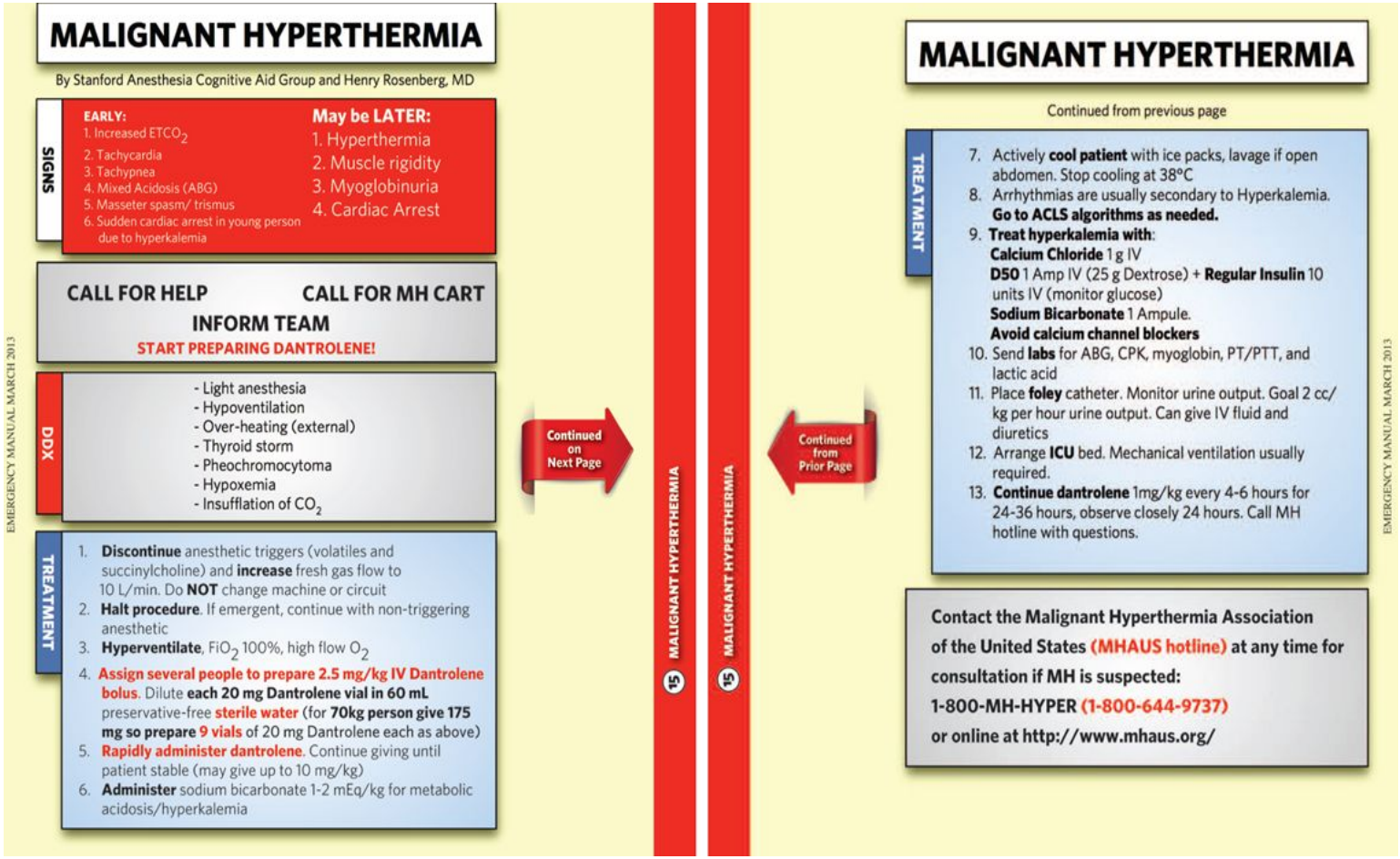
https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm

Provider Influences on Obstetric Hemorrhage Outcomes



The California Pregnancy-Associated Mortality Review. Report from 2002-2007 Maternal Death Reviews. Sacramento: California Department of Public Health, Maternal, Child and Adolescent Health Division. 2017

