A Team Effort to Reduce Maternal Mortality:

Implementing Patient Safety Bundles for Hypertension

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Disclosures

I have no conflicts of interest to disclose.

DISCLAIMER:

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Objectives

- Provide an overview of the Hypertension Patient Safety Bundle.
- Give suggestions for how to effectively implement and utilize the bundle within your organization.
- Identify resources to customize for use within your organization.

Maternal Mortality and Severe Morbidity

Approximate distributions, compiled from multiple studies

Cause	Mortality (1-2 per 10,000)	ICU Admit (1-2 per 1,000)	Severe Morbid (1-2 per 100)
VTE and AFE	15%	5%	2%
Infection	10%	5%	5%
Hemorrhage	**15%**	**30%**	**45%**
Preeclampsia	**15%**	**30%**	**30%**
Cardiac Disease	25%	20%	10%

Hypertension Perspective

- Hypertensive disorders in pregnancy are common complications that affect 5% to 10% of all pregnancies in the United States. [3]
- Preeclampsia is the leading case of maternal and perinatal morbidity and mortality, with an estimated 50,000 – 60,000 preeclampsia-related deaths per year worldwide. [2,4]
- For every preeclampsia-related death that occurs in the United States, there are probably 50-100 other women who experience "near miss" significant maternal morbidity that stops short of death but still results in significant health risk and health care costs. [1,3]

1. Callaghan WM, Mackay AP, Berg CJ. Identification of severe maternal morbidity during delivery hospitalizations, United States, 1991-2003. *Am J Obstet Gynecol* 2008; 199:133.e1-8.
2. Duley L. Maternal mortality associated with hypertensive disorders of pregnancy in Africa, Asia, Latin American and the Caribbean. *Br J Ostet Gtnaecol* 1992;99:547-53.
3. Kuklina EV, Ayala C, Callaghan WM. Hypertensive disorders and severe obstetric morbidity in the United States. *Obstet Gynecol* 2009: 113:1299-306.
4. World Health Organization. The world health report: 2005: make every mother and child count. Geneva: WHO; 2005. Available at: http://www.who.int/whr/2005_en.pdf

Dominance of Provider QI Opportunities

- 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
  - Difficulties getting physician to the bedside
  - "Location of care" issues involving Postpartum, ED and PACU

Present in >95% of cases

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

Present in >90% of cases

National Partnership for Maternal Safety: Confluence of Multiple Efforts- May 2013 ACOG Annual Clinical Meeting

- CDC / ACOG Maternal Mortality Work Group
- SMFM--M back into MFM Work Group
- AWHONN: Safety Projects
- State Quality Collaboratives
- Merck for Mothers
- Maternal Child Health Branch—M back into MCH
- CDC: Maternal Mortality Reviews and Maternal Morbidity Projects

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Current Commentary

The National Partnership for Maternal Safety

Mary E. D'Alton, MD, Elliott K. Main, MD, M. Kathryn Menard, MD, and Barbara S. Levy, MD

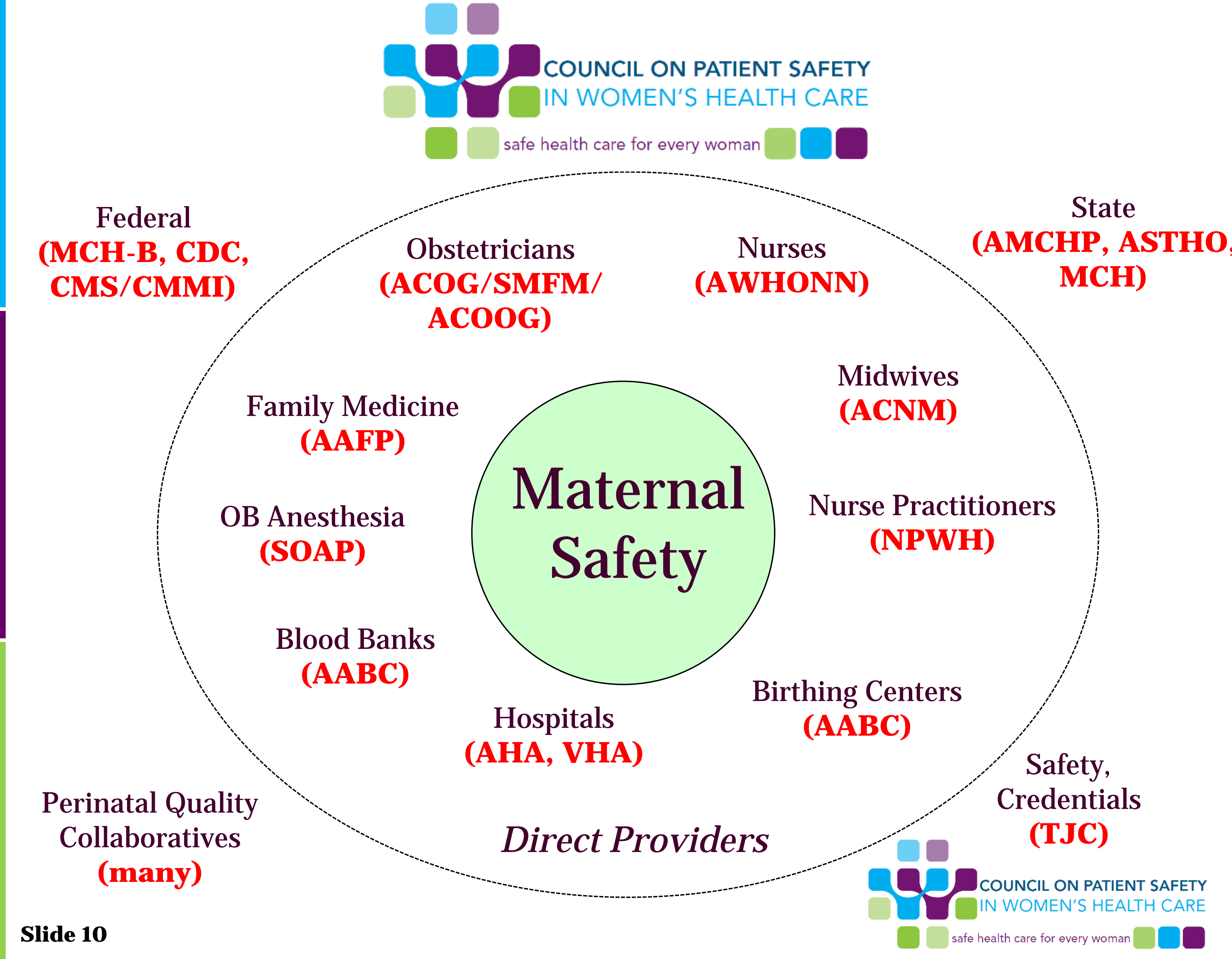
Recognition of the need to reduce maternal mortality and morbidity in the United States has led to the creation of the National Partnership for Maternal Safety. This collaborative, broad-based initiative will begin with three priority bundles for the most common preventable causes of maternal death and severe morbidity: obstetric hemorrhage, severe hypertension in pregnancy, and peripartum venous thromboembolism. In addition, three unit-improvement bundles for obstetric services were identified: a structured approach for the recognition of early warning signs and symptoms, structured internal case reviews to identify systems improvement opportunities, and support tools for patients, families, and staff that experience an adverse outcome. This article details the formation of the National Partnership for Maternal Safety and introduces the initial priorities.

