Adaptive brain-machine interface allows anesthesia control

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Technology description

Market Opportunity

Everyday, nearly 60,000 patients in the United States receive general anesthesia (GA). GA is currently administered manually. Manual administration, however, can lead to the inefficient use of intensive care unit (ICU) personnel, as a single nurse per shift could be solely dedicated to manually managing the anesthetic infusion rate for a single patient for several days. Manual administration can also lead to using more anesthetic than is necessary. This leaves the general anesthesia market, a market expected to be valued at $2 billion by 2020, with a large, unmet need. Technologies able to control a wide variety of anesthetics and adapt to varying drug dynamics must be developed.

USC Solution

USC researchers have developed a brain-machine interface (BMI) that can automate drug delivery with precision and enable more efficient control of anesthetics. This adaptive algorithm delivers a drug based on real-time feedback of a patient’ s EEG activity. The BMI takes the neural recordings and adjusts the drug infusion rate accordingly. This technology can be applied to a wide range of drugs.

Application area

Anesthesia management
Anesthesia delivery

Advantages

Control various types of anesthesia
Adapts in real-time
Reduces medical error
Allows for more efficient use of ICU

Institution

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