Cognitive Aids and Educational Modules In Healthcare



For healthcare providers caring for obstetric patients, does implementing **context-specific cognitive aids** and an **evidence-based online educational module** for identification and management of obstetric hemorrhage a**ffect provider knowledge and confidence levels?**

Aims of The Project

- Increase staff knowledge and confidence in OBH management
- Create cognitive aid and educational module based on best available practice guidelines
- Evaluate the impact of context-specific implementation of CA and educational module
- Observe secondary outcomes such as decreased maternal morbidity and mortality and decreased hospital costs

Organizational Need:

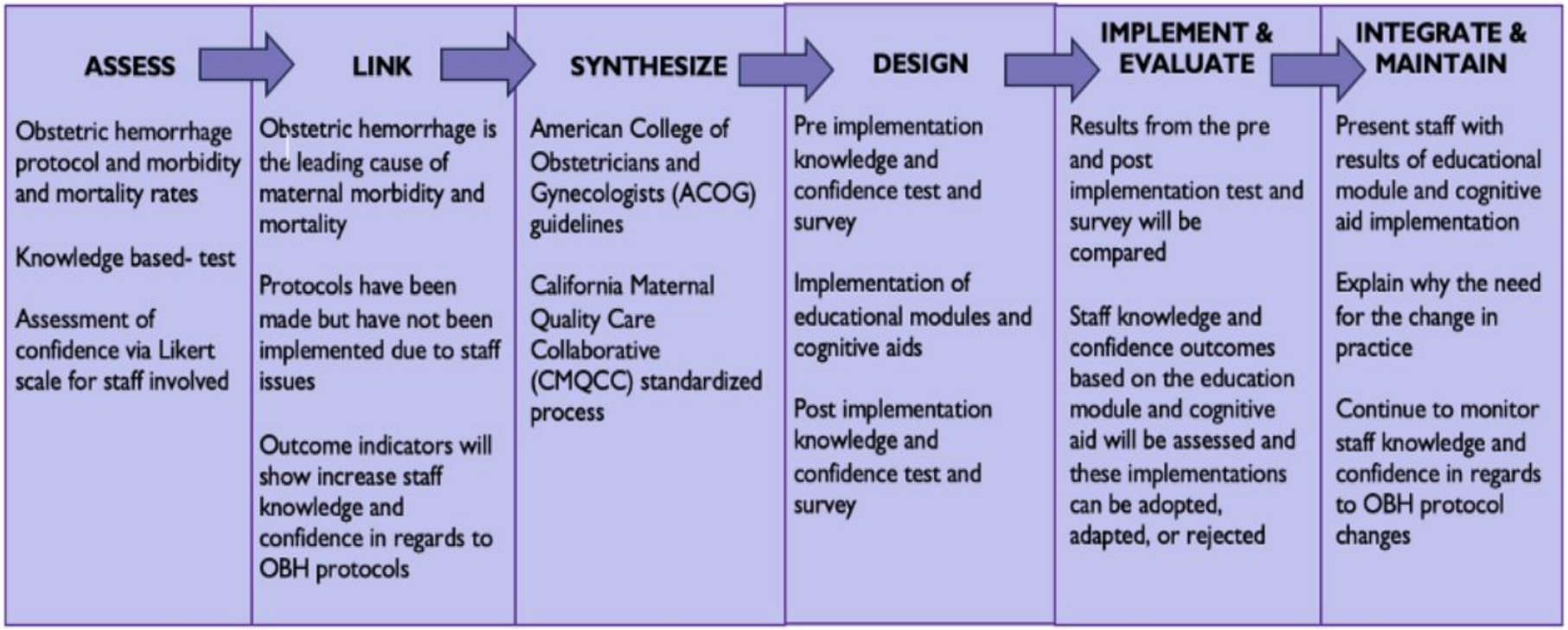
Northwestern Medicine Huntley Hospital

20-bed Family Birth Center

McHenry County Population: 311,747

Approximately 300-500 births annually

Theoretical Model for Change: Rosswurm & Larrabee

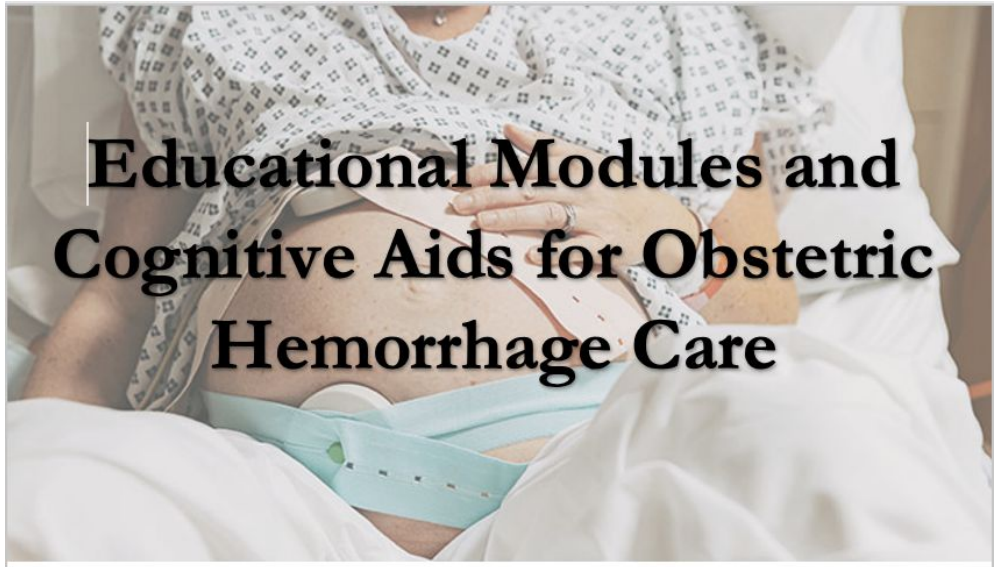


Methods

- **Project design:**
  - Prospective, single-group pretest-posttest, quasi-experimental with survey data collection
- **Intervention:**
  - Online educational module made with SkillsOnPoint through Teachable
    - Emailed to 43 staff members
  - Cognitive aid with best practice guidelines
    - OB hemorrhage cart, ORs, nursing unit, anesthesia office
- **Evaluation**
  - Anonymous pre- and post-implementation surveys via Qualtrics
    - Confidence survey + knowledge exam

Online Module

- 21 slides on Microsoft PowerPoint with script, recorded on iMovie
