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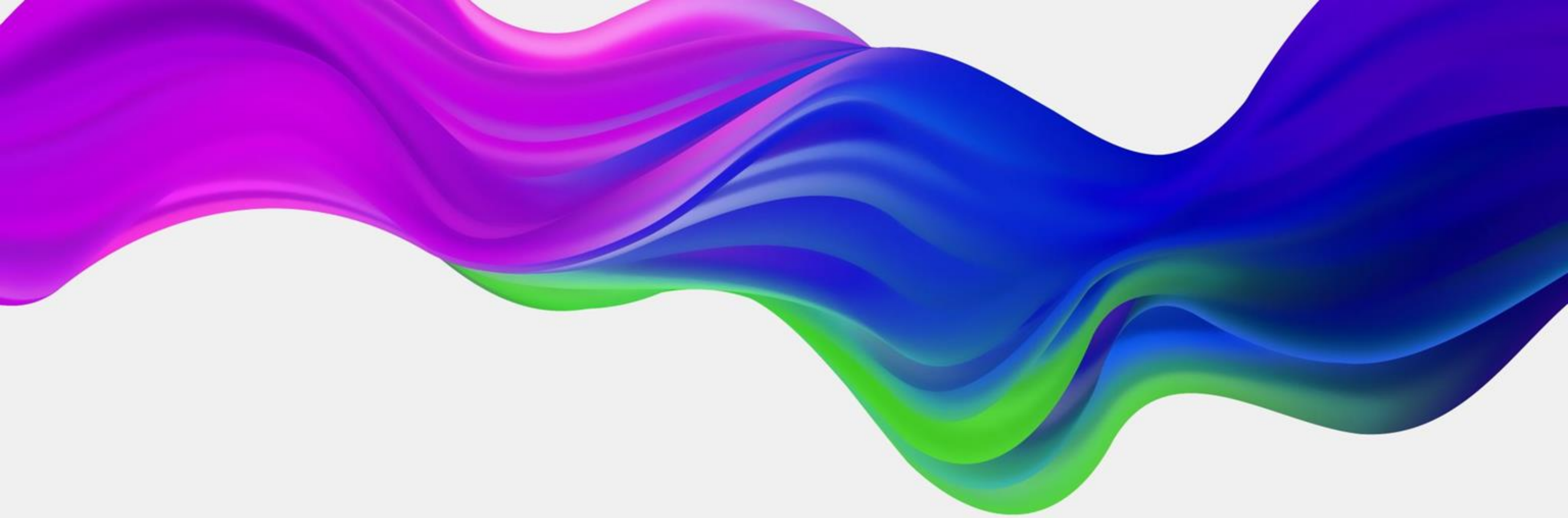

REFRAMING OUR APPROACH TO SEVERE MATERNAL MORBIDITY CASE REVIEW ANALYSIS

Presented by:

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OBJECTIVES:

Evaluate our approach to the SMM case review process used to:

