

## **Introducing computerized alert systems into clinical practice in the OR and ICU.**

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Computerized clinical decision support systems increase the value of electronic medical records by linking knowledge and patient data to generate alerts and reminders. These tools can enhance human vigilance, prevent infrequent but predictable slips and errors, and improve patient safety. With the advent of commercial products that allow users to create customized alerts, experience with decision support systems in anesthesia and perioperative medicine will grow.

We currently use a commercially available tool (Event Manager, Metavision, iMDSOft, Israel) to follow and alert clinical staff of various physiological parameters and combinations of physiological data with diagnostic and drug order data. The Event Manager is available in both the Anesthesia Information Management System (MVOR, iMDSOft) and the Clinical Information System for Intensive Care Units (MVICU, iMDSOft). We describe how the Event Manager is programmed, illustrated with examples from the OR and ICU.

These include administrative reminders during anesthesia and an alert for the detection of separation from cardiopulmonary bypass during cardiac surgery triggering a 'turn-on alarms' message. In the ICU examples of these 'events' include an alert for a low potassium value, an alert for persistent decrease in oxygen saturation that does not trigger the conventional monitor's alarm, an alert for performing a chest x-ray following central line placement, anticoagulants following trauma, institution of thyroid replacement therapy in hypothyroidism, administration of corticosteroids in sepsis. Other nursing-related events include Glasgow Coma Scale determination after admission, the Norton scale for the prevention of pressure sores, and a reminder for IV line set changes every 96 hours.

Challenges include appropriate selection of events, the requirement for a rich source of clinical data, the need for ongoing rule maintenance and updating, the problem of time delay for critical intraoperative events, the risk of alert overload, the need for outcome measurement, and the necessity for clinician involvement in the selection, design and implementation of these 'events'.