Our agenda for today--

Please see the agenda in the chat or in the body of the email that included your zoom link.
HOUSEKEEPING

Technical Support: If you need any support during this meeting, please feel free to reach out to Peter Marschall via the chat or via email: pmarschall@socialent.com

Questions? If you have any questions, please put those in the Q&A box.
WELCOME REMARKS

BRIAN IRIYE, MD
MANAGING PARTNER,
HIGH RISK PREGNANCY CENTER
NEVADA ALLIANCE FOR INNOVATION IN MATERNAL HEALTH KICKOFF VS BLASTOFF
**AIM**

- A national data-driven maternal safety and quality improvement initiative
- Works to reduce preventable maternal mortality and severe maternal morbidity
- Utilizes state and community based teams to align national, state and hospital level QI efforts
1) Maternal Mortality Review Committee-2020
2) Expansion of Medicaid
3) Reporting of data stratified by race and ethnicity
4) Establishment of a PQC
5) Participation in the Alliance for Innovation in Maternal Health Program
NEVADA MATERNAL DEATH RATE

- 2nd lowest rate in the country at 8.4 deaths per 100,000 births
- California lowest at 4.0
PREGNANCY ASSOCIATED MATERNAL MORTALITY PER 100,000 LIVE BIRTHS

<table>
<thead>
<tr>
<th>Maternal Race/Ethnicity</th>
<th>Ratio per 100,000 Live Births</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>White, non-Hispanic</td>
<td>134.6</td>
<td>43%</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>181.7</td>
<td>24%</td>
</tr>
<tr>
<td>API/AI/AN, non-Hispanic</td>
<td>59.6</td>
<td>5%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>74.0</td>
<td>24%</td>
</tr>
</tbody>
</table>
IMPLEMENTATION OF QUALITY IS EXTRAORDINARILY SLOW

Physician adoption of new practices years after discovery

Even worse, only 50% of EBPs make it into practice

Even worse, only 50% of EBPs make it into practice.
**EVIDENCE – PRACTICE GAP**

Consistent failure to translate evidence into routine practice

- 50% of patients do not receive recommended care
- 30% of medical spending is on unnecessary care

- Optimization of patient care demands closing of the evidence-practice gap
- Optimal introduction of new interventions and technology ensure access, delivery and usage
WILL THIS WORK?

• Protocols standardize care
  • The more way of doing things the more
    • Confusion in care initiation
    • Delay
    • Possible implicit bias
  • Protocols
    • Improve care quality
    • Bolster medico-legal arguments for care
    • Reduce time on EMR documentation
    • Improve staff communication of services
    • Reduce costs
    • Work towards elimination of racial bias
Landing the Plane

1. Get clearance to land using the communication radio. An essential part of flight is staying in touch with ATC (Air Traffic Control), Approach Control, or Tower, during approach and landing procedures. You can find the correct frequencies on your sectional chart.
   - When changing frequencies on the communication radio it is courteous to listen for the better part of a minute to make sure no stations are in the middle of an exchange. Only when you are sure there are no “conversations” going on should you make your initial broadcast. This helps to avoid the “stepped-on” situation which occurs when multiple stations are broadcasting on the same frequency at the same time.

2. Reduce the airspeed. To do this, reduce power and lower the flaps to the appropriate level. Do not deploy flaps at excessively high speeds (only when airspeed is within the white area on the airspeed indicator). Stabilize the airspeed and rate of descent by applying back pressure on the control wheel.
   - Knowing if you’re right just takes practice.18
     - Pick your aiming point and begin your descent.
3. Get the right angle of descent and airspeed. This is controlled by a mixture of throttles and yoke. Once you’ve found a runway, you need to have the combination exactly right to land. When it comes to flying an aircraft, this is the hardest part.
   - A general rule is that the approach speed is 1.3 multiplied by the stalling speed of the aircraft. This should be indicated on the A32, however, always take into account wind speed, too.

4. Lower the nose and watch the numbers on the runway. These are there for a reason. They tell the pilot whether he or she is going to overshoot or land short. Lower the nose, keeping the numbers right on your horizon.
   - If the numbers start to disappear under the aircraft nose, you are landing long.
   - If the numbers distance themselves from the aircraft nose, you are landing short.
   - As you get closer to the ground, you will experience the “ground effect.” This will be explained by your instructor in detail, but basically the ground effect causes the plane to float a bit because of reduced drag near the ground.
5 Reduce the throttle to idle. Raise the nose slowly by pulling back on the yoke, until the two main wheels touch down. Continue holding the nose wheel off the ground; it will settle to the ground by itself.

6 Come to a stop. Once the nose wheel has touched down, you can apply brakes to slow for exiting the runway. Exit as soon as possible on the off ramp specified by the tower. Never stop on a runway.
OBSTETRICS

Maternal mortality in the United States: predictability and the impact of protocols on fatal postcesarean pulmonary embolism and hypertension-related intracranial hemorrhage

Steven L. Clark, MD; James T. Christmas, MD; Donna R. Frye, RN; Janet A. Meyers, RN; Jonathan B. Perlin, MD, PhD

OBJECTIVE: The purpose of this study was to examine the efficacy of specific protocols that have been developed in response to a previous analysis of maternal deaths in a large hospital system. We also analyzed the theoretic impact of an ideal system of maternal triage and transport on maternal deaths and the relative performance of cause of death determination from chart review compared with a review of discharge coding data.

STUDY DESIGN: We conducted a retrospective evaluation of maternal deaths from 2007-2012 after the introduction of disease-specific protocols that were based on 2000-2006 data.

RESULTS: Our maternal mortality rate was 6.4 of 100,000 births in just policy that involved automatic and rapid antihypertensive therapy for defined blood pressure thresholds eliminated deaths from in-hospital intracranial hemorrhage and reduced overall deaths from pre-eclampsia from 15-3 (P = .02). From 1-3 deaths were related causally to cesarean delivery. Only 7% of deaths were potentially preventable with an ideal system of admission triage and transport. Cause of death analysis with the use of discharge coding data was correct in 52% of cases.

CONCLUSION: Disease-specific protocols are beneficial in the reduction of maternal death because of hypertensive disease and postoperative pulmonary embolism. From 2-6 women die annually in the United States because of cesarean delivery itself. A reduction in
OBJECTIVE: The purpose of this study was to examine the efficacy of specific protocols that have been developed in response to a previous analysis of maternal deaths in a large hospital system. We also analyzed the theoretic impact of an ideal system of maternal triage and transport on maternal deaths and the relative performance of cause of death determination from chart review compared with a review of discharge coding data.

STUDY DESIGN: We conducted a retrospective evaluation of maternal deaths from 2007-2012 after the introduction of disease-specific protocols that were based on 2000-2006 data.

RESULTS: Our maternal mortality rate was 6.4 of 100,000 births in just >1.2 million deliveries. A policy of universal use of pneumatic compression devices for all women who underwent cesarean delivery resulted in a decrease in postoperative pulmonary embolism deaths from 7 of 458,097 cesarean births to 1 of 465,880 births ($P = .038$). A policy that involved automatic and rapid antihypertensive therapy for defined blood pressure thresholds eliminated deaths from in-hospital intracranial hemorrhage and reduced overall deaths from pre-eclampsia from 15:3 ($P = .02$). From 1:3 deaths were related causally to cesarean delivery. Only 7% of deaths were potentially preventable with an ideal system of admission triage and transport. Cause of death analysis with the use of discharge coding data was correct in 52% of cases.

