

ADAM

An outline of the features and potential of 'ADAM', a medical device for use during general anaesthesia and intensive care.

The background to the project identifies the need for such a device:

- The dose of general anaesthetic drugs required to produce safe, quickly reversible unconsciousness varies greatly between individual patients. Too little anaesthetic may result in accidental awareness and pain during the operation, with conscious recall and prolonged mental suffering. This is believed to occur in around one in two thousand anaesthetics.
- In the absence of any objective method of measurement, the anaesthetist has to rely on clinical evaluation and experience to judge the depth, and hence to decide the dose of anaesthetic to be delivered to the patient. Albeit well intentioned, anaesthetists tend to act cautiously and administer higher doses than may be necessary for many of the more sensitive patients.
- Each year, approximately 29 million patients in the United States and more than 35 million patients in Europe and Japan undergo surgical procedures. It is estimated that approximately 70% of these surgical patients in the United States, or 20 million patients, receive general anaesthesia or deep sedation monitored by an anaesthesia provider.
- The need therefore exists for a patient monitor to measure anaesthetic depth to support clinical decision making, to match the established, reliable monitoring of other body systems, which are mandatory during surgery and intensive care. ADAM meets this need.

Anaesthetists will be able to utilise ADAM's real-time, on-line depth of anaesthesia monitoring to support clinical management decisions. ADAM's proprietary technology is based on core software algorithms, which runs on standard PC architecture (Windows etc) and functions with different anaesthetic techniques and agents. ADAM may be a stand-alone monitor, or may be integrated in existing patient monitoring systems.

ADAM measures depth of anaesthesia by real-time analysis of electrical brain activity (electroencephalogram {EEG} waveform signals), acquired via scalp electrodes connected via an interface to the computer. The ADAM system has been trained to recognise and interpret EEG patterns, from which the depth of anaesthesia may be deduced. The information is updated every ten seconds on a continuous trend display, in a manner that is easily understood and assimilated at a glance.

Enhanced, informed control of the depth of anaesthesia has attractions for patients, anaesthetists, and healthcare managers:

- reduced risk of accidental awareness (consciousness) during surgery under general anaesthesia;
- faster wake-up from anaesthesia;

- less patient time in the operating room and post-anaesthesia care unit after surgery;
- improvements in the quality of recovery.

ADAM has additional potential as an early indicator of brain deterioration during general anaesthesia or intensive care, these being circumstances in which the usual clinical signs and measures are masked by the drug induced unconsciousness and paralysis.

ADAM has completed successful clinical validation trials at successive stages of development, and now only requires final refinement and confirmatory clinical trials aimed at developing the marketable version of ADAM. There is also a defined upgrade path, with further options for the future versions.

ADAM has considerable commercial potential and that the market is ripe for such a device due to clinical need and increasing litigation. ADAM has been developed over more than a decade by a team that is fully committed to the implementation and further enhancement of the device.

For more information please contact:

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