Diagnostic Challenges in Maternal Healthcare
ADVANCING DIAGNOSTIC EXCELLENCE IN MATERNAL HEALTH CARE: A WORKSHOP
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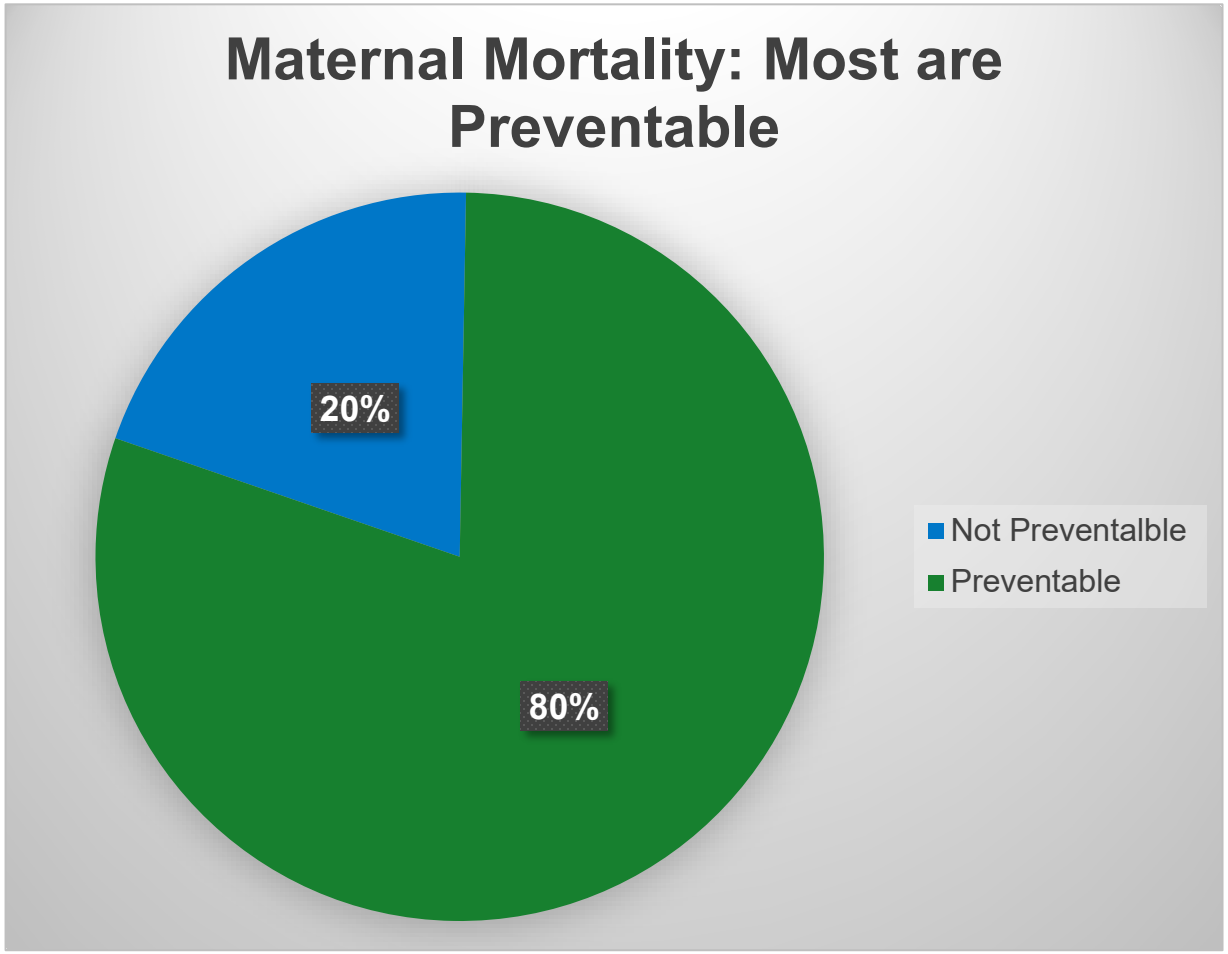
Disclosure