CONCLUSION: Disease-specific protocols are beneficial in the reduction of maternal death because of hypertensive disease and postoperative pulmonary embolism. From 2-6 women die annually in the United States because of cesarean delivery itself. A reduction in deaths from postpartum hemorrhage should be the priority for maternal death prevention efforts in coming years in the United States.

Key words: checklist, maternal mortality rate, patient safety
WHAT IS DIFFERENT?

My hospital has an anti-HTN protocol
• Many times they are not initiated
• BPs measured incorrectly
• Delays in ordering the protocol and treatment based on the protocol
• Different education on PP and L and D
• Who gets labetalol and who gets hydralazine?
• Also nifedipine is not an option at many centers

This is going to be different
• Education
• Standardization
• All current up to date options
• Safety, reduction of bias, improvement in patient care
NOT WILL IT WORK, IT HAS TO WORK

- Improve patient safety
- Lower cost without sacrificing quality
- Equally distribute services
- Reduce huge variations in care and costs
- It's not that we don't have solutions, it's just that we cannot implement those solutions in health care organizations
AIM CORE TEAM
INTRODUCTIONS

VICKIE IVES, MA
MATERNAL, CHILD AND ADOLESCENT HEALTH
SECTION MANAGER,
DIVISION OF PUBLIC AND BEHAVIORAL HEALTH
NEVADA AIM CORE TEAM

Ihsan Azzam, PhD, MD | Chief Medical Officer, DPBH
Suzanne Bierman, JD, MPH | NV Medicaid Administrator, DHCFP
Marissa Brown, MHA, BSN, RN | NV Hospital Association
Brian Iriye, MD | Maternal Fetal Medicine Specialist, SMFM
Sandra Koch, MD | Obstetrician-Gynecologist, ACOG
Noah Kohn, MD | Pediatrician
Natalie Nicholson, DNP, MBA, RN, CENP | AWHONN, NPWH
Jennifer Vanderlaan, PhD, MPH, CNM, FNP | ACNM, UNLV
AIM OVERVIEW

EMILY GREENWOOD

PROGRAM MANAGER, AIM
AIM’s Primary Objective

Reduce preventable maternal deaths and severe maternal morbidity (SMM) in the United States.

By:

- Promoting safe care for every U.S. birth
- Engaging multidisciplinary partners at the national, state and hospital levels
- Developing and providing tools for implementation of evidence-based patient safety bundles
- Utilizing data-driven quality improvement strategies
- Aligning existing efforts and disseminating evidence-based resources
AIM By the Numbers

90% % U.S. States Engaged in AIM
65% % U.S. States Enrolled in AIM
51% % U.S. States Implementing a Bundle with AIM

AIM Bundle Implementation
**Multiple states are implementing more than one**

N=51 (50 states and Washington, DC)
Alliance for Innovation on Maternal Health moves established guidelines into practice with a standard approach to improve safety in care.

Maternal Mortality Review Committees conduct detailed reviews for complete and comprehensive data on maternal deaths to prioritize statewide prevention efforts.

Perinatal Quality Collaboratives mobilize state or multi-state networks to implement clinical quality improvement efforts and improve care for mothers and babies.

Created from a Centers for Disease Control, Division of Reproductive Health source.
AIM Patient Safety Bundles

- Safe Reduction of Primary Cesarean Birth
- Severe Hypertension in Pregnancy
- Obstetric Hemorrhage
- Obstetric Care for Women with Opioid Use Disorder
- Postpartum Basics: From Birth to Postpartum Visit
- Postpartum Basics: From Maternity to Well-Woman Care
- Maternal Venous Thromboembolism
- Reduction of Peripartum Racial and Ethnic Disparities
- Cardiac Conditions in Obstetrical Care
- Maternal Sepsis
Why an AIM Data Center?

- Supports data-driven quality improvement
- Benchmark metrics against “like” hospitals and stratifies outcomes by patient demographics
- Allows for comparison across state collaboratives
- Tracks bundle implementation and SMM rates overtime
What is in the AIM Data Portal?

Outcome Measures
- Calculated and submitted on behalf of hospitals by collaborative administrators
- Data primarily sourced from hospital discharge and birth certificate data

Structure and Process Measures
- Data collected by participating facilities and submitted by hospital administrators
- Based on AIM Data Collection Plan

Data from other AIM state teams
- Provides collaborative-wide data for all metrics provided by all states
- Allowing for improved benchmarking
Thank you!

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

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IMPROVING MATERNITY OUTCOMES AT SCALE: PERINATAL QUALITY COLLABORATIVES AND HYPERTENSIVE DISORDERS OF PREGNANCY

ELLIOTT MAIN, MD

CLINICAL PROFESSOR, OBSTETRICS AND GYNECOLOGY – MATERNAL FETAL MEDICINE, STANFORD UNIVERSITY
MEDICAL DIRECTOR, CALIFORNIA MATERNAL QUALITY CARE COLLABORATIVE
Improving Maternity Outcomes at Scale: Perinatal Quality Collaboratives and Hypertensive Disorders of Pregnancy

Elliott K. Main, MD
Director of Quality Assurance and Implementation for AIM
Medical Director, CMQCC
Clinical Professor of Obstetrics and Gynecology, Stanford University School of Medicine
Objectives and Disclosures

Objectives:
- Identify key elements that make a State Perinatal Quality Collaborative successful
- List the barriers for rapid treatment of severe range hypertension
- Understand the background for the AIM HTN Bundle elements

Disclosures
- Dr. Main has no conflicts or disclosures to report
In the last 15 years, US has seen rises in:

Maternal Mortality:
Up 50-70%

Severe Maternal Morbidity:
Up 100%

Cesarean Births:
Up 50%
Lost Mothers Series

Rene Martin, ProPublica
Renee Montagne, NPR News

Winner of the George Polk Award in Journalism (2018)
What states aren't doing to save new mothers' lives

The U.S. maternal death rate is among the highest in the developed world. Eighteen states haven't studied these deaths and others tend to blame moms.

