

Brainwave revelation helps recovery

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Recovery times from anesthesia may well be considerably lessened thanks to new fact finding from Swinburne University of Technology and the Australian-based biomedical company, Cortical Dynamics Ltd.

In a report issued in the medical journal *Anesthesiology*, Swinburne's Professor David Liley summarizes a new approach to analyzing brainwaves during anesthesia, enabling doctors a separate supervision of a patient's level of consciousness and analgesic state.

For now, doctors can use a variety of electroencephalogram (EEG)-based monitors to conclude if patients are sufficiently anesthetized throughout surgery. However, according to Liley, this approach can be complicated.

"EEG-based monitors have, over time, been very useful in operating theatres. However, their downfall is that they use arbitrary, rule-of-thumb determinations to analyses brain signals and translate them into something that tells us about consciousness."

"They are also unable to interpret the effect that analgesic agents – that is painkillers – have on brain activity," he said.

The functionality of Liley's world-first approach is that it will enable doctors to observe a person's consciousness and analgesic state independently of one another.

In his most recent study, Liley analyzed brainwave data furnished by his clinical associates in Europe. The input was from 45 patients who had been anaesthetized with propofol in the presence of varying levels of the synthetic opioid remifentanil.

"Using a physiologically motivated signal analysis method, we could detect the effects that the opioid had on the brain's electrical activity, independent of the effects of the propofol. This will enable us to come up with a method that will allow doctors to monitor hypnotic and analgesic states independently of one another," Liley said.

This procedure could lead to a lot of advantages for surgery patients. "Being able to optimize the delivery of anesthesia will not only reduce the incidence of intra-operative awareness, it will also improve the patient's recovery time and allow them to mobilize more quickly after an operation," Liley said.

"From a hospital's perspective it's also likely to save a considerable amount of money in terms of drug costs."