VCHIP
Vermont Child Health Improvement Program
UNIVERSITY OF VERMONT LARNER COLLEGE OF MEDICINE

PERINATAL QUALITY COLLABORATIVE VERMONT

Mission: optimizing care and health outcomes in pregnancy and infancy through collaboration and continuous quality improvement.

AIM

ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

Severe Hypertension in Pregnancy Patient Safety Bundle (2022)

Element Implementation Details

Outline of Kickoff and implementation over the year:

Overview of the HTN Bundle and data collection (today)

<u>Webinars/Topics to be covered for the year:</u>

- Definition, Diagnosis, and Treatment of Hypertension in Pregnancy
- Protocols, Debriefs, Drills, Multisystem Reviews
- Review of Quick Drills for Hypertension Emergencies

Let me know if there are specific topics you would like covered or tools developed

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<u>Goal:</u>

Reduction of maternal morbidity and mortality by implementation of specific perinatal safety bundles and longitudinal measurement of outcomes: severe maternal morbidity, implementation of process and structural measures

CDC definition of Severe Maternal Morbidity: 21 diagnoses with discharge codes well defined

Appendix 2. Severe Morbidity Indicators and Corresponding ICD-9-CM/ICD-10-CM/PCS Codes during Delivery Hospitalizations.

The table below includes the list of 21 indicators and corresponding ICD codes used to identify delivery hospitalizations with SMM.

Severe Maternal Morbidity Indicator	DX or PR	ICD-9	ICD-10	ICD-10 short
1. Acute myocardial infarction	DX	410.xx	I21.01, I21.02, I21.09, I21.11, I21.19, I21.21, I21.29, I21.3, I21.4, I21.9, I21.A1 and I21.A9 I22.0, I22.1, I22.2, I22.8, I22.9	I21.xx, I22.x
2. Aneurysm*	DX	441.xx	I71.00 – I71.03, I71.1, I71.2, I71.3, I71.4, I71.5, I71.6, I71.8, I71.9, I79.0	I71.xx* I79.0*No I71.7 code exists, so ICD-10 list encompasses all possible I71 codes
3. Acute renal failure	DX	584.5, 584.6, 584.7, 584.8, 584.9, 669.3x	N17.0, N17.1, N17.2, N17.8, N17.9, O90.4	N17.x, O90.4
4. Adult respiratory distress syndrome	DX	518.5x, 518.81 518.82 518.84, 799.1	J80, J95.1, J95.2, J95.3, J95.821, J95.822, J96.00, J96.01, J96.02, J96.20, J96.21, J96.22, R09.2	J80, J95.1, J95.2, J95.3, J95.82x, J96.0x, J96.2x R09.2
5. Amniotic fluid embolism	DX	673.1x	O88.11x*, O88.12 (*childbirth*), O88.13 (*puerperium*) * *x*=1st, 2nd and 3rd trimester	O88.1x
6. Cardiac arrest/ventricular fibrillation*	DX	427.41, 427.42*, 427.5 * Ventricular flutter	I46.2, I46.8, I46.9, I49.01*, I49.02** * Ventricular fibrilation ** Ventricular flutter	I46.x, I49.0x
7. Conversion of cardiac rhythm	PR	99.6x	5A2204Z, 5A12012	5A2204Z, 5A12012
8. Disseminated intravascular coagulation	DX	286.6, 286.9, 666.3x	D65, D68.8, D68.9, O72.3* *see comments for pregnancy related codes	D65, D68.8, D68.9, O72.3
9. Eclampsia	DX	642.6x	O15.00, O15.02, O15.03, O15.1, O15.2, O15.9 O14.22 – HELLP syndrome (HELLP), second trimester, O14.23 – HELLP syndrome (HELLP), third trimester HELLP syndrome is not included currently (ranges in severity, more research is needed)	O15. X
10. Heart failure/arrest during surgery or procedure	DX	997.1	I97.120, I97.121, I97.130, I97.131, I97.710, I97.711	I97.12x, I97.13x, I97.710, I97.711
11. Puerperal cerebrovascular disorders	DX	430.xx, 431.xx, 432.xx, 433.xx, 434.xx, 436xx, 437.xx, 671.5x, 674.0x, 997.02	I60.0x, I60.1x, I60.2, I60.3x, I60.4, I60.5x, I60.6, I60.7, I60.8, I60.9; I61.1, I61.2, I61.3, I61.4, I61.5, I61.6, I61.8, I61.9; I62.0x, I62.1, I62.9;I63.0xx, I63.1xx, I63.2xx, I63.3xx, I63.4xx , I63.5xx, I63.6, I63.8, I63.9; I65.0x, I65.1, I65.2x, I65.8, I65.9; I66.0x, I66.1x, I66.2x, I66.3, I66.8, I66.9; I67.0, I67.1, I67.2, I67.3, I67.4, I67.5, I67.6, I67.7, I67.8xx, I67.9; I68.0, I68.2, I68.8; O22.51, O22.52, O22.53, I97.810, I97.811, I97.820, I97.821, O87.3 674.0x – no crosswalk	I60.xx- I68.xx, O22.51, O22.52, O22.53, I97.81x, I97.82x, O87.3 I62.9 – included but should not be captured if this is not a valid code.
12. Pulmonary edema / Acute heart failure	DX	518.4, 428.1, 428.0, 428.21, 428.23, 428.31, 428.33, 428.41, 428.43	J81.0, I50.1, I50.20, I50.21, I50.23, I50.30, I50.31, I50.33, I50.40, I50.41, I50.43, I50.9 (-) Add 5th character: 0=unspecified 1=acute 2=chronic 3=acute on chronic 0=unspecified – keep since it is commonly used among health care providers terminology in medical records	J81.0, I50.1, I50.20, I50.21, I50.23, I50.30, I50.31, I50.33, I50.40, I50.41, I50.43, I50.9
13. Severe anesthesia complications	DX	668.0x*, 668.1x, 668.2x	O74.0 , O74.1, O74.2, O74.3, O89.01*, O89.09, O89.1, O89.2 *O89.01 Aspiration – decided to keep due to difficulties of separation from "Aspiration Pnuemonitis"	O74.0 , O74.1 , O74.2, O74.3, O89.0x, O89.1, O89.2
14. Sepsis	DX	038.xx, 995.91, 995.92, 670.2x (after October 1, 2009)	O85, O86.04, T80.211A, T81.4XXA, T81.44, T81.44XA, T81.44XD, T81.44XS **or** severity: R65.20 **or** A40.0, A40.1 , A40.3 , A40.8, A40.9, A41.01, A41.02, A41.1, A41.2, A41.3, A41.4, A41.50, A41.51, A41.52, A41.53, A41.59, A41.81, A41.89, A41.9, A32.7	O85, O86.04, T80.211A, T81.4XXA, T81.44xx, **or** R65.20 **or** A40.x, A41.x, A32.7
15. Shock	DX	669.1x, 785.5x, 995.0, 995.4, 998.0x	O75.1, R57.0, R57.1, R57.8, R57.9, R65.21, T78.2XXA, T88.2XXA , T88.6XXA, T81.10XA, T81.11XA, T81.19XA	O75.1, R57.x, R65.21, T78.2XXA, T88.2 XXA, T88.6 XXA, T81.10XA , T81.11XA, T81.19XA
16. Sickle cell disease with crisis	DX	282.42, 282.62, 282.64, 282.69	D57.00 , D57.01, D57.02, D57.211, D57.212, D57.219, D57.411, D57.412, D57.419, D57.811, D57.812, D57.819 (5th digit: unspecified, acute chest syndrome or splenic sequestration)	D57.0x, D57.21x, D57.41x, D57.81x
17. Air and thrombotic embolism	DX	415.1x, 673.0x, 673.2x 673.3x, 673.8x	I26.01, I26.02, I26.09, I26.90, I26.92, I26.99 O88.011-O88.019, O88.02, O88.03, O88.211-O88.219, O88.22, O88.23, O88.311-O88.319, O88.32, O88.33, O88.81, O88.82, O88.83 * I26.0 – Pulmonary embolism with acute cor pulmonale (acute right ventricle heart failure)	I26.x, O88.0x, O88.2x, O88.3x, O88.8x
18. Blood products transfusion	PR	99.0x	99.0x à 160 ICD-10-PCS codes **The most common** 30233H1 Transfusion of **Nonautologous** Whole Blood into Peripheral Vein, Percutaneous Approach 30233K1 Transfusion of Nonautologous Frozen Plasma into Peripheral Vein,	30233 Peripheral vein, percutaneous (7th digit: x=1: nonautologous) 30240 Central Vein, open (7th digit: x=1: nonautologous) 30243 Central Vein, percutaneous (7th digit: x=1: nonautologous
19. Hysterectomy	PR	68.3x-68.9x	0UT90ZZ, 0UT94ZZ, 0UT97ZZ, 0UT98ZZ, 0UT9FZZ	0UT90ZZ, 0UT94ZZ, 0UT97ZZ, 0UT98ZZ, 0UT9FZZ
20. Temporary tracheostomy*	PR	31.1	0B110Z4, 0B110F4, 0B113Z4, 0B113F4, 0B114Z4, 0B114F4	0B110Z, 0B110F, 0B113, 0B114
21.Ventilation	PR	93.90, 96.01, 96.02, 96.03, 96.05	5A1935Z, 5A1945Z, 5A1955Z	5A1935Z, 5A1945Z, 5A1955Z