Identify missed opportunities, &

Develop action plans to improve quality & safety

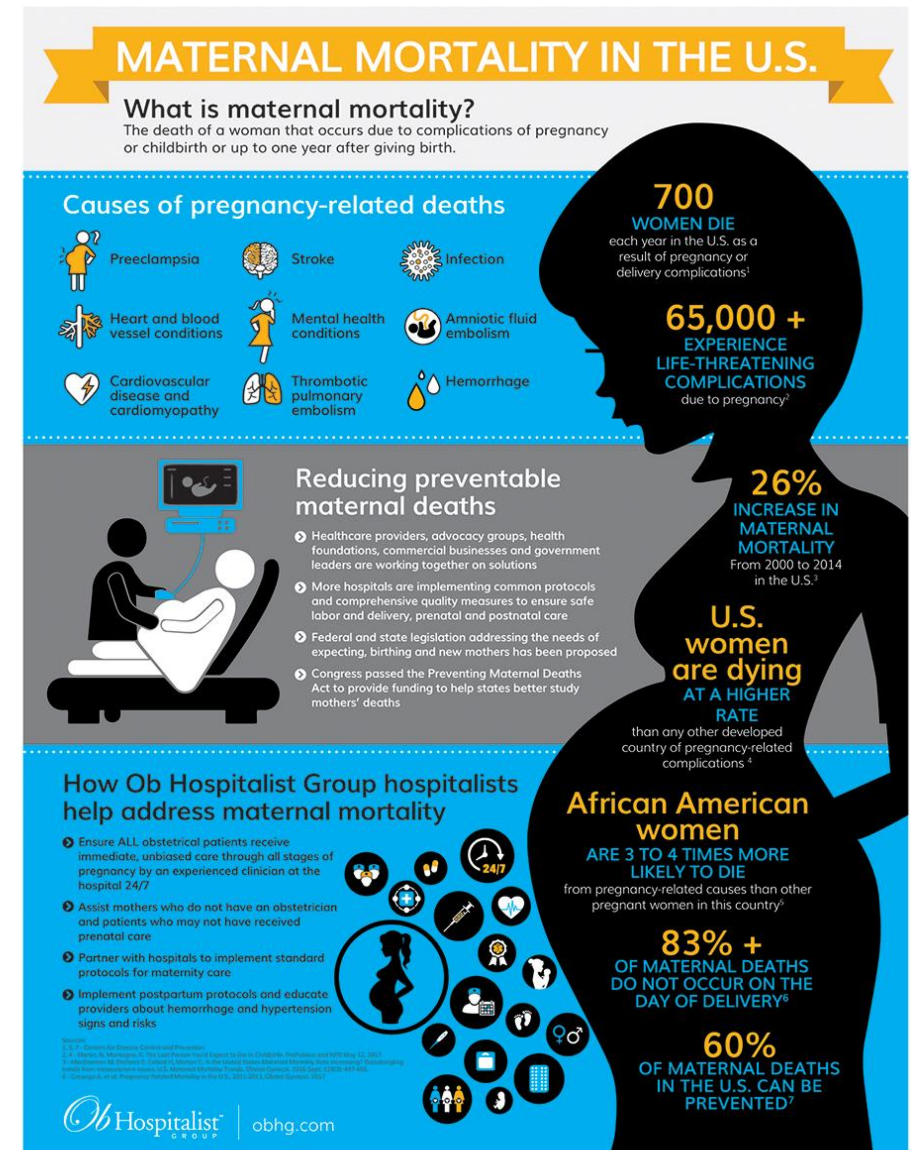
Compare the current process to the new approach using the new SMM risk adjusted score and underlying cause

