Safety Action Series

Maternal Early Warning System: Successfully Implementing and Utilizing an Escalation Plan

Monday, August 15, 2016
2:00 p.m. Eastern
Dial In: 888.863.0985
Conference ID: 34874161
Speakers

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Disclosures

- Deb Kilday, MSN, RN has no real or perceived conflicts of interest to disclose.

- Beth McGovern, MSN, RNC-OB, CHSE has no real or perceived conflicts of interest to disclose.
Objectives

- Identify the value of an early warning system to recognize and respond to mothers who may be developing critical illnesses.
- Review organizational solutions for identifying and treating women with deteriorating conditions using the MEWS.
- Discuss elements and characteristics of an effective escalation plan.
- Share strategies for successfully implementing an escalation policy and driving culture change.
- Provide an example of successful implementation of MEWS into Electronic Medical Records.
Maternal Early Warning System

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Maternal Early Warning System

“Early detection of severe illness in pregnant women is challenging because of the relative rarity of such events, combined with the normal changes in physiology associated with pregnancy and childbirth”

The Health Foundation
“Pattern of delay in recognition of hemorrhage, hypertensive crisis, sepsis, venous thromboembolism, and heart failure.”
Maternal Safety Bundles and MEWS

Core maternal safety bundles
1. Obstetric Hemorrhage
2. Hypertension in Pregnancy
3. Prevention of Venous Thromboembolism
4. Safe Reduction of Primary Cesarean Births: Supporting Intended Vaginal Births
5. Reduction of peripartum racial disparities
6. Postpartum care basics for maternal safety

Supplemental maternal safety bundles
1. Maternal Early Warning System
2. Patient, Family, and Staff Support after a Severe Maternal Event
Maternal Safety Bundle components: The “4 R’s”

• Readiness – Every unit
  – Is your team ready for an emergency?

• Recognition – Every patient
  – How does your team recognize patients at risk or experiencing deterioration?

• Response – Every emergency
  – What is your team’s response to an emergency?

• Reporting – Every unit
  – How does your team improve and learn?
Maternal Early Warning System

Readiness
- Obstetric Hemorrhage

Recognition
- Hypertension in Pregnancy

Response

Reporting
- Prevention of VTE
Preventing Maternal Death

The goal of all labor and delivery units is a safe birth for both newborn and mother. A previous Alert(1) reviewed the causes of death and injury among newborns with normal birth weight and suggested risk reduction strategies. This Alert addresses the equally tragic loss of mothers. Unfortunately, current trends and evidence suggest that maternal mortality rates may be increasing in the U.S., despite the rarity of the incidence of maternal death – deaths that occur within 42 days of birth or termination of pregnancy. Since 1996, a total of 84 cases of maternal death have been reported to The Joint Commission’s sentinel event database, with the largest numbers of events reported in 2004, 2005 and 2006. According to the National Center for Health Statistics of the Centers for Disease Control and Prevention, in 2006, the national maternal mortality rate was 13.3 deaths per 100,000 live births. (2) “Although the current maternal mortality rate may reflect increased identification of women who died during or shortly after pregnancy (3), there clearly has been no decrease in maternal mortality in recent years, and we are not moving toward the U.S. government’s Healthy People 2010 target of no more than 3.3 maternal deaths per 100,000 live births (4),” says William M. Callaghan, M.D., M.P.H., senior scientist, Division of Reproductive Health, Centers for Disease Control and Prevention.

Leading causes and prevention of maternal death

The Joint Commission Issue 44, January 26, 2010 Preventing Maternal Death
The Joint Commission: Sentinel Event Alert #44

- Have a process for recognizing and responding as soon as a patient’s condition appears to be worsening.
- Develop written criteria describing early warning signs of a change or deterioration in a patient’s condition and when to seek further assistance.
- Based on the hospital’s early warning criteria, have staff seek additional assistance when they have concerns about a patient’s condition.
- Inform the patient and family how to seek assistance when they have concerns about a patient’s condition.

The Joint Commission Issue 44, January 26, 2010 Preventing Maternal Death
## Contributing Factors

<table>
<thead>
<tr>
<th></th>
<th>Preeclampsia or Eclampsia</th>
<th>Obstetric Hemorrhage</th>
<th>Cardiovascular Disease</th>
<th>Venous Thromboembolism</th>
<th>Amniotic Fluid Embolism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed Response to Triggers</td>
<td>92%</td>
<td>85%</td>
<td>63%</td>
<td>75%</td>
<td>67%</td>
</tr>
<tr>
<td>Ineffective Care</td>
<td>69%</td>
<td>75%</td>
<td>45%</td>
<td>45%</td>
<td>50%</td>
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<tr>
<td>Misdiagnosis</td>
<td>42%</td>
<td>40%</td>
<td>31%</td>
<td>50%</td>
<td>–</td>
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<tr>
<td>Failure to Consult</td>
<td>8%</td>
<td>25%</td>
<td>10%</td>
<td>25%</td>
<td>6%</td>
</tr>
<tr>
<td>Lack of Continuity of Care</td>
<td>39%</td>
<td>30%</td>
<td>27%</td>
<td>25%</td>
<td>–</td>
</tr>
</tbody>
</table>

- Green: > 15% to 30
- Yellow: > 30% to 60%
- Purple: > 60%

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Main EK et al. Pregnancy-related mortality in California: Causes, characteristics, and improvement opportunities.
Subcommittee on Vital Sign Triggers

“Every birthing facility in the United States should adopt tools that identify maternal patients who require urgent bedside evaluation by a physician, including tested examples of obstetric warning criteria that identify critical vital signs and symptoms”

The National Partnership for Maternal Safety
Maternal Early Warning System
Two Essential Components

1. The Maternal Early Warning Criteria
2. An supporting Effective Escalation Policy
1. Maternal Early Warning Criteria

- Systolic BP (mm Hg) < 90 or > 160
- Diastolic BP (mm Hg) > 100
- Heart rate (beats per min) < 50 or > 120
- Respiratory rate (breaths per min) < 10 or > 30
- Oxygen saturation on room air at sea level < 95%
- Oliguria mL / hr for 2 hours < 35
- Maternal agitation, confusion, or unresponsiveness
- Patient with hypertension reporting a non-remitting headache
- Patient with preeclampsia or hypertension reporting shortness of breath

*Note: These triggers cannot address every possible clinical scenario that could be faced by an obstetric clinician and must not replace clinical judgment. As a core safety principle, bedside nurses should not hesitate to escalate their concerns at any point.*
2. Effective Escalation Policy

Every hospital should have a Maternal Warning System

Planning for and anticipating known emergencies

Multidisciplinary team work

Simplicity is critical for success

ACOG The Maternal Early Warning Criteria: A Proposal From the National Partnership for Maternal Safety
Effective Escalation Policy

An abnormal parameter would require:

- Prompt reporting to a physician or other qualified clinician

- Prompt bedside evaluation by a physician or other qualified clinician with the ability to activate resources in order to initiate emergency diagnostic and therapeutic interventions as needed
Local Escalation Plan

An effective escalation policy defines:

✓ **Who** to notify

✓ **How** to notify them

✓ **When and How** to activate the clinical chain of command to ensure an appropriate response
Response to Emergencies: Small Rural Hospitals

• Readiness – Every unit
  – Is your team ready for an emergency?
• Recognition – Every patient
  – How does your team recognize patients at risk or experiencing deterioration?
• Response – Every emergency
  – What is your team’s response to an emergency?
• Reporting – Every unit
  – How does your team improve and learn?
Evaluating Clinician

- RRT
- Anesthesia Provider
- Obstetric Provider
- ED Physician
- MFM
- Patient
- Bedside Nurse
- Hospitalist
- Nurse Midwife
- Family Doctor
Encouraging Patient & Family Activation

“The hospital recognizes and responds to changes in a patient’s condition,” and “informs the patient and family how to seek assistance when they have concerns about a patient’s condition.”

✔ Patients and Families are partners at every level of care
✔ Patient and Family awareness of risks, signs and symptoms
✔ Patient and Family know how to seek help when they have concerns
Teamwork and Communication

Standardized communication:

- Situation–Background–Assessment–Recommendation (SBAR)
- Closed Loop Communication
- Concerned, Uncomfortable, and Safety Issue (CUS)
- Huddles, Briefings and Debriefings
Education, Simulation & Team Training

“Planning for and responding to emergencies is an integral part of the function of every hospital”

“Readiness, Recognition, Response and Reporting”

The Effectiveness of Combined Training Modalities on Rapid Response Teams
Culture of Safety

Maintain an organizational attitude of “collective mindfulness”, where everyone, individually and as a team, is keenly aware that even minor failures in safety processes can lead to adverse outcomes.
AIM eLearning Modules

The Alliance for Innovation on Maternal Health (AIM) Program is pleased to announce and share its series of AIM eModules. The AIM eModules have been designed to be interactive and collaborative. Upcoming AIM eModules will focus on the implementation of the Safe Care Framework, Recognition, Response, and Reporting of maternal safety bundles.