For all pregnancy related codes O00-O9A:

AIM Severe Hypertension in Pregnancy ICD10 Codes List

Code	Long Description
O111	Pre-existing hypertension with pre-eclampsia, first trimester
O112	Pre-existing hypertension with pre-eclampsia, second trimester
O113	Pre-existing hypertension with pre-eclampsia, third trimester
O114	Pre-existing hypertension with pre-eclampsia, complicating childbirth
O115	Pre-existing hypertension with pre-eclampsia, complicating the puerperium
O119	Pre-existing hypertension with pre-eclampsia, unspecified trimester
O1410	Severe pre-eclampsia, unspecified trimester
O1412	Severe pre-eclampsia, second trimester
O1413	Severe pre-eclampsia, third trimester
O1414	Severe pre-eclampsia complicating childbirth
O1415	Severe pre-eclampsia, complicating the puerperium
O1420	HELLP syndrome (HELLP), unspecified trimester
O1422	HELLP syndrome (HELLP), second trimester
O1423	HELLP syndrome (HELLP), third trimester
O1424	HELLP syndrome (HELLP), complicating childbirth
O1425	HELLP syndrome (HELLP), complicating the puerperium
O1500	Eclampsia complicating pregnancy, unspecified trimester
O1502	Eclampsia complicating pregnancy, second trimester
O1503	Eclampsia complicating pregnancy, third trimester
O151	Eclampsia complicating labor
O152	Eclampsia complicating the puerperium
O159	Eclampsia, unspecified as to time period

CDC defined list of Severe Maternal Morbidity (SMM) discharge codes reported to AIM

Note:

Some hospitals need some training for diagnoses: for example pre-eclampsia vs eclampsia

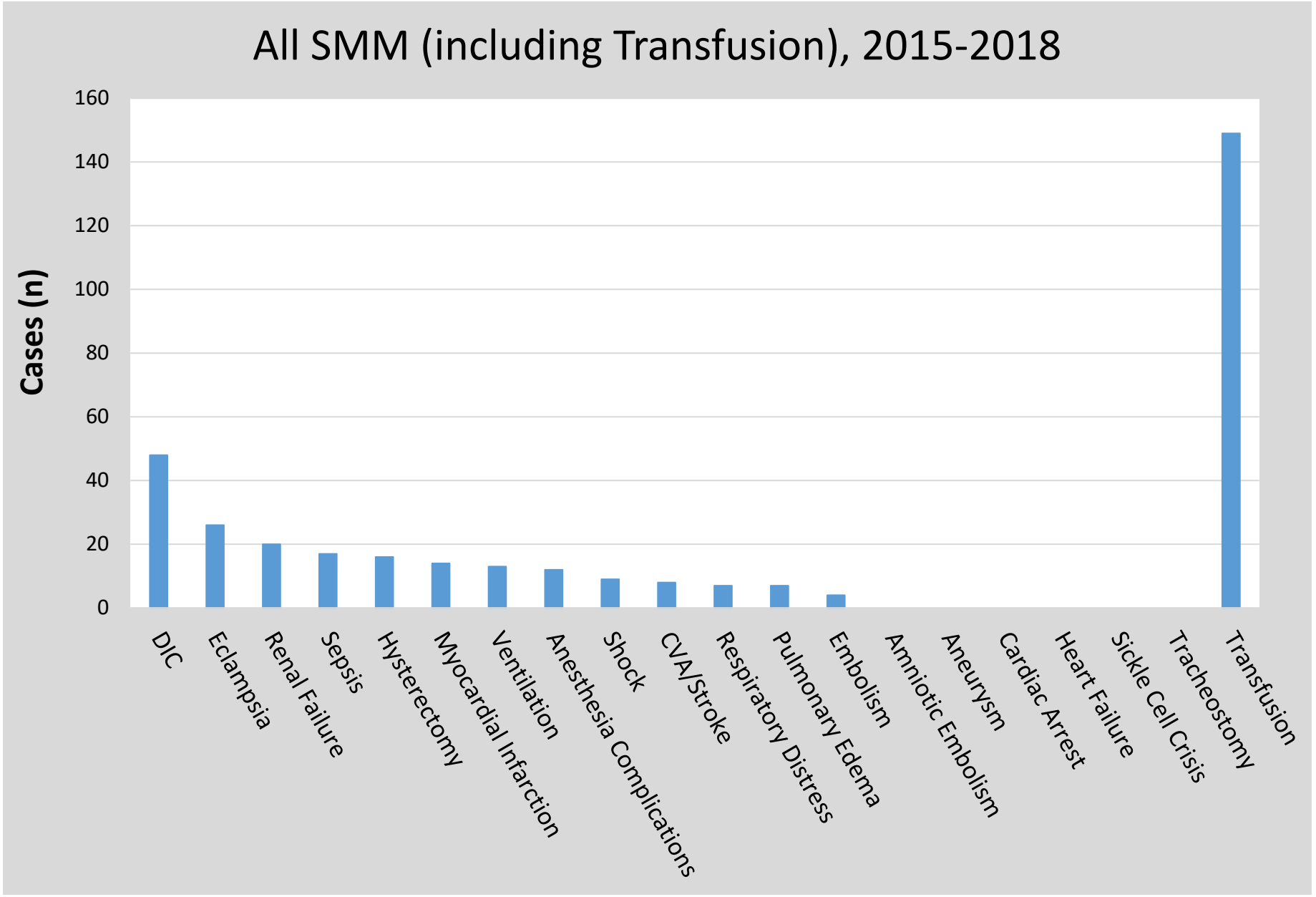
Severe Maternal Morbidity, VUHDDS, 2015-2018 (n=21,123) Statewide			
Conditions / Procedures	**# Codes**	**Conditions / Procedures**	**# Codes**
Transfusion	149	Disseminated Intravascular Coagulation	48
Eclampsia	26	Renal Failure	20
Septicemia and Sepsis	17	Hysterectomy	16
Acute Myocardial Infarction	14	Ventilation	13
Severe Anesthesia Complications	12	Shock	9
Cerebrovascular Accidents / Stroke / Puerperal Cerebrovascular Disorders	8	Respiratory Distress	7
Pulmonary Edema	7	Thrombotic Embolism	4
Amniotic Fluid Embolism	0	Aneurysm	0
Cardiac Arrest / V Fib / General Heart Failure	0	Heart Failure during Procedure or Surgery	0
Sickle Cell Anemia with Crisis	0	Temporary Tracheostomy	0
Hemorrhage	**1576**		
Any SMM, including Transfusion (Total number of deliveries)	314	Any SMM, excluding Transfusion (Total number of deliveries)	177

