



**Maternal Hypertension Office Hours  
12/7/2021**

**AIM Process Measure #4:  
Timely Treatment of Severe Hypertension**

# The Original Measure – Do Not Use

Among pregnant and postpartum people with acute onset severe hypertension, those who were treated within one hour

- **Denominator:** Birthing patients with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension
- **Numerator:** Among the denominator, birthing patients who were treated within 1 hour with IV Labetalol, IV Hydralazine, or PO Nifedipine (see ACOG CO #767 Feb 2019). The 1 hour is measured from the first severe range BP reading, assuming confirmation of persistent elevation through a second reading



# SMFM Special Statement

## *Society for Maternal-Fetal Medicine Special Statement: A quality metric for evaluating timely treatment of severe hypertension*

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HEALTH QUALITY INNOVATORS



# SMFM Measure – Use! (Adopted by AIM)

The percentage of obstetrical patients with one or more persistent severe HTN episode(s) in which treatment with a standard antihypertensive agent is initiated within 60 minutes of the onset of the first episode or in which the first episode resolves within 60 minutes without such treatment.

- **Denominator:** The number of obstetrical patients with 1 or more persistent severe HTN episodes at the facility
- **Numerator:** The number of episodes in the denominator in which EITHER:
  - a. A standard antihypertensive agent was administered within 60 min of episode onset, OR
  - b. A BP that is not severe HTN is recorded and subsequent BPs are not in the severe range within 60 min of episode onset, OR
  - c. Both of the above



# Definitions

- **Obstetric Patient:** A person who is pregnant at any gestational age or within 42 d (6 wk) postpartum
- **Severe Hypertension:** A systolic BP of 160 mm Hg or more, or a diastolic BP of 110 or more, or both
- **Standard antihypertensive agents:** Any of the following -
  - ✓ Labetalol 20, 40, or 80 mg intravenously
  - ✓ Hydralazine 5 or 10 mg intravenously
  - ✓ Nifedipine 10 or 20 mg orally (not an extended-release formulation)



# When to Start the Timer

A severe HTN episode is one in which there is a severe range BP. To determine if the episode persists, the episode timing starts with ***the first severe range on the obstetrical unit***

- Eligible locations = L&D, Triage, PP
- BPs obtained on non-obstetrical units don't count.
- If first severe range was in ambulance, prenatal care office, ED or ICU, it does not count.
- The "timer" for the episode starts from the first severe range BP on an obstetrical unit.