Dr. Dena Goffman developed Postpartum Hemorrhage Educational Videos with Haymarket and PRIME, is on the Obstetrical Safety Council for Cooper Surgical, is an expert consultant for Organon, and served as a PI for the Jada Pivotal Trial and Postmarket Registry

Maternal Mortality in US

- Increasing
- Exceeds other high-income countries
- Significant racial disparities
- Tip of iceberg



Maternal Safety Bundles

Obstetric Hemorrhage

Severe Hypertension in Pregnancy

Safe Reduction of Primary Cesarean Birth

Cardiac Conditions in Obstetrical Care

Care for Pregnant and Postpartum People with Substance Use Disorder

Perinatal Mental Health Conditions

Postpartum Discharge Transition

Sepsis in Obstetrical Care

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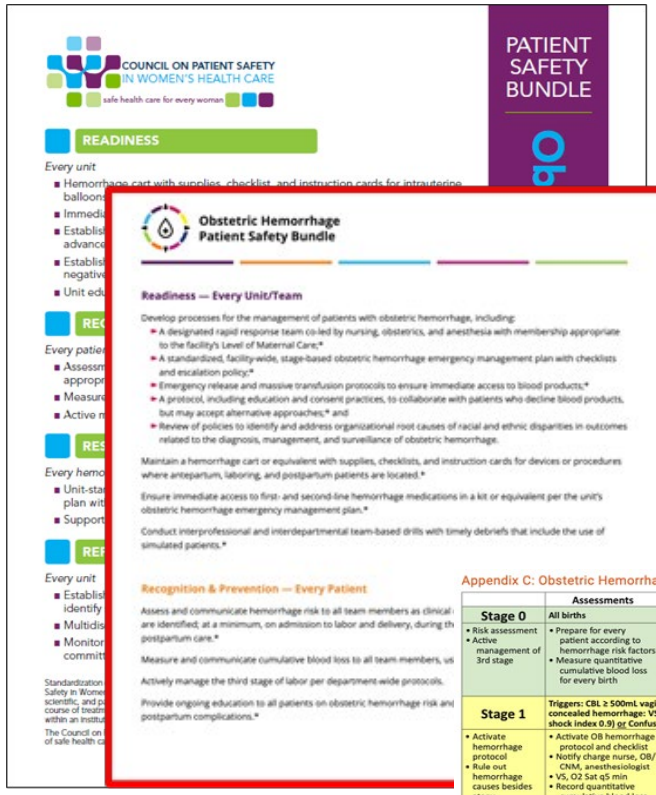