Severe Maternal Morbidity in Vermont:
2015-2018

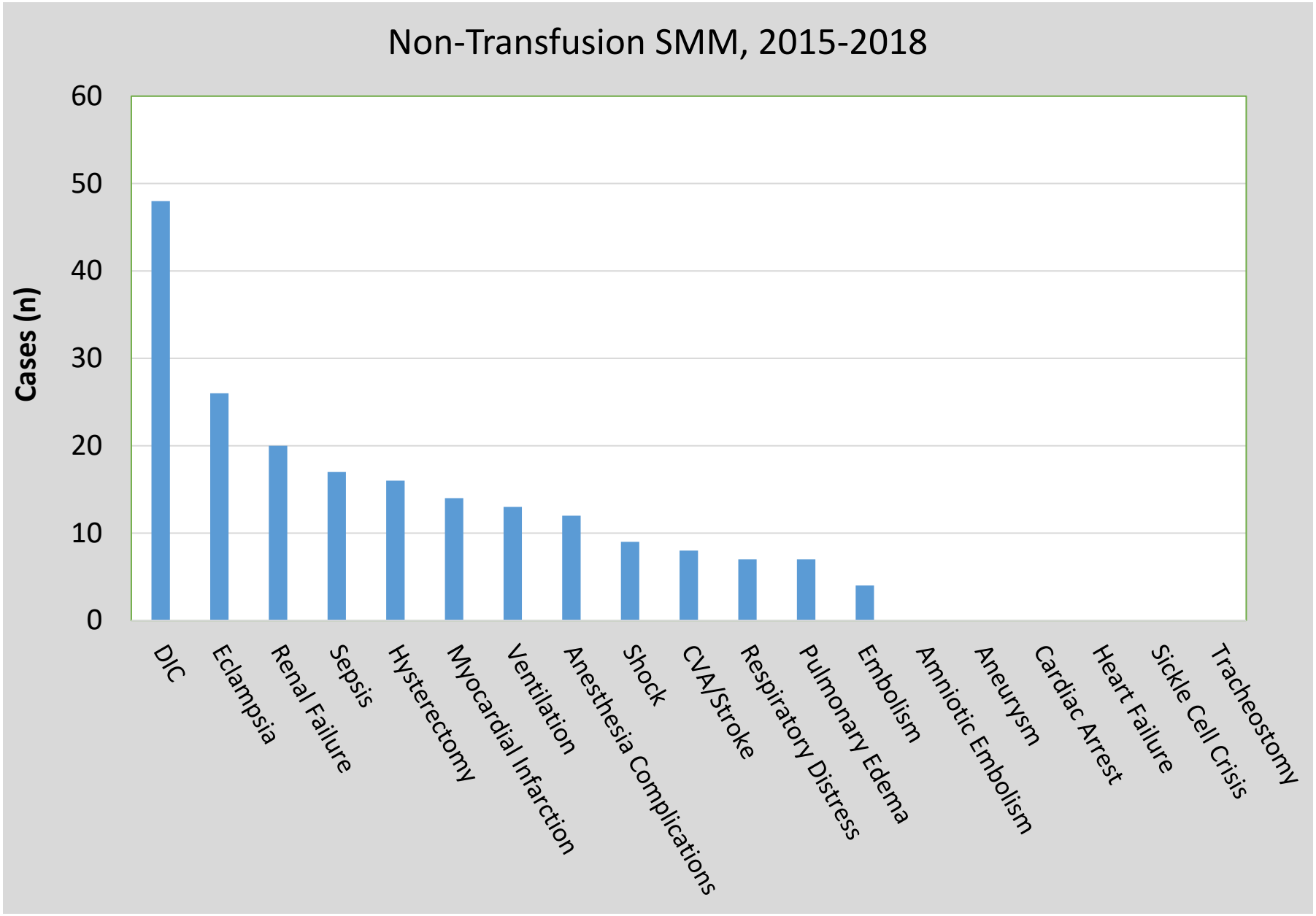
We can now get data about q6 months, lags 6-12 months

<u>Note well:</u>
There are coding errors

- Not as much eclampsia
- Not as many MI (one small hospital coded 11)
- Coding is a work in progress driven by your documentation and coder education

