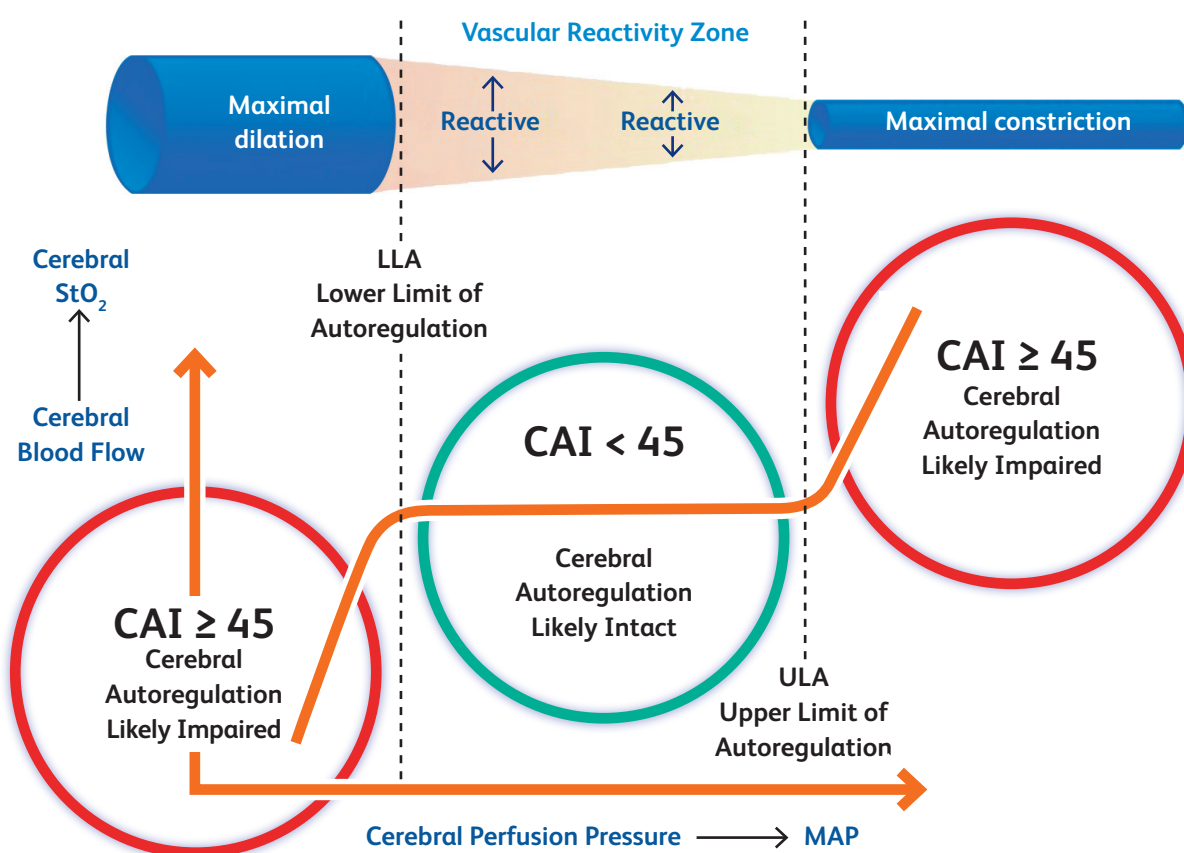


ForeSight IQ™ Cerebral Autoregulation Index (CAI)

Cerebral Autoregulation

Cerebral autoregulation protects brain health by maintaining cerebral perfusion pressure and oxygen delivery to the brain despite changes in blood pressure. This is achieved by vasoconstricting or dilating the brain's vasculature. The lower limit of cerebral autoregulation (LLA) and the upper limit of autoregulation (ULA) are traditionally reported in adults to occur at a mean arterial pressure (MAP) of approximately 50 and 150 mmHg, respectively. These limits can vary between individuals. Within these limits, cerebral autoregulation is intact and able to maintain cerebral perfusion. Outside these limits, cerebral perfusion tracks with blood pressure, potentially leading to hypo- or hyperperfusion and significant complications.



Introduction to Cerebral Autoregulation Index (CAI) Algorithm

CAI algorithm assists clinicians by providing a quantitative measure of the dynamic relationship between MAP and cerebral StO₂. Cerebral blood flow can be represented by cerebral StO₂ from ForeSight IQ™ Sensor and cerebral perfusion pressure (CPP) represented by MAP.

Accessing the CAI Algorithm

The CAI algorithm requires ForeSight IQ™ Sensors and ForeSight™ Oximeter Cable for cerebral StO₂ measurement, a BD invasive arterial transducer for MAP measurement, and the HemoSphere Alta™ Monitor.

