False Alarms and Sensitivity of Conventional Pulse Oximetry versus the Masimo SET Technology in the Pediatric Postanesthesia Care Unit.

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We compared the incidence and duration of false alarms (FA)and the sensitivity of conventional pulse oximetry (CPO) with Masimo Signal Extraction Technology (Masimo SET; Masimo Corporation, Irvine, CA) in children in the postanesthesia care unit.

Disposable oximeter sensors were placed on separate digits of one extremity. Computerized acquisition of synchronous data included electrocardiograph heart rate, SpO2, and pulse rate via CPO and Masimo SET. Patient motion, respiratory, and other events were simultaneously documented. SpO2 tracings conflicting with clinical observations and/or documented events were considered false. These were defined as 1) Data dropout, complete interruption in SpO2 data; 2) False negative, failure to detect SpO2 </= 90% detected by another device or based on observation/intervention; 3) FA, SpO2 </= 90% considered artifactual; and 4) True alarm (TA), SpO2 </= 90% considered valid. Seventy-five children were monitored for 35 +/- 22 min/patient (42 h total).

There were 27 TAs, all of which were identified by Masimo SET and only 16 (59%) were identified by CPO ($P < 0.05$). There was twice the number of FAs with CPO (10 vs 4 Masimo SET; $P < 0.05$). The incidence and duration of data dropouts were similar between Masimo SET and CPO. Masimo SET reduced the incidence and duration of FAs and identified a more frequent incidence of TAs compared with CPO.

Implications: Pulse oximetry that incorporates Masimo Signal Extraction Technology (Masimo Corporation, Irvine, CA) may offer an advantage over conventional pulse oximetry by reducing the incidence of false alarms while identifying a higher number of true alarms in children in the postanesthesia care unit.