Laura Ungar, USA TODAY
2:19 p.m. PDT Sep. 20, 2018
Maternal Mortality Rate, California and United States; 1999-2013

California: ~500,000 annual births, 1/8 of all US births

- California Rate
- United States Rate

Increase of >50% noted in both CA and US rates

CA Mortality Review Committee
### Assessments of Preventability

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>North Carolina “Preventable”</th>
<th>California “Good or strong chance to alter the outcome”</th>
<th>United Kingdom “Substandard care that had a major contribution”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemorrhage</td>
<td>93%</td>
<td>70%</td>
<td>44%</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>60%</td>
<td>60%</td>
<td>64%</td>
</tr>
<tr>
<td>Sepsis / Infection</td>
<td>43%</td>
<td>50%</td>
<td>46%</td>
</tr>
<tr>
<td>DVT / VTE</td>
<td>17%</td>
<td>50%</td>
<td>33%</td>
</tr>
<tr>
<td>Cardiomyopathy</td>
<td>22%</td>
<td>29%</td>
<td>25%</td>
</tr>
<tr>
<td>AFE</td>
<td>0%</td>
<td>0%</td>
<td>15%</td>
</tr>
</tbody>
</table>
• California Pregnancy Associated Mortality Reviews
  – Missed triggers/risk factors: abnormal vital signs, pain, altered mental status/lack of planning for at risk patients
  – Underutilization of key medications and treatments—did not have a plan!
  – Difficulties getting physician to the bedside
  – “Location of care” issues involving Postpartum, ED and PACU

• University of Illinois Regional Perinatal Network
  - Failure to identify high-risk status
  - Incomplete or inappropriate management

Alliance for Innovation on Maternal Health
Kickoff Meeting

Key Provider QI Opportunities: Hemorrhage and Preeclampsia

• California Pregnancy Associated Mortality Reviews
  – Missed triggers/risk factors: abnormal vital signs, pain, altered mental status, lack of planning for at-risk patients
  – Underutilization of key medications and treatments—did not have a plan!
  – Difficulties getting physician to the bedside
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  – Failure to identify high-risk status
  – Incomplete or inappropriate management

### Maternal Mortality and Severe Morbidity

Approximate distributions, compiled from multiple studies

<table>
<thead>
<tr>
<th>Cause</th>
<th>Mortality (1-2 per 10,000)</th>
<th>ICU Admit (1-2 per 1,000)</th>
<th>Severe Morbid (1-2 per 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thromboembolism</td>
<td>10-15%</td>
<td>5%</td>
<td>2%</td>
</tr>
<tr>
<td>Infection</td>
<td>10-15%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>10-15%</td>
<td>30%</td>
<td>45%</td>
</tr>
<tr>
<td>Preeclampsia</td>
<td>10-15%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Cardiac Disease</td>
<td>25-30%</td>
<td>20%</td>
<td>10%</td>
</tr>
</tbody>
</table>
Obstetric Hemorrhage and Preeclampsia: Summary

- Most common **preventable** causes of maternal mortality
- Far and away the most common causes of Severe Maternal Morbidity
- High rates of provider “quality improvement opportunities”
Obstetric Hemorrhage and Preeclampsia: Summary

- Most common **preventable** causes of maternal mortality
- Far and away the most common causes of Severe Maternal Morbidity
- High rates of provider “quality improvement opportunities”

3 Deadly D’s: Denial ✗ Delay ✗ Dismissal ✗
Spectrum of Hypertensive Disorders in Pregnancy
Hospitals know how to protect mothers. They just aren’t doing it.
Maternal Safety Bundles

What are they?

- "Checklist" of items and practices for every birthing site
- Not a national protocol!!
- Facilities will modify content based on local resources

Available (with resource links) at:
safehealthcareforeverywoman.org
“Toolkits” Provide Background Detail and Implementation Guidance for the Safety Bundles

Released 2014
>12,000 downloads

Available at www.CMQCC.org
Updated version under review: summer 2021 release
How does a state Perinatal Quality Collaborative (PQC) Improve Care and Outcomes?

- Not just by convening a group of interested stakeholders
- Not just by establishing a system of outreach education

**Success for AIM:**
- Focus on Building State Capacity to Drive Systems & Culture Change
- Focus on building bridges with Public Health and Communities

Courtesy: Dr. Ann Borders, Medical Director, Illinois Perinatal Quality Collaborative
What is the Cause of Death for Women with Preeclampsia?
### CA-PAMR Final Cause of Death Among Preeclampsia Cases, 2002-2004 (n=25)

<table>
<thead>
<tr>
<th>Final Cause of Death</th>
<th>Number</th>
<th>%</th>
<th>Rate/100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>16</td>
<td>64.0%</td>
<td>1.0</td>
</tr>
<tr>
<td><em>Hemorrhagic</em></td>
<td>14</td>
<td>(87.5%)</td>
<td></td>
</tr>
<tr>
<td><em>Thrombotic</em></td>
<td>2</td>
<td>(12.5%)</td>
<td></td>
</tr>
<tr>
<td>Hepatic (liver) Failure</td>
<td>4</td>
<td>16.0%</td>
<td>0.25</td>
</tr>
<tr>
<td>Cardiac Failure</td>
<td>2</td>
<td>8.0%</td>
<td></td>
</tr>
<tr>
<td>Hemorrhage/DIC</td>
<td>1</td>
<td>4.0%</td>
<td></td>
</tr>
<tr>
<td>Multi-organ failure</td>
<td>1</td>
<td>4.0%</td>
<td></td>
</tr>
<tr>
<td>ARDS</td>
<td>1</td>
<td>4.0%</td>
<td></td>
</tr>
</tbody>
</table>
## Preventing Stroke from Preeclampsia

### Blood Pressure Comparisons: Baseline and Pre-stroke

<table>
<thead>
<tr>
<th>Measure</th>
<th>Pregnancy Baseline (mm Hg)</th>
<th>Pre-stroke (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean systolic BP</td>
<td>110.9 ± 10.7 (n=25)</td>
<td>175.4 ± 9.7 (n=24)</td>
</tr>
<tr>
<td>Systolic BP range</td>
<td>90-136</td>
<td>159-198</td>
</tr>
<tr>
<td>Systolic BP % ≥ 160</td>
<td>0</td>
<td>95.8 (n=27/28)</td>
</tr>
<tr>
<td>Mean diastolic BP</td>
<td>67.4 ± 6.5 (n=25)</td>
<td>98.0 ± 9.0 (n=24)</td>
</tr>
<tr>
<td>Diastolic BP range</td>
<td>58-80</td>
<td>81-113</td>
</tr>
<tr>
<td>Diastolic BP % ≥ 110</td>
<td>0</td>
<td>12.5 (n=3)</td>
</tr>
<tr>
<td>Diastolic BP ≥ 105</td>
<td>0</td>
<td>20.8 (n=5)</td>
</tr>
</tbody>
</table>

96%!

13%!

- CA PAMR: 333 P-R maternal deaths 2002-2007
- 61% of 54 Preeclampsia/Eclampsia deaths were stroke
- 96% had Sys BP>160; only 65% had Dias BP >110
- Only 48% received any antihypertensive meds
- Only 29% received ACOG Standard Treatment
Controlling blood pressure is the key intervention to prevent deaths due to stroke in women with preeclampsia.

Over the last decade, the UK has focused QI efforts on aggressive treatment of both systolic and diastolic blood pressure and has demonstrated a reduction in deaths.

