

Smart Anaesthesia Monitoring: Why the Conox System is Redefining Depth of Anaesthesia Assessment

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Authors:

Dr. Sunny Alex, Professor and HOD,

Department of Anaesthesiology, Pain Medicine & Critical Care

KMCT Medical College, Kozhikode, Kerala

Email: sunnex76@hotmail.com Phone: 8129230676

Sir/Madam,

We read with great interest about recent advancements in anaesthesia monitoring technologies and would like to share our observations regarding the Conox Smart Anaesthesia Monitoring System. This non-invasive monitor employs advanced digital processing algorithms to assess both the hypnotic and analgesic components of anaesthesia through two validated indices — qCON (level of consciousness) and qNOX (probability of response to noxious stimuli).

Accurate monitoring of depth of anaesthesia remains a vital component of safe anaesthetic practice. Conventional parameters and single-index EEG systems often fail to capture the simultaneous dynamics of hypnosis and nociception. The Conox system addresses this gap by offering dual indices that provide real-time information on both cortical and subcortical activity.

The qCON index (range 0–99) reflects cortical activity and correlates well with hypnotic depth, with a target range of 40–60 for adequate anaesthesia. Studies have demonstrated that qCON is comparable to BIS in predicting propofol concentration, while offering greater signal stability and faster detection of state changes. The qNOX index, derived from EEG power spectral analysis, provides an estimate of nociceptive responsiveness. A qNOX value below 40 corresponds to a low likelihood of patient movement in response to surgical stimuli, even during variable anaesthetic conditions.

Clinical studies between 2012 and 2018 have validated these indices across different surgical and ICU settings. In comparative studies, Conox-guided anaesthesia has been shown to reduce propofol and opioid consumption, shorten recovery times, and potentially decrease postoperative opioid requirements. Moreover, its robustness in challenging scenarios — such as ketamine use or opioid-free anaesthesia with dexmedetomidine — enhances its clinical versatility.

Technically, the device's portability, Bluetooth connectivity, and single-use three-electrode sensor make it user-friendly and adaptable to operating theatres and critical care environments. Its rapid response time and superior stability further reinforce its clinical value.

In conclusion, the Conox system offers anaesthesiologists a reliable, non-invasive, and validated modality for balanced anaesthesia management, enabling optimized drug use and enhanced patient safety.

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