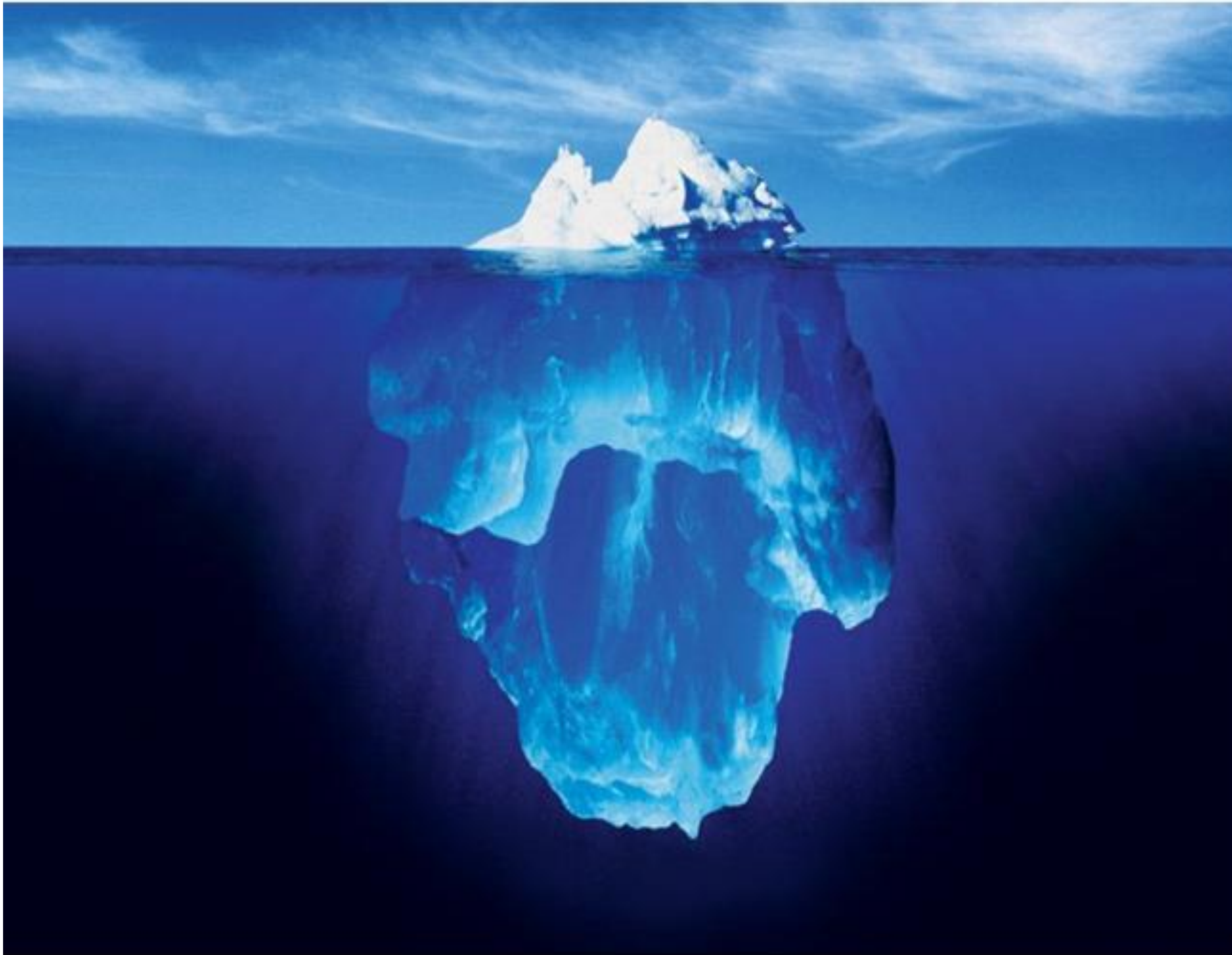
The Problem

Maternal Mortality Rate, California and United States; 1999-2013

LEADING CAUSES OF MATERNAL MORTALITY IN US

- Hemorrhage
- Hypertensive disorder
- Infection (sepsis)
- Pulmonary embolism
- Pre-existing chronic conditions
  - such as Cardio-Vascular Disease (CDC, 2016).





MATERNAL MORTALITY~ TIP OF THE ICEBERG

- **Morbidity vs. Mortality**
- Morbidity 50 to 100 times more frequent
- 5.1 per 1000 (US, 2003) Callahan, 2008
- 14.3 per 1000 (US, 2014) CDC, 2020
- Proxy for mortality
- Goal of SMM reviews-

BACKGROUND- Call To Action

- TJC (2010) 44th issue of Sentinel Event Alerts, "Preventing Maternal Death".
  - Replaced by OB Care Consensus #5
  - Council on Women's Health
- TJC (2015) launched a **new mandate** for hospitals:
  - Analyze their SMM cases to identify opportunities for improvement
  - Use a multi-disciplinary team approach
  - **Criteria**
    - **received 4 or more units of blood products**
    - **admitted to an ICU within 24 hours of birth**

TOP 4 SYSTEMS ISSUES

- 131 maternal mortality cases reported to between 2004 to 2015
  - **human factors (n= 127),**
  - **communication (n= 125),**
  - **assessment (n= 86),**
  - **leadership (n= 66).**
- Most sentinel events are multi-factorial

(TJC, 2016)

PREVENTABLE? AVOIDABLE?

- Up to 50% may have been avoided
- Prevention starts with:
  - **Use of best practice guidelines**
  - **Identifying the systems issues that create barriers**

CA-PAMR Pregnancy-Related Deaths
Chance to Alter Outcome by Grouped Cause of Death
2002-2006 (N=257)

Clinical Cause of Death	Chance to Alter Outcome			
	Strong/Good N (row %)	Some N (row %)	None N (row %)	Total N
Obstetric hemorrhage	18 (72)	6 (24)	1 (4)	25
Sepsis/infection	14 (61)	7 (30)	2 (9)	23
Preeclampsia/eclampsia	27 (61)	16 (36)	1 (2)	44
Venous thromboembolism	11 (50)	10 (46)	1 (5)	22
Cardiomyopathy and other cardiovascular causes	15 (24)	37 (59)	11 (18)	63
Cerebrovascular accident	3 (15)	6 (30)	11 (55)	20
Amniotic fluid embolism	0	16 (84)	3 (16)	19
All other causes of death	16 (41)	19 (49)	4 (10)	39
Total (%)	104 (41%)	117	34	255*

BUILDING OUR LOCAL SMM REVIEW PROCESS

2015 to 2020:

Evolution-

- Small group - Nursing & System's issues
- Generic Screen at OB QI

Cases per year:

- Medium- 2 to 3 / month= 25 annual
- Large- 4 to 14 / month = 70 annual

Roles & Responsibilities

- CNS- initial abstraction; analysis & trends
- MD & RN Directors- immediate changes
- QI Department- determine level of SSE
- OB QI- Peer review

2015

CNSs to Nurse Dir, Med Dir, Quality

2017

CNSs to Nurse Dir, Med Dir, Quality, Select cases to OB QI

2020

CNSs to Quality and all cases to OB QI- Generic Screen

ABSTRACTION TOOL OFFERED BY-

THE *COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE* (2016)

SHORT form

- Abstraction hx
- Patient data & PNC & Delivery
- Case Narrative & Case Analysis
- Assessment: Category- Blood or ICU
- Sequence of Morbidity
- Resolution: OFI- might alter outcomes:
  - Provider, System, Patient
  - Recommendations

LONG form

- SMM Outcome Factors Guide
- System & Provider Factors- Did these factors contribute to the SMM?
- Patient Factors?
  - Co-morbidities
  - OB conditions
  - Complications
  - Psych health/ Stressors/ Barriers to Prenatal Care

ADDITIONAL CONSIDERATIONS

Healthcare Performance Improvement, LLC. (2009)

Individuals

- **Competency-**
  - Knowledge & skills
- **Consciousness-**
  - attention
- **Communication-**
  - Information processing
- **Critical Thinking-**
  - cognition
- **Compliance-**
  - motivation

Systems

- **Structure-**
  - Span of control; gaps in roles; resource allocation
- **Culture-** Non-collaborative; inadequate response
- **Process-**
  - Omitted actions; excessive actions; poorly sequenced; inadequate interface- products, handoff, info
- **Policy & Protocol-**
  - Lacking; usability; understandability; under-utilized job aids
- **Technology-**
  - In-put/Out-put [alarms; display]; human capability; arrangement; environment

FINDINGS FROM OUR LOCAL SMM CASE REVIEWS

1. Teamwork increased:
   - Simulations & TeamSTEPPS
2. Role of the RRT clarified.
3. Order set revised
4. *"Chorio"* was incorrectly coded as *"Sepsis".*
5. Some transfusions were needed D/T anemia on admission.
6. Unusual cases hard to discern

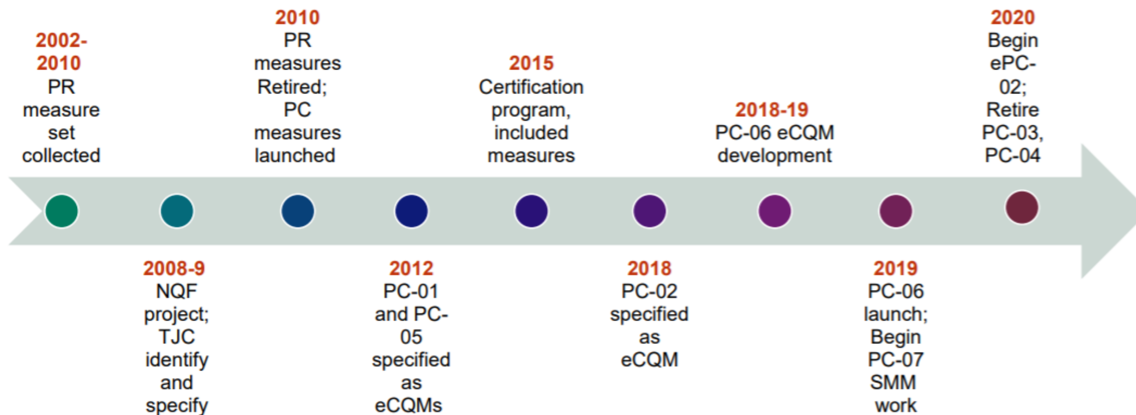
REVISING THE SMM REVIEW PROCESS

- PC-07 reporting
  - *TJC- Starting in 2022*
- New Review Criteria
  - *CDC, 2016*
- R3 Report:
  - *TJC. (2019) Issue 24.*
- Expanded OB Comorbidity Scoring-
  - *Leonard et al, 2020*

PC07- Maternal Complications

- ***NEW Perinatal Care Measure***
- ***Plan - PC-07 to be eCQM***

Perinatal Care Measures Project History



Electronic Perinatal Care Measures (ePC)

- Measures currently in use:
  - ePC-01 Elective Delivery
  - ePC-05 Exclusive Breast Milk Feeding
  - ePC-02 Cesarean Birth – launched for 2020
- Measures under development:
  - ePC-06 Unexpected Complications in Term Newborns