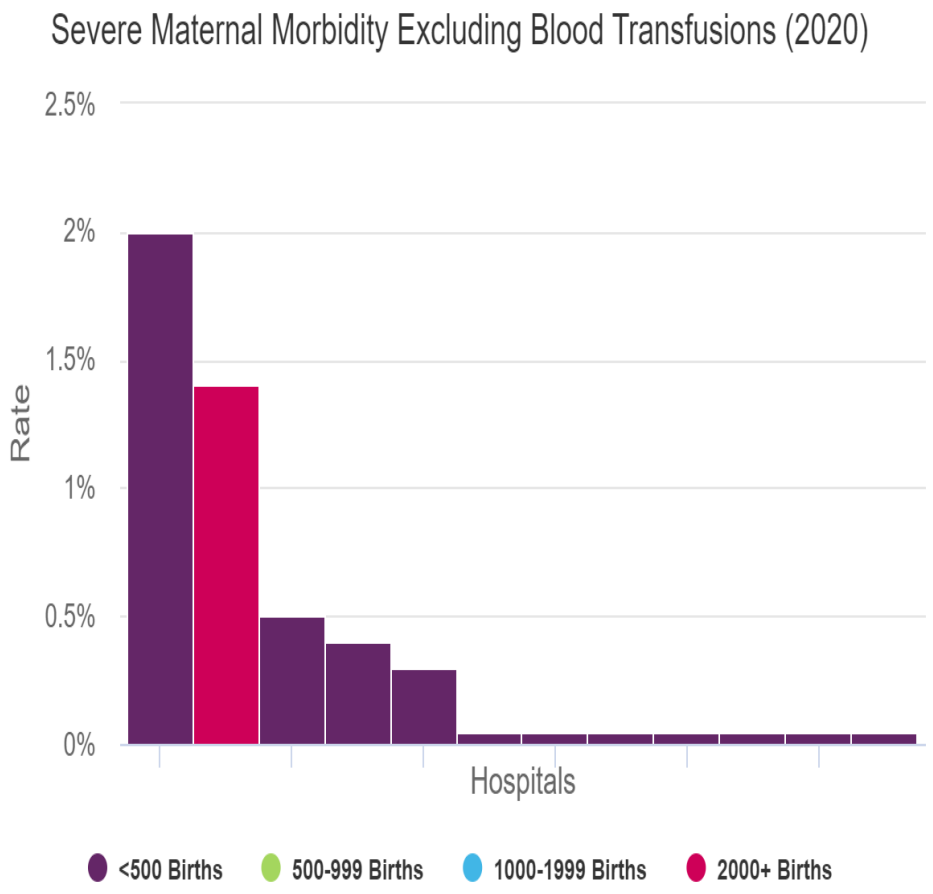


Transfusion is by far the most common Severe Maternal Morbidity in the state

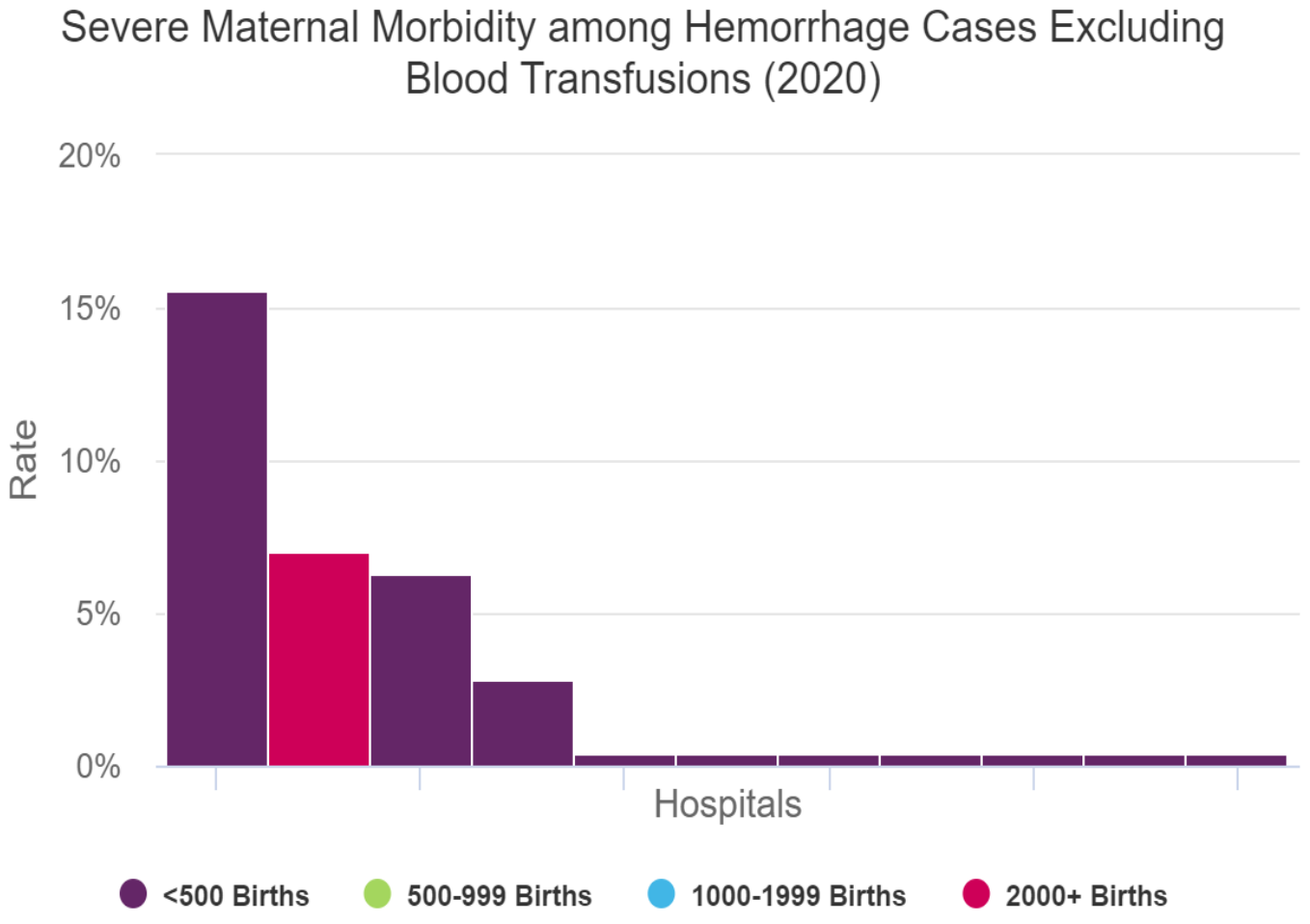


When transfusion is omitted, sequelae of HTN is next most common (although overcoded)

Overall VT Severe Maternal Morbidity excluding Transfusion by Volume

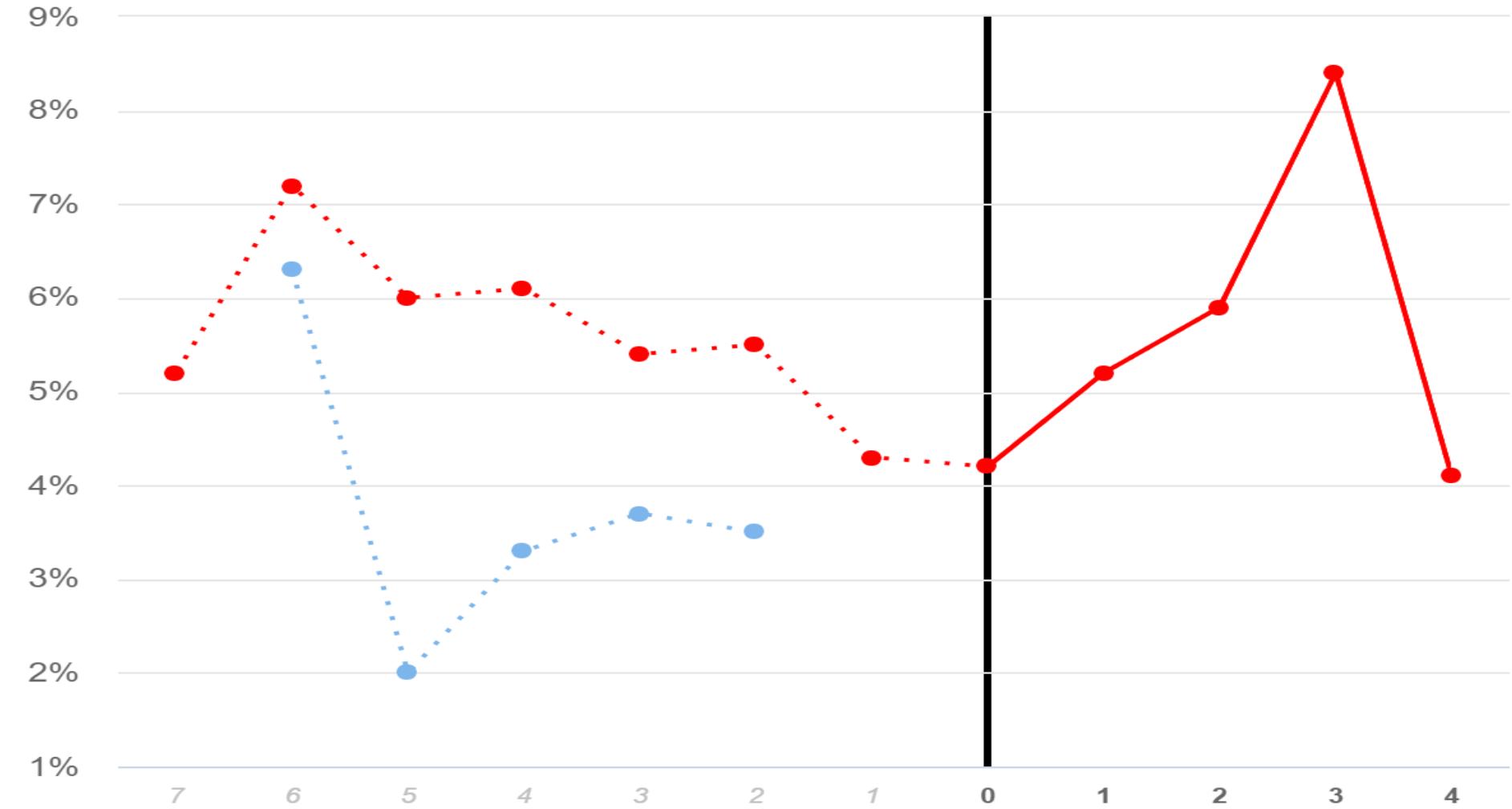


Overall VT Severe Maternal Morbidity only in Hemorrhage cases excluding Transfusion by Volume



Severe Maternal Morbidity among Hemorrhage Cases Excluding Blood Transfusions

Aggregate Collaborative Average



Severe Hypertension in Pregnancy Patient Safety Bundle

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AIM 5 Rs:

Readiness-Every Care Setting
Recognition & Prevention-Every Patient
Response-Every Event
Reporting and Systems Learning-Every Unit
Respectful, Equitable, and Supportive Care-Every Unit/Provider/Team Member

Severe Hypertension in Pregnancy Patient Safety Bundle

Readiness — Every Care Setting

Develop processes for management of pregnant and postpartum patients with severe hypertension, including:

- A standard protocol for maternal early warning signs, diagnostic criteria, monitoring and treatment of severe preeclampsia/eclampsia (including order sets and algorithms)
- A process for the timely triage and evaluation of pregnant and postpartum patients with severe hypertension or related symptoms
- A system plan for escalation, obtaining appropriate consultation, and maternal transfer as needed

Ensure rapid access to medications used for severe hypertension/eclampsia with a brief guide for administration and dosage in all areas where patients may be treated.

Conduct interprofessional and interdepartmental team-based drills with timely debriefs that include the use of simulated patients.

Develop and maintain a set of referral resources and communication pathways between obstetric providers, community-based organizations, and state and public health agencies to enhance services and supports for pregnant and postpartum families.