- Sections included:
  - Introduction and Objectives (0:56)
  - Background and Education (4:42)
  - Management and Treatment (6:44)
  - Cognitive Aid (3:10)
  - Conclusion (0:24)
- Total estimated time to complete: 25 mins
- Surveys implemented before and after completion of the module



Educational Modules and Cognitive Aids for Obstetric Hemorrhage Care

Scan the QR code below for module access.

Your participation is vital for improving obstetric care! THANK YOU for your time and for all you do to care for our parturients and their families.

If you have any questions or concerns regarding this education module please reach out to Joan Stout or Rachel Varghese.

POSTPARTUM HEMORRHAGE CHECKLIST & MANAGEMENT

WHAT IS IT?

Postpartum hemorrhage is defined as a blood loss of **>1,000mL** or blood loss accompanied by signs or symptoms of hypovolemia within 24 hours. However, blood loss **>500mL in a vaginal delivery** or a blood loss **>1500mL in a repeat c-section** is abnormal & should be investigated & managed

ASSESSING RISK FACTORS

LOW RISK
- No previous uterine incision
- Singleton pregnancy
- <4 vaginal births
- No bleeding disorder

MEDIUM RISK
- Prior c-section
- Multiple gestation, >4 vaginal births
- Chorioamnionitis, polyhydramnios
- History of PPH or uterine fibroids
- PLT count <100k, HCT < 30%
- Preeclampsia or prolonged labor

HIGH RISK
- Placenta previa or accreta
- Abruption or active bleeding
- Known coagulopathy
- HELLP syndrome
- PLT count <50k or HCT <24%
- Fetal demise