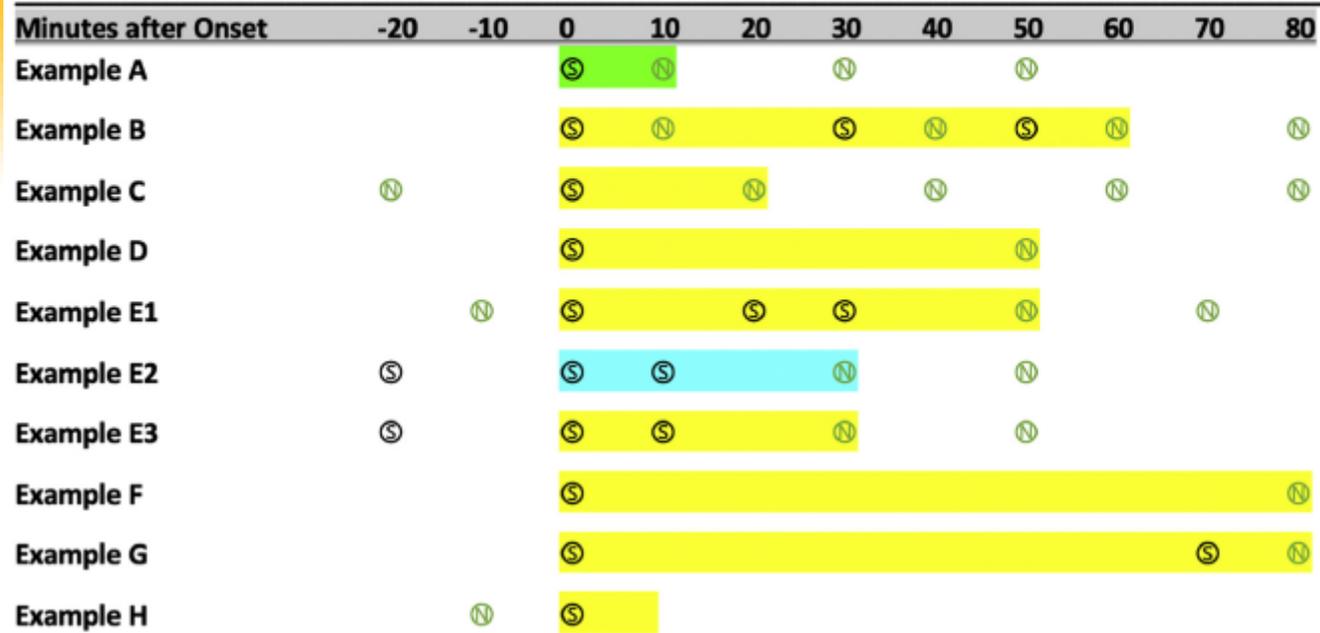


# “Persistent Episode”

- An episode should be considered persistent by default (and counted in the denominator) if the repeat measurement does not happen within 15 minutes of the initial severe range BP - *even if that first repeat measurement is normal.*
  - An episode would be persistent even if there is a normal BP measurement at 16 minutes.
- If there is a second severe range BP ***anytime*** in the 15-60 minutes following that first severe range BP, then the episode is persistent (and should be counted in denominator), even if there were normal intervening BPs.



**FIGURE 1**  
Examples of severe hypertension episodes



Notes:

Example A: SHTN episode, but not persistent SHTN

Example B: Multiple SHTN observations within 1 hour, none of them persisting more than 10 min

Example C: Persistent SHTN episode, resolved within 20 min

Example D: Persistent SHTN episode, resolved within 50 min

Example E1: Persistent SHTN episode

Example E2: Same observations as E1, shifted left by 20 min (the SHTN at 0 min in D1 is at minus 20 min in D2)

This is not an SHTN episode because the SHTN at 0 min is not the first consecutive SHTN observation.

Example E3: Same observations as E2, but the SHTN at minus 20 min was observed in emergency department.

Episode onset is defined as minute 0, the time of first SHTN on an obstetrical unit.

Example F: Persistent SHTN episode because there is no documentation of a non-SHTN blood pressure within 15 minutes of episode onset

Example G: Persistent SHTN episode

Example H: Patient Left Against Medical Advice at minute 10. This is a persistent SHTN episode because there is no documentation of a non-SHTN blood pressure within 15 min.



# The Numerator

Adequacy of treatment is measured 60 minutes from ***onset – so from that first severe range BP on obstetric unit.***

- Treatment should be considered appropriate if one of the three specific agents used (IV Labetelol; IV hydralazine; po Nifedipine)
  - Irrespective of whether or not the treatment was successful
- Any persistent HTN episode that resolves within 60 minutes should be considered appropriately treated (and be counted in numerator)
  - Even if medications were NOT administered



# Additional Notes

- All pregnant and postpartum patients should be included
  - Do not exclude patients with chronic hypertension
- Report by the patient, not by the instance
  - Only report the 1<sup>st</sup> instance of severe-range BP during admission
  - Each admission counts as one measurement period – “reset” the patient at the end of a hospital encounter
- Count transfers in/out based on occurrence at your facility (e.g., count timely treatment before being transferred to another facility; count timely treatment upon transfer to your facility)



# Discharge Codes

Additional cases for the denominator may be captured by searching for the ICD-10 discharge diagnosis codes:

