UNIVERSITY OF MICHIGAN HEALTH
MICHIGAN MEDICINE

The Early Warning Team: A Rapid Response Team for Maternal Hemorrhage

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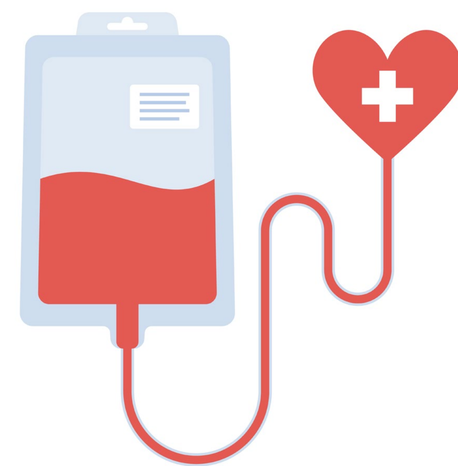
LEARNING OBJECTIVES

1. Outline key components of a local response team for postpartum hemorrhage
2. Identify required steps to utilize root cause analysis and design countermeasures.

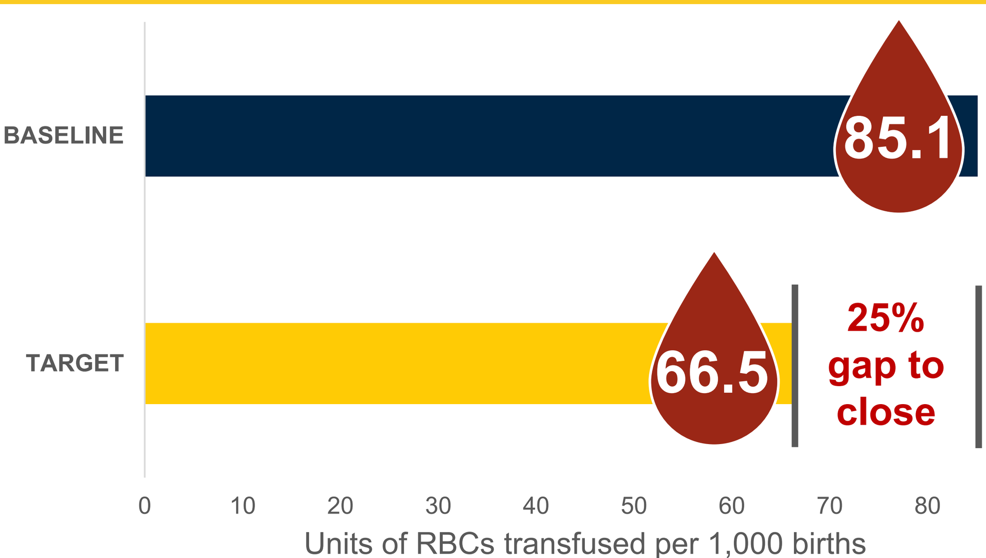
PROBLEM & IMPORTANCE

Nearly **1 in 5 women** at University of Michigan Health's Von Voigt lander Women's Hospital (VVWH) experienced a PPH in 2020.

- Postpartum hemorrhage (PPH) is defined as the cumulative blood loss of greater than or equal to 1,000 mL or blood loss accompanied by hemodynamic instability[1].
- Maternal hemorrhage leading to blood transfusions is a leading cause of maternal morbidity[1].
- **Optimizing preparedness, recognition and management of PPH reduces maternal morbidity and mortality.**