IMPORTANT PHONE NUMBERS

RAPID RESPONSE	5-5555
BLOOD BANK	654-0807
ANESTHESIA	VOCERA
OB HOSPITALIST/ATTENDING	VOCERA
NURSING SUPERVISOR	VOCERA

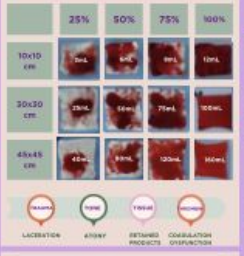
SIGNS & SYMPTOMS

CONFUSION
HR >110
BP < 85/45
O2 SAT < 95%
SHOCK INDEX 0.9
CONFUSION
DIAPHORESIS

RECOGNITION

Active bleeding: soaking a perineal pad (holds up to 80mL) in 1 hour or passing a clot > 6cm

PERCENTAGE OF SPONGE SATURATION



OTHER CONSIDERATIONS & INTERVENTIONS

- Intrauterine JADA system placement
- Uterine artery ligation
- Hysterectomy

INITIAL STEPS

1. Call for **additional help** & activate hemorrhage protocol
2. Bring cart & medications to the room
3. **Assess airway, breathing, circulation** & vital signs Q5 min
1. Provide **supplemental O2** >5L/min via mask
2. Ensure adequate, **large bore IV** access (at least 18 gauge)
3. Increase **fluids & increase oxytocin** rate
4. Provide **fundal massage**
5. Record **quantitative blood loss** Q5-15 min
6. Insert **straight cath** or **urinary catheter**
7. Potential to activate **Massive Transfusion Protocol (MTP)**

INFUSIONS & LABS

LACTATED RINGERS --- replaces blood loss 3:1

DRAW STAT BLOOD WORK --- CBC and type & cross if not already completed

WARM BLOOD PRODUCTS --- prevent lethal triad of hypothermia, coagulopathy, & acidosis

BLOOD PRODUCTS

PACKED RED BLOOD CELLS (PRBCS)
First line product for blood loss; 35-40 min for a crossmatch; in an emergency O negative blood is used
1 unit = 200mL volume

FRESH FROZEN PLASMA (FFP)
Highly desired if >2 units PRBCs given or for prolonged PT, PTT
1 unit = 180mL volume

PLATELETS (PLTS)
Priority for women with platelets < 50k
1 unit = 40-50k increase in platelets

CRYOPRECIPITATE (CRYO)
Priority for fibrinogen levels < 80
1 unit = 80-100 mg/dL increase in fibrinogen
Best for DIC with low fibrinogen where volume replacement is not needed

MEDICATIONS

OXYTOCIN (PITOCIN)
30units/500mL solution IV

METHYLERGONOVINE (METHERGINE)
0.2mg IM (may repeat)
Avoid with hypertension

HEMABATE, CARBOPROST
250mcg IM (may repeat Q20 up to 3x)
Avoid with asthma, caution with hypertension