Develop trauma-informed protocols and provider education to address health care team member biases to enhance equitable care.

Severe Hypertension in Pregnancy Patient Safety Bundle

Recognition & Prevention — Every Patient

Assess and document if a patient presenting is pregnant or has been pregnant within the past year in all care settings.

Ensure accurate measurement and assessment of blood pressure for every pregnant and postpartum patient.

Screen for structural and social drivers of health that might impact clinical recommendations or treatment plans and provide linkage to resources that align with the pregnant or postpartum person's health literacy, cultural needs, and language proficiency.

Provide ongoing education to all patients on the signs and symptoms of hypertension and preeclampsia and empower them to seek care.

Provide ongoing education to all health care team members on the recognition of signs, symptoms, and treatment of hypertension.

Severe Hypertension in Pregnancy Patient Safety Bundle

Response — Every Event

Utilize a standardized protocol with checklists and escalation policies including a standard response to maternal early warning signs, listening and investigating patient-reported and observed symptoms, and assessment of standard labs for the management of patients with severe hypertension or related symptoms.

Initiate postpartum follow-up visit to occur within 3 days of birth hospitalization discharge date for individuals whose pregnancy was complicated by hypertensive disorders.

Provide trauma-informed support for patients, identified support network, and staff for serious complications of severe hypertension, including discussions regarding birth events, follow-up care, resources, and appointments.

Severe Hypertension in Pregnancy Patient Safety Bundle

Reporting and Systems Learning — Every Unit

Establish a culture of multidisciplinary planning, huddles, and post-event debriefs for every case of severe hypertension, which identifies successes, opportunities for improvement, and action planning for future events.

Perform multidisciplinary reviews of all severe hypertension/eclampsia cases per established facility criteria to identify systems issues.

Monitor outcomes and process data related to severe hypertension, with disaggregation by race and ethnicity due to known disparities in rates of severe hypertension.

Severe Hypertension in Pregnancy Patient Safety Bundle

Respecful, Equitable, and Supportive Care — Every Unit/Provider/Team Member

Engage in open, transparent, and empathetic communication with pregnant and postpartum people and their identified support network to understand diagnoses, options, and treatment plans.

Include pregnant and postpartum persons as part of the multidisciplinary care team to establish trust and ensure informed, shared decision-making that incorporates the pregnant and postpartum person's values and goals.

Definitions of each HTN disease: talk to coders (and make sure your notes have the correct diagnosis)

	Gestational Age	**BP parameters**	**Notes**
Chronic Hypertension	Pre-pregnancy, <20 weeks	140/90	Recommendation is to treat mild HTN in pregnancy; start early
Chronic hypertension with superimposed preeclampsia (with or without severe features)	CHTN with relatively rapid bp escalation of a previously stable patient	HTN: 140/90 Severe HTN: 160/110 Proteinuria present (>300 mg/24 hrs, P:C >0.3)	Third trimester escalation of bp is common and is responsive to increased medication; unresponsive, rapid escalation or symptoms of preeclampsia
Gestational hypertension	HTN develops >20 wks in pt without dx HTN prior to pregnancy	HTN: 140/90 Severe HTN: 160/110 No proteinuria	Severe HTN is treated similarly regardless of proteinuria or dx preeclampsia
Preeclampsia without severe features	>20 wks	BP >140/90, <160/110 Proteinuria	Antepartum or postpartum, progressive, code most severe
Preeclampsia with severe features	>20 weeks	BP >140/90, <160/110 Proteinuria Abnormal labs, HA, vision changes	Antepartum or postpartum, progressive, code most severe
Eclampsia	>20 wks	Preeclampsia with seizures	Antepartum or postpartum

Readiness — Every Care Setting

Readiness Element	Key Points
Care Setting	All care settings potentially including: • Labor and Delivery Units • Freestanding Birthing Centers • Emergency Departments • Urgent Care • Critical Care • Primary Care/Ob-Gyn Office • Other Outpatient Settings
Medications	Medications should be stocked and immediately available in obstetric units (AP, L&D, PP), the Emergency Department, and in other areas where patients may be treated. Recommended medications include: • Magnesium sulfate • Oral nifedipine, immediate release (acceptable first-line medication) • Intravenous hydralazine • Labetalol
Interprofessional and interdepartmental team-based drills	Facilitate drills with simulated patients and timely debriefs that emphasize: • All elements of the facility severe hypertension emergency management plan • Patient-centered, empathetic, trauma-informed care
Referral resources and communication pathways	Ensure that: • Maternal and neonatal transfer protocol is in place • Hospitals/prenatal care sites should implement resource mapping to identify local resources and support services so that this information is available to providers and other care team members to optimize referrals. Consider providing blood pressure cuff, education materials, and information on who to call for concerns for patient to take home
Trauma-informed protocols and bias training	Ensure that: • Every clinical setting, health system, and providers are welcoming and inclusive of all people no matter backgrounds, race, ethnicity, gender, social class, language, ability, and other personal or social identities and characteristics. Recognize that: • Some of the identities above may be marginalized and to care for people in an intersectional manner is to treat the patient as a whole person and acknowledge all the identities that might impact equitable, supportive, and quality care.

Note that the ED, OBGYN offices, and outpatient settings need to be included in training: patients will present at different places

Emergency HTN kit in Pyxis/on floor

Drills and simulations: time from diagnosis to medication <60 minutes

Drills and simulations: time from diagnosis to medication <60 minutes

New to AIM: every safety bundle has a trauma informed care/health equity structural piece

Recognition & Prevention — Every Patient

Recognition Element	Key Points
Obtain and assess labs while listening to and investigating patient symptoms	Recommended labs include, at minimum: • Proteinuria • CBC with platelet count • Serum creatinine • LDH • AST • ALT
Screening for community support needs and resources provided	Screening should include: • Medical needs • Mental and behavioral health needs • Substance use disorder needs • Structural and social drivers of health
Patient Education	Should include: • Who to contact with medical and mental health concerns, ideally stratified by severity of condition or symptoms • Review of warning signs/symptoms • Reinforcement of the value of outpatient postpartum follow up • Summary of delivery events and treatments used • Information about future pregnancies and hypertension risk Can include: • Patient support network in receiving relevant resources and education All provided resources should align with the pregnant or postpartum patient's: • Health literacy • Cultural needs • Language proficiency • Geographic location and access

Have a lab panel or favorites

Ensure all places that screen with bp know to ask patients if they are pregnant or within 6 weeks postpartum (some protocols ask a year): bp cut-offs much lower for emergency treatment in pregnancy/postpartum compared to ususal ED patients

Education during pregnancy and discharge re:
symptoms
Appropriate postpartum fu

Response — Every Event

Response Element	Key Points
Standardized, facility-wide protocols	Should include: • Onset and duration of magnesium sulfate therapy • Advance preparation for seizure prophylaxis and magnesium toxicity • Notification of physician or primary care provider if systolic pressure is 160 mm Hg or more or diastolic pressure is 110 mm Hg or more for two measurements within 15 minutes • Monitoring cases of borderline severe hypertension (150 to 159 mm Hg systolic and/or 105-109 mm Hg diastolic) closely for progression to severe hypertension. • Initiating treatment within 60 minutes of verification after first severe range blood pressure reading, assuming confirmation of persistent elevation through a second reading. • Escalation measures for ongoing observation and management
Postpartum follow-up visit	Discharging facility or obstetric provider should schedule postpartum follow-up (either in-person appointment or phone call) within 3 days of discharge date. This visit should include: • Blood pressure check • Discussion of signs and symptoms of worsening hypertension • Who to contact if signs and symptoms continue • Information about where to go, such as urgent care facility or Emergency Department, if signs and symptoms worsen
Trauma-informed support for patients and identified support network	Discussions regarding birth events, follow-up care, resources, and appointments should be provided verbally and, ideally, in a written clinical summary that aligns with the person's health literacy, culture, language, and accessibility needs.