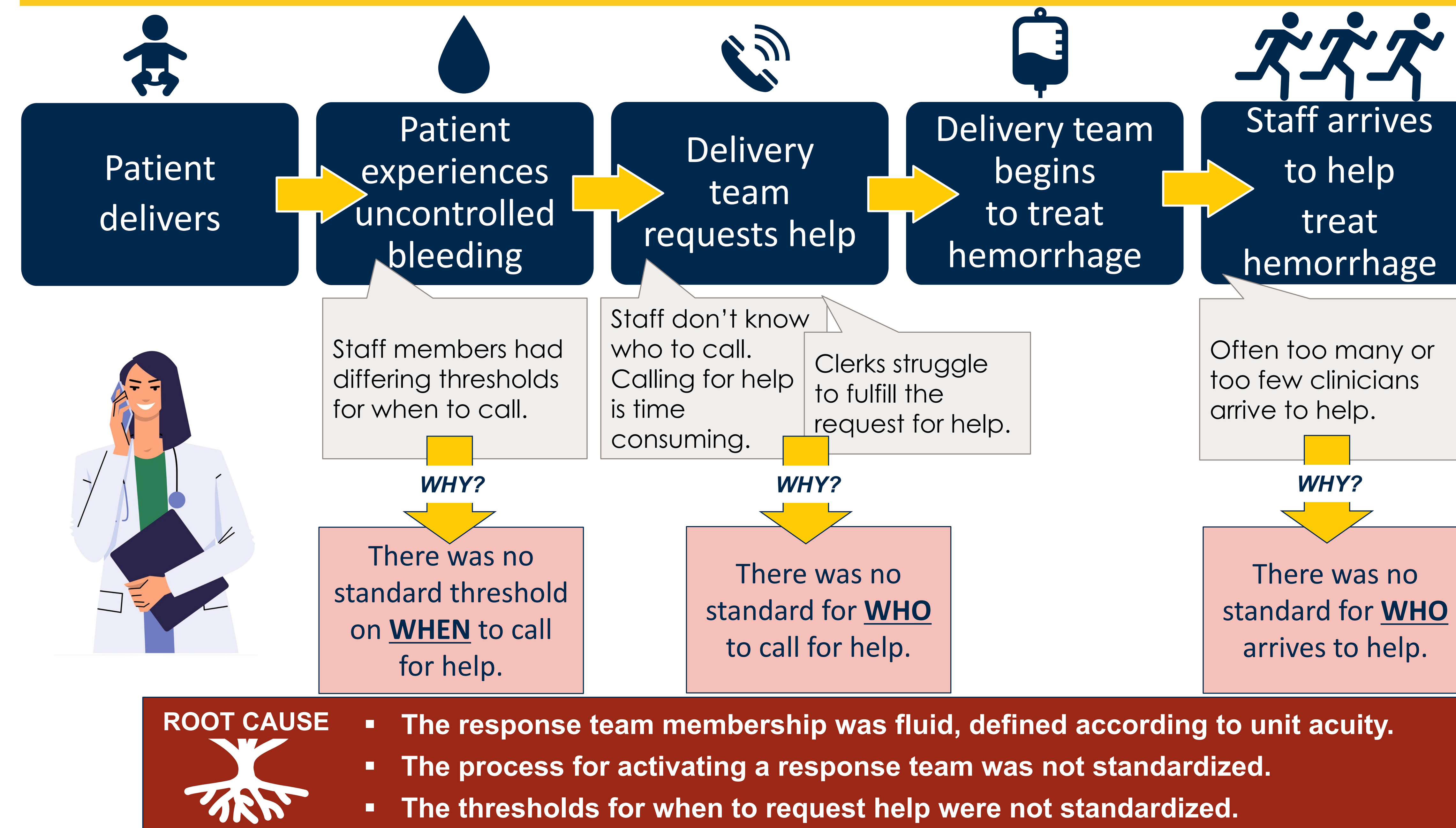
MEASURING SUCCESS



"The California Maternal Quality Care Collaborative (CMQCC) is a multi-stakeholder organization committed to ending preventable morbidity, mortality and racial disparities in California maternity care."[2]

CMQCC uses "units of RBC transfused per 1,000 births" as one way to measure a birth center's postpartum hemorrhage performance.

BASELINE STATE & ROOT CAUSE ANALYSIS



DESIGNING THE FUTURE STATE

1 Define a local response team for PPH: the Early Warning Team

DELIVERY TEAM:
- Delivering Provider
- Primary Nurse
- Secondary Nurse

EARLY WARNING TEAM:
- Attending Physician (non-delivery service)
- Chief Resident
- Anesthesia Chief Resident and/or
- Anesthesia Attending
- Nurse Unit Team Leader(s)

The number of staff entering room was given careful considerations to balance quality and safety of care with respecting and honoring the patient's first bonding moments with their new baby.

2 Define thresholds to activate the Early Warning Team

- A new communication plan was designed and adopted into the unit's PPH policy.
- The new policy was widely distributed in the unit via huddles, staff meetings, simulations, and at-the-elbow education.

Level	Criteria
ROUTINE COMMUNICATION situational awareness	QBL > 500 and bleeding is controlled
URGENT COMMUNICATION Early Warning Team reports to patient's location	VAGINAL QBL>500ml or CESAREAN QBL>1000ml and Ongoing bleeding, abnormal vital signs, and/or clinical concern or any case with QBL > 1500ml
STAT COMMUNICATION transfer patient to OR	Bleeding is uncontrolled and/or patient is unstable