  - ePC-07 Maternal Complications

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NEW SMM CRITERIA for Review

21 Major COMPLICATIONS (CDC, 2016)

- Acute MI
- Aneurysm
- Acute renal failure
- ARDS
- AFE
- Cardiac arrest - V-fib
- Conversion of cardiac rhythm
- DIC
- Eclampsia
- Heart failure/arrest during a procedure

- Cerebrovascular disorder
- Pulmonary edema
- Acute heart failure
- Severe anesthesia complications
- Sepsis
- Shock
- Sickle cell disease with crisis
- Air and thrombotic embolism
- Blood product transfusion
- Hysterectomy
- Temporary Tracheostomy
- Ventilation

SMM Indicators- substantial increases: 1993 to 2014

- Blood transfusions- 399%.
- Acute renal failure- 300%.
- ARDS- 205%.
- Cardiac arrest, fibrillation, or conversion of cardiac rhythm - 175%.
- Shock - 173%.
- Acute myocardial infarction - 100%.
- Ventilation/temporary tracheostomy - 93%.
- Sepsis - 75%.
- Hysterectomy - 55%.

(CDC, 2020)

10 Underlying Causes- What Led to Complication- (CDC, 2016)

- OB Hemorrhage
- Placental hemorrhage
- Infection and chorio
- Preeclampsia/Eclampsia
- Anemia on Admission (POA)
- Other hematologic
- Other medical
- Other OB
- Venous Thromboembolism
- Cerebrovascular conditions

TJC- Implement January 2021

R³ Report | Requirement, Rationale, Reference

A complimentary publication of The Joint Commission

Issue 24, August 21, 2019

Published for Joint Commission-accredited organizations and interested health care professionals, *R3 Report* provides the rationale and references that The Joint Commission employs in the development of new requirements. While the standards manuals also may provide a rationale, *R3 Report* goes into more depth, providing a rationale statement for each element of performance (EP). The references provide the evidence that supports the requirement. *R3 Report* may be reproduced if credited to The Joint Commission. Sign up for email delivery.

Provision of Care, Treatment, and Services standards for maternal safety

- Hemorrhage
- Preeclampsia

An *Expanded* OB (<u>Comorbidity)</u> Scoring System

(LEONARD ET AL, 2020)

- Placenta accreta- 59
- Pulmonary HTN- 50
- Chronic renal disease- 38
- Bleeding disorder- 34
- Cardiac disease- 31
- HIV / AIDS- 30
- Placenta previa- 27
- Preeclampsia c severe features- 26
- Anemia- 20 Twins- 20

- Placental abruption- 18
- Preterm birth- 18
- GI disease- 12
- Preeclampsia – not severe- 11
- Asthma- 11
- Substance use disorder- 10
- Autoimmune disease- 10
- Chronic HTN- 10
- Others- all less than 10

How Comorbidities Present on Admission (POA) RISK ASSESSMENT EFFECTS our REVIEW PROCESS

- Lower Risk- 0 to 6 POA
- Medium Risk- 7 to 30 POA
- Higher Risk- 30 plus POA

Example of Comorbidity, Complication, Underlying Causes & Action Plan

Low POA score-

Hemorrhage- complication

Underlying cause- **atony**

Action Plan:

- Simulations/Drills
- Access to meds
- Weighing blood- QBL

High POA score-

Hemorrhage- complication

Underlying cause- **accreta**

Action Plan:

- Antepartum plan
- Blood on stand-by
- Case in Main OR

CASE STUDIES-
LOW RISK WOMEN- ***POA 0 to 6***

- No comorbidities

- Diabetes- GDM
- BMI >40;
- Neuromuscular disease;
- Hx Mental health;
- Previous C/S;
- AMA

REVIEW PROCESS & RESULTS

Process

- ❑ Debrief
- ❑ Incident Report
- ❑ Investigation of incident
- ❑ IA/RCA

Results

- ❑ Communication
- ❑ Patient Factors & Barriers to Care
- ❑ Missed Opportunities
- ❑ Delays in Care

CASE STUDIES-

MEDIUM RISK WOMEN- POA 7 to 30

- Placental abruption- 18
- Preterm birth- 18
- GI disease- 12
- Preeclampsia – not severe- 11 ★
- Asthma- 11
- Substance use disorder- 10
- Autoimmune disease- 10
- Chronic HTN- 10
- Anemia- 20; Twins- 20