Hypertension protocol/guideline:

- How to take bp
- Recognition: severe
- Treatment algorithms
- Mg
- Mg toxicity
- Eclampsia

Postpartum follow-up:
Within 3 days of discharge

Review with appropriate translators, information, mechanism to receive care (transportation, child care)

Reporting and Systems Learning - Every Unit

Reporting Element	Key Points
Multidisciplinary Case Review	Reviews may assess and/or identify: • Alignment with standard policies and procedures • Appropriate updates to standard policies and procedures for future events • Other opportunities for improvement, including identification of discriminatory practices and opportunities to improve respectful, equitable and supportive care. Consistent issues should be reported via established pathways

Multidisciplinary reviews: each case

Respectful, Equitable, and Supportive Care — Every Unit/Provider/Team Member

Respectful Care Element	Key Points
Open, transparent, and empathetic communication with pregnant and postpartum people and their identified support network	• Establish and/or maintain a mechanism for patients, support network, and staff to identify inequitable care and episodes of miscommunication or disrespect. • Develop plan to address reported cases of inequitable care, miscommunication, or disrespect
Inclusion of the patient as part of the multidisciplinary care team	• Establishment of trust • Informed, bidirectional shared decision-making • Patient values and goals as the primary driver of this process
As Black, Indigenous, and Hispanic people experience maternal mortality and severe maternal morbidity at disproportionately higher rates because of systemic racism, but not race itself, it is necessary to mitigate bias by having a high index of suspicion for a contributing clinical condition, such as severe hypertension, in these populations.	
Patient support networks may include nonfamilial supports, such as doulas and home visitors, who, with the postpartum person's permission, should be welcomed when any teaching or planning is provided.	

Language/translator access (in person optimal)
Social work
Support referrals

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Severe Hypertension in Pregnancy Patient Safety Bundle (2022)

Core Data Collection Plan

Version 1.0 June 2022

Measurement of safety bundle:

Outcomes
Process Measures
Structural Measures

Thank you for filling out RedCap

Severe Hypertension in Pregnancy Patient Safety Bundle (2022)
Core Data Collection Plan

Outcome

Metric	Name	Description	Notes
O1	Severe Maternal Morbidity (excluding transfusion codes alone)	**Report N/D** **Denominator:** All qualifying pregnant and postpartum people during their birth admission **Numerator:** Among the denominator, those who experienced severe maternal morbidity, excluding those who experienced transfusion alone	Disaggregate by race and ethnicity, payor
O2	Severe Maternal Morbidity among People with Preeclampsia (excluding transfusion codes alone)	**Report N/D** **Denominator:** All qualifying pregnant and postpartum people during their birth admission with preeclampsia **Numerator:** Among the denominator, those who experienced severe maternal morbidity, excluding those who experienced transfusion alone	Disaggregate by race and ethnicity, payor

Outcome Measures:

Plan:
Extract discharge data by codes

Process Measures: RedCap

Process

Metric	Name	Description	Notes
P1	Timely Treatment of Persistent Severe Hypertension	**Report N/D** **Denominator:** Pregnant and postpartum people with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension **Numerator:** Among the denominator, those who were treated within 1 hour with IV Labetalol, IV Hydralazine, or PO Nifedipine. The 1 hour is measured from the first severe range BP reading, assuming confirmation of persistent elevation through a second reading.	• Disaggregate by race/ethnicity, payor • Full measurement specifications can be found in this SMFM Special Statement

From Epic/EMR:

Need to build this metric

Some hospitals may need to be manual and need a process to keep track of patients that had severe hypertension (most hospitals <5/year)

Logic something like:

- Pull bps on M7 and B7 >=160/110
- Pull med administration for those times (goal: within an hour)

Metric	Name	Description	Notes
P2	Scheduling of Postpartum Blood Pressure and Symptoms Checks	**P2A: Severe Hypertension During the Birth Admission** **Report N/D** **Denominator:** Pregnant and postpartum people during their birth admission with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension **Numerator:** Among the denominator, those who had a postpartum blood pressure and symptoms check scheduled to occur within 3 days after their birth hospitalization discharge date **P2B: All Other Hypertensive Disorders During Pregnancy** **Report N/D** **Denominator:** Pregnant and postpartum people during their birth admission with a documented diagnosis of preeclampsia, gestational or chronic hypertension, excluding those who experienced persistent severe hypertension during their birth admission (**see P2A**) **Numerator:** Among the denominator, those who had a postpartum blood pressure and symptoms check scheduled to occur within 7 days after their birth hospitalization discharge date	• Disaggregate by race/ethnicity, payor • Exclude those who were transferred out of your facility prior to discharge • Blood pressure measurement and symptoms checks can be scheduled at any point during the 3- and 7-day time periods and do not necessarily require an in-person visit • Planning and considerations should be made for patients with weekend discharges and/or those with 3- and 7-day follow up periods that fall on the weekend. These patients should be included in the denominator as part of quality measurement • See **ACOG Committee Opinion 736 on Optimizing Postpartum Care**

Process Measures: RedCap

Postdischarge follow-up within 3 days (severe HTN) or 7 days (mild HTN):

Look in discharge section if the date they are scheduled to return is included: might need to figure out how to document, an RN phone call with bp discussion acceptable

(Hint: start providing prescriptions for blood pressure cuffs to ALL pts with HTN)

Metric	Name	Description	Notes
P3	OB Provider Education	**P3A: Provider education on severe hypertension and preeclampsia** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of delivering physicians and midwives has completed within the last two years **an education program on Severe Hypertension/ Preeclampsia** that includes the unit-standard protocols and measures? **P3B: Provider education on respectful and equitable care** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of OB providers has completed within the last 2 years the last 2 years **an education program on respectful and equitable care?**	

Process Measures: RedCap

HTN: Provider education q2 yrs (mandatories)

Need to send out to everyone q2 yrs and put link into Cornerstone (requested)

Respectful and Equitable care education: Provider education

Mandatory DEI in Cornerstone

Metric	Name	Description	Notes
P4	OB Nursing Education	**P4A: Nursing education on severe hypertension and preeclampsia** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of OB nurses (including L&D and postpartum) has completed within the last two years **an education program on Severe Hypertension/Preeclampsia** that includes the unit-standard protocols and measures? **P4B: Nursing education on respectful and equitable care** **Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of OB nurses (including L&D and postpartum) has completed within the last 2 years **an education program on respectful and equitable care?**	
P5	ED Provider & Nursing Education – Hypertension and Pregnancy	**Report estimate in 10% increments (round up)** At the end of this reporting period, what cumulative proportion of clinical ED providers and nursing staff has completed within the last 2 years education on signs and symptoms of severe hypertension and preeclampsia in pregnant and postpartum people?	

Process Measures: RedCap

HTN: RN education q2 yrs (mandatories)

Need to send out to everyone q2 yrs and put link into Cornerstone (requested)

Respectful and Equitable care education: RN education

Mandatory DEI in Cornerstone

Measure: % of Providers and RNs that received education in the last 2 years

Metric	Name	Description	Notes
P6	Unit Drills	**Report # of drills and the drill topics** **P6a:** **Report integer** At the end of this reporting period, how many OB drills (In Situ and/or Sim Lab) were performed on your unit for any maternal safety topic? **P6b:** **Report TRUE/FALSE for the following drill topics: Hemorrhage, Severe Hypertension, Other** At the end of this reporting period, what topics were covered in the OB drills?	Ideally, drills related to severe hypertension will cover all sequelae, such as preeclampsia

Process Measures: RedCap

In situ (quick) drills and simulations

Structure

Metric	Name	Description	Notes
S1	Patient Event Debriefs	Has your department established a standardized process to conduct debriefs with patients after a severe event?	• Include patient support networks during patient event debriefs, as requested • Severe events may include the The Joint Commission sentinel event definition, severe maternal morbidity, or fetal death
S2	Clinical Team Debriefs	Has your department established a system to perform regular formal debriefs with the clinical team after cases with major complications?	Major complications will be defined by each facility based on volume, with a minimum being The Joint Commission Severe Maternal Morbidity Criteria

Structural Measures: RedCap

With patients: Practice these regularly in Quick Drills AND debrief for pretty much any uncommon event

For clinical team: Formal debrief after each event; PRACTICE, PRACTICE, PRACTICE with Quick Drills

Metric	Name	Description	Notes
S3	Multidisciplinary Case Reviews	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 who received ≥ 4 units RBC transfusions)?	For greatest impact, we suggest that in addition to the minimum instances for review defined in S3, hospital teams also implement missed opportunity reviews for key bundle process measures (e.g., instances in which acute onset severe hypertension was not treated within 1 hour) in both unit debriefs and multidisciplinary case reviews
S4	Unit Policy and Procedure	Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to: • **S4A:** Measuring blood pressure • **S4B:** Treatment of severe hypertension/preeclampsia, • **S4C:** The use of seizure prophylaxis, including treatment for overdose	

Structural Measures: RedCap

Multidisciplinary Reviews: ensure you hospital has a structure for these (a point peron to call and tell them you need one).