Appendix C: Obstetric Hemorrhage Care Guidelines: Table Format

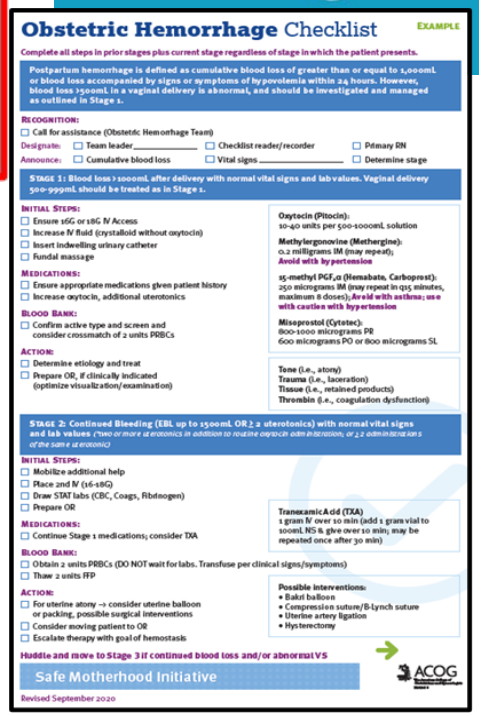
	Assessments	Meds/Procedures	Blood Bank
Stage 0	**All births**		
• Risk assessment • Active management of 3rd stage	• Prepare for every patient according to hemorrhage risk factors • Measure quantitative cumulative blood loss for every birth	• **Active Management of 3rd Stage** • **Oxytocin** IV infusion or 10u IM	• **Medium Risk:** T&S • **High Risk:** T&C 2 U • **Positive Antibody Screen** (prenatal or current, exclude low level anti-D from RhoGam): T&C 2 U
Stage 1	**Triggers: CBL ≥ 500mL vaginal / ≥ 1000 mL cesarean with *continued bleeding* or Signs of concealed hemorrhage: VS abnormal or trending (HR ≥ 110, BP ≤ 85/45, O2 sat < 95%, shock index 0.9) or Confusion**		
• Activate hemorrhage protocol • Rule out hemorrhage causes besides atony	• Activate OB hemorrhage protocol and checklist • Notify charge nurse, OB/CNM, anesthesiologist • VS, O2 Sat q5 min • Record quantitative cumulative blood loss q5-15 min • Careful inspection with good exposure of vaginal walls, cervix, uterine cavity, placenta. If intra-op, inspect broad ligament, posterior uterus and placenta.	• **IV Access: Minimum 18 gauge** • Increase IV fluid (LR) and **oxytocin** rate • **Fundal/bimanual massage** **MOVE ON** to 2nd level uterotonic if no response (see Stage 2 meds below) • Empty bladder: Straight cath or Foley with urometer	• **Convert to High Risk and take appropriate precautions** Consider T&C 2 Units PRBCs *where clinically appropriate if not already done*
Stage 2	**Triggers: *Continued bleeding* w/ CBL < 1500 mL or VS remain abnormal**		
• Sequentially advance through medications and procedures • Mobilize team and blood bank support • Keep ahead with volume and blood products • Determine source of bleeding **including concealed hemorrhage**	• **OB to bedside** • **Mobilize team:** 2nd OB, OB Rapid Response, assign roles • Continue VS & record **cumulative** quantitative blood loss q5-15 min • **Complete evaluation** of vaginal wall, cervix, placenta, uterine cavity • Send additional labs including DIC panel • If in Postpartum: Move to L&D/OR • Evaluate for special cases: - Uterine inversion - Amniotic fluid embolism	• **2nd Level Uterotonic:** - **Methylergonovine** 0.2mg IM *(if no HTN)* or - **Carboprost** 250 mcg IM *(if no asthma)* or *Only if hypertensive and asthmatic* - **Misoprostol** 800 mcg SL • **2nd IV access** (minimum 18 gauge) • Bimanual/uterine massage • TXA 1 gram - may repeat in 30 min • **Vaginal:** (typical order) - Move to OR - Repair any tears - D&C: r/o retained placenta - Place intrauterine balloon • **Intra-op Cesarean:** (typical order) - Inspect broad ligament, posterior uterus, and placenta - Uterine sutures - Place intrauterine balloon - Uterine artery ligation	• **Notify Blood Bank of OB hemorrhage** • Bring 2 Units PRBCs to bedside, consider use of **Emergency Release products** (un-crossmatched) and transfuse per clinical signs – *do not wait for lab values* • Use blood warmer for transfusion Consider activating MTP if there is ***continued bleeding***
Stage 3	**Triggers: *Continued bleeding* with CBL > 1500mL or > 2 units PRBCs given or abnormal VS or Suspicion of DIC**		
• Initiate Massive Transfusion Protocol • Invasive surgical approaches	• **Expand team** - Advanced GYN surgeon - 2nd anesthesia provider - OR staff - Adult intensivist • **Repeat** coags & ABGs • Central line • Family support	• Selective embolization (IR) • Laparotomy - Uterine sutures - Uterine artery ligation - Hysterectomy • Patient support - Warmer for IV fluids - Upper body warming device - SCDs	• **Activate Massive Transfusion Protocol** Transfuse aggressively • Near 1:1 PRBC: FFP • 1 PLT apheresis pack per 4-6 units PRBCs

This table was adapted from the Improving Health Care Response to Obstetric Hemorrhage: A California Quality Improvement Toolkit, funded by the California Department of Public Health, 2015; supported by Title V funds.

