Decision support systems may improve quality of patient surgical care

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Physician anesthesiologists are constantly striving to improve the quality of surgical care and postoperative outcomes for patients. Integrating the various sources of patient medical data they are faced with during surgery into a single dashboard view to help guide decisions during anesthesia may be one way to improve intraoperative care. New research published in the February issue of *Anesthesiology*, the peer-reviewed journal of the American Society of Anesthesiologists (ASA), illustrates how physician anesthesiologists are investigating the challenges and opportunities of integrating patient data, to aid clinicians in patient management, through clinical decision support technologies.

A study of 26,769 patients, by Sachin Kheterpal, M.D., M.B.A., and colleagues, examined a novel operating room (O.R.) software system that integrates various sources of patient data in real-time into a single dashboard view. The system provides a "live" schematic organ system view of the patient equipped with beating heart and breathing lungs. It also includes digital text and audible alerts notifying physicians when a patient's blood pressure is dangerously low. Use of the decision support system by physician anesthesiologists was shown to meaningfully improve management of lung ventilation in patients during surgery. However, use of the system was not associated with improvements in postoperative outcomes, such as complications or length of hospital stay.

"Physician anesthesiologists generally need to be aware of 40 different patient data streams at one time during surgery, including blood pressure, ventilation and heart rate. Just as in an airplane cockpit, these

dozens of different data streams need to be integrated effectively to make important decisions. Unfortunately, this remains a challenge with most electronic health records," said Dr. Kheterpal, lead author and associate professor of anesthesiology at the University of Michigan Medical School in Ann Arbor, Michigan. "However, a decision support and visualization system such as the one we tested can do this in real time, allowing the physician to be more systematic and contextually aware in the challenging O.R. environment."

In an accompanying editorial, Daniel Sessler, M.D., at the Cleveland Clinic in Ohio, emphasized the importance of formally validating decision support systems on clinical outcomes before making them mainstream. "My concern is that decision support systems in development may easily include a hundred or more alerts," Dr. Sessler wrote. "Presumably many will be helpful, but others may not. It would, therefore, seem reasonable to expect most decision support systems and alerts to undergo formal testing, just as we would expect any drug or other device to be properly validated. I congratulate Kheterpal et al. on formally testing their system."

In a second editorial, Gail H. Javitt, J.D., M.P.H., a member of the Health Care and Life Sciences practice in the Washington, D.C. office of the law firm Epstein Becker Green, wrote "These technologies encompass a wide range of clinical settings and in the foreseeable future may extend to virtually every facet of clinical care." She noted there is limited data currently available on how clinical decision support systems affect patient postoperative outcomes. The editorial focused on the regulatory landscape for clinical decision support systems, emphasizing the current and potential future role of the U.S. Food and Drug Administration (FDA).

Provided by American Society of Anesthesiologists

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