“Treat the Damn Blood Pressure!”
# Medication Protocols: First Line Agents in Preeclampsia

<table>
<thead>
<tr>
<th>Medication Agents</th>
<th>Labetalol IV</th>
<th>Hydralazine IV</th>
<th>Nifedipine (Immediate release)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route</td>
<td>IV</td>
<td>IV</td>
<td>PO</td>
</tr>
<tr>
<td>Initial therapy</td>
<td>20 mg</td>
<td>5-10 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td>Onset</td>
<td>2-5 minutes</td>
<td>5-20 minutes</td>
<td>5-20 minutes</td>
</tr>
<tr>
<td>Peak</td>
<td>5 minutes</td>
<td>15-30 minutes</td>
<td>30-60 minutes</td>
</tr>
<tr>
<td>Max dose (Before switching agents)</td>
<td>140 mg</td>
<td>20 mg</td>
<td>50 mg</td>
</tr>
<tr>
<td><strong>Mechanism of action</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Combined α and β-blocking agent</td>
<td>- Arteriolar dilator</td>
<td>- Calcium channel blocker</td>
</tr>
<tr>
<td></td>
<td>- Arteriolar dilator</td>
<td>- Arteriolar dilator</td>
<td>- Arterial smooth muscle dilator</td>
</tr>
<tr>
<td></td>
<td>- Decreases heart rate</td>
<td>- Increases heart rate</td>
<td></td>
</tr>
<tr>
<td><strong>Side effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Use with caution in patients with known asthma.</td>
<td>- Tachycardia, headache</td>
<td>- Reflex tachycardia</td>
</tr>
<tr>
<td></td>
<td>- Flushing, light headedness, palpitations and scalp tingling</td>
<td>- Upper abdominal pain (rare)</td>
<td>- Headache</td>
</tr>
<tr>
<td></td>
<td>- Safe for use after cocaine and amphetamine use (including methamphetamine)</td>
<td>- Flushing</td>
<td>- Flushing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Nausea</td>
<td>- Nausea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Vomiting</td>
<td></td>
</tr>
</tbody>
</table>
ACOG Protocol for Treatment of Severe HTN in Pregnancy

LABETALOL

IF SEVERE BP ELEVATIONS PERSIST FOR 15 MINUTES OR MORE, ADMINISTER
LABETALOL 20 MG IV FOR >2 MINUTES

AFTER 10 MINUTES, IF EITHER BP THRESHOLD IS STILL EXCEEDED, ADMINISTER
LABETALOL 40 MG IV FOR >2 MINUTES

AFTER 10 MINUTES, IF EITHER BP THRESHOLD IS STILL EXCEEDED, ADMINISTER
LABETALOL 80 MG IV FOR >2 MINUTES

AFTER 10 MINUTES, IF EITHER BP THRESHOLD IS STILL EXCEEDED, ADMINISTER
HYDRALAZINE 10 MG IV FOR >2 MINUTES

sBP≥160 or dBP≥110,
(persisting 15min)

ACOG Committee Opinion 767,
Feb 2019: Interim Update: Emergent Therapy for Acute-Onset Severe Hypertension During Pregnancy and the Postpartum Period

ACOG Practice Bulletin 222,
June 2020: Gestational Hypertension and Preeclampsia
Barrier Analysis for Delays in Treating Severe Hypertension

- BP stabilized before meds given
- No knowledge of BP parameters
- Competing priorities
- Unable to rapidly access meds
- RN reluctant to give IV push
- Magnesium SO4 given instead
- MD not available
- Fear of hypotension

Why was the severe BP not treated?
### Kantorowska et al (NYU)

AJOG 2020 223:250  
52% Delayed RX (>60min)

**RR for Delayed Treatment:**

<table>
<thead>
<tr>
<th>RR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2x</td>
<td>Initial BP not in severe range</td>
</tr>
<tr>
<td>2.7x</td>
<td>W/o preeclamptic symptoms</td>
</tr>
<tr>
<td>2.7x</td>
<td>10pm—6am</td>
</tr>
<tr>
<td>2.2x</td>
<td>Labor symptoms</td>
</tr>
<tr>
<td>1.8x</td>
<td>White race</td>
</tr>
<tr>
<td></td>
<td>Term &gt;&gt; Preterm</td>
</tr>
</tbody>
</table>

### Deshmukh et al (Yale)

AJOG 2021 in press  
73% Delayed (>60min) or no RX

**More likely if… (aOR):**

<table>
<thead>
<tr>
<th>RR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.85x</td>
<td>Black</td>
</tr>
<tr>
<td>1.77x</td>
<td>Hispanic</td>
</tr>
<tr>
<td>6.65x</td>
<td>Preterm</td>
</tr>
</tbody>
</table>

**Less likely if… (aOR):**

<table>
<thead>
<tr>
<th>RR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.79x</td>
<td>7pm—6am</td>
</tr>
<tr>
<td>0.66x</td>
<td>Postpartum</td>
</tr>
</tbody>
</table>
Conquering “Fear of Hypotension”

As part of the CMQCC Maternal Hypertension collaborative:
- Hypotension defined as ≥30% reduction in Systolic BP
- IV Labetalol: 69 women—10% hypotension
- IV Hydralazine: 31 women—11% hypotension
- No change in fetal heart rate category
- No women required emergent delivery for fetal indication

Need to change the collective mindset from reluctance to treat severe HTN to embracing treatment for everyone
Hypertension Structure Measures

Why These Measures?

- Have a recently reviewed and updated severe hypertension policy or procedure that provides a standard approach to measuring BP, treating severe HTN and safe use of Magnesium SO4.
- Develop OB-specific resources and protocols to support patients, families, and staff through major OB complications.
- Establish a system to perform regular formal debriefing discussions after cases with major complications.
- Establish a process to perform multidisciplinary system-level review of all severe HTN cases.
- Integrate at least some of the recommended Hypertension bundle processes into the hospital’s electronic health record system.

WHY? For emergency care, it is critical to have standard approach for all staff that can be taught, drilled, debriefed so that everyone can function as a team.

WHY? Emergent events during childbirth can be traumatizing to women and their families (and providers). The events can often lead to depression, anxiety and PTSD.

WHY? Debriefs are the first step to identify improvement opportunities for complicated cases. They also reinforce a culture of safety on the unit.

WHY? Each case provides multiple learning and improvement opportunities that mostly involve system changes.

WHY? Integration of bundle elements into order sets and on-line resources is one of the most effective steps to reinforce and sustain change.
Hypertension Process Measures

Why These Measures?

- Estimated cumulative proportion of OB physicians and providers who have completed an education program on obstetric hemorrhage and bundle elements and unit-standard protocol in the past 2 years.
- Estimated cumulative proportion of OB nurses who have completed an education program on obstetric hemorrhage and bundle elements and unit-standard protocol in the past 2 years.
- Number of OB drills conducted during the current quarter on any maternal safety topic and topics covered.
- Proportion of patients with persistent new onset severe hypertension who were treated within 1 hour.

WHY? Best practices for hemorrhage continue to change; for a successful team response to hemorrhage, all nurses and providers need to be on the same page in the same playbook.

WHY? It is not enough to have a great protocol and equipment; one has to train the team and practice using the protocol and equipment on a regular basis.

WHY? The single most important step for prevention of maternal deaths from hypertensive disorders is to treat systolic hypertension in an emergent time frame.
“Failure to Rescue”

- Everything we have talked about today can fall into the category of rapid and appropriate response to problems.
- Outcome: “Among women with hypertensive disorders, how many have Severe Maternal Morbidity”
- Secondary prevention: Induction of labor of women with HTN at 37 weeks.
- Very little about primary prevention...