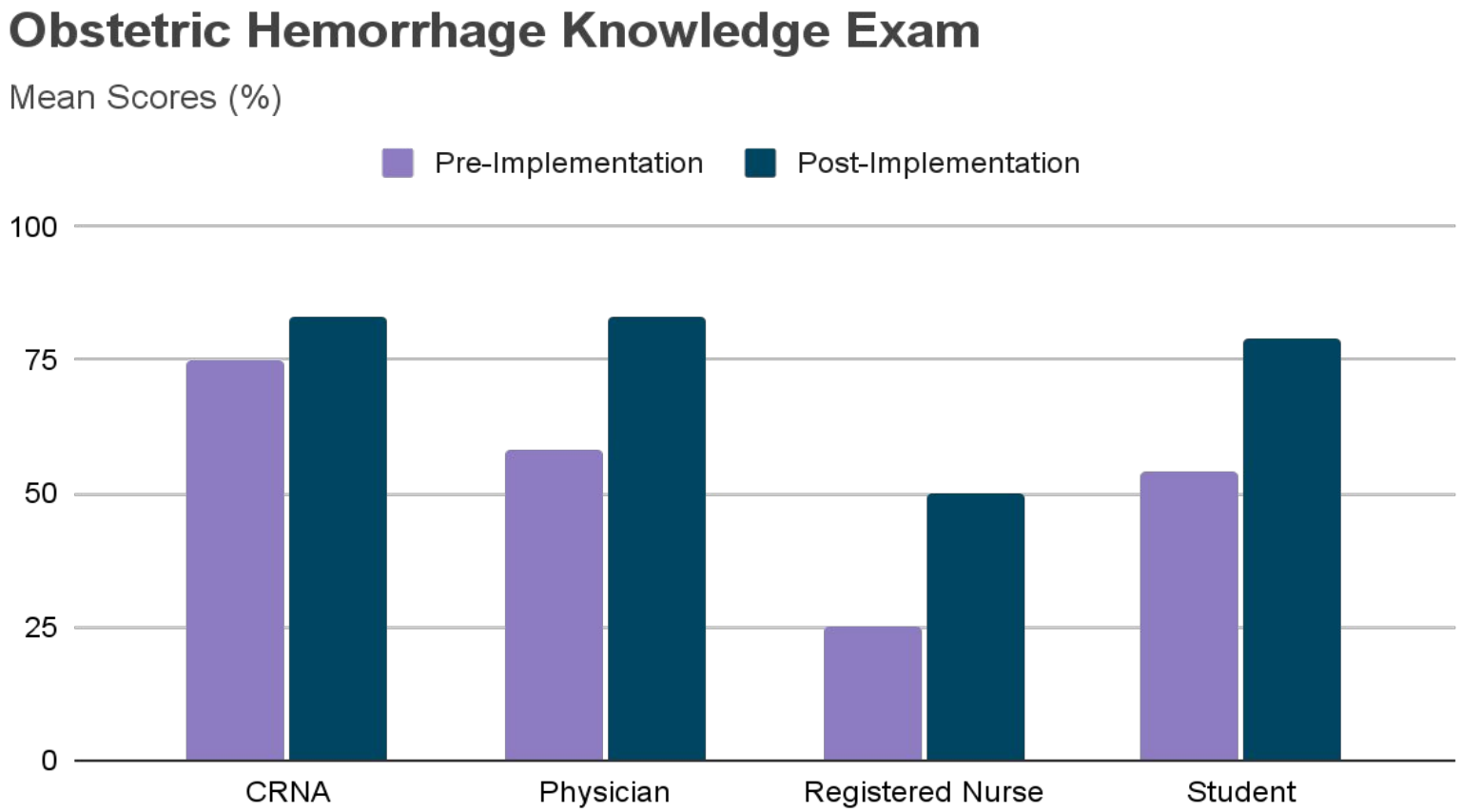
MISOPROSTOL (CYTOTEC)
800-1000mcg PR
600mcg PO *or* 800mcg SL

TRANEXAMIC ACID (TXA)
1 gram over 10 minutes (add 1 gram vial to 100mL NS bag); may repeat once after 30 min

Results

- 43 staff members received email invitation to participate in the study
  - 30 obstetric staff members
  - 13 anesthesia staff members
  - Additional 3 OBGYN physicians and 3 SRNAs recruited
- 16 participants signed up for the module → 6 completed the pre- and post-implementation surveys and exams and are included in the study