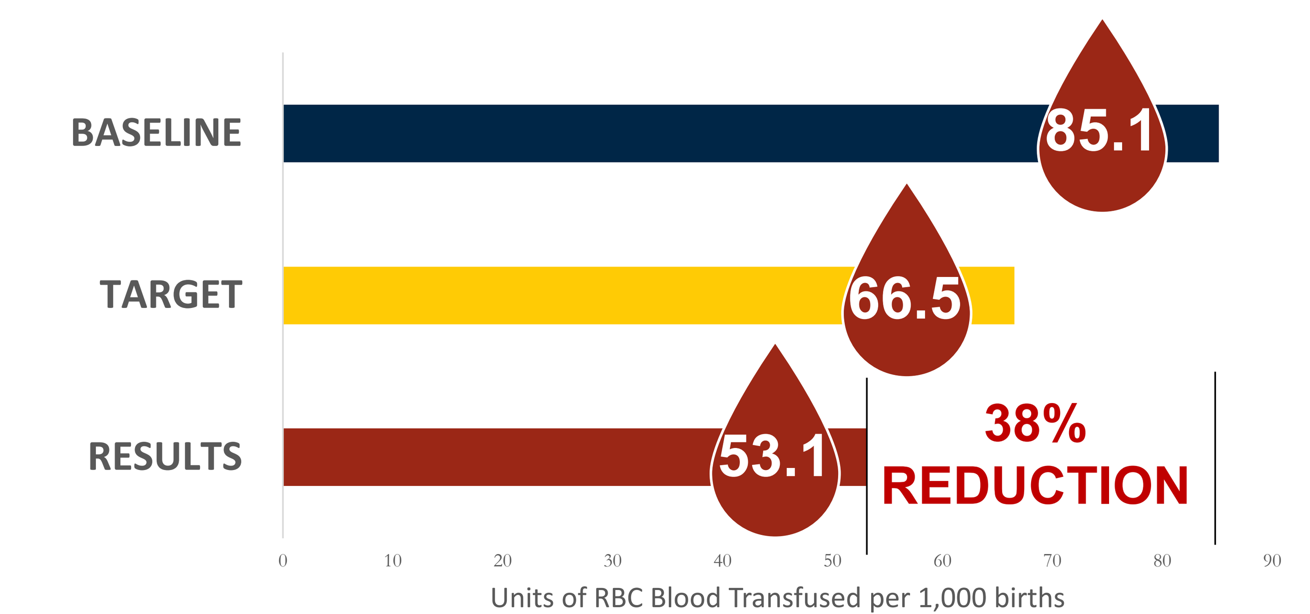
3 Define standard process and script to activate the Early Warning Team

WHEN **URGENT COMMUNICATION** CRITERIA ARE MET:

1. **Nurse or Provider activates the Early Warning Team by using the in-room phone that connects directly to the Unit Clerk.**
   "Call the Early Warning Team for PPH. The QBL is 750mL."
2. **Unit Clerk receives call, repeats back request for confirmation, and activates the Early Warning Team using a pre-populated Secure Chat message for PPH.**
   "I will activate Early Warning Team - PPH with a QBL of 750mL."
3. **Clinicians receive message on UCC phone and report to delivery room or delegate if unavailable.**
   "URGENT Early Warning Team PPH"
   Room Number: *** QBL: ***
   Service *** Phone:***

RESULTS

Between 7/1/21-7/31/22, VVWH transfused 53.1 units per 1,000 births, ***a 38% reduction from baseline***.



Appropriate activation of the Early Warning Team increased to 45% six months after implementation.

KEYS TO SUCCESS

A Multidisciplinary Team and Systematic Approach
- The team was comprised of all job roles working in the Birth Center.
- The team utilized scientific problem-solving approach to identify opportunities, root cause and a future state.

Implementation Strategy
- Educating staff at daily huddles, safety rounds, team/unit meetings, email, simulations and at-the-elbow support.

Sharing Performance
- A weekly scorecard with relevant outcome goals and process metrics was displayed in team spaces.
- A dashboard was created to monitor performance over time.

A Plan for Sustainment
- A control plan was utilized to identify priority metrics and reaction plans.

References
1. ACOG Practice Bulletin Number 183: Postpartum Hemorrhage. Obste Gynecol. 2017 Oct; 130(4): e168-e186
2. CMQCC (n.d.). Who We Are. https://www.cmqcc.org/who-we-are

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BASELINE STATE & ROOT CAUSE ANALYSIS

ROOT CAUSE

- **The response team membership was fluid, defined according to unit acuity.**
- **The process for activating a response team was not standardized.**
- **The thresholds for when to request help were not standardized.**

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2 Define thresholds to activate the Early Warning Team

ROUTINE COMMUNICATION	URGENT COMMUNICATION	STAT COMMUNICATION
situational awareness	Early Warning Team reports to patient's location	transfer patient to OR

3 Define standard process and script to activate the Early Warning Team

"Call the Early Warning Team for PPH. The QBL is 750mL."

"I will activate Early Warning Team - PPH with a QBL of 750mL."

"URGENT Early Warning Team PPH"

*Room Number: *** QBL: ****
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MEASURING SUCCESS

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KEYS TO SUCCESS