- Severe preeclampsia: O14.10, O14.12, O14.13, O14.14, O14.15
- Severe hypertension: I16.0, I16.1, I16.9
- HELLP syndrome: O14.20, O14.22, O14.23, O14.24, O14.25
- Eclampsia: O15.00, O15.02, O15.03, O15.1, O15.2, O15.9
- Preexisting hypertension: O11.1, O11.2, O11.3, O11.4, O11.5, O11.9

**\*\*Best practice: identify denominator using BP, and not coding**



# FAQs

<b>Concern</b>	<b>Response</b>
An episode can be considered persistent even if there is only 1 severe HTN observation in the episode.	The burden of proof is on providers to document that the BP has declined to the non-severe range. Failure to recheck the BP promptly is a quality gap that should be tracked and acted on.
The metric should be based on the time after confirmed persistent severe HTN, not the time after the first observation of severe HTN.	A long delay in repeating the BP measurement would result in delayed treatment that would not be captured if the metric was based on the time after repeat BP.
The metric should be based on treatment within 30 min of episode onset, not 60 min.	The facilities are encouraged to adopt a stricter 30-minute standard for the numerator once they have achieved a reasonable rate using the 60-minute standard.
The metric should include all episodes of severe HTN, not just the first episode for each patient.	Basing the metric on first episodes was a compromise intended to decrease the administrative burden of ascertaining the data. Facilities that could automate ascertainment are encouraged to track all episodes. The assumption that timely treatment of a first episode correlates with timely treatment of all episodes should be tested.
Episode onset time should be based on the first severe HTN observation wherever it occurs, even if it occurs on non-obstetrical units.	Exclusion of outlying units was a compromise made because of difficulty in identifying obstetrical patients on those units and issues of interoperability of vital signs databases among different hospital units.

**P4. Numerator:** Among the denominator, birthing patients who were treated within 1 hour with IV Labetalol, IV Hydralazine, or PO Nifedipine (see ACOG CO #767). The 1 hour is measured from the first severe range BP reading, assuming confirmation of persistent elevation through a second reading. ⓘ

**P4. Denominator:** Birthing patients with acute-onset severe hypertension that persists for 15 minutes or more, including those with preeclampsia, gestational or chronic hypertension ⓘ

All Races

**Note:** If race/ethnicity-level data was not collected, leave the table fields below blank. If race/ethnicity-level data was collected and there were no denominator cases, populate both the numerator and denominator fields with 0.

Non-Hispanic  
Asian

Non-Hispanic  
Black

Hispanic

Non-Hispanic  
American Indian  
and Alaska Native

Non-Hispanic  
White

Non-Hispanic  
Other

Note that AIM Data Center will be updated with SMFM measure wording soon; please disregard if it still includes the old text descriptions for numerator and denominator!

# Data Submission Reminders

- Q3-2021 (Jul-Sep) data was due by October 31<sup>st</sup>
  - **Submit by December 15<sup>th</sup> to be included in Q3 benchmarking report**
- Q4-2021 (Oct-Dec) data is due by January 31<sup>st</sup>
- Q1-2022 (Jan-Mar) data is due by April 30<sup>th</sup>
- Q2-2022 (Apr-Jun) data is due by July 31<sup>st</sup>
- Hospitals are NOT submitting outcome measures