Staff Knowledge of OBH



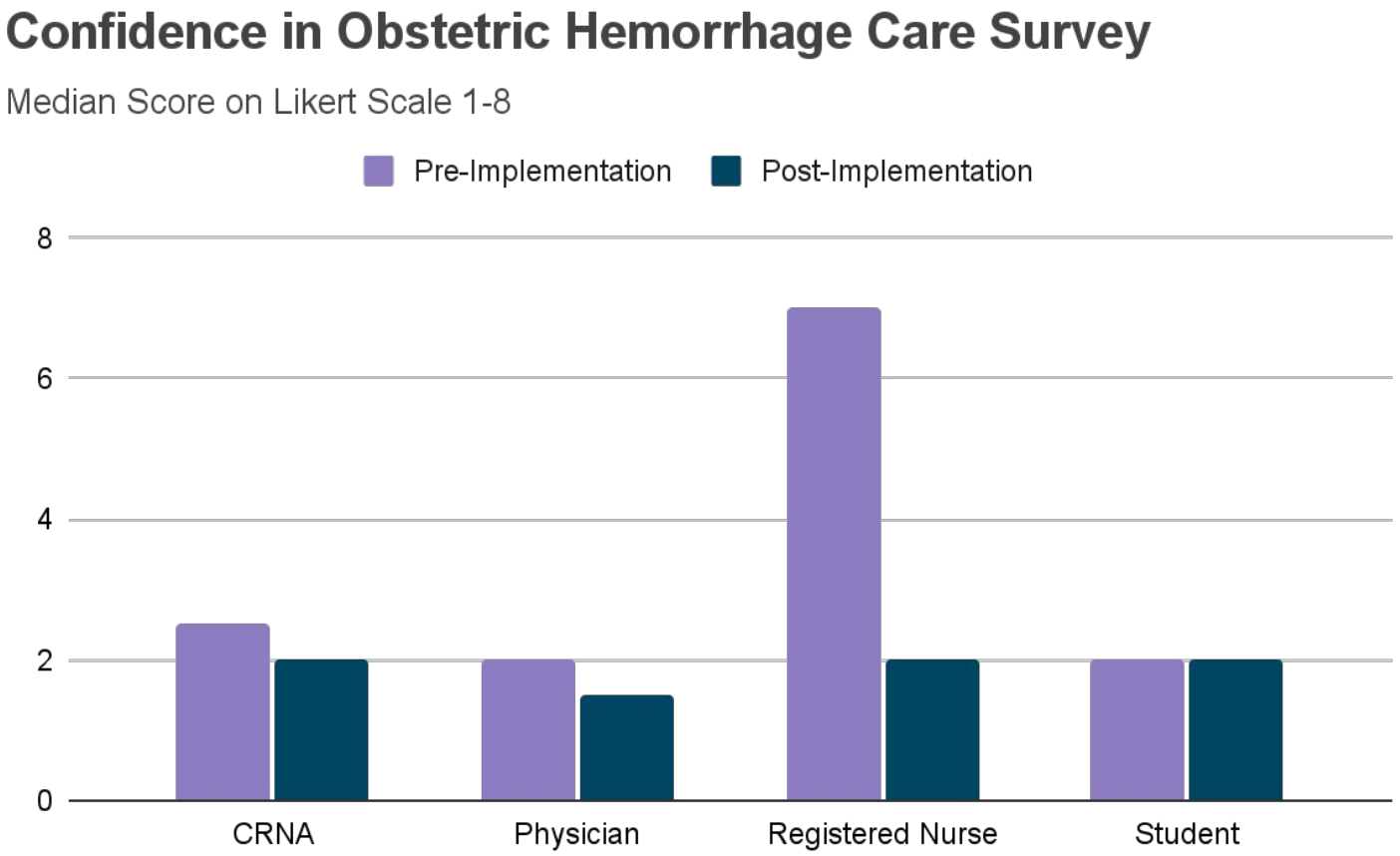
Note. Only completion of the entire module and pre- and post-tests were included in analyses. One question answered correctly accounts for one point, out of a total of 12 possible points. PPH = postpartum hemorrhage. (-) = No data points available. Data points were scored as a percentage of correct answers and averaged among the total number of participants.

Staff Self Confidence with OBH Management

Statement	Baseline score (median)	Post-implementation score (median)
I am able to stay calm in emergency situations	2	1.5
PPH will make me paralyzed/unable to act	2.5	2
I can handle PPH whenever it happens	3	2.5
I remain calm when handling PPH	2.5	2
I have experienced that I am able to act in situations with PPH	3.5	3.5
I am able to identify PPH in an early stage	2.5	2
I am confident in how to treat PPH	3	1.5
I can carry out the necessary actions to handle PPH	2	1

