

Predict
hypotension
sooner.* Act ahead
of time.^{1,2}

Acumen intelligent decision support suite

In a two-center retrospective analysis of patients undergoing major surgery, the Hypotension Prediction Index software demonstrated superior predictive ability than the commonly measured perioperative haemodynamic variables²

* Predictive performance of HPI is superior to that of CO, SV, MAP, PP, HR, SVV and Shock Index²



Edwards

Proactive patient insights for smart recovery

Haemodynamic insights can help guide you with proactive decision support across care settings so you can maintain optimal pressure and flow for your patients.

Risk of hypotension

Numerous studies show IOH is strongly associated with risk, especially myocardial injury, acute kidney injury and mortality.³⁻¹⁰ Acumen HPI software is effective in detecting haemodynamic instability and substantially reducing* intraoperative hypotension when used in surgical patients who require intraoperative haemodynamic monitoring during non-cardiac surgery.

* A single arm, multicentre, prospective-to-historical control where noncardiac surgical patients received arterial line monitoring.



IOH is common

88%* of noncardiac surgery patients (19,466/22,109) monitored with an arterial line experienced at least one hypotensive event* for at least 1 minute.¹¹

From a retrospective multicentre observational study that evaluated moderate-to-high risk (ASA status of 3 or 4) noncardiac surgery patients monitored for hypotension at hospitals that used an invasive arterial line $\geq 75\%$ of the time.

* Hypotension/hypotensive event was defined as MAP <65 mmHg for at least one minute.¹¹



IOH may elevate risk^{3,4,11}

Prolonged exposures below mean arterial pressure (MAP) thresholds of 65 mmHg are associated with increased risk of mortality, myocardial injury (MI) and Acute Kidney Injury (AKI) after noncardiac surgery.^{4,12}



IOH can be reduced

Acumen HPI software has demonstrated a reduction* in the duration of IOH by 57%.

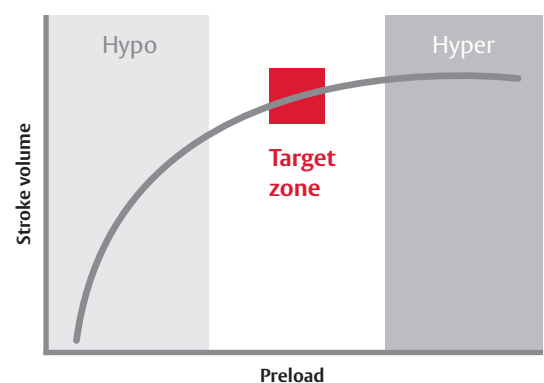
* Single arm, multicenter, prospective-to-historical control where non-cardiac surgical patients received arterial line monitoring.

Haemodynamic instability



Continuous access to pressure and flow parameters allow you to evaluate haemodynamic instability and guide appropriate treatment. The patient's location on the Frank-Starling curve can be determined by measuring changes in SV in response to change in preload using a fluid challenge or passive leg raise (PLR). Dynamic and flow-based parameters provide a comprehensive haemodynamic assessment and may help guide individualised fluid administration to avoid over and under resuscitation.^{13,14} When managing perfusion, stroke volume can be optimised using the patient's own Frank-Starling curve.

Frank-Starling relationship between preload and stroke volume (SV)



Acumen Hypotension Prediction Index (HPI) software

Studies have shown that Acumen HPI software:^{1,2,15,16}



Achieves statistically significant reduction of hypotension when combined with a treatment protocol in noncardiac surgery vs. standard of care.^{1,2,15,16}



Demonstrates accuracy to predict the likelihood of hypotension.^{1,2,15,16}



Demonstrates superior predictive abilities for hypotension than common haemodynamic parameters such as cardiac output (CO), stroke volume (SV), and changes in mean arterial pressure (MAP).^{1,2,15,16}

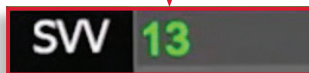
Key elements of Acumen HPI software



HPI parameter
Index value ranging from 0 to 100 with higher values indicating a higher likelihood of a hypotensive event* to occur.

HPI secondary screen

The advanced haemodynamic 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.



Preload: Stroke volume variation (SVV) or pulse pressure variation (PPV)**
The percent difference between minimum and maximum stroke volume (SV) or pulse pressure (PP) during a respiratory cycle. Note: SVV serves as an accurate marker of position status on the Frank-Starling curve.



Contractility: Systolic slope dP/dt
Maximum upslope of the arterial pressure waveform from a peripheral artery.



Afterload: Dynamic arterial elastance (Ea_{dyn})
The ratio of pulse pressure variation to stroke volume variation (PPV/SVV). It is an estimate of arterial elastance.

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

** ΔSV can be used when appropriate

Innovation for proactive management of hypotensive events*

Acumen IQ cuff and Acumen IQ sensor each have the capability to unlock the Acumen Hypotension Prediction Index (HPI) software, enabling you to choose the right device for your patient and clinical needs.

