



Use of Smartphone in Modern Anesthesia and Critical Care

Dear Editor,

Mobile internet connectivity through smartphone technology has helped keep people connected. Healthcare-related applications provide valuable facts and have added a new dimension to knowledge sharing. With the availability of new cheap smartphones and good internet services, the number of social media application and mobile medical applications has dramatically increased over the past few years. We are practicing in an exciting time for technology and innovation to impact the way we care for patients.¹ The use of smartphones in today's healthcare arena means that anesthetists and intensivists can have instantaneous access to a wealth of information including drug information such as its dosage, uses, side effects, and complications; clinical references; educational materials; and recent medical journals and trails and different applications for easy calculations of different clinical scores. These small, handy technological devices have provided unique opportunities for use in medicine, especially in the field of anesthesia and critical care.²

Healthcare-related applications provide valuable facts in different hospital settings, including the perioperative and intensive care unit environment. Information regarding medications, symptoms of diseases, diagnosis, and dosage calculators are readily available at the fingertips. In addition, these apps help care professionals with tasks such as time management, health record maintenance and access, communications, consulting, monitoring, medical education, and training.

While it is easy to see why medical apps are popular among healthcare professionals (HCPs), the issue of reliability and quality remains. In many of the healthcare-related applications, there was no information received from HCP during the development, leaving expert medical input lacking in many cases; moreover, limitations such as airway assessment were an issue.

The boosting prevalence of healthcare-related smartphone technology generates a constantly increasing worldwide interest. Anesthesiology, as a profession, has been one of the first to adopt new technologies. In addition to the general medicine application, there are applications relating to anesthesia in particular. There are many mobile applications to choose from, each contributing to the various responsibilities of an anesthesiologist. The various apps in anesthesiology and critical care are drug calculation app, medical calculator apps, and drug reference apps. Interestingly, these apps have found their way among the pediatric age group as well. In a study among Korean children undergoing surgery, behavioral

intervention program with a smartphone application was used as an alternative to premedication with a positive effect. This may allow the use of premedication at a low dose, if not getting rid of it all together in the future.

Technology has affected all aspects of our lives, and intensive care medicine is no different from it. This technology revolution has led to the development of many apps that are used by both patients and doctors. We can now have access to a variety of applications. While all of them are not backed by scientific evidence, there are others that have improved healthcare system in various ways. These applications are extremely useful for prognostic indexes, formula related to analytical values, and infusion dose titration. Some popular apps include MDCalc, MedCalc, and MedCalc IX. All-in-one Apps are another set of applications which are widely used such as MedScape, Epocrates, Omnio, and iDoctus. These apps have numerous functions such as medication guides, different algorithms for therapeutic and diagnostic purpose, disease index calculators, and so on. Sepsis clinical guide is another application which provides clinical information and tools used in the diagnosis and management of sepsis and septic shocks. It is updated with definitions from the third conference on sepsis,³ has a new quick-SOFA index for the rapid evaluation of sepsis, treatment measures from the Surviving Sepsis Campaign, and results from the different well-known trials such as ARISE, ProCESS, and ProMISE. This app is designed to be used by physicians and other healthcare providers managing critically ill patients. Recently available innovative apps evolved that offer real-time visualizations of patient's vital signs through smartphones. One can turn the phone into one point-of-care ultrasound system. There are yet other apps that digitalize blood pressure curves. Applications such as MEDSCAPE and UPTODATE are very useful for getting instantaneous information regarding dosing and drug interactions and basic medical pathology and mechanism of the disease.⁴

Despite the fact that software programmers come with a number of processes and debuggers, the risks of malfunctioning, errors, etc., are a reality. This can be a vital risk for patients, as one study on apps for the resuscitation of burn-injured patients confirmed, where 13 out of the 32 apps analyzed showed errors in the estimation of fluid therapy with respect to the total body surface area burned,⁵ so risk and benefit has to judge on an individual basis. In context to airway application, the simplicity of the application in determining airway difficulty directly limits the clinical utility of the application. The lack of patient security protocols that abide by the Health Insurance

Portability and Accountability Act and the electronic transfer of patient information in an unsecured manner also makes this application of limited use in a real-world healthcare setting.

To conclude, the year 2019 has brought numerous useful applications for anesthetists and intensivists which are user-friendly and help us improve patient care with latest and updated data. The potential for apps to improve the practice of medicine at the point of care has earned the nickname of “Pocket Brain.”²

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Conflicts of interest

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