(Obstet Gynecol 2014;123:973–7)
DOI: 10.1097/AOG.0000000000000219

issued a Sentinel Alert entitled "Preventing Maternal Death"[2] and proposed various initiatives to decrease maternal mortality including case reporting and review, health care provider education, team training and drills, and thromboembolism prophylaxis.

During the past 2 years, several organizations–including the American College of Obstetricians and Gynecologists (the College), the Centers for Disease Control and Prevention, the Society for Maternal–Fetal Medicine, the Health Resources and Services Administration, the Association of Women's Health, Obstetric, and Neonatal Nurses, and the American College of Nurse-Midwives–have collaborated to identify priorities for maternal safety. Universal recognition of the need for action to reduce U.S. maternal mortality and morbidity led to the creation of the National Partnership for Maternal Safety. This report outlines a national initiative for every birthing facility

D'Alton, ME. (2014). National Partnership for Maternal Safety. *Obstet Gynecol, 123,* 973-977.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Federal
(MCH-B, CDC, CMS/CMMI)
Obstetricians
(ACOG/SMFM/ ACOOG)
Nurses
(AWHONN)
State
(AMCHP, ASTHO, MCH)
Midwives
(ACNM)
Family Medicine
(AAFP)
Maternal Safety
OB Anesthesia
(SOAP)
Nurse Practitioners
(NPWH)
Blood Banks
(AABC)
Birthing Centers
(AABC)
Hospitals
(AHA, VHA)
Safety, Credentials
(TJC)
Perinatal Quality Collaboratives
(many)
Direct Providers
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Council on Patient Safety: July 2013

Endorsed the concept: 3 Maternal Safety Bundles

"What every birthing facility in the US should have…"

The bundles represent outlines of recommended protocols and materials important to safe care ***BUT*** *the specific contents and protocols should be individualized to meet local capabilities.*

http://safehealthcareforeverywoman.org

Sli

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4 Domains of Patient Safety Bundles

- Readiness
- Recognition & Prevention
- Response
- Reporting & Systems Learning

PATIENT SAFETY BUNDLE

Hypertension

Click here for a downloadable PDF of the bundle.

Click here for a complete resource listing.

READINESS

Every Unit

- Standards for early warning signs, diagnostic criteria, monitoring and treatment of severe preeclampsia/eclampsia (include order sets and algorithms)
- Unit education on protocols, unit-based drills (with post-drill debriefs)
- Process for timely triage and evaluation of pregnant and postpartum women with hypertension including ED and outpatient areas
- Rapid access to medications used for severe hypertension/eclampsia: Medications should be stocked and immediately available on L&D and in other areas where patients may be treated. Include brief guide for administration and dosage.
- System plan for escalation, obtaining appropriate consultation, and maternal transport, as needed

Click here for Readiness Resources

- Hypertensive Disorders During Pregnancy Checklist: Eclampsia (ACOG District II)
- Hypertensive Disorders During Pregnancy Checklist: Postpartum Preeclampsia in the ED (ACOG District II)
- Hypertensive Disorders During Pregnancy Checklist: Severe Hypertension in Pregnancy (ACOG District II)
- Hypertension in Pregnancy Task Force Report (ACOG) - Coming Soon

Goals

- Improve **readiness** to severe hypertension in pregnancy by identifying standard protocols on every unit.
- Improve **recognition** of severe hypertension in pregnancy by prompt response to early maternal warning signs.
- Improve **response** to severe hypertension in pregnancy with facility wide standards for management and treatment of severe hypertension and eclampsia.
- Improve **reporting/systems learning** of severe hypertension in pregnancy by establishing a culture of huddles and debriefs.

Readiness - Every Unit

Standards for early warning signs, diagnostic criteria, monitoring and treatment of severe preeclampsia/eclampsia

- Adopt standard maternal early warning signs and diagnostic criteria
- Adopt protocols for evaluation, monitoring and treatment, including order sets and algorithms

Hypertension in Pregnancy

Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy

Readiness - Every Unit

Unit education on protocols, unit-based drills

- Familiarize all team members with safety bundle and protocols
- Team-based drills to improve knowledge and skills, identify areas for improvement
- Post-drill debriefing

Readiness - Every Unit

Process for a timely triage and evaluation of pregnant and postpartum women with hypertension

- Every unit includes any unit where a pregnant woman might present – ED, urgent care
- All women of reproductive age should be asked about current or recent pregnancy
- Protocol for prompt assessment of symptoms

Readiness - Every Unit

Rapid access to medications used for severe hypertension/eclampsia

- Medications should be stocked and immediately available on L&D and other areas where patients may present (ED)
- Medications with uniform concentration and standard orders for administration
- Magnesium Sulfate, labetalol and/or hydralazine, nifedipine

Readiness - Every Unit

System plan for escalation, obtaining appropriate consultation, and maternal transport, as needed

- Criteria and protocol for escalation
- Plan for rapid stabilization and transport

PATIENT SAFETY BUNDLE

Hypertension

READINESS

Every Unit

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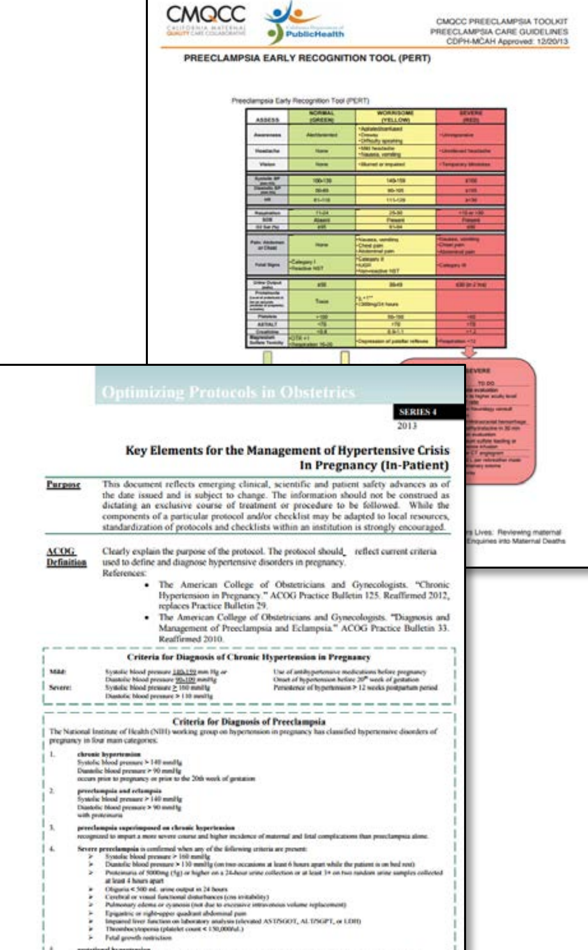
- System plan for escalation, obtaining appropriate consultation, and maternal transport, as needed

RECOGNITION & PREVENTION

Every Patient

- Standard protocol for measurement and assessment of BP and urine protein for all pregnant and postpartum women
- Standard response to maternal early warning signs including listening to and investigating patient symptoms and assessment of labs (e.g. CBC with platelets, AST and ALT)
- Facility-wide standards for educating prenatal and postpartum women on signs and symptoms of hypertension and preeclampsia


CMQCC
CMQCC PREECLAMPSIA TOOLKIT
PREECLAMPSIA CARE GUIDELINES
CDPH-MCAH Approved: 12/20/13
PREECLAMPSIA EARLY RECOGNITION TOOL (PERT)

Optimizing Protocols in Obstetrics
SERIES 4
2013

Key Elements for the Management of Hypertensive Crisis In Pregnancy (In-Patient)

Purpose: This document reflects emerging clinical, scientific and patient safety advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed. While the components of a particular protocol and/or checklist may be adapted to local resources, standardization of protocols and checklists within an institution is strongly encouraged.

