Description of Device:

The QFlow 500 Perfusion Monitoring System consists of the Bowman Perfusion Monitor® (BPM), an umbilical cord and a minimally invasive QFlow 500™ Perfusion Probe. The BPM provides real-time continuous perfusion, in absolute physiological units (ml/100g-min). The BPM is the only technology that provides continuous, quantitative perfusion measurements at the bedside.

QFlow 500™ Perfusion Probe:

The minimally invasive QFlow 500™ Perfusion Probe measures tissue blood flow in the spherical volume surrounding the distal tip of the probe. The approximate 1 mm diameter flexible probe can be inserted into any soft tissue at the site where quantitative knowledge of perfusion is desired.

Perfusion (CBF) – is measured in absolute physiological units of ml of blood per 100g of tissue per minute. Absolute CBF values permit determination of functional thresholds.
Integrating Absolute CBF Values with Other Brain Physiology: Multimodal Monitoring

**Impaired Autoregulation**
- CBF and ICP (CPP) permits determination of impaired autoregulation
- Brain injured patients with impaired autoregulation experience worse outcomes

**Cerebral Vascular Resistance (CVR)**
- CBF and ICP (CPP) permits determination of cerebral vascular resistance
- CVR = CPP/CBF; CVR has been shown to predict vasospasm 1 to 5 days before onset

Neurosurgeon OR: Applications of Perfusion (CBF) Monitored in the OR

- **Aneurysm Surgery**
  - Shows level of collateral CBF during Temporary Clipping and has been shown to predict the TAO clipping time to avoid infarct
- **EC/IC Bypass Surgery**
  - Shows change in CBF

Additional Features and Benefits Associated with Other Parameters

**Brain Temperature - T (ºC)**
- Thermal diffusion based CBF quantification includes continuous temperature
- Early detection of fever reduces risk of temperature related brain injury

**Thermal Conductivity - K (mw/cm-ºC)**
- Thermal diffusion based CBF includes tissue thermal conductivity determination
- Tissue thermal conductivity is a function of tissue water content
- Permits insight into brain water content and changing levels of tissue hydration

References: