Editorial

Information technology in operating room: yes or no?

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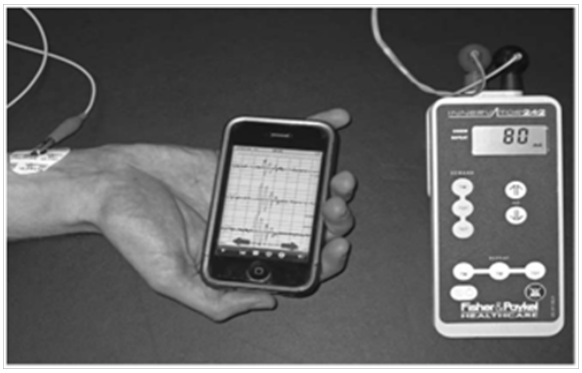
Advancements in the technology made a big impact on the way modern society functions and the integration of mHealth is now an accepted part of health-care delivery. The practical use of personal electronic devices (PED) has transformed communications, the financial sector and entertainment and now mobile technology is on its way to innovate healthcare delivery and the quality of the patient's experience. The 'anytime anywhere' access makes it an useful tool as it can allow us rapid access to patient record, treatment protocol and also affords opportunities to quickly refer medical texts, operate clinical calculators, acquire treatment guidelines and obtain other information pertinent to patient care.[1]

While surfing on net, hundreds of "Anesthesia apps" for an anesthesiologist are available in which some are targeted specifically for anesthesiologist in which some are available for free while others are paid. Various applications useful to an anesthesiologist are Anesthesia central, Anesthesia 411, Vargo anesthesia etc. Anesthesia Central is a must have app for every anesthesiologist and critical care physicians where there is comprehensive collection of disease, drug, procedure, and literature, ideal for treating patients perioperatively and is organized in a quick-read format so we can quickly find answers. Anesthesia 411 is an anesthesia guide for about 125 common surgical procedures. Vargo anesthesia app provides tips regarding anesthetic management of various cases. Each case goes through summary of procedure, preparations, anesthetics, concerns, positioning, duration, possible complications and contraindications.

International Anesthesia Research Society (IARS) launched Open Anesthesia, a self study app for anesthesiology residents, CRNAs (certified registered nurse anaesthetists) and physicians to improve their knowledge. This app developed by Amphetamobile, which is specialized in delivery of mobile content and education, offers numerous multimedia sections with podcasts, TEE of the month, Article of the month, Video summaries of issues of Anesthesia and Analgesia and Virtual Rounds in Obstetric anesthesia as well as editable medical content in anesthesiology on medical WIKI.

One particularly innovative use of the device involves the use of the accelerometer built into the iPhone.[2] Train-of-four ratio technique, is the best to measure maintenance of and reversal from neuromuscular blockade, which requires a nerve stimulator and a device to measure the force generated, such as an accelerometer.[3] By combining the built in accelerometer in the i Phone along with the iSeismology app (as shown in Figure), anesthesiologist have an alternative way of measuring the TOF ratio as well.[2]

The ease of access comes at a cost. The technology of standard text message does not meet the standards and rules for privacy and security required by the Health Insurance Portability and Accountability Act (HIPAA), the Health Information Technology for Economic and Clinical Health (HITECH) Act, and the Joint Commission.[5,6] Even though the degree to which mobile and PEDs have become fixture in our daily lives, the days are not far enough to say "DO NOT USE MOBILE or PED IN THE OR SWITCHED OFF MOBILE IN THE OR" because of the following drawbacks associated with it's usage in the OR.



i. Devices are the source of cross contamination. Jeske et al.[7] found that even though 40 anesthesiologists used hand sanitizer, there was easy transmission of pathogens from hand to device and vice versa as most personal mobile devices had critical pathogens on them over the course of time.[7] R I Badr et al.,[8] enrolled 32 staff members (12, 8 and 12 were neurosurgeons, anesthetists and nurses respectively) to determine the potential role of mobile phones in harboring microorganisms and to evaluate it in transmission of microorganisms from the mobile phone to the hand of health care personnel in their study. After disinfecting their hands using an alcohol based hand rub, culture was taken from their fingers of both hands. Then, a short phone call from their personal mobile phones was asked to do by them. Repeated sampling was done from each participant's mobile phone and the hand used to make the call. No growth was detected following the hand rub. The increased rate of bacterial contamination to 30⁄32 (93.7%) on the hands after the use of a mobile phones which was same as that found from the mobile phones (93.7%).[8]

ii. The mobile signals can interfere with the medical devices. Radiation emitted by the phones causes the medical equipment

to become a radio-receiver. An increase in the baseline 'noise', display of incorrect values, change in the alarm settings in monitors, interference with myopotentials in electroencephalographic (EEG) and electrocardiographic (ECG) machines, Reading of implantable pacemakers, input signals of defibrillators and decrease in the cutting power of electrocautery have been reported. The maximum distance at which the phones cause interference has been reported as two meters and phones closer than 88 cms created the maximum interference.[9] Many authors suggest using the mobile three feet away from a medical equipment to prevent interference with it's usage.[10,11]

iii. Social distraction. Non essential distractions like texting, surfing the internet, social media and personal cell phone conversation or playing video games may create a negative perception in the other OR team member that anesthetist was not providing attention to the patient. From preferred physician medicals (PPM) vantage point as a medical professional liability insurance company, any distraction in the operating room can jeopardize patient safety and can negatively impact PPM's ability to successfully defend malpractice law suits. The internet use in OR is trackable, is monitored by most of the health institutions and may be discoverable in the court.[12,13]

iv. Breech of the patient privacy : It is ill legal if one OR personnel post protected health information (PHI), videos or photographs of surgical patients on blogs, discussion boards, or social media sites or share information through email or texting and may result either in major HIPPA fine or imprisonment waiting for an anesthesiologist.[5,6]

Inspite of having significant positive effect of IT on anesthesia practice, remember to maintain our vigilance is must. Regarding internet and network use, we must also become involved in local policy to prevent loss of benefits of IT and indeed all clinicians should realize their responsibility in this account.. Establishing policies and practices for the use of mobile information technology (MIT) in the OR, Association of Surgical Technologists (AST) developed the subsequent Standards to support healthcare delivery organizations (HDO), which are approved on October 10, 2015.[14]

a. Cleaning and disinfection of mobile devices must be done properly prior to being brought into the OR or other critical care unit, e.g. preoperative room or Post Anesthesia Care Unit. It should be done on routine basis as well. Before and after the use of a mobile device, strict hand hygiene by OR personnel should be practiced, particularly if he/she will be providing patient care.

b. Using the mobile devices for personal or non-critical care reasons, zones or areas with Wi-Fi hotspots should be established by HDOs.

c. Using cell phone either directly or wireless headset by OR personnel should never be done during perioperative care of the patient.

d. In the presence of critical care or life support medical equipment, OR personnel should turn off mobile devices to prevent interference with the functioning of the equipment.

e. OR personnel have the duty to responsibly use MIT without violating patient confidentiality, protected health information, and state and federal patient privacy laws.

f. To coordinate the effective care of surgical patients, OR personnel should use email and smart phones in an efficient and professional manner

g. Certified Surgical Technologists (CSTs) should complete continuing education regarding HIPAA regulations and the risks associated with the use of mobile devices.

Anesthesiologists are well-advised to consider using information technology carefully in (and around) their practice works and what risks are involved. In advance of problems occurring, planning should be done. We must recognize our role in determining appropriate use of information technology in OR as medical professionals.

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