

### **Auto-regulation in cerebral blood flow: How to optimize brain perfusion**

The brain perfusion is driven by blood volume being supplied to the brain as an organ over a period of time. Flow measured in volume per time is influenced by cardiac output and vascular resistance. During brain injury, cerebral auto-regulatory mechanism dictates the flow by self-constricting or self-dilating in an effort to maintain an adequate cerebral blood flow (CBF) regardless of the mean arterial blood pressure (MAP). Cerebral perfusion pressure is measured by MAP-ICP (intracranial pressure) and must be kept at a stable level in order to provide a normal brain cellular metabolism. In the event of ischemic, hemorrhagic or traumatic brain injury, this autoregulation may be impaired and the MAP may have a direct impact on CBF as the relationship becomes more linear. It is important intensivists to understand this concept in order to successfully resuscitate an injured brain.