AIM eModule Introduction

This education set will provide the background and role of the nation in relation to maternal mortality and morbidity and is a resource for the need to provide reliable resources and tools to support hospitals across the United States with their efforts to improve outcomes of mothers and their babies.

AIM eModule 1: Maternal Early Warning System (MEWS)

Participants will learn to identify the value of an early warning system to recognize and respond to mothers with deteriorating conditions, consider the development of organizational solutions for recognizing and responding to women with deteriorating conditions using the MEWS and facilitate organizational readiness through the development of sector-wide to sustain steady state evaluation and treatment for women meeting Maternal Early Warning Criteria.

AIM eModule 2: Obstetric Hemorrhage

This AIM eModule is focused on Obstetric Hemorrhage and consists of an introductory presentation, followed by presentations addressing guidelines, recognition & prevention, response, and reporting.

Click to access the module now.

AIM eModules
IMPLEMENTATION
Implementation of the Maternal Early Warning System

Beth McGovern MSN, RNC-OB CHSE
Clinical Practice Specialist
The Valley Hospital
Out of adversity comes opportunity.

~ Benjamin Franklin
Sentinel Event, Issue #44
Preventing Maternal Death

“Identify specific triggers for responding to changes in the mother’s vital signs and clinical condition and develop and use protocols and drills for responding to changes.”

Joint Commission Sentinel Event, Issue #44 retrieved from Joint Commission, January 2010.
MEOWS: Maternal Early Obstetric Warning Score

- Swanton, *IJOA* 2009; 18: 253-7
- Singh, *Anaesth* 2012;67:12-18
- Mackintosh N, *BMJ Qual Saf* 2014;23:26-34
The Maternal Early Warning Criteria: A Proposal from the National Partnership for Maternal Safety

Jill M. Mhyre, Robyn D’Oria, Afshan B. Hameed, Justin R. Lappen, Sharon L. Holley, Stephen K. Hunter, Robin L. Jones, Jeffrey C. King, and Mary E. D’Alton

ABSTRACT
Case reviews of maternal death have revealed a concerning pattern of delay in recognition of hemorrhage, hypertensive crisis, sepsis, venous thromboembolism, and heart failure. Early-warning systems have been proposed to facilitate timely recognition, diagnosis, and treatment for women developing critical illness. A multidisciplinary working group convened by the National Partnership for Maternal Safety used a consensus-based approach to define the Maternal Early Warning Criteria, a list of abnormal parameters that indicate the need for urgent bedside evaluation by a clinician with the capacity to escalate care as necessary in order to pursue diagnostic and therapeutic interventions. This commentary reviews the evidence supporting the use of early-warning systems, describes the Maternal Early Warning Criteria, and provides considerations for local implementation.

JOGNN. 43. 771-779: 2014. DOI: 10.1111/1552-6909.12504

The Maternal Early Warning Criteria: A Proposal from the National Partnership for Maternal Safety
Next Steps.....

• Inter professional meeting

• Criteria agreed on

• Design a protocol for effective escalation
Agreed Upon Criteria

**Immediate Action Required**

- Systolic BP; mmHg <90 or >160
- Diastolic BP; mmHg >100
- Heart rate; bpm <50 or >120
- Respiratory rate; bpm <10 or >30
- Oxygen saturation; % <95
- Oliguria; ml/hr x 2h <35

✓ Maternal agitation, confusion, or unresponsiveness
✓ Patient with hypertension reporting a non-remitting headache or shortness of breath

*Not applicable for B/P Systolic <90 when <= 30 minutes post epidural and anesthesiologist present.

http://www.safehealthcareforeverywoman.org
MEWS Protocol

• Immediate action is required when any of the MEWS criteria are met
  – Items that are not in the lower box should be confirmed, within 10 minutes, prior to calling the physician
MEWS Protocol, Cont.

• When immediate action is required:
  – If the attending physician is immediately available, he/she will provide prompt bedside evaluation of the patient. The in-house OB will be notified to provide bedside evaluation if the attending physician is not at the bedside within 5 minutes.
  – If the attending physician is not immediately available, the RN will call the in-house OB to provide prompt bedside evaluation of the patient. The attending physician or CNM will also be notified of the patient’s status. If the CNM is notified, he/she will promptly notify the attending physician.
  – If the in-house OB is called but not immediately available, he/she will receive a verbal report and determine what further action is necessary.
MEWS Protocol, Cont.

• When called to the bedside, the physician will document by writing a note which includes but is not limited to:
  – Differential diagnosis (the RN will provide this protocol and a differential diagnosis list to the bedside)
  – Planned frequency (increased) of monitoring and re-evaluation
  – Criteria for immediate physician notification
  – Any diagnostic or therapeutic interventions

• The physician will communicate the assessment and plan via a “huddle”. Huddle participants include the primary RN, the Charge RN, and the Anesthesiologist. If the attending physician is present, the in-house OB will also participate in the “huddle”.
MEWS Protocol, Cont.

• MFM consultation is required if the MEWS criteria are met for more than one hour. Consider consultation with an intensivist or calling the Rapid Response Team in addition to MFM consultation.
• Depending on the clinical evaluation, patient laboratory and diagnostic studies to consider include:
  – CBC
  – Type and screen
  – CMP
  – Magnesium level
  – EKG, particularly in the presence of tachycardia, bradycardia, or chest pain
  – CT angiogram or perfusion scan in patients with acute chest pain
  – CXR if the patient has SOB, particularly if pre-eclamptic
• If the primary RN and the charge nurse question any aspect of the patient’s care and the issue is not resolved with the attending physician, another appropriate physician (MFM, Department Chair or Vice Chair, or the Chairman of the DQAIC Committee) and a nurse in the Nursing chain of command (Nurse Manager, Clinical Practice Specialist, or Nursing Supervisor/AVP) will be notified
Implementation

• After education to all Obstetricians and Nurses on Labor and Delivery and Mother Baby units

• RN documents in notes when a MEWS PROTOCOL has been initiated and an occurrence report is generated to be able to monitor compliance.
MEWS Surveillance Board

- Patients that meet the MEWS criteria appear on this surveillance board when the criteria is met as well as an electronic page is sent to the charge nurse to alert him or her of this patient’s critical status.

- Automated notification of patients status on the board goes to Charge Nurses on Labor and Delivery and Mother Baby as well as the Clinical Practice Specialist.
### MEWS Surveillance Board

<table>
<thead>
<tr>
<th>Name</th>
<th>Registration Status/Type</th>
<th>Age</th>
<th>Sex</th>
<th>Location</th>
<th>Room/Bed</th>
<th>Blood Pressure</th>
<th>Heart Rate</th>
<th>O2 Sat</th>
<th>Resp Rate</th>
<th>HA/SOB</th>
<th>Mat. State</th>
<th>Output</th>
</tr>
</thead>
</table>
| ADM  IN  
  v000178599  
  91193235 | 27 F  
  Women and Children Svcs-Ch 3  
  C3116-P | 38/54 | 72 | 18 | 03/22/16 00:00  
  Headache: Absent | 03/22/16 07:00  
  Level Of Consciousness: Awake, Alert |
Improvements

• More timely beside evaluations
• More timely corrective actions
• More timely consultations
• More timely transfer of patients that require a higher level of care
Bar chart showing the number of patients identified by the MEWS criteria for each quarter from 1st Qtr 2015 to 2nd Qtr 2016. The number of patients identified is as follows:

- 1st Qtr 2015: 0
- 2nd Qtr 2015: 3
- 3rd Qtr 2015: 3
- 4th Qtr 2015: 2
- 1st Qtr 2016: 5
- 2nd Qtr 2016: 6
Average Time to Bedside evaluation in Minutes

- 1st Qtr 2015: 18 minutes
- 2nd Qtr 2015: 8 minutes
- 3rd Qtr 2015: 8 minutes
- 4th Qtr 2015: 5 minutes
- 1st Qtr 2016: 6 minutes
- 2nd Qtr 2016: 6 minutes

*Average Time to Bedside evaluation in Minutes*
Feedback

• Utilized in Labor and Delivery and Mother Baby

• We currently follow ACOG District II Antihypertensive Algorithm so we made sure they were in alignment

• Staff feel like they are being listened to and that there is improved communication and a plan has been put into place before anyone leaves the patient bedside
Feedback

• It is not impossible to implement. We are a community hospital without residents.

• The health care team now has clear expectations for when a prompt beside evaluation is required.

• There is a plan that is in place that is documented and shared with the rest of the team.
Questions

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Q&A Session
Press *1 to ask a question

You will enter the question queue
Your line will be unmuted by the operator for your turn

A recording of this presentation will be made available on our website:
www.safehealthcareforeverywoman.org
Next Safety Action Series

Effective Use of Labor Induction to Support Intended Vaginal Births

Wednesday, August 24 | 12:30pm Eastern

Joyce Edmonds, PhD, MPH, RN
Assistant Professor, Boston College

David Lagrew, MD, FACOG
Chief Integration and Accountability Officer, MemorialCare Health System

Click here to register now.