Because of the multidisciplinary nature of this diagnosis especially important

HTN Diagnosis and Treatment Policy/Guideline:
Should have one
Can share ours as eample

Structural Measures: RedCap

Metric	Name	Description	Notes
S5	Patient Education Materials on Urgent Postpartum Warning Signs	Has your department developed/curated patient education materials on urgent postpartum warning signs that align with culturally and linguistically appropriate standards?	
S6	Emergency Department (ED) Screening for Current or Recent Pregnancy	Has your ED established or continued standardized verbal screening for current pregnancy and pregnancy in the past year as part of its triage process?	

Patient Education:

- During pregnancy and especially postpartum
- Combine with HTN
- Written materials provided (in correct language) at discharge
- If you have issues with getting documents in specific languages check with us

Do you want a webinar on Language access?

Emergency Room Screening:
Very important
We used 6 weeks since after this should go to PCP

Structural Measures: RedCap

Metric	Name	Description
S5	Patient Education Materials on Urgent Postpartum Warning Signs	Has your department developed/curated patient education materials on urgent postpartum warning signs that align with culturally and linguistically appropriate standards?
S6	Emergency Department (ED) Screening for Current or Recent Pregnancy	Has your ED established or continued standardized verbal screening for current pregnancy and pregnancy in the past year as part of its triage process?

Patient Education:
Discharge follow-up:

VNA:

- VNA referral can count as a visit and should be utilized to help bridge inpt and outpt care (need to figure out documentation of that visit for chart-very important)
- Each hospital should include VNA in their roll out with the focus on PP follow-up and support
- We will be including VNA in all the Webinars, consider inclusion in other hospital based education
- Include in any multidisciplinary review (organized by the hospital/practice)

Optional

Metric	Name	Description	Notes
OP1	Patient Support After Persistent Severe Hypertension	**Report N/D** **Denominator:** Pregnant and postpartum people with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension **Numerator:** Among the denominator, those who received a verbal briefing on their persistent severe hypertension by their care team before discharge	• Disaggregate by race and ethnicity, payor • The denominator criteria are established for the purposes of standardized data collection and reporting and are not meant to represent all instances in which a verbal briefing with a patient may be appropriate

Structural Measures: RedCap

Patient Support: specific discussion about severe HTN by care team (can be RN): this would include DC planning and fu bp check in 3 days

RedCap will be used for collection:

Structural measures

Same verbage as that presented

Structural Measures:

Patient Event Debriefs: Has your department established a standardized process to conduct debriefs with patients after a severe event? **Notes: Include patient support networks during patient event debriefs, as requested** **• Severe events may include the The Joint Commission sentinel event definition, severe maternal morbidity, or fetal death**	Not Started In process Completed Change the slider above to set a response	reset
Clinical Team Debriefs: Has your department established a system to perform regular formal debriefs with the clinical team after cases with major complications? **Notes: Major complications will be defined by each facility based on volume, with a minimum being The Joint Commission Severe Maternal Morbidity Criteria**	Not Started In process Completed Change the slider above to set a response	reset
Multidisciplinary Case Reviews: 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 who received ≥ 4 units RBC transfusions)? **Notes: For greatest impact, we suggest that in addition to the minimum instances for review, hospital teams also implement missed opportunity reviews for key bundle process measures (e.g., instances in which acute onset severe hypertension was not treated within 1 hour) in both unit debriefs and multidisciplinary case reviews**	Not Started In process Completed Change the slider above to set a response	reset
Unit Policy and Procedure: Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to measuring blood pressure?	Not Started In process Completed Change the slider above to set a response	reset
Unit Policy and Procedure: Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to treatment of severe hypertension/preeclampsia?	Not Started In process Completed Change the slider above to set a response	reset
Unit Policy and Procedure: Does your hospital have a Severe HTN/ Preeclampsia policy and procedure (reviewed and updated in the last 2 years) that provides a unit-standard approach to the use of seizure prophylaxis, including treatment for overdose?	Not Started In process Completed Change the slider above to set a response	reset
Patient Education Materials on Urgent Postpartum Warning Signs: **Has your department developed/curated patient education materials on urgent postpartum warning signs that align with culturally and linguistically appropriate standards?**	Not Started In process Completed Change the slider above to set a response	reset

RedCap:

Additional measures

Current instrument: **Section 2: Pregnant Person and Neonatal Variables** Return to edit view

NOTE: Please be aware that branching logic and calculated fields will not function on this page. They only work on the survey pages and data entry forms.

Pregnant Person Variables

NMI inductions between $37+^{0}/_{7}$ weeks and $38+^{6}/_{7}$ weeks
* must provide value

Elective deliveries (induction or C/S) <39 weeks
* must provide value

Scheduled repeat C/S <39 weeks
* must provide value

Number of pregnant persons with...

Gestational Hypertension
* must provide value

Pre-eclampsia
* must provide value

Eclampsia
* must provide value

Chronic Hypertension with Superimposed Preeclampsia?
* must provide value

New 2021, AIMS

Severe Hypertension Requiring IV Medication
* must provide value

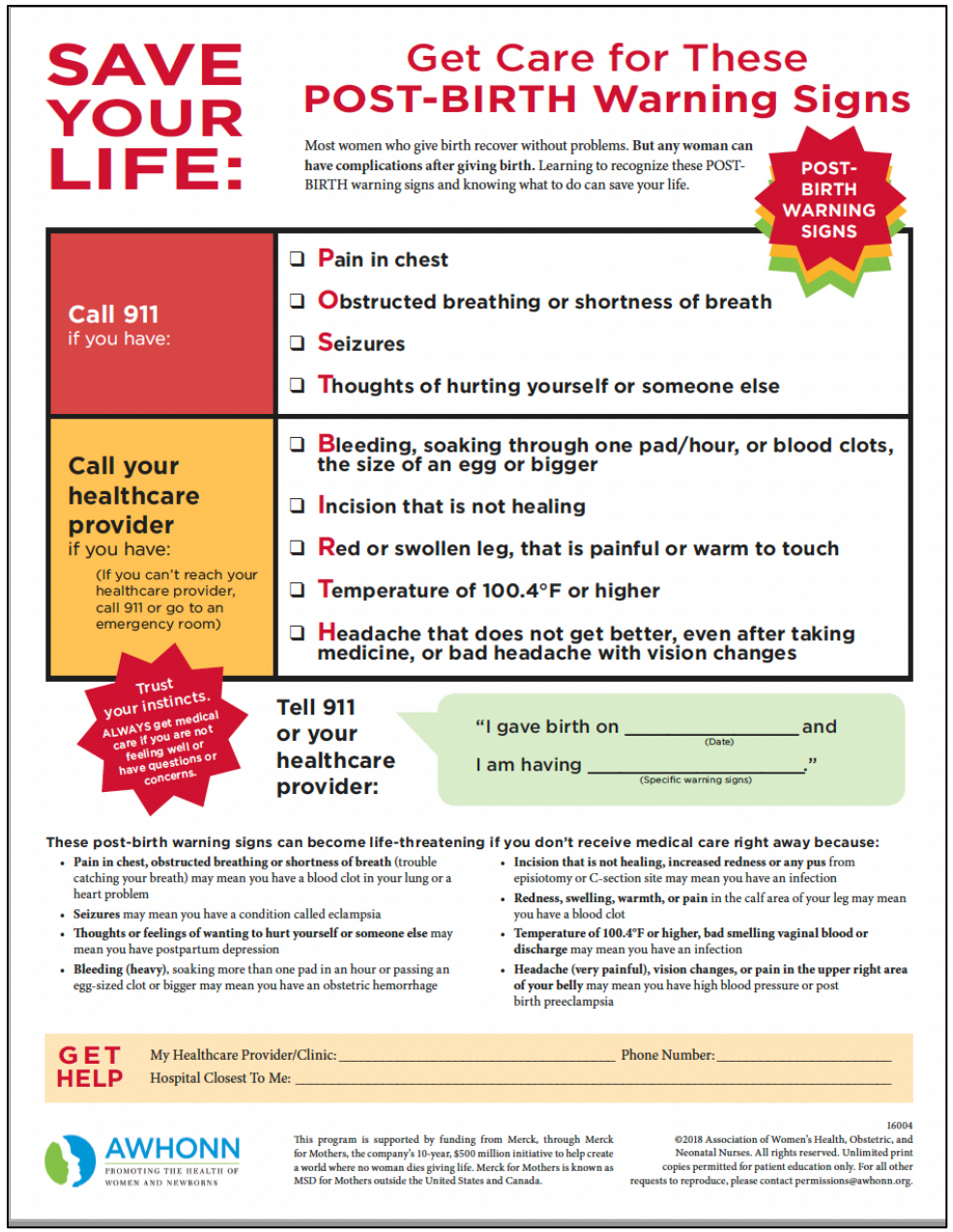
Number of pregnant persons with venous thromboembolism in pregnancy or puerperium?
* must provide value