Prevention: Low-Dose Aspirin

- Effective mechanism for prevention of preeclampsia in high-risk patients (mainly those with a history of preeclampsia)
- LDA: anti-inflammatory, anti-angiogenesis, anti-platelet
- 81 mg/day prophylaxis recommended for women at high risk of preeclampsia (ACOG, USPSTF)
  - Should be initiated between 12-28 weeks gestation (optimally before 16 weeks)
  - Should be continued daily until delivery
- Controversies remain:
  - Dosage? Who to treat? How to message?
AIM Structure Measures: Hypertension

- Hypertension/Preeclampsia Policy/Protocol that covers measurement of BP, treatment of severe HTN, administration of Magnesium and treatment of Mag overdose
- Drills at least annually
- Multidisciplinary case reviews
- Debriefs after case with complications
- Staff Education

New Standards for Perinatal Safety

PC.06.03.01
Reduce the likelihood of harm related to maternal severe hypertension/preeclampsia.

Element(s) of Performance for PC.06.03.01

1. Develop written evidence-based procedures for measuring and remeasuring blood pressure. These procedures include criteria that identify patients with severely elevated blood pressure.
2. Develop written evidence-based procedures for managing pregnant and postpartum patients with severe hypertension/preeclampsia that includes the following:
   - The use of an evidence-based set of emergency response medications that are stocked and immediately available on the obstetric unit
   - The use of seizure prophylaxis
   - Guidance on when to consult additional experts and consider transfer to a higher level of care
   - Guidance on when to use continuous fetal monitoring
   - Guidance on when to consider emergent delivery
   - Criteria for when a team debrief is required

Note: The written procedures should be developed by a multidisciplinary team that includes representation from obstetrics, emergency department, anesthesiology, nursing, laboratory, and pharmacy.

3. Provide role-specific education to all staff and providers who treat pregnant/postpartum patients about the hospital’s evidence-based severe hypertension/preeclampsia procedure. At a minimum, education occurs at orientation, whenever changes to the procedure occur, or every two years.

Note: The emergency department is often where patients with symptoms or signs of severe hypertension present for care after delivery. For this reason, education should be provided to staff and providers in emergency departments regardless of the hospital’s ability to provide labor and delivery services.

4. Conduct drills at least annually to determine system issues as part of ongoing quality improvement efforts. Severe hypertension/preeclampsia drills include a team debrief.

Continued...
23 Community hospitals in Dignity Health (CA, NV, AZ)

Introduction of standardized approach for HTN disorders (CMQCC)

Comparison of 3 time periods:
- Baseline: initial 6 months (Jan-Jun 2015)
- Monitoring 1: next 6 months
- Monitoring 2: next 6 months
HTN Bundle elements and criteria:

1. **Magnesium SO4**: all women with preeclampsia with severe features, and all women with BP≥160 sys or ≥110 dias (regardless of HTN type)

2. **Acute BP Treatment**: all women with BP≥160 sys or ≥110 dias had successful reduction of BP within 1 hour

3. **Early PP follow-up**: ≤2wks for all HTN disorders; ≤1 week if received HTN medication during admission

### TABLE

<table>
<thead>
<tr>
<th>Population characteristics and outcome data</th>
<th>Baseline</th>
<th>Monitoring phase I</th>
<th>Monitoring phase II</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deliveries</td>
<td>22,506</td>
<td>24,409</td>
<td>22,534</td>
<td>69,449</td>
</tr>
<tr>
<td>Met criteria for treatment with magnesium sulfate</td>
<td>589 (2.6%)</td>
<td>646 (2.6%)</td>
<td>799 (3.5%)</td>
<td>2034 (2.9%)</td>
</tr>
<tr>
<td>Appropriately treated with magnesium sulfate</td>
<td>503 (85.4%)</td>
<td>597 (92.0%)</td>
<td>769 (96.2%)</td>
<td>P &lt; .01</td>
</tr>
<tr>
<td>Met criteria for acute blood pressure treatment</td>
<td>504 (2.2%)</td>
<td>490 (2.0%)</td>
<td>526 (2.3%)</td>
<td>P = .5</td>
</tr>
<tr>
<td>Appropriately treated with hypertensive medication</td>
<td>287 (56.9%)</td>
<td>388 (79.2%)</td>
<td>474 (90.1%)</td>
<td>P &lt; .01</td>
</tr>
</tbody>
</table>

Overall 3-element bundle compliance: 50.5% 88.5%  P < .01
Among ALL gravidas
Severe Maternal Hypertension Treated Within 60 Minutes

Goal: 80% of women treated <60 min

Increased 41% to 82%
Change per Month, aOR = 1.11, 95% CI 1.10-1.12
P < 0.001
Severe Maternal Hypertension with Severe Maternal Morbidity Reported

15% baseline to 9% last quarter
41% reduction*

*When adjusted for hospital characteristics, results were unchanged
Key Postpartum Follow-up is Critical

- Early post-discharge follow-up recommended for all patients diagnosed with preeclampsia/eclampsia
- Recommend post-discharge follow-up:
  - within 3-7 days if medication was used during labor and delivery OR postpartum
  - within 7-14 days if no medication was used
- Postpartum patients presenting to the ED with hypertension, preeclampsia or eclampsia should either be assessed by or admitted to an obstetrical service
- Watch for: Worsening preeclampsia and heart failure (cardiomyopathy)
New Postpartum Approaches for Hypertension

- In a prospective study using BP self-monitoring after discharge
  - Over half required extra treatment for exacerbations in BP, of which 16% were severe. Women who were Black or BMI>35 experienced longer time to HTN resolution

- In a RCT that compared office-based follow-up with text-based remote monitoring for management of PP hypertension
  - No hospital readmissions were noted, and 85% had BP's obtained at least twice in the first 7 days. Furthermore, racial disparities in postpartum BP monitoring and outcomes were eliminated


Preeclampsia in the Emergency Department

- Most important first step is to identify whether they are or have been pregnant in the last year
  - If yes \(\rightarrow\) assess immediately
- Emergency and OB clinicians should be notified of the patient’s arrival immediately to expedite evaluation and treatment
- The “trigger” BP in pregnancy and postpartum (160/110) is lower than values for hypertensive emergencies in non-OB patients

**Specific S/S that Require Urgent Triage:**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Symptom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent Headache</td>
<td>Weakness</td>
</tr>
<tr>
<td>Visual change (floaters, spots)</td>
<td>Severe abdominal pain</td>
</tr>
<tr>
<td>History of preeclampsia</td>
<td>Confusion</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>Seizures</td>
</tr>
<tr>
<td>History of high blood pressure</td>
<td>Seizures</td>
</tr>
<tr>
<td>Chest pain</td>
<td>Fevers or chills</td>
</tr>
<tr>
<td>Heavy bleeding</td>
<td>Swelling in hands or face</td>
</tr>
</tbody>
</table>
Patient Education Materials

www.preeclampsia.org
Prevention: Low-Dose Aspirin

- Effective mechanism for prevention of preeclampsia in high-risk patients (mainly those with a history of preeclampsia)
- LDA: anti-inflammatory, anti-angiogenesis, anti-platelet
- 81 mg/day prophylaxis recommended for women at high risk of preeclampsia
  - Should be initiated between 12-28 weeks gestation (optimally before 16 weeks)
  - Should be continued daily until delivery
Maternal Mortality Rate
California and United States; 1999-2013

