Measure Abbreviation: BP 01

Data Collection Method: This measure is calculated based on data extracted from the electronic medical record combined with administrative data sources such as professional fee and discharge diagnoses data. This measure is explicitly not based on provider self-attestation.

Description: Percentage of cases where intraoperative hypotension (MAP < 55 mmHg) was sustained for less than 20 minutes.

Measure Time Period: Intraoperative. See ‘Other Measure Build Details’ for more information

Measure Type: Process

Measure Summary: BP 01 measures the cumulative time of Mean Arterial Pressure (MAP) <55mmHG for a given case and provider. BP 01 includes non-invasive and invasive blood pressure monitoring captured using automated and manually entered physiologic data.

Rationale: Intraoperative hypotension is associated with compromised organ perfusion and puts patients at risk for post-operative mortality, cardiac adverse events (CAEs), acute kidney injury, and stroke. Multiple studies have demonstrated the association of a decreased mean arterial pressure and postoperative morbidity and mortality. One retrospective review included 33,000 non-cardiac surgical patients and determined that a mean arterial pressure less than 55mmHG predicted CAEs and adverse renal-related outcomes (Walsh, et al). This was confirmed by a distinct investigation of 5000 patients using invasive blood pressure measurement (Sun et al).

Inclusions:
All patients requiring general anesthesia or monitored anesthesia care (MAC).

Exclusions:
- Patients < 18 years old
- ASA 5 and 6 cases
- Baseline MAP < 60 mmHG (Highest MAP documented in preop under MPOG concepts 71120, 70211, 70212)
- Daily Hospital Management for Epidural (CPT: 01996)
- Obstetric Non-Operative Procedures (CPT: 01958, 01960, 01967)
- Obstetric Non-Operative Procedures with procedure text: “Labor Epidural”
- Organ Harvest (CPT:01990)
- Cardiac surgery with pump and <1 year old (CPT: 00561)
- Cardiac surgery with pump and > 1 year old (CPT: 00562)
- Cardiac surgery with hypothermic arrest (CPT: 00563)
- CABG with pump (CPT: 00567)
- CABG without pump (CPT: 00566)
- Heart Transplant (CPT: 00580)
Liver Transplant Surgery (CPT: 00796, 47135)
Lung Transplant Surgery (CPT: 32851, 32852, 32853, 32855)
Unlisted Anesthesia Procedures (CPT: 01999)

MPOG Concept IDs Required:

<table>
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<tr>
<th>BP MPOG Concept IDs</th>
<th>3011 BP Sys Invasive Unspecified Site 1</th>
<th>3027 BP Dias Invasive Unspecified Site 4</th>
<th>3043 BP Mean Invasive Unspecified Site 2</th>
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<td>3012 BP Dias Invasive Unspecified Site 1</td>
<td>3028 BP Mean Invasive Unspecified Site 4</td>
<td>3046 BP Sys Invasive Unspecified Site 3</td>
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<td>3030 BP Sys Arterial Line (Invasive, Peripheral)</td>
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<td>3042 BP Dias Invasive Unspecified Site 2</td>
<td>3477 BP Mean Invasive Unspecified Site 5</td>
</tr>
</tbody>
</table>

Data Diagnostics Affected:
- Percentage of Physiologic Observations with a Meaningful Type Mapping
- Percentage of Cases with Invasive Blood Pressure
- Percentage of Cases with Non-invasive Blood Pressure
- Percentage of Cases with Physiologic Observations
- Percentage of Physiologic Rows that are Machine Captured
- Percentage of Cases with any Staff Tracking
- Percentage of Anesthesia Provider Sign-Ins that are Timed

Phenotypes Used:
- AnesthesiaEnd
- AnesthesiaStart
- AsaNotes
- DataCaptureEnd
- DataCaptureStart
- MpgCaseld
- PatientInRoom
- PatientOutOfRoom
- ProcedureText
- AgeinYears
- AnesthesiaLeftBound
- AnesthesiaRightBound
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- Asa5or6
- BaselineBloodPressureMean
- ProcedureTypeMri

Other Measure Build Details:

- Instances where there are two blood pressure monitoring methods, the higher MAP will be used to determine measure compliance.
- Artifact readings will be identified and removed from final measurement calculation. Artifact processing: if systolic and diastolic blood pressures are present, the values must be at least 5 mmHg apart; otherwise the values will be excluded. MAP values less than 10 are excluded.
- Each incidence of MAP <55 will attribute the responsible provider for a max of 5 minutes
- To determine how many minutes the last BP documented accounts for, the difference between the documented time of the BP and the “Measure End Time” algorithm is used (see page 3). As with the duration of other BPs, this duration is also capped at 5 minutes.

Algorithm for determining Measure Start/End Times:

**Measure Start Time:**
First Blood Pressure Reading after the latest of these 3 times:
1. First documented Anesthesia Start time.
2. First documented Patient in Room time.
3. First documented Data Capture Start time.

**Measure End Time:**
1. Patient Out of Room. If not available,
2. Data Capture End. If not available,
3. Anesthesia End.

Success:
- MAP <55mmHG that does not exceed cumulative time of 20 minutes OR
- MAP >55mmHG throughout case length.

Threshold: 90%.

**Responsible Provider:** All providers for a given case whose individual cumulative MAP < 55mmHG exceeds the 20 minute timeframe.

**Method for determining Responsible Provider:** BP 01 is calculated on a per provider basis so there may be multiple responsible providers per case. For example, if two anesthesiologists participated in a case and there were periods of hypotension when each provider was signed in, there would be two responsible providers noted. The case will populate the institutional flagged cases list once.

**Risk Adjustment (for outcome measures):**
Not applicable.

References:


