Adequacy of Anesthesia

Anesthesia. It’s a word most commonly associated with surgery, something many of us have either experienced personally or through a friend or family member. But how does it work? What makes it effective, and what actually happens to the human body when under anesthetic agent?

The term anesthesia refers to the loss of sensation with or without loss of consciousness. When conducting invasive and often minimally invasive surgery, anesthetic gas, or agent, is delivered to the patient as they are breathing. There are three components of anesthesia: unconsciousness, immobility and pain management, or ‘antinociception’. All three elements can be tailored and optimized for the individual patient. This is a concept called ‘Adequacy of Anesthesia’™ or AoA.

Basics about anesthesia and AoA:

- **Unconsciousness** refers to the lack of awareness of the outside world. It is the component where the patient is asleep during general anesthesia.
- **Immobility** refers to the patient’s lack of motion. Complete immobility should be ensured to maintain a stable surgical field.
- **Antinociception** refers to inhibition of the nociceptive processing in the nervous system. Analgesia is the treatment to provide antinociception. This is most commonly understood as pain management.

The Adequacy of Anesthesia (AoA) concept signals GE Healthcare’s commitment to provide clinical measurements for the components required under general anesthesia. These measurements help clinicians deliver tailor-made anesthesia to the patient. By understanding AoA through calculations and measurements a patient can benefit by receiving the optimal amount of anesthetic agent.

GE Healthcare’s AoA Solution:

- **Unconsciousness**. Entropy is indicated for adult and pediatric patients older than 2 years within a hospital for monitoring the state of the brain by data acquisition of electroencephalograph (EEG) and frontal electromyograph (FEGM) signals. Response Entropy (RE) and State Entropy (SE) are processed EEG and FEMG variables. The device that produces these measurements is the E-Entropy Module.
- **Immobility**. Neuromuscular transmission (NMT) is the transfer of an impulse between a nerve and a muscle in the neuromuscular junction. GE Healthcare’s E-NMT Module provides quantitative, automatic measurements of muscle response to stimuli.
- **Antinociception**. The Surgical Pleth Index (SPI) is indicated for monitoring the patient’s responses to surgical stimuli and analgesic medications during general anesthesia. SPI is based on readily available pulse oximetry signals. They are pulse wave amplitude and pulse rate