California: ~500,000 annual births, 1/8 of all US births

Maternal Deaths per 100,000 Live Births

Year

California Rate
United States Rate

CA Mortality Review Committee
Maternal Mortality Rate
California and United States; 1999-2013

California: ~500,000 annual births, 1/8 of all US births

- California Rate
- United States Rate

CMQCC
Toolkits and Collaboratives
CA Mortality Review Committee
Pull As Many Levers as Possible: Collective Impact
Bundle Implementation Pearls

- Engagement: Patient Stories
- Early Wins:
  - Carts, medication availability
  - Icons for high risk, Buttons, Be Creative and fun
- Multi-disciplinary team:
  - OB, Anesthesia, Nursing, Pharmacy co-leads
- Celebrate!
  - “We cared for a patient with a Severe HTN today and the team did great!”
- Case reviews--share among the team
Outcome Measures have Challenges

- Maternal Mortality: very rare (1 per 10,000), many different causes, half not related to delivery, often delayed in reporting
- Severe Maternal Morbidity: >50% are “transfusion alone”
  - Transfusion is variable coded—HRSA/ AHRQ/ CDC will be jointly promoting SMM w/o transfusion as the key measure (and annually releasing rates for every state)
  - We have analyzed CA data for the underlying causes of SMM and have found that Hypertensive disorders account for about 35% of SMM w/o transfusion
  - Hospital level SMM is driven by case-mix, but a recent risk-adjustment algorithm* does allow for accurate hospital comparisons
  - Additional choices: SMM among women with HTN; B-W disparity for SMM

Alliance for Innovation on Maternal Health
Kickoff Meeting

Maternal Mortality by Race/Ethnicity

How did we do in California?

United States

California

All Races

Black:White Ratio

Black:White Ratio


All Races

All Races

W

H

A

B

W

H

A

B

Black

White

Hispanic

Asian

Black

White

Hispanic

Asian
Serena Williams’ Story of Not Being Listened To Despite history of multiple PE, her doctors and nurses minimized her PP complaints and refused a CT scan (later positive for multiple small PE).

Lt. Comdr. Shalon Irving PhD
Why do Black Women do so much worse?

Usual explanation by doctors and nurses is that black women have more obesity, more hypertension, more diabetes, and more social disadvantages…
What If We Looked At B:W Disparity In SMM
Only Among College Graduates?
And adjusted for age, BMI and other clinical and demographic risk factors…
What If We Looked At B:W Disparity In SMM Only Among College Graduates?

And adjusted for age, BMI and other clinical and demographic risk factors…

Black-White disparity in SMM is highest among college graduates (2.2x higher than whites)
What If We Looked At B:W Disparity In SMM Only Among College Graduates?

And adjusted for age, BMI and other clinical and demographic risk factors…

Black-White disparity in SMM is highest among college graduates (2.2x higher than whites)

Looking At Absolute Rates:
• SMM rate in Black women with college degrees: 2.4%
• SMM rate in White women without high school diplomas: 1.6%

California linked data: 2010-2015 Q3
CMQCC
Hemorrhage Safety Collaborative: Effects on Severe Maternal Morbidity

Do Black women get the greatest benefit from having standardized emergency care?

The ALLY Model

A: Avoid Assumptions
L: Learn about the whole patient by asking open ended questions
L: Listen more than you talk
Y: Yield to the patient by involving them in their care

https://guidetoallyship.com
By Erica Chidi and Erica P. Cahill, M.D.
Oct. 22, 2020

Protecting Your Birth: A Guide For Black Mothers
How racism can impact your pre- and postnatal care — and advice for speaking to your Ob-Gyn about it.

For Pregnant Black Women--
For Care Providers--
Advancing Equity / Reducing Inequities

- Combine clinical bundles WITH equity work
- Be humble, still lots to learn, be inclusive of many voices
- Disaggregate process and outcome measures by R/E
- Bias training, while important, is only the beginning
  - Web tools: Diversity Science; OMH; MOD
- Actions to promote unit culture change
  - Addressing microaggressions, Allyship, Respectful care principles
- Personal feedback, particularly from higher risk groups
  - Formal PREM surveys, open comments, support persons
Final Thoughts

- No Data without Stories / No Stories without Data
- Remember the 3 Deadly D’s: Denial, Delay, and Dismissal
- Build everything into daily workflows (harness the EHR!)
- Be acutely aware of equity needs for different populations
- Implementation is hard: share the creative ideas from hospital teams themselves
- If you are going to effect change, there has to be measures
- The HTN Safety Bundles can fit ALL size hospitals
‘I am one of the 50,000’

Every year, 50,000 women in the U.S. suffer injuries or severe complications related to childbirth. Many are lucky to survive. They want you to hear their stories.

USA TODAY investigations

Susan Goodhue, Maryland

Rachel Yencha, Ohio

Haelie Cobb, Texas

Avrial Bates, Ohio

Donielle Bell, Georgia

I assumed that all hospitals, if they deliver babies, that they are prepared for things to go wrong.
— Rachel Yencha, Ohio
Thanks to the CMQCC Staff

Visit: [CMQCC.org](http://CMQCC.org)
DISPARITY IN MATERNAL MORTALITY/SEVERE MATERNAL MORBIDITY

GARY PRESUMEY-LEBLANC, MS

RESPECTFUL CARE PROJECT COORDINATOR, AIM
Disparity in Maternal Mortality/Severe Maternal Morbidity
Maternal Mortality

- According to the World Health Organization, maternal mortality or maternal death can be defined as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes”
Severe Maternal Morbidity

- According to the Center for Disease Control, severe maternal morbidity (SMM) includes unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman’s health.
Disparities

- Pregnant women in the United States are **more than twice as likely** to die from complications related to pregnancy or childbirth than those in most other high-income countries in the world.
- Women in majority Black communities have a **63% higher rate** of SMM than women in majority white communities.
- Women in majority Hispanic communities have a **32% higher rate** of SMM than women in majority white communities.
- Black and Hispanic women have a **substantially higher prevalence** than white women of the most common risk factors that put women at risk of SMM.
- Disparities in pregnancy-related deaths for Black and American Indian and Alaska Native (AIAN) women **increase by maternal age and persist across education levels**.
Factors Driving Disparities in Maternal Health

- The factors driving disparities in maternal and infant health are complex and multifactorial
  - Health insurance coverage
  - Access to care
  - Social and economic factors
  - Structural and systemic racism and discrimination
AIM Equity Work
Respectful Care

- At AIM, respectful care seeks to **acknowledge the entire reproductive lifespan and understand and address all aspects of medical history** that includes outcomes like mortality, morbidity and historical travesties that include, but are not limited coerced contraception, forced sterilization, and medical experimentation
Respectful Care Goals

- At AIM, the goal is to build a culture of –
  - Equity
  - Teamwork
  - Open communication

- To ensure an equitable dynamic of power in healing and whole person, patient-centered, trauma-informed care for every patient, in every clinical encounter.
AIM Patient Safety Bundles

- A bundle is a structured way of improving the processes of care and patient outcomes:
  - Small
  - Straightforward
  - Evidence-based

- The power of a bundle comes from the body of science behind it and the method of execution: with complete consistency.
  - Performed uniformly