ACOG Definition: Clearly explain the purpose of the protocol. The protocol should reflect current criteria used to define and diagnose hypertensive disorders in pregnancy.
References:
- The American College of Obstetricians and Gynecologists. "Chronic Hypertension in Pregnancy." ACOG Practice Bulletin 125. Reaffirmed 2012, replaces Practice Bulletin 29.
- The American College of Obstetricians and Gynecologists. "Diagnosis and Management of Preeclampsia and Eclampsia." ACOG Practice Bulletin 33. Reaffirmed 2010.

Criteria for Diagnosis of Chronic Hypertension in Pregnancy

Criteria for Diagnosis of Preeclampsia

Recognition and Prevention - Every Patient

Standard protocol for measurement and assessment of BP and urine protein for all pregnant and postpartum women

- Protocol for accurate measurement of blood pressure – timing, patient position, equipment
- Standard for assessment of urine protein based on lab availability and timing

Recognition and Prevention - Every Patient

Standard response to maternal early warning signs

- Standardized risk assessment tool to enhance early recognition and treatment

Recognition and Prevention - Every Patient

Facility-wide standards for educating prenatal and postpartum women on signs and symptoms of hypertension and preeclampsia

- Inform women of the signs and symptoms of preeclampsia and when to notify their provider
  - Multiple opportunities – prenatal visits, childbirth class, hospital
  - Consider health literacy

PATIENT SAFETY BUNDLE

Hypertension

RESPONSE

Every case of severe hypertension/preeclampsia

- Facility-wide standard protocols with checklists and escalation policies for management and treatment of:
  - Severe hypertension
  - Eclampsia, seizure prophylaxis, and magnesium over-dosage
  - Postpartum presentation of severe hypertension/preeclampsia
- Minimum requirements for protocol:
  - Notification of physician or primary care provider if systolic BP =/> 160 or diastolic BP =/> 110 for two measurements within 15 minutes
  - After the second elevated reading, treatment should be initiated ASAP (preferably within 60 minutes of verification)
  - Includes onset and duration of magnesium sulfate therapy
  - Includes escalation measures for those unresponsive to standard treatment
  - Describes manner and verification of follow-up within 7 to 14 days postpartum
  - Describe postpartum patient education for women with preeclampsia
- Support plan for patients, families, and staff for ICU admissions and serious complications of severe hypertension

REPORTING/SYSTEMS LEARNING

Every unit

- Establish a culture of huddles for high risk patients and post-event debriefs to identify successes and opportunities
- Multidisciplinary review of all severe hypertension/eclampsia cases admitted to ICU for systems issues
- Monitor outcomes and process metrics

Note: "Facility-wide" indicates all areas where pregnant or postpartum women receive care. (E.g. L&D, postpartum critical care, emergency department, and others depending on the facility).

The American College of Obstetricians and Gynecologists

COMMITTEE OPINION

Number 623 • February 2015

Committee on Obstetric Practice

Emergent Therapy for Acute-Onset, Severe Hypertension During Pregnancy and the Postpartum Period

CMQCC PREECLAMPSIA TOOLKIT
PREECLAMPSIA CARE GUIDELINES
CDPH-MCAH Approved: 12/20/13

ERRATA 5.13.14

A California Toolkit to Transform Maternity Care

Improving Health Care Response to Preeclampsia:
A California Quality Improvement Toolkit

THIS COLLABORATIVE PROJECT WAS DEVELOPED BY:
THE PREECLAMPSIA TASK FORCE
CALIFORNIA MATERNAL QUALITY CARE COLLABORATIVE
MATERNAL, CHILD AND ADOLESCENT HEALTH DIVISION; CENTER FOR FAMILY HEALTH
CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

Response - Every Case of Severe Hypertension/Preeclampsia

Facility-wide standard protocols with checklists and escalation policies for management and treatment of:

- ***Severe hypertension***
- ***Eclampsia, seizure prophylaxis, and magnesium over-dosage***
- ***Postpartum presentation of severe hypertension/preeclampsia***

Response - Every Case of Severe Hypertension/Preeclampsia

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- Describe postpartum patient education for women with preeclampsia.

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Response - Every Case of Severe Hypertension/Preeclampsia

When patients have been admitted to the ICU or have had serious complications of severe hypertension facilities should have a support plan for:

- ***Patients***
- ***Families***
- ***Staff***

PATIENT SAFETY BUNDLE

Hypertension

RESPONSE

Every case of severe hypertension/preeclampsia

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Note: "Facility-wide" indicates all areas where pregnant or postpartum women receive care. (E.g. L&D, postpartum critical care, emergency department, and others depending on the facility).

Hypertension Process Metrics Could Include:

- Adherence to protocols for acute management
- Appropriateness of response to early warning criteria
- Documentation of education of pregnant and postpartum women about symptoms of preeclampsia for women at risk
- Occurrence of post severe maternal morbidity (SMM) event debrief and outcomes
- Timeliness of medication administration
- Timeliness of triage and evaluation

Note: These metrics are provided as an example and are not meant to serve as a comprehensive listing. Metrics for Reporting and Systems Learning can be modified to meet the particular needs of an institution.

Current Commentary

Standardized Severe Maternal Morbidity Review

Rationale and Process

Sarah J. Kilpatrick, MD, PhD, Cynthia Berg, MD, MPH, Peter Bernstein, MD, Debra Bingham, DrPH, RN, Ana Delgado, CNM, MSN, William M. Callaghan, MD, MPH, Karen Harris, MD, MPH, Susan Lanni, MD, Jeanne Mahoney, RN, BSN, Elliot Main, MD, Amy Nacht, CNM, MSN, Michael Schellpfeffer, MD, Thomas Westover, MD, and Margaret Harper, MD

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Reporting/Systems Learning - Every Unit

Establish a culture of huddles and debriefs to identify successes and opportunities for improvement

- ***Briefs, huddles and debriefs become part of the routine***
- ***Will improve role clarity, situational awareness and utilization of available resources***

Remember: Debriefing is meant to be a learning experience and a way to address both human factors and systems issues to improve the response for next time. There is to be no blaming/finger-pointing.