CAI Required Equipment



Only available on HemoSphere Alta™ Monitor (ALTAALL1)



Any BD invasive arterial transducer (AIQS8)



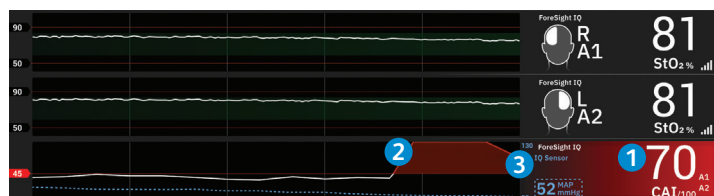
ForeSight™ Oximeter Cable (HEMFSM10)



ForeSight IQ™ Sensor(s) (FSMSLIQ)
Cerebral location on adults only

CAI Display on the HemoSphere Alta™ Monitor

CAI display provides a continuously updated CAI value that helps clinicians recognize when a patient's cerebral autoregulation may be compromised. By quantifying the coherence between Mean Arterial Pressure (MAP) and cerebral oxygen saturation (StO₂), the CAI trend line highlights when values cross clinically relevant thresholds.



- 1 The CAI value updates every 20 seconds and displays a value on a scale from 0 to 100. This value equates to the level of coherence between MAP and cerebral StO₂.
 - A high CAI value (CAI ≥ 45) means that MAP and cerebral StO₂ have greater coherence and informs the clinician that alterations in MAP may result in concomitant changes in cerebral StO₂, which may indicate that cerebral autoregulation is likely not intact.
 - Alternatively, a low CAI value (CAI < 45) means there is lower coherence likely reflecting an intact cerebral autoregulation.

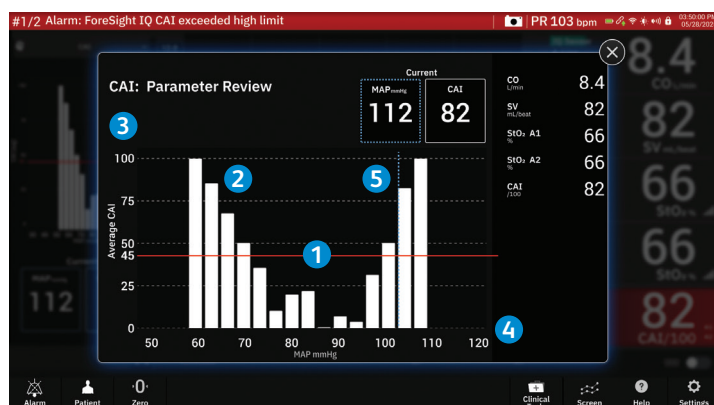
NOTE: CAI is not available in pediatric mode.

- 2 The CAI white trend line changes to red, with red shading, when the CAI value reaches the threshold of 45 or higher.
- 3 The MAP is represented by the blue dotted trend line, and the current MAP value is shown in the blue dotted box within the CAI parameter tile.

NOTE: CAI is informational only and is not indicated to be used for therapeutic decisions made solely on the Cerebral Autoregulation Index (CAI).

HemoSphere Alta™ Monitor CAI Histogram Plot

CAI histogram displays the distribution of CAI values over time, helping visualize the status of cerebral autoregulation over a range of pressures the patient has experienced.



- 1 **Threshold:** The CAI threshold of 45 is represented by a red line; values of 45 and above indicate that cerebral autoregulation is likely impaired, while values below 45 suggest that cerebral autoregulation is likely intact.
- 2 **Histogram Bars:** CAI histogram continuously updates every 20 seconds with each bar on the histogram showing previous CAI values with corresponding MAP values, providing a cumulative view to assess patient's cerebral autoregulation status.
- 3 **Y-axis:** CAI values range from 0 to 100.
- 4 **X-axis:** MAP values with each bar representing increments of 5 mmHg.
- 5 **MAP:** Blue dotted line represents current MAP value.

CAUTION

Inaccurate CAI values may be caused by:

- Inaccurate MAP measurements
- Inaccurate cerebral StO_2 measurements

The CAI parameter should not be used exclusively to treat patients. A review of all of the patient's haemodynamics is recommended prior to initiating treatment.

Summary

- The CAI value updates every 20 seconds and displays a value on a scale from 0 to 100
- A high CAI value ($\text{CAI} \geq 45$) means that MAP and StO_2 have a greater coherence and informs the clinician that alterations in MAP may result in concomitant changes in cerebral oxygen saturation – This may occur when autoregulation is not intact, and the patient has likely reached either the lower (LLA) or upper (ULA) limit of cerebral autoregulation
- A low CAI value ($\text{CAI} < 45$) means there is a lower level of coherence between the two parameters and therefore alterations in MAP may not result in concomitant changes in cerebral oxygen saturation – This may occur when autoregulation is intact, and the patient is likely between the lower (LLA) and upper (ULA) limit of cerebral autoregulation
- CAI requires a ForeSight IQ™ Sensor for cerebral StO_2 , a BD pressure transducer (TruWave™ Transducer, FloTrac™ Sensor or Acumen IQ™ Sensor) for arterial blood pressure and a HemoSphere Alta™ Monitor



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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