Institute for Healthcare Improvement

AIM ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

Obstetric Hemorrhage Change Package



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Response

Every Event

Change Concept	Change Idea	Key Resources and Tools
1. Utilize a standardized, facility-wide, stage-based, obstetric hemorrhage emergency management plan, with checklists and escalation policies for stage-based management of patients with obstetric hemorrhage, including: a. Advance preparations made based on hemorrhage risk (e.g., cell saver, blood bank notification, etc.)	Designate a patient and identified support network liaison to provide updates in real-time and include these communications on emergency checklist ◊	Florida Obstetric Hemorrhage Initiative Tool Kit (p 33)[21] Preparing for Clinical Emergencies in Obstetrics and Gynecology, ACOG CO #590.[9]
	Perform multi-disciplinary debriefing at the following timepoints: • After resolution of an acute hemorrhage • At the time of transfer to reassess hemorrhage risk and to convey risk to the postpartum team	Obstetric Team Debriefing Form	ACOG[37]
b. Evaluate patients for etiology of hemorrhage		
c. Use of obstetric rapid response team		
d. Evidence-based medication administration or use of nonpharmacological interventions	Communicate directly with patient about clinical concerns and planned management, prior to performing any physical interventions such as bimanual pelvic exam, tamponade placement, or speculum exam ◊	The SHARE Approach | AHRQ[38] Partnering in healthcare: A framework for better care and outcomes[39]
	Include patient-reported pain in assessment and have clear plans for pain management	

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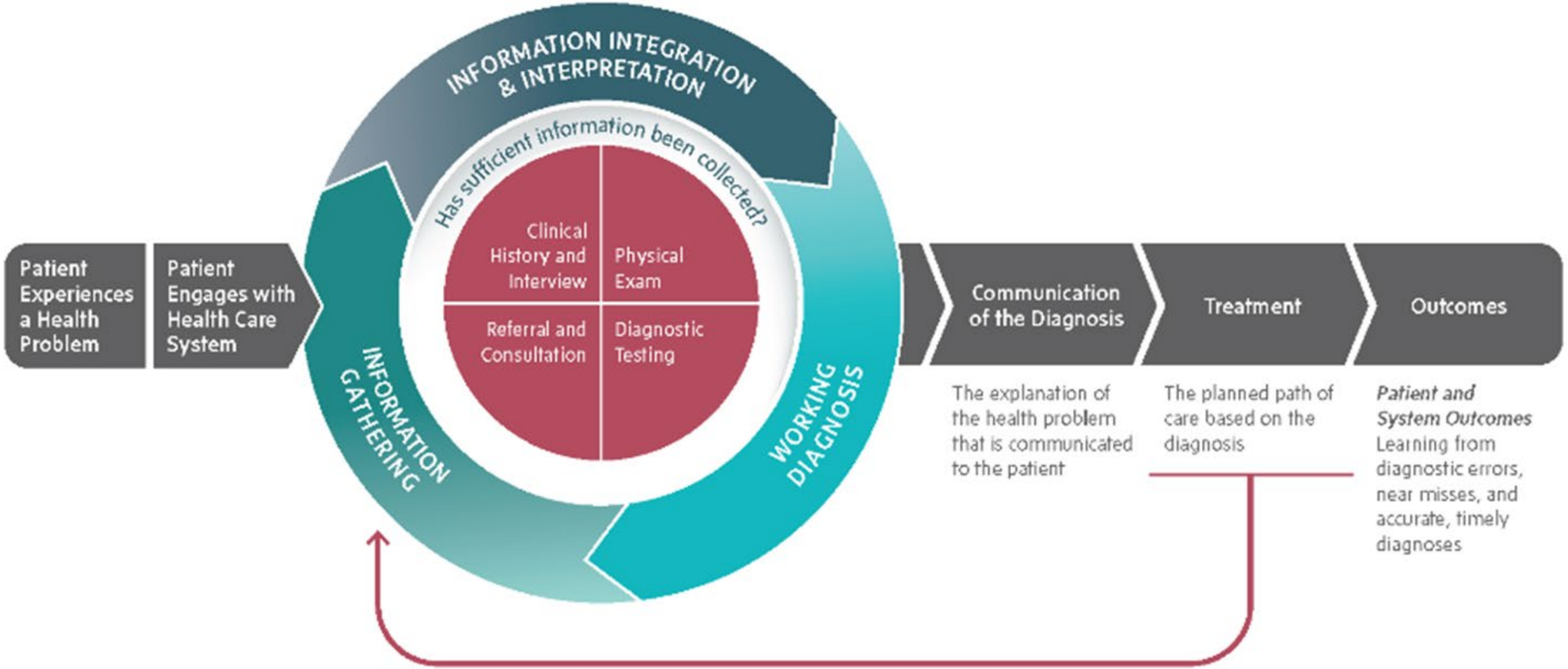
Diagnostic Safety