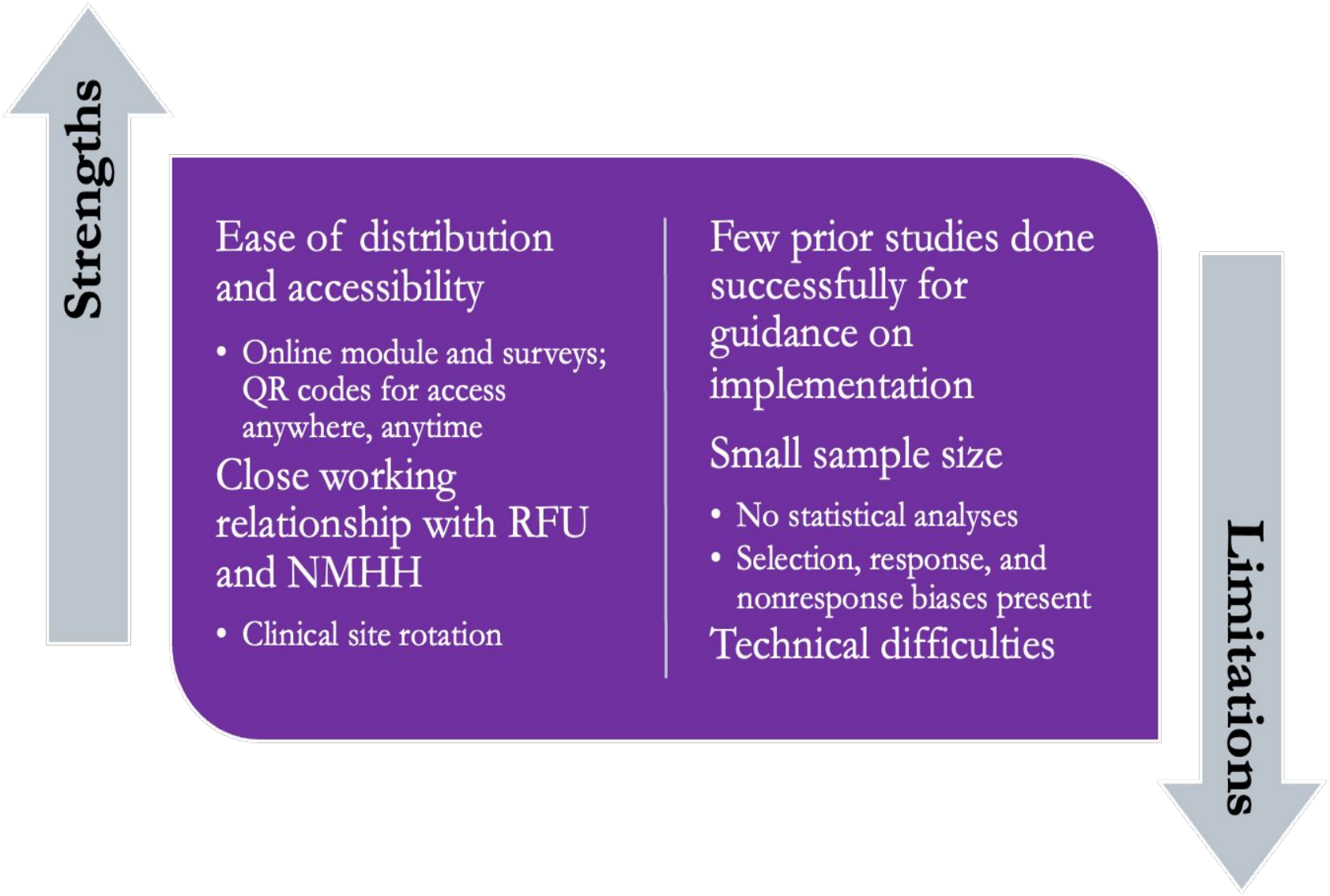
Note. OBH = obstetric hemorrhage. Scored on a scale ranging from 1 = always to 8 = never.

