Improving patient safety and clinician workflow in the general care setting with enhanced surveillance monitoring.

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Clinical monitoring systems have been implemented in the inpatient hospital setting for decades, with little attention given to systems analysis or assessment of impact on clinician workflow or patient care. This study provides an example of how system-level design and analysis can be applied in this domain, with specific focus on early detection of patient deterioration to mitigate failure to rescue events. Wireless patient sensors and pulse oximetry-based surveillance system monitors with advanced display and information systems capabilities were introduced to 71 general care beds in two units. Nursing workflow was redesigned to integrate use of the new system and its features into patient assessment activities. Patient characteristics, vital sign documentation, monitor alarm, workflow, and system utilization data were collected and analyzed for the period five months before and five months after implementation. Comparison unit data were also collected and analyzed for the same periods. A survey pertaining to staff satisfaction and system performance was administered after implementation. Statistical analysis was performed to examine differences in the before and after data for the target and control units. The enhanced monitoring system received high staff satisfaction ratings and significantly improved key clinical elements related to early recognition of changes in patient state, including reducing average vital signs data collection time by 28%, increasing patient monitoring time (rate ratio 1.22), and availability and accuracy of patient information. Impact on clinical alarms was mixed, with no significant increase in clinical alarms per monitored hour.