

## MEASURE TITLE

# ePreop31: Intraoperative Hypotension (IOH) Among Non-Emergent Noncardiac Surgical Cases

## MEASURE STEWARDS

### ePreop and Cleveland Clinic

## MEASURE DESCRIPTION

The Intraoperative Hypotension (IOH) Measure seeks to capture the percentage of general, neuraxial, or regional anesthesia care cases in which the mean arterial pressure (MAP) falls below 65 mmHg for a cumulative total of 15 minutes or more. Among adults having non-cardiac surgery, a MAP below 60–70 mmHg has been associated with increased risk of: (1) acute kidney injury (AKI), (2) myocardial injury (3) and mortality. The risk is a function of both hypotension severity and duration.<sup>1</sup> For example, patients are at an increased risk of acute kidney injury and myocardial injury when their cumulative time below a MAP of 65 mmHg reaches or exceeds 13 minutes. When patients fall further below this threshold (for example, a MAP below 55 mmHg), even shorter periods are associated with increased risk.<sup>2</sup>

## MEANINGFUL MEASURE AREA

### Patient Safety & Preventable Healthcare Harm

## MEASURE OVERVIEW

- The Intraoperative Hypotension (IOH) Measure evaluates the proportion of cases in which a patient's MAP is below 65 mmHg for 15 minutes or more, cumulatively over the course of the surgery.
- A lower overall measure score indicates less time spent under the specified MAP threshold.
- Providers are not expected to receive a score of zero on the measure, as some patients may have a MAP that falls below 65 mmHg for reasons outside of a provider's control.
- The IOH Measure is not intended to be a substitute for a provider's judgement around managing IOH for any given patient; for some patients, a provider may manage blood pressure using a higher or lower target MAP.
- The IOH Measure is reported through a Qualified Clinical Data Registry (QCDR) and uses Common Procedural Technology (CPT) codes, patient demographics and billing data to identify patients who are included in the IOH Measure's denominator.
- To report the IOH Measure, the reporting provider must submit electronic physiological monitoring data over the course of the surgery as monitored by an Anesthesia Information Management System (AIMS) or with vital signs automatically transferred from the monitor.
- Reporting providers who track blood pressure manually, or on paper, are not eligible to report the IOH Measure.

## INCLUSION CRITERIA

- Patients aged 18 years or older
- Non-emergency surgeries, including elective and urgent surgeries
- General, neuraxial, or regional anesthesia care
- American Society of Anesthesiologists (ASA) physical status classification of 2, 3 or 4

## EXCLUSION CRITERIA

- Patients with a baseline MAP below 65 mmHg
- American Society of Anesthesiologists (ASA) physical status classification of 1, 5 or 6
- Monitored anesthesia care (MAC)
- Induced hypotension cases
- Emergency surgery
- Cardiac surgery
- Obstetric non-operative procedures
- Liver or lung transplant
- Cataract surgery
- Non-invasive gastrointestinal (GI) cases
- Manual blood pressure tracking and measurement where vital signs are not automatically transferred from the monitor

## MEASURE LOGIC

### Unadjusted IOH Measure scores are calculated as follows:



#### NUMERATOR

Cases in which patients have a **MAP < 65 mmHg that exceeds the cumulative length of 15 minutes**



#### DENOMINATOR

All cases in which adults (age 18 and older) with inpatient non-emergent surgery require general, neuraxial, or regional anesthesia care

The IOH Measure is risk-adjusted to account for patient-level and case-level risk factors that affect the probability of IOH that are outside of an anesthesia provider's control. Variables incorporated into the risk adjustment model include the following:

- Age
- American Society of Anesthesiologists (ASA) physical status classification
- Body mass index
- Duration of surgery
- Gender

While there are numerous steps to calculating unadjusted and risk-adjusted measure scores, ePreop will work directly within your facility's electronic health records (EHR) system to manage objective data collection and score calculation. Ultimately, this Measure will help improve patient safety and care with reduced documentation burden for participating providers and anesthesia groups.

<sup>1</sup> Sessler, D., Bloomstone, J., Aronson, S., Berry, C., Gan, T., Kellum, J., Plumb, J., Mythen, M., Grocott, M., Edwards, M., Miller, T. (2019). Perioperative Quality initiative Consensus Statement on Intraoperative Blood Pressure, Risk and Outcome for Elective Surgery. *British Journal of Anesthesia*, 122 (5), 563-574.

<sup>2</sup> Salmasi, V., Maheshwari, K., Yang, G., Mascha, E.J., Singh, A., Sessler, D.I., & Kurz, A. (2017). Relationship between intraoperative hypotension, defined by either reduction from baseline or absolute thresholds, and acute kidney injury and myocardial injury. *Anesthesiology*, 126(1), 47-65.

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## To learn more about the Intraoperative Hypotension (IOH) Measure:

Visit: [provationmedical.com/ioh](https://provationmedical.com/ioh)