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Over-monitoring and alarm fatigue: For whom do the bells toll?

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Telemetry monitors with rhythm strips streaming out and the clamor of alarms are ubiquitous on hospital units. Once monitors were present only in intensive care units (ICUs), but have now become a cornerstone of care in non-ICU hospital settings. But are telemetry monitors used too much? Although the American Heart Association (AHA) practice standards for electrocardiographic monitoring specify the indications and duration of monitoring, research has shown that monitoring is overused.

Because monitoring is noninvasive, it seems harmless. But there are unintended consequences, like deaths related to alarm fatigue. When nurses work among constantly beeping monitors, they may begin to ignore the alarm signals. For instance, in 2010 at a Massachusetts hospital, a patient death was directly linked to telemetry monitoring after alarms signaling a critical event went unnoticed by 10 nurses. Although alarms were created to enhance patient safety, they have recently become an urgent patient safety issue themselves.

Some argue that more is better when it comes to telemetry monitoring. Perhaps detecting that one critical event in one patient without an indication for monitoring justifies its widespread use. However, one of the major consequences of over-monitoring is the proliferation of alarms, of which 72–99% have been deemed clinically insignificant. More monitoring means more alarms, and more alarms mean more false alarms. The din of alarms is not only annoying to staff, patients, and visitors, but can also result in sentinel events. Important clinical events may be missed amid the cacophony.

Patient safety and regulatory agencies are addressing the problem of alarms and alarm fatigue. For instance, the ECRI Institute has placed alarm hazards in first or second place on their Top 10 Health Technology Hazards annual list since 2007. The Joint Commission recently released a sentinel event alert regarding alarms based, in part, on reports of 98 patient-related events resulting in 80 deaths from January of 2009 to June of 2012. The Joint Commission has made the task of improving the safety of clinical alarm systems a National Patient Safety Goal for 2014.

More monitoring does not necessarily lead to better patient outcomes. Multiple studies have suggested that telemetry monitoring does not contribute to early detection of clinically

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relevant arrhythmias, decrease long-term mortality, or alter medical management, such as transfer to an ICU, changes in medication, or the use of revascularization procedures.⁷ Telemetry as a means of preventing, detecting, and improving survival from cardiac arrest is not supported, as research indicates that cardiac arrests occur infrequently in patients on telemetry and when arrests do happen, telemetry plays a small role in patient survival.

Over-monitoring remains a significant issue in hospital settings. Data from our ongoing PULSE Trial indicate that of 2766 patients on telemetry monitors, 35% had no indication for monitoring per the AHA practice standards. Similarly, Benjamin et al found that 35% of a total of 1559 monitoring days in 501 patients, monitoring was not indicated based on the practice standards.

More monitoring means more money. Benjamin and colleagues also suggest that eliminating monitoring when not indicated could save a minimum of \$53.00 per day per patient, with an average of \$82.44. This equates to \$250,000 per year for hospitals with at least 400 beds and 5000 non-indicated telemetry days per year, which they consider a conservative estimate.

Telemetry can be a helpful clinical tool when used in the right patient for the appropriate period of time. The goal is not more telemetry nor is it simply about decreasing the number of patients who are monitored. It is about monitoring judiciously and choosing wisely those who would truly benefit from this surveillance. Evidence underscores the feasibility of reducing over-monitoring without untoward consequences for the patient.⁷ However, practice needs to be improved, and practice standards need to be validated and revised based on advances in technology and health care.

Telemetry monitoring should not be ubiquitous without a proven clinical purpose, as over-monitoring, with the accompanying alarms, may be a significant hazard. The elimination of unnecessary monitoring could lead to a higher proportion of clinically meaningful alarms and possibly a faster response time. It is time that telemetry use evolves from a “more is better” attitude to a more measured, evidence-based approach. As Albert Einstein said, “Any intelligent fool can make things bigger and more complex. It takes a touch of genius – and a lot of courage – to move in the opposite direction.”

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