REVIEW PROCESS & RESULTS

Process

- ❑ Debrief
- ❑ Incident Report
- ❑ Investigation of incident
- ❑ IA/RCA

Results

- ❑ Communication
- ❑ Patient Factors & Barriers to Care
- ❑ Missed Opportunities
- ❑ Delays in Care

CASE STUDIES-
HIGHER RISK WOMEN- POA > 30

- Placenta accrete- 59
- Pulmonary HTN- 50
- Chronic renal disease- 38 ★
- Bleeding disorder- 34
- Cardiac disease- 31
- HIV / AIDS- 30
- Placenta previa- 27
- Preeclampsia with severe features- 26
    - PLUS Diabetes, or Anemia

REVIEW PROCESS & RESULTS

Process

- ❑ Debrief
- ❑ Incident Report
- ❑ Investigation of incident
- ❑ IA/RCA

Results

- ❑ Communication
- ❑ Patient Factors & Barriers to Care
- ❑ Missed Opportunities
- ❑ Delays in Care

Trends by Risk Level & Complications

Low Risk	Medium Risk	High Risk
• Transfusion d/t OB hemorrhage • Sepsis	• Pulmonary edema • Transfusion d/t anemia POA • Acute heart failure	• CVD • Acute renal failure • ARDS • DIC d/t placental hemorrhage

Clinical Implications by Role

Staff Nurse

- Competency
- Consciousness
- Communication
- Critical Thinking
- Compliance

Manager & Director

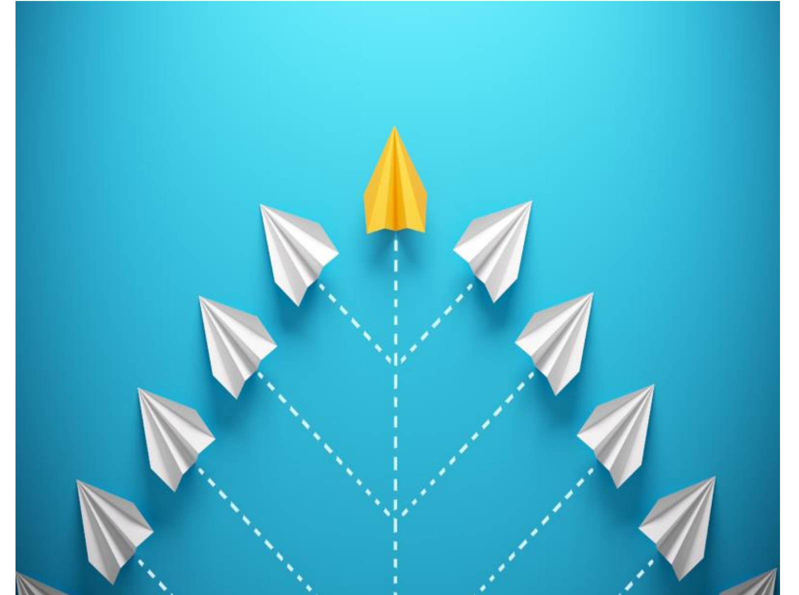
- Structure
- Culture
- Process
- Policy/Protocol
- Technology

Next Steps

- Identify **all** SMM cases
- Abstract data & Review cases
- Consider stratifying by:
  - POA score
  - Underlying causes
- Disseminate information
- Create transparency
- Action plan
  - Simulations to improve teamwork; Update order sets to reflect protocols; Fix documentation gaps

CONCLUSION

- **Usefulness-**
  - required by TJC; quarterly vs monthly
- **Sustainability-**
  - Pre-OB QI committee:
    - analyze for Nursing & Systems issues
  - OB QI provider concerns- Generic Screen
- **Spread**-
  - applicable for small, med & large hospitals



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Most Common SMM Indicators after Discharge

Blood transfusion

Pulmonary edema / Acute heart failure

Sepsis

Adult respiratory distress syndrome

Air and thrombotic embolism

Eclampsia

Puerperal cerebrovascular disorders

Acute Renal Failure

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Enhancing Reviews and Surveillance to Eliminate Maternal Mortality (ERASE MM)

Maternal Mortality Review Committees (MMRCs) are multidisciplinary committees in states and cities that perform comprehensive reviews of deaths among women within a year of the end of a pregnancy. They include representatives from public health, obstetrics and gynecology, maternal-fetal medicine, nursing, midwifery, forensic pathology, mental and behavioral health, patient advocacy groups, and community-based