Type of event: ______________________ Date of event: ______________________

Location of event: ______________________ Person completing form: ______________________

Members of team present: (circle all that apply)
Primary RN, Anesthesia personnel, Nurse Manager, Primary MD, Neonatology personnel, OB/Surgical tech, Charge RN, MFM leader, Unit Clerk, Resident(s), Patient Safety Officer, Antepartum team (RNs, PA, Fellow, Resident), Other RNs

Thinking about how the obstetric event was managed…

Identify what went well (Check if yes)
- ☐ Communication
- ☐ Role clarity (leader/supporting roles identified and assigned)
- ☐ Teamwork
- ☐ Situational awareness
- ☐ Decision-making
- ☐ Other: ______________

Identify opportunities for improvement: **"human factors"** (Check if yes)
- ☐ Communication
- ☐ Role clarity
- ☐ Teamwork
- ☐ Situational awareness
- ☐ Decision-making
- ☐ Human error
- ☐ Other: ______________

Identify opportunities for improvement: **"systems issue"** (Check if yes)
- ☐ Equipment/supplies/accessibility
- ☐ Medication
- ☐ Blood products availability
- ☐ Inadequate support (in unit or other areas of the hospital)
- ☐ Delays in transporting the patient (within hospital or to another facility)
- ☐ Staffing
- ☐ Other: ______________

For identified issues, please fill in table below…

Issue	Actions to be Taken	Person Responsible

Do not place any patient identifiers on this form

Fig. 1. Sample debrief tool for maternal severe morbidity or death—Montefiore Medical Center. Figure courtesy of C. Lee and D. Goffman. Used with permission.

Kilpatrick. Severe Maternal Morbidity Review Process. Obstet Gyncol 2014.

Reporting/Systems Learning - Every Unit

Multidisciplinary review all severe hypertension/eclampsia cases admitted to ICU cases for systems issues

- Formal meetings to identify any systems issues or breakdowns that influenced the outcome of the event
- Multidisciplinary Perinatal Quality Committee
- Sanctioned and protected.

Reporting/Systems Learning in Every Unit

Monitor outcomes and process metrics in perinatal quality improvement committee

- Process measures used to document the frequency that a new approach is used
- Outcome measures used to determine project success
- Goal: To reduce the number of severe hypertensive events that result in severe maternal morbidity or mortality
- Follow internally number of women who require ICU care

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Obstetric Hemorrhage

Severe Hypertension

Venous Thromboembolism

- Clinician Education & Resources
- Data Collection
- Implementation Visits & Grand Rounds
- Patient Support
- Public Relations & Media
- Quarterly Meetings & Monthly Calls

Thank you to all participating hospitals for supporting the Safe Motherhood Initiative:

TYPES OF HYPERTENSION

CHRONIC HYPERTENSION (OF ANY CAUSE)	○ SBP ≥ 140 **or** DBP ≥ 90 ○ Pre-pregnancy or <20 weeks
GESTATIONAL HYPERTENSION	○ SBP ≥ 140 **or** DBP ≥ 90 ○ > 20 weeks ○ Absence of proteinuria or systemic signs/symptoms
CHRONIC HYPERTENSION + SUPERIMPOSED PREECLAMPSIA	
PREECLAMPSIA - ECLAMPSIA	○ SBP ≥ 140 **or** DBP ≥ 90 ○ Proteinuria with or without signs/symptoms ○ Presentation of signs/symptoms/lab abnormalities but no proteinuria **Proteinuria not required for diagnosis eclampsia seizure in setting of preeclampsia*
PERSISTENT, SEVERE PREECLAMPSIA	○ Two severe BP values (SBP ≥ 160 **or** DBP ≥ 110) obtained 15-60 minutes apart ○ Persistent oliguria <500 ml/24 hours ○ Progressive renal insufficiency ○ Unremitting headache/visual disturbances ○ Pulmonary edema ○ Epigastric/RUQ pain ○ LFTs > 2x normal ○ Platelets < 100K ○ HELLP syndrome **5 gr of proteinuria no longer criteria for severe preeclampsia*

DEFINITIONS

SEVERE HYPERTENSION:

- Systolic blood pressure ≥ 160 mm Hg or
- Diastolic blood pressure ≥ 110 mm Hg

HYPERTENSIVE EMERGENCY (PERSISTENT HYPERTENSION):

- Two severe BP values taken 15-60 minutes apart
- Severe values do not need to be consecutive
- *Can occur during antepartum, intrapartum, or postpartum periods*

WHEN TO TREAT

	DEFINITION	WHEN TO TREAT
SEVERE HYPERTENSION	• Systolic blood pressure ≥ 160 **or** • Diastolic blood pressure ≥ 110	• Repeat BP every 5 minutes for 15 minutes • Notify physician if SBP ≥ 160 **or** DBP ≥ 110
HYPERTENSIVE EMERGENCY (PERSISTENT HYPERTENSION)	• Two severe BP values taken 15-60 minutes apart • Severe values do not need to be consecutive • *Can occur during antepartum, intrapartum, or postpartum periods*	• If severe BP elevations persist for 15 minutes or more, begin treatment ASAP. **Preferably within 60 minutes of the second elevated value.** • If two severe BPs are obtained within 15 minutes, treatment may be initiated if clinically indicated

FIRST LINE THERAPIES

- Intravenous labetalol
- Intravenous hydralazine
- Oral nifedipine

Note: Magnesium Sulfate

- Not recommended as antihypertensive agent
- Remains drug of choice for:
  - Seizure prophylaxis
  - Controlling seizures in eclampsia
- Unless contraindicated, should be given when managing hypertensive crisis:
  - IV bolus of 4-6 grams in 100 ml over 20 minutes, followed by IV infusion of 1-2 grams per hour
  - Continue for 24 hours postpartum

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REVISED JULY 2017

Labetalol Algorithm

EXAMPLE

Trigger: If severe elevations (SBP ≥160 or DBP ≥ 110) persist* for 15 min or more **OR** If two severe elevations are obtained within 15 min and tx is clinically indicated

1. **Labetalol 20 mg**† IV over 2 minutes

2. Repeat BP in 10 minutes

3. If SBP ≥ 160 or DBP ≥ 110, administer **labetalol 40 mg** IV over 2 minutes; If BP below threshold, continue to monitor BP closely

4. Repeat BP in 10 minutes

5. If SBP ≥ 160 or DBP ≥ 110, administer **labetalol 80 mg** IV over 2 minutes; If BP below threshold, continue to monitor BP closely

6. Repeat BP in 10 minutes

7. If SBP ≥ 160 or DBP ≥ 110, administer **hydralazine**§ **10 mg** IV over 2 minutes; If below threshold, continue to monitor BP closely

8. Repeat BP in 20 minutes

9. If SBP ≥ 160 or DBP ≥ 110 at 20 minutes, obtain emergency consultation from specialist in MFM, internal medicine, anesthesiology, or critical care

10. Give additional antihypertensive medication per specific order as recommended by specialist

11. Once BP thresholds are achieved, repeat BP:

12.
   - Every 10 minutes for 1 hour
   - Then every 15 minutes for 1 hour
   - Then every 30 minutes for 1 hour
   - Then every hour for 4 hours

13. Institute additional BP monitoring per specific order

- Notify provider after one severe BP value is obtained
- Institute fetal surveillance if viable
- Hold IV labetalol for maternal pulse under 60
- Maximum cumulative IV-administered dose of labetalol should not exceed 220 mg in 24 hours
- There may be adverse effects and contraindications. Clinical judgement should prevail.