- A bundle ties the changes together into a package of interventions that people know must be followed for every patient, every single time.
AIM Bundle Components

- Readiness
- Recognition and Prevention
- Response
- Reporting and Systems Learning
- Respectful Care
DATA OVERVIEW AND REDCAP DATA COLLECTION SYSTEM

KAGAN GRIFFIN, MPH, RD

MATERNAL CHILD AND ADOLESCENT HEALTH EPIDEMIOLOGIST

DIVISION OF PUBLIC AND BEHAVIORAL HEALTH
State of Nevada
Department of Health and Human Services

Alliance for Innovation on Maternal Health (AIM)
Data Overview

Kagan Griffin, MPH, RD
MCH Epidemiologist

7/7/2021
Helping people. It’s who we are and what we do.
Agenda

• Data Overview of Nevada Maternal Mortality and Severe Maternal Morbidity
• AIM Data Requirements
• AIM Data Submission Process
Maternal Mortality and Severe Maternal Morbidity

Maternal Mortality and Severe Maternal Morbidity
Nevada, 2020
March 2021

Office of Analytics
Department of Health and Human Services

https://dhhs.nv.gov/uploadedFiles/dhhsnvgov/content/Programs/O
ffice_of_Analytics/Maternal%20Mortality%20and%20Severe%20Ma
ternal%20Morbidity%20Report%202020.pdf
Maternal Mortality

Maternal Deaths
Pregnancy-Related Deaths
Pregnancy-Associated Deaths
Maternal Mortality: Pregnancy-Associated Deaths (PAD)

PAD Ratio per 100,000 Live Births and Number of Deaths, Nevada, 2015-2020

Maternal Mortality: PAD

PAD Ratio and Percent by Race/Ethnicity, Nevada, 2020

Maternal Mortality: PAD

PAD Ratio and Percent by Maternal Age and Race/Ethnicity, Nevada, 2020

Maternal Mortality: Pregnancy-Related Deaths (PRD)

PRD Ratio per 100,000 Live Births and Number of Deaths, Nevada, 2012-2017

Data Source: Pregnancy Mortality Surveillance System (PMSS)
Maternal Mortality: PRD

PRD Ratio and Percent by Race/Ethnicity Nevada, 2016-2017

Data Source: Pregnancy Mortality Surveillance System (PMSS)

- 18.4 per 100,000 live births for White, non-Hispanic (28%)
- 63.0 per 100,000 live births for Black, non-Hispanic (33%)
- 55.8 per 100,000 live births for API/AI/AN, non-Hispanic (22%)
- 11.6 per 100,000 live births for Hispanic (17%)
Maternal Mortality: PRD

PRD Ratio by Maternal Age and Race/Ethnicity, Nevada, 2016-2017
Severe Maternal Morbidity (SMM)

SMM Rate per 10,000 Deliveries and Number of Cases, Nevada, 2020

2020 data are preliminary and subject to changes.

Severe Maternal Morbidity

Distribution of SMM Indicators, Nevada, 2020

Leading Diagnosis-Based Indicators of SMM, Nevada, 2020

# Severe Maternal Morbidity

## SMM by Maternal Demographics, Nevada, 2020

<table>
<thead>
<tr>
<th>Demographic</th>
<th>SMM Cases</th>
<th>Rate per 10,000 Deliveries</th>
<th>Total Deliveries</th>
<th>Percent of Total Deliveries</th>
<th>Percent of SMM Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maternal Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;=19</td>
<td>25</td>
<td>174.8</td>
<td>1,430</td>
<td>4.7%</td>
<td>4.5%</td>
</tr>
<tr>
<td>20-24</td>
<td>92</td>
<td>153.4</td>
<td>5,999</td>
<td>19.6%</td>
<td>16.7%</td>
</tr>
<tr>
<td>25-29</td>
<td>150</td>
<td>166.4</td>
<td>9,017</td>
<td>29.5%</td>
<td>27.2%</td>
</tr>
<tr>
<td>30-34</td>
<td>148</td>
<td>174.8</td>
<td>8,467</td>
<td>27.7%</td>
<td>26.9%</td>
</tr>
<tr>
<td>35-39</td>
<td>104</td>
<td>229.2</td>
<td>4,538</td>
<td>14.9%</td>
<td>18.9%</td>
</tr>
<tr>
<td>&gt;=40</td>
<td>32</td>
<td>289.3</td>
<td>1,106</td>
<td>3.6%</td>
<td>5.8%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White non-Hispanic</td>
<td>160</td>
<td>148.1</td>
<td>10,801</td>
<td>35.3%</td>
<td>29.0%</td>
</tr>
<tr>
<td>Black non-Hispanic</td>
<td>129</td>
<td>276.4</td>
<td>4,667</td>
<td>15.3%</td>
<td>23.4%</td>
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<tr>
<td>AI/AN non-Hispanic</td>
<td>5</td>
<td>211.9</td>
<td>236</td>
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<td>0.9%</td>
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<tr>
<td>API non-Hispanic</td>
<td>55</td>
<td>186.8</td>
<td>2,945</td>
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<td>10.0%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>195</td>
<td>168.4</td>
<td>11,581</td>
<td>37.9%</td>
<td>35.4%</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.0</td>
<td>67</td>
<td>0.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
<td>269.2</td>
<td>260</td>
<td>0.9%</td>
<td>1.3%</td>
</tr>
</tbody>
</table>

### AIM Data Requirements

<table>
<thead>
<tr>
<th>Data Measure</th>
<th>Data Source</th>
<th>Frequency</th>
<th>Data Coordinating Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome based on Hospital Discharge Data (HDD) File Key Measure: Severe Maternal Morbidity (SMM)</td>
<td>HDD File (ICD-9/ICD-10)</td>
<td>Baseline: 2011-Current Year (CY)</td>
<td>Office of Analytics, DPBH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td>Outcome based on Race/Ethnicity Key Measure: Severe Maternal Morbidity (SMM)</td>
<td>HDD File (ICD-9/ICD-10)</td>
<td>Annual</td>
<td>Office of Analytics, DPBH</td>
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<tr>
<td></td>
<td></td>
<td>Vital Records/BC</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td>Process Measures</td>
<td>Hospital generated data</td>
<td>Quarterly</td>
<td>Hospital</td>
</tr>
<tr>
<td>Structure Measures</td>
<td>Hospital generated data</td>
<td>Quarterly</td>
<td>Hospital</td>
</tr>
</tbody>
</table>
### AIM Data Requirements