- Accurate and timely identification of the explanation for a patient's health problem(s)
- Effective communication of that health problem to the patient (NASEM)

Diagnostic Error

- Diagnostic error can be defined as a diagnosis that is missed, wrong or delayed

The Diagnostic Process

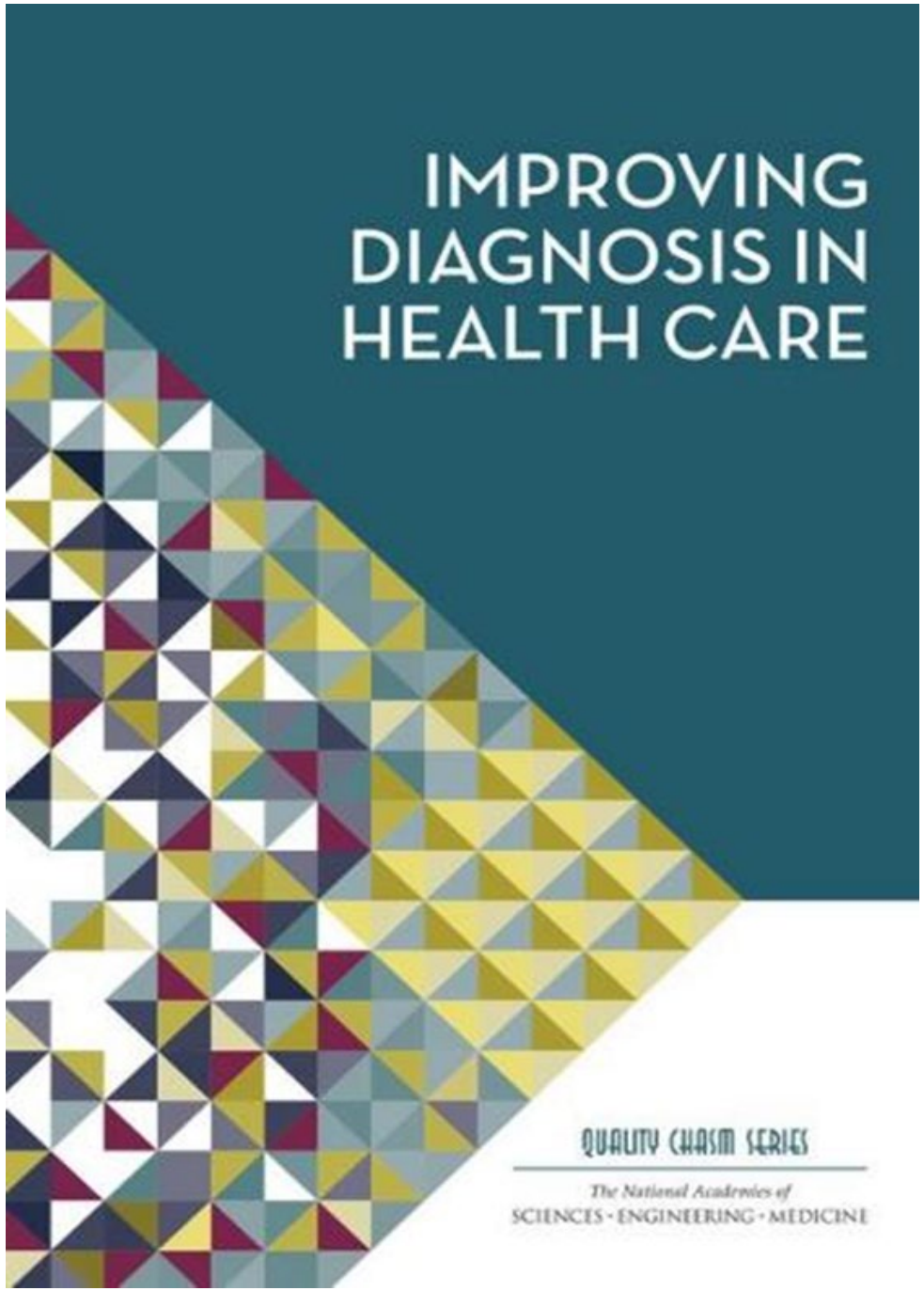


NASEM, 2015

Diagnostic Process

Dynamic, team-based activity that involves:

- uncertainty
- plays out over time
- requires effective communication and collaboration among multiple providers, diagnostic services, and the patient



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Standards for Respectful Care at Birth

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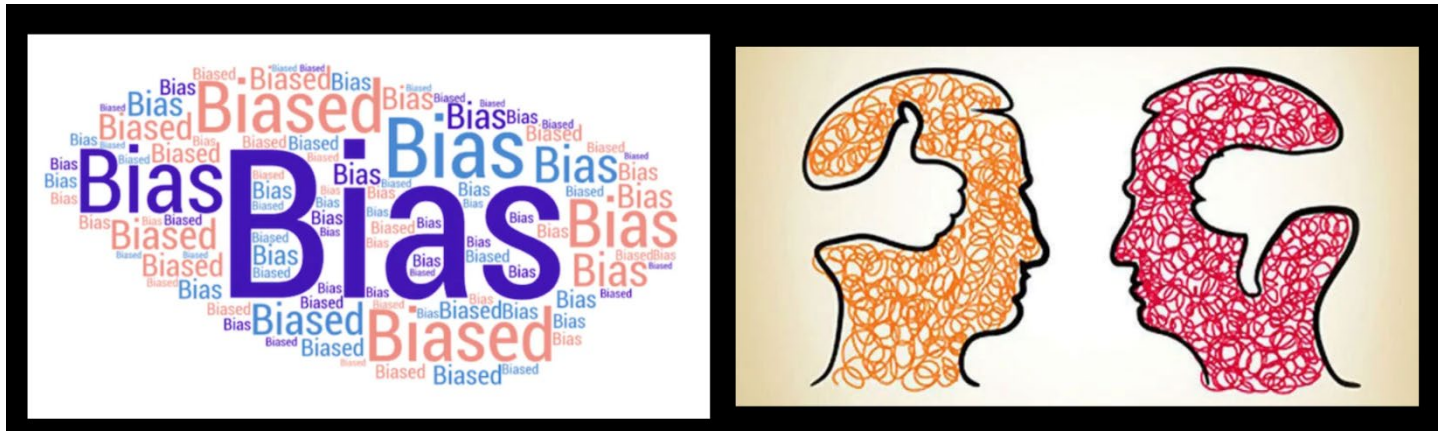