Postpartum maternal readmission (within 7 days)
* must provide value

Postpartum maternal readmission (within 42 days; if information available)

optional

Supporting materials for all hospitals:



SAVE YOUR LIFE:

Get Care for These POST-BIRTH Warning Signs

Most women who give birth recover without problems. **But any woman can have complications after giving birth.** Learning to recognize these POST-BIRTH warning signs and knowing what to do can save your life.

POST-BIRTH WARNING SIGNS

Call 911 if you have:

- ❑ **Pain in chest**
- ❑ **Obstructed breathing or shortness of breath**
- ❑ **Seizures**
- ❑ **Thoughts of hurting yourself or someone else**

Call your healthcare provider if you have:

(If you can't reach your healthcare provider, call 911 or go to an emergency room)

- ❑ **Bleeding, soaking through one pad/hour, or blood clots, the size of an egg or bigger**
- ❑ **Incision that is not healing**
- ❑ **Red or swollen leg, that is painful or warm to touch**
- ❑ **Temperature of 100.4°F or higher**
- ❑ **Headache that does not get better, even after taking medicine, or bad headache with vision changes**

Trust your instincts. ALWAYS get medical care if you are not feeling well or have questions or concerns.

Tell 911 or your healthcare provider:

"I gave birth on _____ (Date) and I am having _____ (Specific warning signs)."

These post-birth warning signs can become life-threatening if you don't receive medical care right away because:

- **Pain in chest, obstructed breathing or shortness of breath** (trouble catching your breath) may mean you have a blood clot in your lung or a heart problem
- **Seizures** may mean you have a condition called eclampsia
- **Thoughts or feelings of wanting to hurt yourself or someone else** may mean you have postpartum depression
- **Bleeding (heavy)**, soaking more than one pad in an hour or passing an egg-sized clot or bigger may mean you have an obstetric hemorrhage
- **Incision that is not healing, increased redness or any pus** from episiotomy or C-section site may mean you have an infection
- **Redness, swelling, warmth, or pain** in the calf area of your leg may mean you have a blood clot
- **Temperature of 100.4°F or higher, bad smelling vaginal blood or discharge** may mean you have an infection
- **Headache (very painful), vision changes, or pain in the upper right area of your belly** may mean you have high blood pressure or post birth preeclampsia

GET HELP

My Healthcare Provider/Clinic: _____ Phone Number: _____

Hospital Closest To Me: _____

AWHONN PROMOTING THE HEALTH OF WOMEN AND NEWBORNS

16004

This program is supported by funding from Merck, through Merck for Mothers, the company's 10-year, $500 million initiative to help create a world where no woman dies giving life. Merck for Mothers is known as MSD for Mothers outside the United States and Canada.

Documents Status: **Approved**

IDENT	NOBG64
Type of Document	Guideline
Applicability Type	Cross-Organizational
Title of Owner	Nursing Dir: Women's Care & Peds
Title of Approving Official	Chief Nursing Officer
Date Effective	1/19/2021
Date of Next Review	1/19/2022

THE University of Vermont MEDICAL CENTER

TITLE: Obstetric Hypertension Guideline

PURPOSE:
Hypertensive disorders of pregnancy constitute one of the leading causes of maternal and perinatal mortality worldwide. It has been estimated that preeclampsia complicates 2–8% of pregnancies globally. In the United States, the rate of preeclampsia increased by 25% between 1987 and 2004. Moreover, in comparison with women giving birth in 1980, those giving birth in 2003 were at 6.7-fold increased risk of severe preeclampsia. This complication is costly: one study reported that in 2012 in the United States, the estimated cost of preeclampsia within the first 12 months of delivery was $2.18 billion ($1.03 billion for women and $1.15 billion for infants), which was disproportionately borne by premature births. Acute-onset, severe systolic hypertension, severe diastolic hypertension, or both can occur during the prenatal, intrapartum, or postpartum periods. At any of these pregnancy time points, severe hypertension can be associated with severe maternal morbidity, including stroke, heart failure, and seizure. Pregnant women or women in the postpartum period with acute-onset, severe systolic hypertension; severe diastolic hypertension; or both require urgent antihypertensive therapy. Reduction in hypertension may reduce the risk of severe maternal morbidity (ACOG Practice Bulletin: 202: Gestational Hypertension and Preeclampsia, 2019; Emergent Therapy for Acute Onset, Severe Hypertension During Pregnancy and Postpartum, ACOG Committee Opinion 767, 2019).

POLICY STATEMENT: The UVMMC OB Hypertension guideline includes readiness, recognition, response, and reporting for severe maternal hypertension within our institution. Activation of appropriate resources and personnel may be necessary for patients within the Birthing Center, Mother Baby Unit, or other areas of the institution.

Readiness:

System Level: Standardized protocols for identification, diagnostic criteria, and management of severe hypertension, unit based multidisciplinary drills, system plan for escalation of care.

Patient Level: Assessment of risk factors and education of early warning signs such as headache and visual changes. Patients at high risk for preeclampsia may be treated with low dose aspirin (81-162 mg) during pregnancy.

Recognition: Standardized measurement of blood pressure in pregnancy and post-partum; identification of risk factors for severe hypertension; identification of early warning symptoms.

Response: Standardized approach for the prompt treatment of severe hypertension with checklists, escalation policies, and immediate availability of medications. Support for patient, families, staff during and after severe maternal morbidity event related to severe hypertension.

Reporting: Use of SAFE system for reporting of events, multidisciplinary review of severe hypertension cases with severe maternal morbidity at QAI. Education every 2 years and M&M as indicated

2022

Resource Binder

A guide to accompany OB Drill Binders

Trainer Resources

The heart and science of medicine.

ACOG The American College of Obstetricians and Gynecologists

AIM ALLIANCE FOR INNOVATION ON MATERNAL HEALTH

PERINATAL QUALITY COLLABORATIVE VERMONT

VCHIP

THE University of Vermont MEDICAL CENTER

TABLE OF CONTENTS Continued

HTN AIM Safety Bundle Implementation:
1 year

Webinars/Topics to be covered for the year:

- Definition, Diagnosis, and Treatment of Hypertension in Pregnancy
- Protocols, Debriefs, Drills, Multisystem Reviews
- Review of Quick Drills for Hypertension Emergencies

Let me know if there are specific topics you would like covered or tools developed

Add:

VNA supporting documents

- Standard instructions re: fu for postpartum bp checks (and PPH too)
- Shprt story: call if bp>140/90, symptoms preeclampsia within 7 days of delivery