Staff Self Confidence with OBH Management, by Role



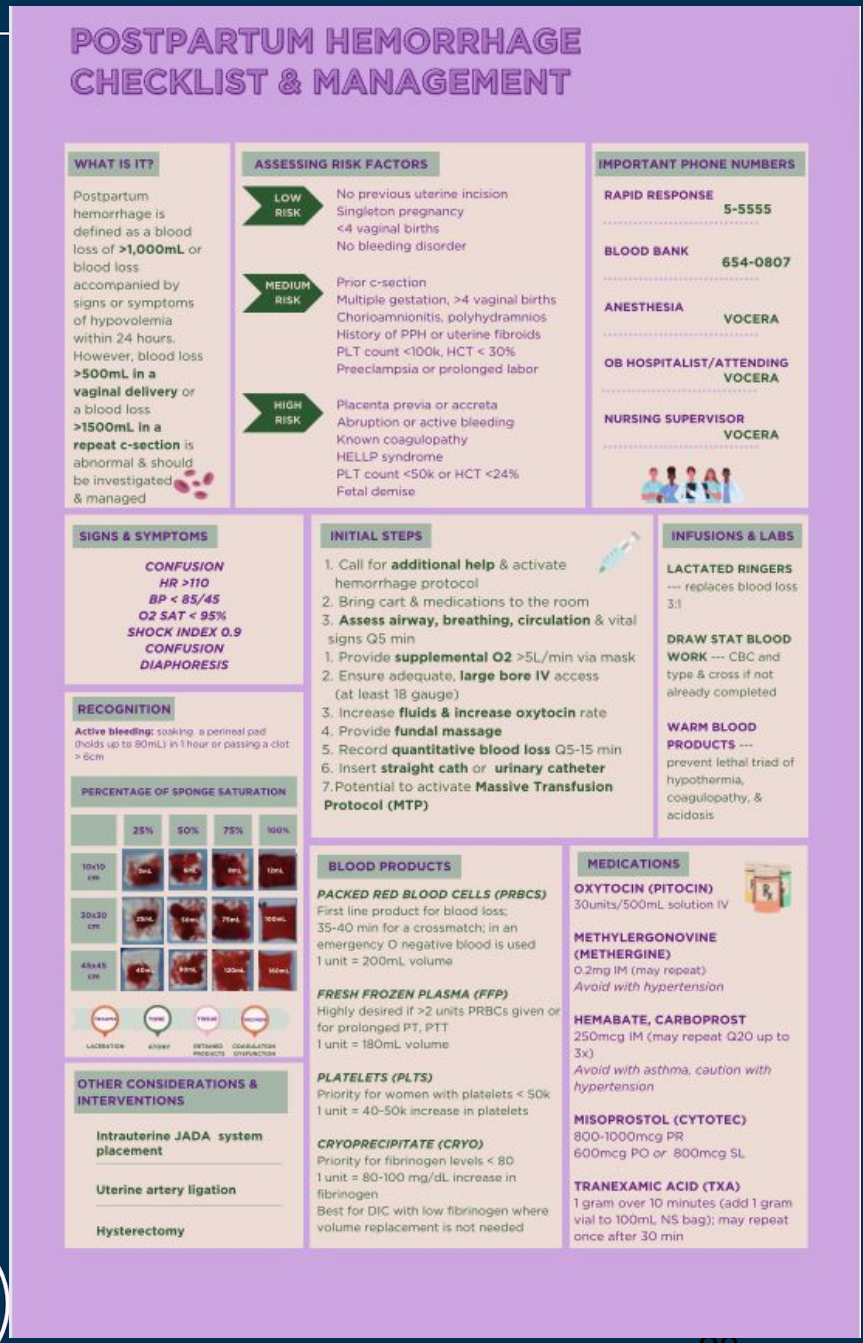
Note. OBH = Obstetric hemorrhage. Scored on a scale ranging from 1 = always to 8 = never. Question number 2 scored in reverse for analysis. (-) = No data points available.

Discussion


Strengths
Ease of distribution and accessibility
• Online module and surveys; QR codes for access anywhere, anytime
Close working relationship with RFU and NMHH
• Clinical site rotation
Few prior studies done successfully for guidance on implementation
Small sample size
• No statistical analyses
• Selection, response, and nonresponse biases present
Technical difficulties
Limitations

Translation to Practice

- **California Maternal Quality Care Collaborative (CMQCC)** and **American College of Obstetricians and Gynecologists (ACOG)** best practice guidelines:
  - Early and ongoing risk identification strategies
  - Establishing a chain of command for escalating care
  - Quantitative and cumulative blood loss measurements
  - Activating an OBH specific MTP
  - Emergency hemorrhage cart
  - Cognitive aids



Implementation Challenges

- Importance of EBP not valued by all
  - Average of 17 year lag-time
- Buy-in from leadership vital for student-led projects
- Clinician turnover, stress, and frequent schedule changes
  - Frequent meetings with leadership and staff

Dissemination

Conclusion

References

Scan me!