# Sample Report Output Using Meditech

Initial_BP_Systolic	Initial_BP_Diastolic	DateTime	DrugID	DrugName	ServiceDateTime	Drug_Diff_Minutes	2nd_BP_Systolic	2nd_BP_Diastolic	BP2_DateTime	BP2_DiffMinutes_From_Init	Drug_2nd_BP_DiffMinutes	3rd_BP_Systolic	3rd_BP_Diastolic	BP3_DateTime	BP3_D_Minutes_From_I
167	79	2021-01-15 14:30:00	HYDRAL	Apresoline	2021-01-15 14:38:00	8	168	80	2021-01-15 14:47:00	17	9	165	77	2021-01-15 15:00:00	
187	104	2021-01-18 19:41:00	HYDRAL	Apresoline	2021-01-18 19:43:00	2	163	95	2021-01-18 19:48:00	7	5	155	92	2021-01-18 19:51:00	
185	101	2021-01-18 23:21:00	HYDRAL	Apresoline	2021-01-18 23:22:00	1	191	98	2021-01-18 23:26:00	5	4	165	96	2021-01-18 23:31:00	
171	77	2021-01-19 15:02:00	HYDRAL	Apresoline	2021-01-19 15:26:00	24	169	77	2021-01-19 15:32:00	30	6	170	72	2021-01-19 15:42:00	
171	77	2021-01-19 15:02:00	HYDRAL	Apresoline	2021-01-19 15:27:00	25	169	77	2021-01-19 15:32:00	30	5	170	72	2021-01-19 15:42:00	
176	92	2021-01-20 20:54:00	HYDRAL	Apresoline	2021-01-20 20:59:00	5	171	93	2021-01-20 20:59:00	5	0	167	92	2021-01-20 21:04:00	
171	93	2021-01-20 20:59:00	HYDRAL	Apresoline	2021-01-20 20:59:00	0	167	92	2021-01-20 21:04:00	5	5	190	99	2021-01-20 21:09:00	
187	102	2021-01-22 1:37:00	HYDRAL	Apresoline	2021-01-22 1:45:00	8	156	76	2021-01-22 1:45:00	8	0	148	77	2021-01-22 1:50:00	
194	96	2021-01-23 10:27:00	RS-NIF10	Procardia *Restricted*	2021-01-23 10:28:00	1	200	92	2021-01-23 11:00:00	33	32	184	95	2021-01-23 11:04:00	
218	133	2021-02-19 8:33:00	LABET20IN	Trandate	2021-02-19 12:18:00	225	114	75	2021-02-19 13:09:00	276	51	127	76	2021-02-19 15:58:00	4
166	92	2021-03-04 7:20:00	HYDRAL	Apresoline	2021-03-04 12:57:00	337	137	88	2021-03-04 14:30:00	430	93	168	90	2021-03-04 16:30:00	5
166	92	2021-03-04 7:20:00	LABET20IN	Trandate	2021-03-04 12:58:00	338	137	88	2021-03-04 14:30:00	430	92	168	90	2021-03-04 16:30:00	5
166	92	2021-03-04 7:20:00	LABET20IN	Trandate	2021-03-04 13:48:00	388	137	88	2021-03-04 14:30:00	430	42	168	90	2021-03-04 16:30:00	5
163	84	2021-03-11 7:10:00	HYDRAL	Apresoline	2021-03-11 7:13:00	3	138	63	2021-03-11 7:15:00	5	2	140	66	2021-03-11 7:20:00	
169	91	2021-04-13 7:09:00	HYDRAL	Apresoline	2021-04-13 7:14:00	5	161	84	2021-04-13 7:14:00	5	0	161	80	2021-04-13 7:19:00	
161	84	2021-04-13 7:14:00	HYDRAL	Apresoline	2021-04-13 7:14:00	0	161	80	2021-04-13 7:19:00	5	5	157	86	2021-04-13 7:24:00	
168	73	2021-04-20 17:22:00	HYDRAL	Apresoline	2021-04-20 17:25:00	3	168	75	2021-04-20 17:32:00	10	7	157	67	2021-04-20 17:37:00	
161	92	2021-04-21 4:56:00	HYDRAL	Apresoline	2021-04-21 5:00:00	4	145	84	2021-04-21 5:01:00	5	1	154	85	2021-04-21 5:06:00	
163	79	2021-04-21 12:40:00	HYDRAL	Apresoline	2021-04-21 12:45:00	5	155	74	2021-04-21 12:50:00	10	5	155	75	2021-04-21 12:51:00	
172	87	2021-04-22 9:22:00	LABET20IN	Trandate	2021-04-22 10:10:00	274	122	65	2021-04-22 10:15:00	424	152	124	75	2021-04-22 10:25:00	7



# Discussion

1. What questions do you have about the measure?
2. What are your current barriers to reporting the measure?
3. What can we do help?



# Stay Connected



## For more information

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