

How personalized alarm management improves patient care and reduces alarm overload

While alarms play an important role in notifying healthcare professionals of critical patient needs, having too many notifications can cause alarm fatigue for already overworked nurses and may put some patients at risk. Being able to differentiate between emergency situations and simple notifications while also being able to route alarms to appropriate staff can help hospitals optimize their alarm management systems.

During a *Becker's Hospital Review* webinar sponsored by TigerConnect, Laurie Devin, RN, medicine coordinator at Yale New Haven Hospital (Conn.) (part of Yale New Haven Health), and Ryan Bush, RN, director of clinical consulting at TigerConnect, described the alarm management challenges that Yale New Haven Health faced, how TigerConnect helped Yale New Haven Health meet those challenges and the results that were achieved. Yale-New Haven Health is a five-hospital system with more than 2,600 beds.

Four key takeaways were:

1. Disjointed clinical systems that don't work collaboratively impede the ability to use these systems to their full potential. This was previously the situation at Yale New Haven Health, where there were diverse alarm processes, no centralized telemetry or telemetry war room and no dedicated clinician whose sole responsibility was to continuously monitor telemetry alarms.

"We all know that patient safety is compromised when critical alarms are not responded to in a timely manner," Devin said. "In fact, the 2023 Joint Commission National Patient Safety goal calls on hospitals to improve the safety of clinical alarm systems. . . but at Yale New Haven Hospital, patient care units throughout the hospital had varying telemetry monitoring systems, which made a war room unobtainable."

This variability, combined with software complexity and Epic-assigned care teams, meant that clinical systems were disjointed and not working in collaboration. The result was that alarm management was a significant clinical problem because centralized alarm management was not meeting the organization's quality and safety needs. Yale

New Haven recognized the importance of clinical alarm safety, did an assessment to identify opportunities for improvement and then worked on a solution to improve safety. This solution included technology, current practices and culture, education and buy-in.

A key part of Yale New Haven's long-term solution was upgrading the telemetry system so that all units would be on the same version and could be centrally monitored. But replacing the telemetry system is costly, leading Yale New Haven to investigate middleware technology to provide cohesion and interoperability.

2. A key part of the solution was workflow redesign, which was influenced by data, policies, clinical best practices and flowing the workflow through TigerConnect. The biggest opportunity for Yale New Haven was to incorporate data as part of the workflow redesign and to have data drive decisions. "This was actually one of the most important aspects of the workflow design," Bush said.

Also critical in the redesign was use of TigerConnect. "With TigerConnect acting as the hub, we were able to bring interoperability among each of our clinical applications," Devin said. Yale New Haven could now route clinically relevant alarms to individual nurses' devices and create accountability. Nurses were already assigning themselves to patients in Epic; now TigerConnect could match the specific patient alarm to the specific nurse who was caring for the patient and send an alarm to that nurse's mobile heartbeat device. "In this manner, nurses can be alerted to critical alarms individually, following an established alarm escalation workflow," she said.

3. By employing a multidisciplinary approach that focused on clinical practice and technology working together, Yale New Haven Health achieved the buy-in needed. The multidisciplinary approach at Yale New Haven focused on the needs and feedback of front-line nurses, emphasized clinical practice and leveraged technological solutions for support. This was all done while being highly iterative in using data analysis. Also critical was the use of change management techniques to develop organization-wide buy-in.

4. Yale New Haven Health has achieved powerful results, which includes reducing the median number of alarms per bed. Due to implementing TigerConnect, Yale New Haven Health has reduced its median number of alarms per bed by an average of 8 percent; one inpatient telemetry unit saw a 37 percent reduction in its number of alarms.

In addition, by eliminating alarms of shorter than 15 seconds, many of which are attributable to patients that tend to self-correct, the hospital reduced its alarms by 60 percent. "It's essential to monitor alarms that are accompanied by a lot of other noisy activities within the unit," Bush said. "When alarms are targeted to the right clinical resources at the right time, it's a safer, more efficient way to streamline them and create less alarm overload."

In the future, Yale New Haven Health plans on focusing on continuous improvement, hospital-wide standardization and expansion into other areas such as the NICU/PICU.

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