* Two severe readings more than 15 minutes and less than 60 minutes apart

† **Avoid parenteral labetalol with active‡ asthma, heart disease, or congestive heart failure; use with caution with history of asthma. May cause neonatal bradycardia.**

‡ "Active asthma" is defined as:
Ⓐ symptoms at least once a week, or
Ⓑ use of an inhaler, corticosteroids for asthma during the pregnancy, or
Ⓒ any history of intubation or hospitalization for asthma.

§ Hydralazine may increase risk of maternal hypotension.

THERAPIES WHEN NO IV ACCESS AVAILABLE

- Initiate algorithm for oral nifedipine

or

- Oral labetalol, 200 mg

Repeat in 30 min if SBP remains ≥ 160 or DBP ≥ 110 and IV access still unavailable

SECOND LINE THERAPIES

If patient fails to respond to first line therapies, recommend emergency consult with:

- Maternal Fetal Medicine
- Internal Medicine
- Anesthesiology
- Critical Care
- Emergency Medicine

May also consider:

- Labetalol or nicardipine via infusion pump
- Sodium nitroprusside for extreme emergencies (used for shortest amount of time due to cyanide/thiocyanate toxicity)

MONITORING BLOOD PRESSURE MANAGEMENT

MATERNAL

- Measure BP every 10 minutes during administration of antihypertensive medications
- Once BP is controlled (<160/110), measure:
  - Every 10 minutes for 1 hour
  - Every 15 minutes for next hour
  - Every 30 minutes for next hour
  - Every hour for four hours
- Obtain baseline labs:
  - CBC
  - Platelets
  - LDH
  - Liver function tests
  - Electrolytes
  - BUN creatinine
  - Urine protein

FETAL

- Fetal monitoring surveillance as appropriate for gestational age

EXAMPLE

Hypertensive Emergency Checklist

HYPERTENSIVE EMERGENCY:

- Two severe BP values (≥160/110) taken 15-60 minutes apart. Values do not need to be consecutive.
- May treat within 15 minutes if clinically indicated

- ☐ Call for Assistance
- ☐ Designate:
  - ◯ Team leader
  - ◯ Checklist reader/recorder
  - ◯ Primary RN
- ☐ Ensure side rails up
- ☐ Ensure medications appropriate given patient history
- ☐ Administer seizure prophylaxis (magnesium sulfate first line agent, unless contraindicated)
- ☐ Antihypertensive therapy within 1 hour for persistent severe range BP
- ☐ Place IV; Draw preeclampsia labs
- ☐ Antenatal corticosteroids (if <34 weeks of gestation)
- ☐ Re-address VTE prophylaxis requirement
- ☐ Place indwelling urinary catheter
- ☐ Brain imaging if unremitting headache or neurological symptoms
- ☐ Debrief patient, family, and obstetric team

† "Active asthma" is defined as:
Ⓐ symptoms at least once a week, or
Ⓑ use of an inhaler, corticosteroids for asthma during the pregnancy, or
Ⓒ any history of intubation or hospitalization for asthma.

MAGNESIUM SULFATE

Contraindications: Myasthenia gravis; avoid with pulmonary edema, use caution with renal failure

IV access:

- ☐ Load 4-6 grams 10% magnesium sulfate in 100 mL solution over 20 min
- ☐ Label magnesium sulfate; Connect to labeled infusion pump
- ☐ Magnesium sulfate maintenance 1-2 grams/hour

No IV access:

- ☐ 10 grams of 50% solution IM (5 g in each buttock)

ANTIHYPERTENSIVE MEDICATIONS

For SBP ≥ 160 or DBP ≥ 110
(See SMI algorithms for complete management when necessary to move to another agent after 2 doses.)

- ☐ **Labetalol** (initial dose: 20mg); **Avoid parenteral labetalol with active asthma, heart disease, or congestive heart failure; use with caution with history of asthma**
- ☐ **Hydralazine** (5-10 mg IV* over 2 min); **May increase risk of maternal hypotension**
- ☐ **Oral Nifedipine** (10 mg capsules); Capsules should be administered orally, not punctured or otherwise administered sublingually

** Maximum cumulative IV-administered doses should not exceed 220 mg labetalol or 25 mg hydralazine in 24 hours*

Note: *If first line agents unsuccessful, emergency consult with specialist (MFM, internal medicine, OB anesthesiology, critical care) is recommended*

ANTICONVULSANT MEDICATIONS

For recurrent seizures or when magnesium sulfate contraindicated

- ☐ **Lorazepam (Ativan):** 2-4 mg IV x 1, may repeat once after 10-15 min
- ☐ **Diazepam (Valium):** 5-10 mg IV q 5-10 min to maximum dose 30 mg

REVISED JULY 2017

Safe Motherhood Initiative

ACOG

- ✓ Call for assistance
- ✓ Designate team leader, checklist reader, primary RN
- ✓ Ensure side rails are up
- ✓ Administer seizure prophylaxis
- ✓ Antihypertensive therapy within 1 hr for persistent severe range BP
- ✓ Place IV; Draw PEC labs
- ✓ Antenatal corticosteroids is <34 wks gestation
- ✓ Re-address VTE prophylaxis requirement
- ✓ Place indwelling urinary catheter
- ✓ Brain imaging if unremitting headache or neurological symptoms
- ✓ Debrief patient, family, OB team

EXAMPLE

Eclampsia Checklist

- ☐ Call for Assistance
- ☐ Designate
  - ◯ Team leader
  - ◯ Checklist reader/recorder
  - ◯ Primary RN
- ☐ Ensure side rails up
- ☐ Protect airway and improve oxygenation:
  - ◯ Maternal pulse oximetry
  - ◯ Supplemental oxygen (100% non-rebreather)
    - ☐ Lateral decubitis position
    - ☐ Bag-mask ventilation available
    - ☐ Suction available
- ☐ Continuous fetal monitoring
- ☐ Place IV; Draw preeclampsia labs
- ☐ Ensure medications appropriate given patient history
- ☐ Administer magnesium sulfate
- ☐ Administer antihypertensive therapy if appropriate
- ☐ Develop delivery plan, if appropriate
- ☐ Debrief patient, family, and obstetric team

† "Active asthma" is defined as:
Ⓐ symptoms at least once a week, or
Ⓑ use of an inhaler, corticosteroids for asthma during the pregnancy, or
Ⓒ any history of intubation or hospitalization for asthma.

