

Study examines use of off-site monitoring of cardiac telemetry and clinical outcomes

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Among non-critically ill patients, use of standardized cardiac telemetry with an off-site central monitoring unit was associated with detection and notification of cardiac rhythm and rate changes within 1 hour prior to the majority of emergency response team activations, and also with a reduction in the number of monitored patients, without an increase in cardiopulmonary arrest events, according to a study appearing in the August 2 issue of *JAMA*.

In studies involving traditional on-site [monitoring](#) for non-intensive care unit [patients](#), more than 90 percent of alarms were without immediate clinical relevance and contributed to clinical desensitization referred to as alarm fatigue. It is unknown if dedicated monitoring personnel at an off-site, central monitoring unit (CMU) can provide effective detection and notification to clinical nursing personnel and also integrate with the dedicated emergency response teams in a large multihospital system. Off-site monitoring can minimize noise distraction from hospital activity, centralize staffing, and allow standardized practices.

Daniel J. Cantillon, M.D., of the Cleveland Clinic, and colleagues evaluated the clinical outcomes associated with an off-site CMU applying standardized cardiac telemetry. A dedicated off-site facility provided continuous cardiac rhythm monitoring for non-intensive care unit (ICU) patients at the Cleveland Clinic and 3 regional hospitals over 13 months. In this model, 1 monitoring technician provides continuous cardiac monitoring for up to 48 patients and also provides blood pressure, pulse oximetry, and respiratory rate notifications on request.

Lead technicians provide on-site oversight and supervision for real-time rhythm interpretation and management requiring clinical attention to charge nursing personnel.

The CMU received electronic telemetry orders for 99,048 patients and provided 410,534 notifications (48 percent arrhythmia/hemodynamic [blood pressure]) among 61 nursing units. Emergency response team (ERT) activation occurred among 3,243 patients, including 979 patients (30 percent) with rhythm/rate changes occurring 1 hour or less prior to the ERT activation. The CMU detected and provided accurate notification for 772 (79 percent) of those events. In addition, the CMU provided discretionary direct ERT notification of the impending worsening of the condition of 105 patients to elicit urgent clinical intervention, including advance warning of 27 cardiopulmonary arrest events (26 percent) for which return of circulation was achieved in 25 patients (93 percent). Telemetry standardization was associated with an average 15.5 percent weekly census reduction in the number of non-ICU monitored patients per week when compared with the prior 13-month period. The number of cardiopulmonary arrests was 126 in the 13 months preintervention and 122 postintervention.

"Normal hospital activities occurring at the nursing station might potentially distract on-site personnel from continuous vigilant patient monitoring, in addition to the possibility of vigilance being divided by other on-site duties. Off-site monitoring allows dedicated personnel to provide patient monitoring removed from the hospital wards with centralized staffing and standardized practices. A CMU also allows oversight and supervision by lead technicians (i.e., somebody to watch those who are watching) to try to ensure continuous monitoring and mitigate lapses," the authors write.

"These data demonstrate that integrating a CMU and an ERT team is feasible, which is particularly important for hospital systems with

dedicated [emergency response](#) teams in which operational and capital costs permit scalability. Once the required resources are in place, the CMU can extend its operability to hospitals that are widely geographically separated while interfacing directly with site-specific ERTs. Future work and technological innovation are needed to further improve efficiency and reduce costs."

More information: *JAMA*, [DOI: 10.1001/jama.2016.10258](https://doi.org/10.1001/jama.2016.10258)

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