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Letter to Editor

The Need to Expand Smart Software in Anesthesia Management

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Nowadays, the use of software in the field of healthcare is considered a necessary option. Many of the equipment in medical centers and clinics that are controlled by this software is used in cases such as monitoring vital signs, being aware of the side effects of drugs, or even choosing the appropriate dose of the patient's medication. The software used in medicine can be used with the help of other existing technologies such as clinical health information technology (IT), clinical decision systems (CDS), electronic medical record review system (EMRs), and telemedicine, or even alone. be placed [1-2]. Currently, many routine medical care procedures are performed by software-based devices. Also, collecting information and analyzing it with the help of this software has been able to help reduce treatment errors to a great extent and prevent the re-hospitalization of the patient and the imposition of additional costs on the patient and the health system [3-4].

General anesthesia is considered one of the most important controlled steps before surgery, which can be done in the form of inhalation anesthetics or, in other cases, intravenous anesthesia. The performance of all drugs used for anesthesia is not the same, and some of these drugs can keep the patient in a state of forgetfulness, reversible hypnosis, loss of reflexes to stimuli, and muscle numbness [5]. The process of anesthetizing the patient is carried out by an anesthesiologist under his constant supervision, and this specialist is responsible for accurately tracking the patient's physiological signals and using the most suitable dose of medicine. Since the clinical conditions of the patients are different from each other, the anesthesia process is considered a stressful and stressful process for the anesthesiologist. Any error in the anesthesia process may cause problems such as the use of too little or too much medicine and the patient's clinical condition may undergo complex changes. With the help of anesthesia automation, it is possible for the anesthesiologist to only monitor the anesthesia process, and many routine tasks such as calculating and adjusting the drug dose are done by automatic systems.

In a study, a group of neuroscience researchers, doctors, and engineers examined the continuous automation of anesthesia. With the help of reinforcement learning technology, the software learned to automatically select the dose of drugs and evaluate their performance. This research showed that the more complex the simulations and adjusted based on the patient's physiology, the better the performance compared to traditional software. Also, this software corresponded with the performance of anesthesiologists in surgeries where anesthesia was performed without the use of the software.

Despite the advantages of using software in anesthesia, there are still many challenges that need to be investigated and addressed. For example, it is possible to mention the fixing of defects caused by the time interval of devices such as pulse oximeters, capnograph, or electrocardiograms or unclear warning of the devices used [6]. Usually, when such problems occur, the specialist's attention is diverted from monitoring the

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patient's clinical symptoms and only solving the technical problems that have arisen. In addition, some problems such as inaccuracy in the proper design of software or user interfaces can also lead to unfortunate consequences such as injury to the patient [7-8].

Considering the mentioned challenges, we suggest that more reports on the progress of anesthesia devices and equipment, as well as software related to the anesthesia process, be published and the initiatives taken in this field be supported. These reports, focusing on software and hardware equipment, can be compiled and published similar to the information provided by centers such as eopinions.com or information from databases such as Consumer Reports and specialized magazines active in the field of personal computers.

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