REVISED JULY 2017

MAGNESIUM SULFATE

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** Maximum cumulative IV-administered doses should not exceed 220 mg labetalol or 25 mg hydralazine in 24 hours*

Note: *If persistent seizures, consider anticonvulsant medications and additional workup*

ANTICONVULSANT MEDICATIONS

For recurrent seizures or when magnesium sulfate contraindicated
- ☐ **Lorazepam (Ativan):** 2-4 mg IV x 1, may repeat once after 10-15 min
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FOR PERSISTENT SEIZURES

- ☐ Neuromuscular block and intubate
- ☐ Obtain radiographic imaging
- ☐ ICU admission
- ☐ Consider anticonvulsant medications

- ✓ Call for assistance
- ✓ Designate team leader, checklist reader, primary RN
- ✓ Ensure side rails are up
- ✓ Protect airway + improve oxygenation
  - Maternal pulse oximetry
  - Supplemental oxygen (100% non-rebreather)
  - Lateral decubitus position
  - Bag-mask ventilation
  - Suction available
- ✓ Continuous fetal monitoring
- ✓ Place IV; Draw PEC labs
- ✓ Administer antihypertensive therapy if appropriate
- ✓ Develop delivery plan
- ✓ Debrief patient, family, OB team

COMPLICATIONS & ESCALATION PROCESS

MATERNAL (PREGNANT OR POSTPARTUM)

- CNS (seizure, unremitting headache, visual disturbance)
- Pulmonary edema or cyanosis
- Epigastric or right upper quadrant pain
- Impaired liver function
- Thrombocytopenia
- Hemolysis
- Coagulopathy
- Oliguria ***<30 ml/hr for 2 consecutive hours***

FETAL

- Abnormal fetal tracing
- IUGR

Prompt Evaluation and Communication

- If undelivered, plan for delivery

GUIDELINES FOR DOCUMENTATION

ON ADMISSION

- ✓ **Complete history**
- ✓ **Complete physical exam + preeclampsia symptoms:**
  - Unremitting headaches
  - Visual changes
  - Epigastric pain
  - Fetal activity
  - Vaginal bleeding
- ✓ **Baseline BPs throughout pregnancy**
- ✓ **Meds/drugs taken throughout pregnancy** (illicit & OTC)
- ✓ **Current vital signs**, inc. O2 saturation
- ✓ **Current and past fetal assessment**:
  - FHR monitoring results
  - Est. fetal weight
  - BPP, as appropriate

GUIDELINES FOR DOCUMENTATION

ASSESSMENT & PLAN

- ✓ **Indicate diagnosis of preeclampsia**
  - If no dx, indicate steps taken to exclude preeclampsia
- ✓ **Antihypertensives taken** (if any)
  - Specific medications
  - Dose
  - Route
  - Frequency
  - Current fetal status
- ✓ **Magnesium sulfate** (if initiated for seizure prophylaxis)
  - Dose
  - Route
  - Duration of therapy
- ✓ **Delivery assessment**
  - If indicated, note: timing, method, route
  - If not indicated, describe circumstances to warrant delivery
- ✓ **Antenatal corticosteroids** if < 34 weeks of gestation

Continue ongoing documentation of assessment every 30 min until patient stabilized at BPs below SBP 160 or DBP 110

POSTPARTUM SURVEILLANCE

INPATIENT

- Necessary to prevent additional morbidity
- Preeclampsia and eclampsia can develop postpartum
- Measure BP every 4 hours after delivery until stable
- Do not use NSAIDs for women with elevated BP
- Do not discharge patient until BP is well controlled for at least 24 hours

ANTIHYPERTENSIVE THERAPY:

- Recommended for persistent postpartum HTN: **SBP ≥ 150 or DBP ≥ 100 on at least two occasions at least 4 hours apart**
- Persistent SBP ≥ 160 or DBP ≥ 110 should be treated within 1 hour

EXAMPLE

EMERGENCY DEPARTMENT

Postpartum Preeclampsia Checklist

IF PATIENT < 6 WEEKS POSTPARTUM WITH:

- BP ≥ 160/110 or
- BP ≥ 140/90 with unremitting headache, visual disturbances, epigastric pain

☐ Call for Assistance

☐ Designate:
- ◯ Team leader
- ◯ Checklist reader/recorder
- ◯ Primary RN

☐ Ensure side rails up

☐ Call obstetric consult; Document call

☐ Place IV; Draw preeclampsia labs
- ◯ CBC
- ◯ PT
- ◯ PTT
- ◯ Fibrinogen
- ◯ Chemistry Panel
- ◯ Uric Acid
- ◯ Hepatic Function
- ◯ Type and Screen

☐ Ensure medications appropriate given patient history

☐ Administer seizure prophylaxis

☐ Administer antihypertensive therapy
- ◯ Contact MFM or Critical Care for refractory blood pressure

☐ Consider indwelling urinary catheter
- ◯ Maintain strict I&O - patient at risk for pulmonary edema

☐ Brain imaging if unremitting headache or neurological symptoms

† "Active asthma" is defined as:
Ⓐ symptoms at least once a week, or
Ⓑ use of an inhaler, corticosteroids for asthma during the pregnancy, or
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REVISED JULY 2017

Safe Motherhood Initiative

- ✓ Call for assistance
- ✓ Designate team leader, checklist reader, primary RN
- ✓ Ensure side rails up
- ✓ Call OB consult; Document call
- ✓ Place IV; Draw PEC labs
  CBC, PT, PTT, Fibrinogen, Chemistry Panel, Uric Acid, Hepatic Function, Type and Screen
- ✓ Administer seizure prophylaxis
- ✓ Administer antihypertensive therapy
  Contact MFM or Critical Care for refractory elevated BP
- ✓ Consider indwelling urinary catheter. Maintain strict I&O
- ✓ Brain imaging if unremitting headache or neurological symptoms

DISCHARGE PLANNING

All patients receive information on preeclampsia:

- ✓ Signs and symptoms
- ✓ Importance of reporting information to health care provider as soon as possible
- ✓ Patient-friendly language
- ✓ Culturally competent

All new nursing and physician staff receive information on hypertension in pregnancy and postpartum

FOR PATIENTS **WITH** PREECLAMPSIA

- ✓ BP monitoring recommended 72 hours after delivery
- ✓ Outpatient surveillance (visiting nurse evaluation) recommended within:
  - o 3-5 days
  - o Again in 7-10 days after delivery (earlier if persistent symptoms)

POST-DISCHARGE EVALUATION

ELEVATED BP AT HOME, OFFICE, TRIAGE

Postpartum triggers:

- SBP ≥ 160 or DBP ≥ 110 or
- SBP ≥ 140-159 or DBP ≥ 90-109 with unremitting headaches, visual disturbances, or epigastric/RUQ pain

- Emergency Department treatment (with OB /MICU consultation as needed)
- AntiHTN therapy suggested if persistent postpartum hypertension, SBP ≥ 150 or DBP ≥ 100, on at least two occasions at least 4 hours apart
- Persistent SBP ≥ 160 or DBP ≥ 110 should be treated within 1 hour

Good response to antiHTN treatment and asymptomatic

Admit for further observation and management
(L&D, ICU, unit with telemetry)

Signs and symptoms of eclampsia, abnormal neurological evaluation, congestive heart failure, renal failure, coagulopathy, poor response to antihypertensive treatment

Recommend emergency consultation for further evaluation with a specialist (MFM, internal medicine, OB anesthesiology, critical care)

Safe Motherhood Iniative Evaluation Phase 1

2016

Results-% with Timely Treatment of HTN

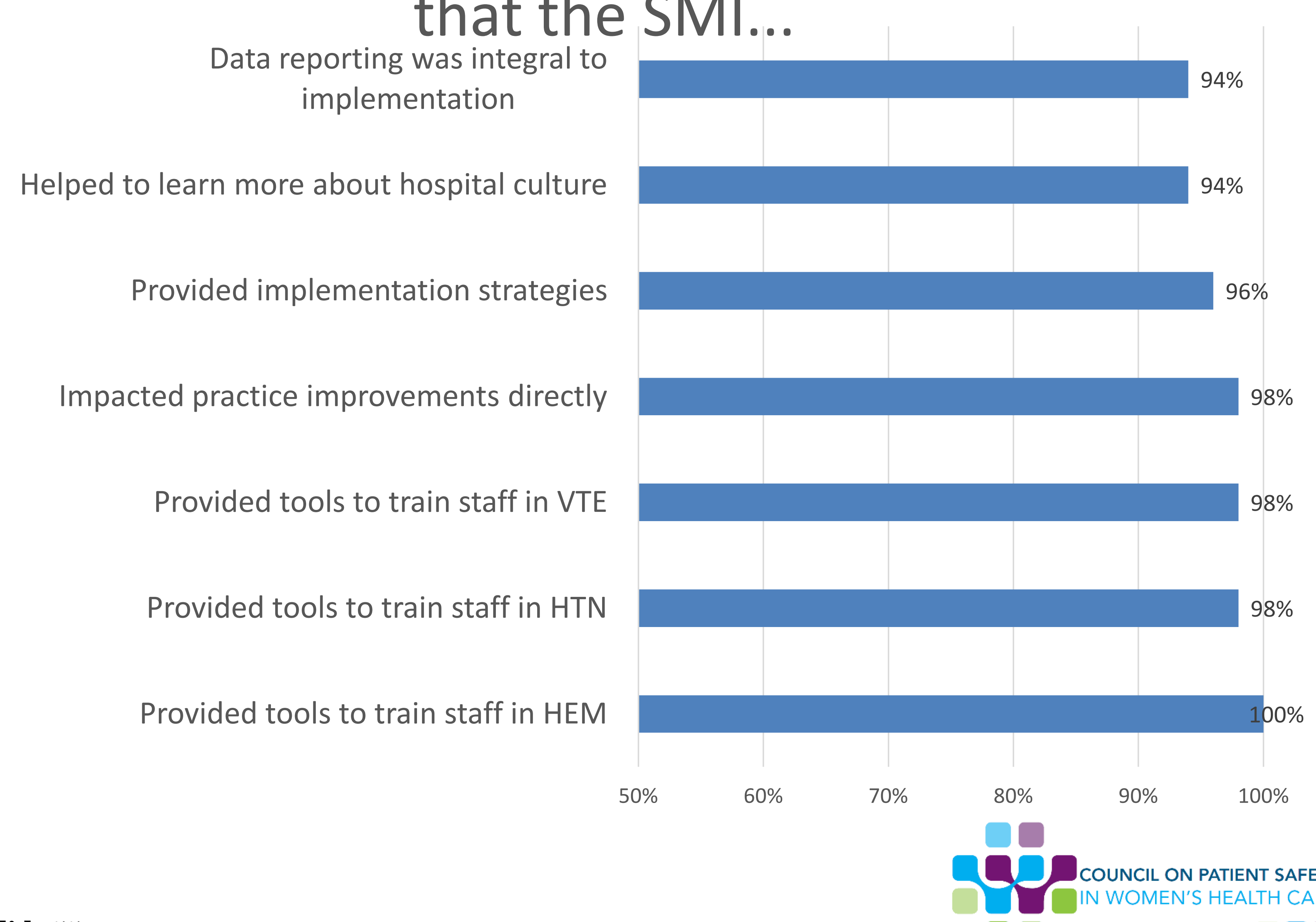
Of the pts with persistent htn, average % treated

Increase from 60.8% to 64.8%-P1 to P2 (NS)

SMI Evaluation Survey Results

- 40% response rate with representative responses from each level of care
  - Level 1 (41%)
  - Level 2 (23%)
  - Level 3 (17%)
  - Level 4 (19%)

Respondents Agree that the SMI…



Bundle Implementation Progress

	Hemorrhage	Severe Hypertension	VTE
Not implemented	1.89%	5.66%	13.21%
In Progress	24.53%	32.08%	35.85%
Fully Implemented	73.58%	62.26%	50.94%

