Artificial Intelligence Enabled Control of Hemodynamics and Anesthesia in Surgery Patients

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INVENTORS

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OTHER INFORMATION

KEYWORDS

Anesthesiology, Hemodynamics, Surgery, Surgeons, anesthetic, automated

CATEGORIZED AS

- **Medical**
  - Software

RELATED CASES

2020-410-0

SUMMARY

UCLAresearchers from the Department of Mechanical and Aerospace Engineering and the Department of Anesthesiology have developed a method for artificial intelligence guided control of anesthetics and other medications during surgery and in the Intensive Care Unit (ICU).

BACKGROUND

The management of patient hemodynamics during surgery and in the Intensive Care Unit (ICU) is a delicate and complex process that involves multiple trained medical professionals to ensure optimal patient outcomes. Typically, surgeries and ICUs require a trained anesthesiologist or critical care physician to monitor a patient's physiologic condition and give the proper dosage of medications at the correct time. However, this can be a strenuous process as dosages are patient-specific, thus requiring them to be constantly monitored and adjusted. As such, there is a need to help relieve some of the burden on these professionals with the development of technology that can help monitor and dose the ideal amount of medication for each patient.

INNOVATION

UCLA researchers have developed a method that analyzes data from patients undergoing surgery and treatment in the ICU and provides information regarding the optimal dosage of medications. By automating this process, anesthesiologists and critical care physicians can instead focus on other vital tasks and ensure better patient outcomes. In testing, this method has been proven to be able to adjust automatically to constantly changing factors and correctly respond to changes in patient conditions.

APPLICATIONS

- Surgical procedures
- Dose responses for non-surgical patients
- Intensive Care Unit (ICU)

ADVANTAGES

- Automated adjustments
- Works with current technology
- Faster responses to fluctuations

STATE OF DEVELOPMENT

A method has been developed and computationally tested.

RELATED MATERIALS

- Pantuck, A. J.; Lee, D.-K.; Kee, T.; Wang, P.; Lakhotia, S.; Silverman, M. H.; Mathis, C.; Drakaki, A.; Belldegrun, A. S.; Ho, C.-M.; Ho, D. Modulating BET Bromodomain Inhibitor ZEN-3694 and Enzalutamide Combination Dosing in a Metastatic Prostate Cancer Patient Using CURATE.AI, an Artificial Intelligence Platform. Advanced Therapeutics 2018, 1 (6), 1800104.
- Zarrinpar, A.; Lee, D.-K.; Silva, A.; Datta, N.; Kee, T.; Eriksen, C.; Weigle, K.; Agopian, V.; Kaldas, F.; Farmer, D.; Wang, S. E.; Busuttil, R.; Ho, C.-M.; Ho, D. Individualizing Liver Transplant Immunosuppression Using a Phenotypic Personalized Medicine Platform. Science Translational Medicine 2016, 8 (333).

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Reference for National Filings	WO 2021/092057	05/14/2021	2020-410

Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- A Controllable and Robust Cell-Free System for Fatty Acids Production

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