Acumen IQ cuff**

Acumen IQ cuff unlocks Acumen HPI software and provides continuous blood pressure and advanced haemodynamic parameters from a noninvasive cuff. Acumen IQ cuff gives you noninvasive access to calculated beat-to-beat haemodynamic information for a broad patient population, including patients in whom an arterial line would not be typically placed.¹⁷



Acumen IQ sensor***

Acumen IQ sensor attaches to any existing radial arterial line and automatically calculates key parameters every 20 seconds, reflecting rapid physiologic changes in moderate- to high-risk surgery. Advanced haemodynamic parameters provided by Acumen IQ sensor offer you continuous insight to more accurately determine your patient's haemodynamic status.



Advanced haemodynamic parameters provided by Acumen IQ cuff and Acumen IQ sensor:

- Hypotension Prediction Index (HPI)
- Systolic slope (dp/dt)
- Dynamic arterial elastance ($E_{a_{dyn}}$)
- Stroke volume (SV)
- Stroke volume variation (SVV)
- Mean arterial pressure (MAP)
- Cardiac index (CI)
- Cardiac output (CO)
- Systemic vascular resistance (SVR)
- Pulse pressure variation (PPV)
- Systemic arterial systolic blood pressure (SYS_{ART})
- Systemic arterial diastolic blood pressure (DIA_{ART})

Acumen HPI software, Acumen IQ cuff, and Acumen IQ sensor are all compatible with the HemoSphere monitor along with a range of other catheters and sensors.

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

** Surgical patient use only

*** Surgical and nonsurgical patient use

Acumen Analytics software

Are you interested in learning how much hypotension you have in your practice? Acumen Analytics software allows you to retrospectively view and analyse previous haemodynamic parameter data from the HemoSphere advanced monitoring platform all on your personal computer, highlighting events including:



Hypotension duration

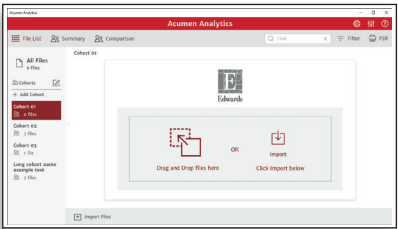


Hypotension frequency



Hypotension prevalence

Key features of Acumen Analytics software



Customisable viewing pane

With a streamlined tile layout, the main viewing page organises a list of all cases, cohort summaries, and cohort comparison for convenient overviews.



Trend parameters

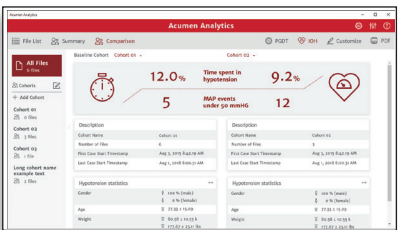
At the core of Acumen Analytics software is advanced haemodynamic parameter data. You can review recorded data on a number of valuable pressure and flow parameters, as well as tissue oxygen saturation that are involved in clinical decision making.

Hypotension Statistics	
Gender	♂ 100 % (male) ♀ 0 % (female)
Monitoring time per patient	⌕ 226.07 ± 174.3 [15.34, 271.33, 478.33]
Number of patients with hypotension	⌕ 10 of 10 100%
Total number of hypotensive events in dataset	⌕ 91 9.1 ± 8.28 [1, 8, 22.5]

Hypotension statistics

This case summary list provides statistics on key hypotensive calculations such as average number of hypotensive events,* duration of each event, number of patients in a cohort that experienced a hypotensive event.*

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



Cohort comparison

The cohort comparison screen allows you to retrospectively compare data from two cohorts. When viewing intraoperative hypotension data, key callouts include duration of hypotension and MAP events under 65 mmHg. The customisable cohort summary screen displays a summary of the data collected for the chosen patient or patient group.

Contact your sales rep if you are interested in this analytics tool.

Model No.	Description	Length (in)	Pack size
AIQCS	Acumen IQ cuff	Small	5
AIQCM	Acumen IQ cuff	Medium	5
AIQCL	Acumen IQ cuff	Large	5
AIQS8	Acumen IQ sensor	84 in / 213 cm	EA
AIQS85	Acumen IQ sensor	84 in / 213 cm	5
AIQS6	Acumen IQ sensor	60 in / 152 cm	EA
AIQS65	Acumen IQ sensor	60 in / 152 cm	5
AIQS6AZ	Acumen IQ sensor with VAMP adult system	60 in / 152 cm	EA
AIQS6AZ5	Acumen IQ sensor with VAMP adult system	60 in / 152 cm	5

Learn more on how you can stay ahead
of hypotension at edwards.com/gb/acumen



For more than 50 years, Edwards Lifesciences has been helping you make proactive clinical decisions and advance the care of surgical and acutely ill patients across the continuum of care.

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Medical device for professional use. For a listing of indications, contraindications, precautions, warnings, and potential adverse events, please refer to the Instructions for Use (consult eifu.edwards.com where applicable).

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