Predictive decision support.
Smart. Innovation.

Acumen Hypotension Prediction Index Software
Predicting hypotensive events

Innovation for proactive management of hypotensive events

Developed in partnership with clinicians across the world and the first in a new category of products, Acumen Hypotension Prediction Index software offers the only predictive monitoring parameter for hypotension that is available in the United States. This first-of-its-kind predictive decision support software detects the likelihood of a hypotensive event before the event occurs, and provides you with insights to understand the root cause and inform a potential course of action for your patient management.

Using the predictive index and continuously updated hemodynamic pressure and flow parameters, you are empowered with both knowledge and ability to take action before a hypotensive event occurs.

The risks of hypotensive events

In noncardiac surgery patients, research findings have revealed strong associations between intraoperative hypotension and elevated risk of both acute kidney injury (AKI) and myocardial injury after noncardiac surgery (MINS).1,2,3

- MINS — the most common cardiovascular complication that occurs after noncardiac surgery — is the leading cause of mortality within one month following surgery.1,4 It is a substantial public health issue.4
- More than 1 in 12 patients (8 million people globally) over 45 years old experience MINS each year.4,5

Once a patient’s mean arterial pressure (MAP) reaches 65 mmHg, it takes just 10 minutes of exposure to see higher associations between intraoperative hypotension and MINS.1

Once a patient’s MAP reaches 50 mmHg, it takes only one minute for the risk of MINS to increase significantly,1 making early identification of a hypotensive event critical.

* A hypotensive event is defined as MAP <65 mmHg for a duration of at least one minute.

The Acumen Hypotension Prediction Index software is comprised of three key elements

**HPI parameter**

The HPI parameter displays as a value ranging from 0 to 100, with higher values indicating higher likelihood of a hypotensive event.*

The proprietary algorithm — developed using data from almost 59,000 hypotensive events and over 144,000 non-hypotensive events — coupled with machine learning techniques detects potential hypotensive trending of a patient’s mean arterial pressure (MAP). The HPI parameter updates every 20 seconds, providing continuous insights into developing hypotensive events.

The diagnostic performance of the HPI parameter was assessed through clinical validation studies. The higher the value of the HPI parameter, the greater the likelihood of a hypotensive event will occur.

**HPI high alert popup**

The HPI high alert popup alerts you when your patient is trending toward or experiencing a hypotensive event.

If the HPI parameter value exceeds 85 for two consecutive 20-second updates or reaches 100 at any time, the HPI high alert popup window will appear, prompting you to review the patient hemodynamics using the HPI secondary screen.

**HPI secondary screen**

The advanced hemodynamic pressure and flow parameters provided on the HPI secondary screen allow you an opportunity to investigate and identify the root cause of potentially developing hypotensive events.

The HPI secondary screen is accessed through the HPI high alert popup, by touching the HPI Information Bar when enabled, by pressing the button on the HPI Key Parameter, or at any time through the Clinical Actions menu on the monitor.

**Preload: Stroke volume variation (SVV)**

- The percent difference between minimum and maximum SV during a respiratory cycle; serves as an accurate marker of position status on the Frank-Starling curve

**Contractility: dP/dt**

- A sensitive measure of changes in the contractility of the left ventricle

**Afterload: Dynamic arterial elastance (Ea_dyn)**

- The ratio of pulse pressure variation to stroke volume variation (PPV/SVV)

*Data on file
The Acumen IQ sensor: unlocking predictive decision support

The Acumen IQ sensor — developed from the legacy of the APCO algorithm — unlocks the Acumen Hypotension Prediction Index software.

The Acumen IQ system automatically updates advanced parameters every 20 seconds, reflecting rapid physiologic changes in moderate-to-high-risk surgery. The minimally invasive Acumen IQ sensor connects to any existing radial arterial line.

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Predictive decision support

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For more than 40 years, Edwards Lifesciences has been helping you make proactive clinical decisions in advancing the care of acutely ill patients across the continuum of care.

Through ongoing collaboration with clinicians, providing continuous education, and our dedication to purposeful innovation, Edwards continues to develop smart hemodynamic management solutions that enable proactive decision support.