#### Severe Hypertension/Preeclampsia Bundle

<table>
<thead>
<tr>
<th>Outcome Measures (O)</th>
<th>Description</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>O1: Severe Maternal Morbidity</strong></td>
<td>Denominator: All mothers during their birth admission, excluding ectopics and miscarriages.&lt;br&gt;Numerator: Among the denominator, all cases with any SMM code.</td>
<td>Quarterly (if available), otherwise annual</td>
</tr>
<tr>
<td><strong>O2: Severe Maternal Morbidity (excluding transfusion codes)</strong></td>
<td>Denominator: All mothers during their birth admission, excluding ectopics and miscarriages.&lt;br&gt;Numerator: Among the denominator, all cases with any non-transfusion SMM code.</td>
<td>Quarterly (if available), otherwise annual</td>
</tr>
<tr>
<td><strong>O3: Severe Maternal Morbidity among Preeclampsia Cases</strong></td>
<td>Denominator: All mothers during their birth admission, excluding ectopics and miscarriages, with one of the following diagnosis codes:&lt;br&gt;- Severe Preeclampsia&lt;br&gt;- Eclampsia&lt;br&gt;- Preeclampsia superimposed on pre-existing hypertension.&lt;br&gt;Numerator: Among the denominator, cases with any SMM code.</td>
<td>Quarterly</td>
</tr>
<tr>
<td><strong>O4: Severe Maternal Morbidity (excluding transfusion codes) among Preeclampsia Cases</strong></td>
<td>Denominator: All mothers during their birth admission, excluding ectopics and miscarriages, with one of the following diagnosis codes:&lt;br&gt;- Severe Preeclampsia&lt;br&gt;- Eclampsia&lt;br&gt;- Preeclampsia superimposed on pre-existing hypertension&lt;br&gt;Numerator: Among the denominator, all cases with any non-transfusion SMM code.</td>
<td>Quarterly</td>
</tr>
</tbody>
</table>
## AIM Data Requirements

### Severe Hypertension/Preeclampsia Bundle

All Process Measures are collected by hospitals on a quarterly basis.

<table>
<thead>
<tr>
<th>Process Measures (P)</th>
<th>Description</th>
<th>Data Coordinator Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1: Unit Drills</td>
<td>In this quarter, <strong>how many OB drills</strong> (In Situ and/or Sim Lab) were performed on your unit for any maternal safety topic? In this quarter, <strong>what topics were covered</strong> in the OB drills?</td>
<td></td>
</tr>
<tr>
<td>P2: Provider Education</td>
<td>At the end of this reporting period, <strong>what cumulative proportion of delivering physicians and midwives has completed</strong> within the last two years an education program on Severe Hypertension/Preeclampsia that includes the unit-standard protocols and measures?</td>
<td></td>
</tr>
<tr>
<td>P3: Nursing Education</td>
<td>At the end of this reporting period, <strong>what cumulative proportion of OB nurses (including L&amp;D and postpartum) has completed</strong> within the last two years an education program on Severe Hypertension/Preeclampsia that includes the unit-standard protocols and measures?</td>
<td></td>
</tr>
<tr>
<td>P4: Treatment of Severe HTN</td>
<td>Among the birthing patients with acute-onset severe hypertension that persists for 15 minutes or more, the number who were treated within 1 hour with IV Labetalol, IV Hydralazine, or PO Nifedipine. Of birthing patients with severe hypertension, number who received appropriate discharge education and follow-up appointments within 7-10 days post-discharge.</td>
<td></td>
</tr>
<tr>
<td>P5: Treatment with Magnesium Sulfate</td>
<td>Among birthing patients with severe preeclampsia or preeclampsia with severe features, how many were treated with magnesium sulfate?</td>
<td></td>
</tr>
</tbody>
</table>
## AIM Data Requirements

### Severe Hypertension/Preeclampsia Bundle

<table>
<thead>
<tr>
<th>Structure Measures (S)</th>
<th>Description</th>
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</tr>
</thead>
</table>
| **S1: Patient, Family & Staff Support** | Report Completion Date  
Has your hospital developed OB specific resources and protocols to support patients, family and staff through major OB complications? | Perinatal Nurse Manager  
Designated QI Leader |
| **S2: Debriefs** | Report Start Date  
Has your hospital established a system in your hospital to perform regular formal debriefs after cases with major complications? |                        |
| **S3: Multidisciplinary Case Reviews** | Report Start Date  
Has your hospital established a process to perform multidisciplinary systems-level reviews on cases of severe maternal morbidity including, at a minimum, birthing patients admitted to the ICU or receiving ≥ 4 units RBC transfusions? |                        |
| **S4: Unit Policy and Procedure** | Report Completion Date  
Does your hospital have a Severe HTN/Preeclampsia policy and procedure (reviewed and updated in the last 2-3 years) that provides a unit-standard approach to measuring blood pressure, treatment of Severe HTN/Preeclampsia, administration of Magnesium Sulfate, and treatment of Magnesium Sulfate overdose? |                        |
| **S5: EHR Integration** | Report Completion Date  
Were some of the recommended Severe HTN/Preeclampsia bundle processes (i.e. order sets, tracking tools) integrated into your hospital's Electronic Health Record system? |                        |
AIM Data Submission Process

Data Submission
1. Data Quality Assessment
   Automatically identify outliers and assess quality of transfusion coding.
2. Integrate Into National Data Set
   Allow state administrators to benchmark their quality improvement projects against other states in the AIM Data Center.

Dashboard
View national, state, and hospital data via interactive charts and visualizations.

Note: AIM national administrators may only view deidentified hospital data for states other than their own, while state administrators may only view data aggregated to the state level.

Nevada Data Compilation

Hospital Administrators
State Administrators
National Administrators
AIM Data Submission Process
Questions?
## Contact Information

<table>
<thead>
<tr>
<th>Name</th>
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</tr>
</tbody>
</table>
Acronyms

- AIM (Alliance for Innovation on Maternal Health)
- SMM (Severe Maternal Morbidity)
- PAD (Pregnancy-Associated Deaths)
- PRD (Pregnancy-Related Deaths)
- HDD (Hospital Discharge Data)
- (NTSV) Nulliparous, Term, Singleton, Vertex Cesarean Birth Rate
- CS (Cesarean Section)
- OB (Obstetric)
- RBC (Red Blood Cells)
- API (Asian Pacific Islander)
- AI (American Indian)
- AN (Alaska Native)
NEXT STEPS

TAMI CONN
STATE SYSTEMS DEVELOPMENT
INITIATIVE MANAGER
MATERNAL, CHILD AND ADOLESCENT HEALTH,
DIVISION OF PUBLIC AND BEHAVIORAL HEALTH
Nevada Alliance for Innovation on Maternal Health: Next steps

July 2021
- Sign participation agreement
- Complete hospital demographics information
- Complete the Facility Readiness Assessment Tool (FRAT)
https://access cadastrum.com/FRAT/FRAT_Official FRAT is open now

August/September 2021
- Complete Data Sharing Agreement
- Attend data harmonization meeting with states
  - Present baseline hospital-level data
- Attend from the Office of Continuing Medical Education at the University of Nevada, Reno School of Medicine
  - Training (late September)
    - The visit comes with a stipend

October/November 2021
- Begin EMR implementation
- Attend AIM and EDC training
- Apply for Multi-Speciality Portfolio Program to allow physicians and physician assistants to earn CME credit

December 2021
- First data reporting due – Q1 2022
QUESTIONS AND CLOSING REMARKS

VICKIE IVES, MA
MATERNAL, CHILD AND ADOLESCENT HEALTH SECTION MANAGER
DIVISION OF PUBLIC AND BEHAVIORAL HEALTH
THANK YOU

PLEASE EVALUATE THIS WEBINAR AND LET US KNOW IF YOU WOULD LIKE TO JOIN THIS IMPORTANT WORK