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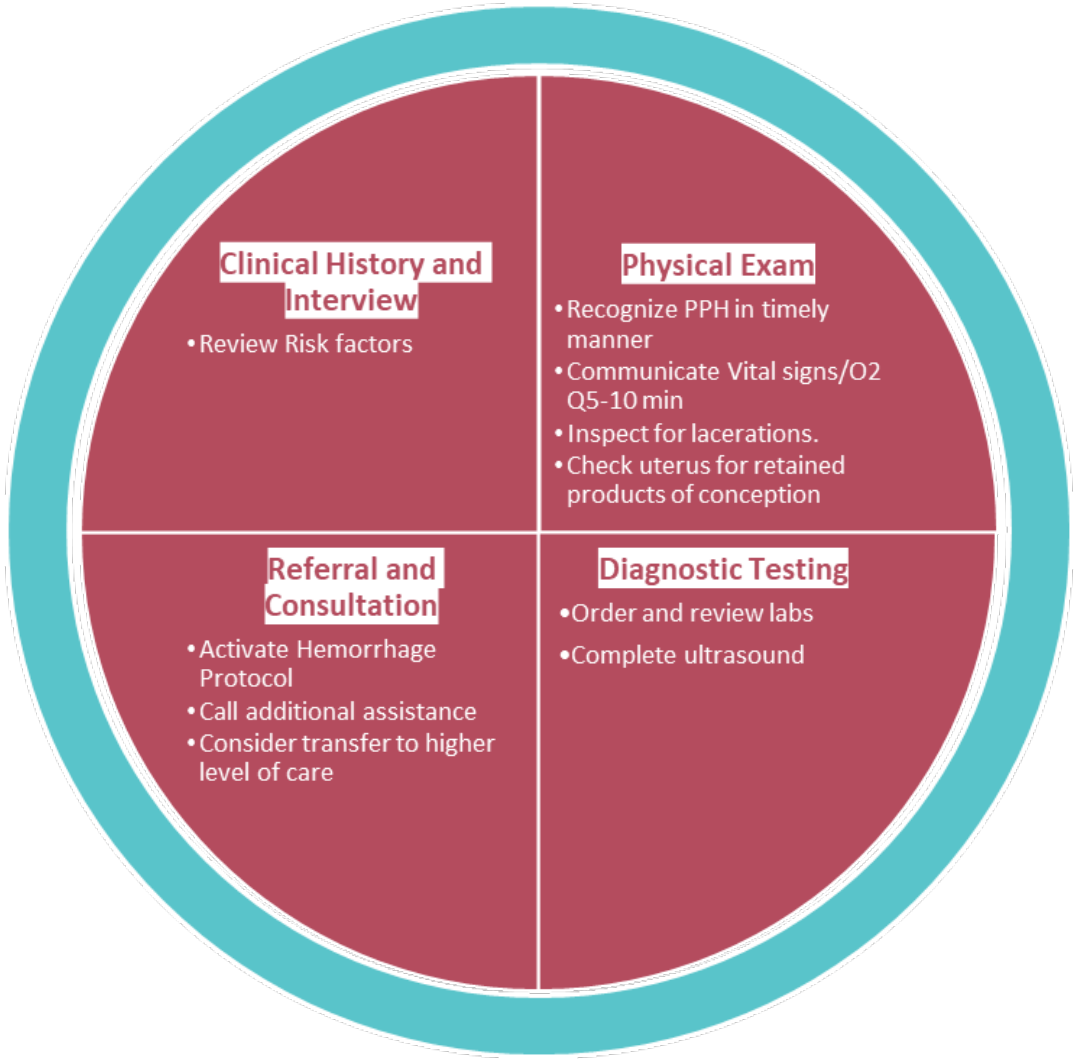
PPH Diagnostic Process



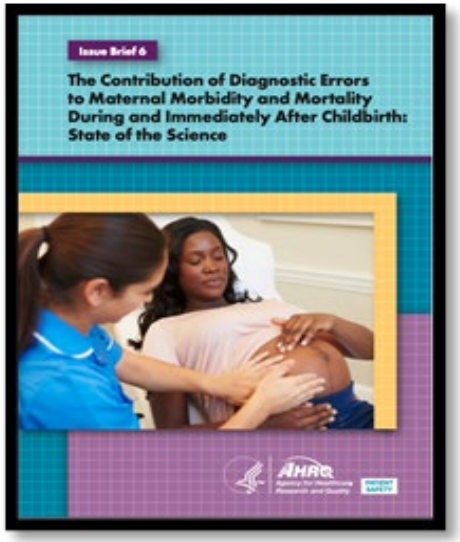
- Team members
- Tasks
- Technologies and tools
- Organization
- Physical Environment
- External Environment

Communication of the Diagnosis

- Obtain consent for blood products
- Communicate diagnosis to patient/support network
- Communicate treatment options to patient/support network
- Counsel patient on need for operative management, potential hysterectomy

Treatment

- Bring PPH cart to room
- Administer medications
- Place urinary catheter
- Place 2nd large bore IV



Potential Opportunities

- Partner with community organizations to inform implementation and evaluation of person-centered communication best practices
- Evaluate strategies to identify and mitigate biases
- Standardize and evaluate risk assessments, with linkage to expected clinical interventions
- Develop standardized approaches to education including characterizing what combination and frequency of training improves care
- Explore the role of simulation as a vehicle of study or a test of change
- Evaluate how electronic health records contribute to obstetric diagnostic error

Bajaj, de Roche, Goffman September 2021

Opportunities:

- Improve healthcare for women
- Reproductive planning and intended pregnancies with preconception evaluation
- Attention to optimizing care in 4th Trimester
- Risk prediction models leveraging AI
- Innovation in developing and evaluating therapies targeting causes of SMM and mortality
- Further definition of metrics delineating standards for treatment/intervention