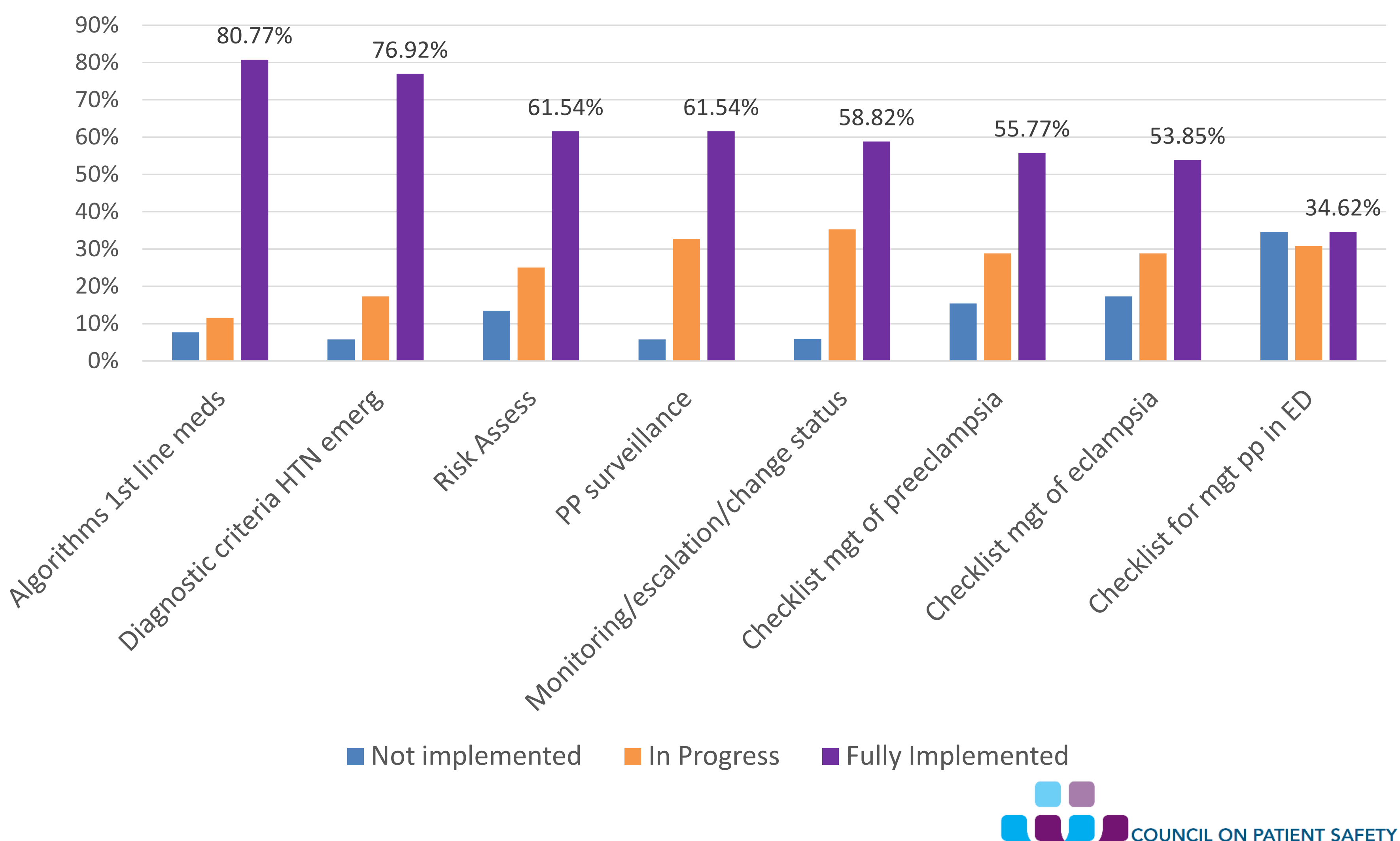
Hemorrhage Bundle Implementation

90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

81.13%
77.36%
67.92%
66.04%
64.15%
59.62%
56.60%
55.77%

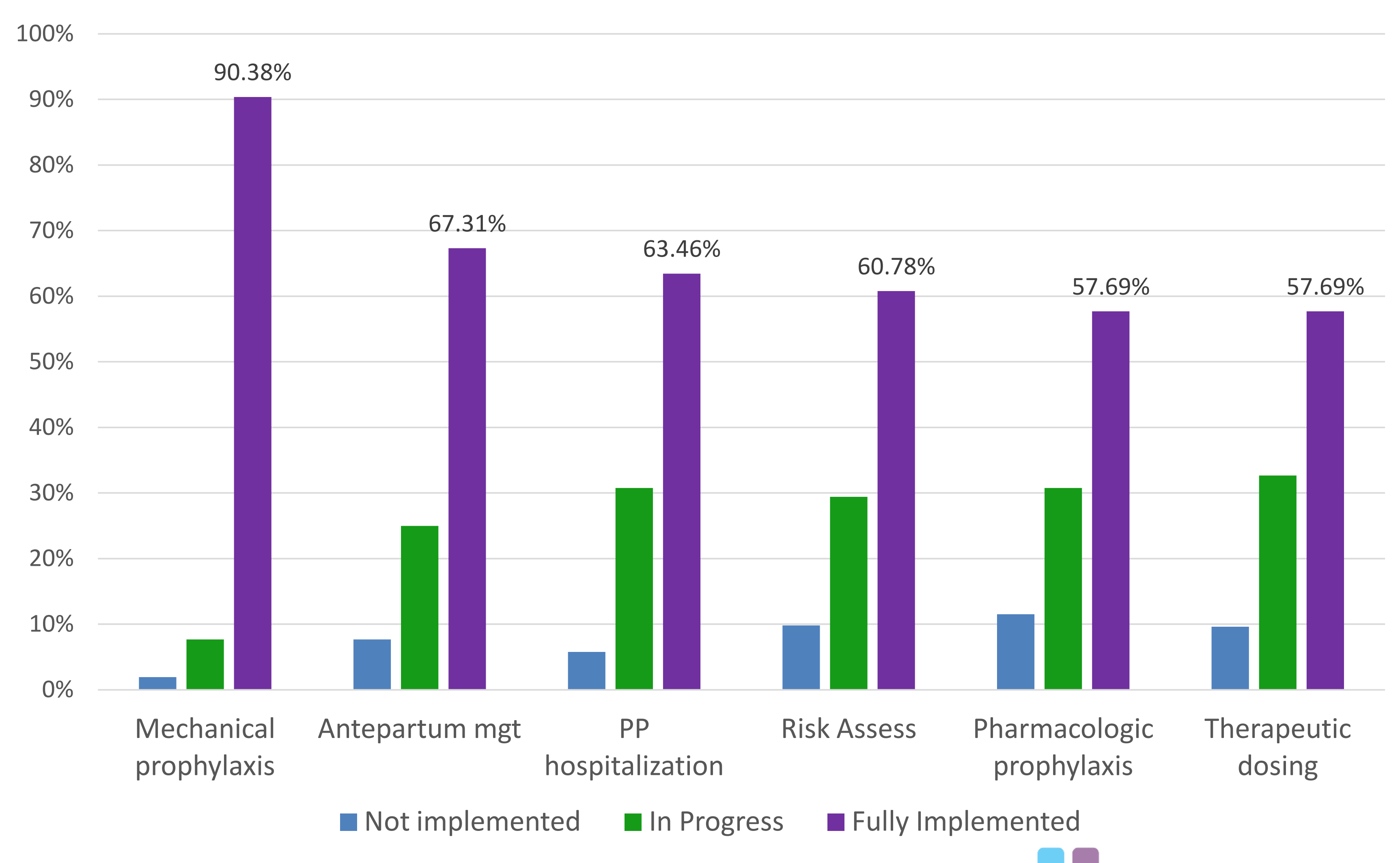
MTP
Cart
Risk Assess
Huddles & Debrief
Drills
Support pt/families
Staged checklist
Placenta Accreta

Not implemented
In Progress
Fully Implemented



COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE

safe health care for every woman



COUNCIL ON PATIENT SAFETY IN WOMEN'S HEALTH CARE
safe health care for every woman

What Improvements Are Needed? What Should Continue?

- "Better data" but data collection is important
- "Quarterly meetings were tremendously valuable"
- Continue education– "change takes a long time"
- "Choose one (bundle) at a time"
- "Would love to continue the networking"
- "Have more site visits"
- "Believe sharing lessons learned was invaluable"
- "I would continue until we are fully implemented and sustained"
- "Better integration of EMRs"
- "Revise checklists for ease of use"

How to implement change

The *New York Times* Bestseller

REVISED and UPDATED SECOND EDITION

NEW CASE STUDIES • APPLICATIONS • RESEARCH

Joseph Grenny • Kerry Patterson

David Maxfield • Ron McMillan • Al Switzler

From the bestselling authors of

crucial conversations

Six Levels of Influence

Think about the Vital Behaviors that you want to change

	Motivation	Ability
Personal	Help them love what they hate	Help them do what they can’t
Social	Provide encouragement	Provide assistance
Structural	Change their economy	Change their space

Things to Remember

- The development of a multidisciplinary taskforce with physician and nursing champions from OB, anesthesia, and critical care is crucial for success
- Don't reinvent the wheel—use available resources to help develop and implement your hospital's individualized response plan
- Simulation is a great way to educate, practice new behaviors and test your infrastructure—make time for it
- Debriefings are critical for continuous quality improvement and effective debriefing is a skill that needs to be taught and practiced.

Thank you