Targeting Telemetry: How Appropriate Use of Patient Monitoring Devices Reduces Waste and Improves Workflows

Telemetry is often inappropriately prescribed for patients who need enhanced monitoring and it begins in the emergency department and continues in the med surg setting. Improving adherence to evidence-based guidelines can reduce waste, enhance patient experience, reduce costs, and save time for overworked clinical staff.

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Introduction

When a patient comes into the emergency department, a clinician's first instinct is to gather as much data about that person as possible. Demographic information, recent medical history, and the reason they came to the Emergency Department are all vital for understanding their condition and making the best possible treatment decisions in a high-pressure, time-sensitive situation.

As part of this information-gathering process, clinicians often enlist the help of telemetry. Patients are immediately covered with electrodes and hooked up to a wide range of devices used to collect vital signs including blood pressure, oxygen saturation, heart rhythm, and respiratory rate, opening a floodgate of complex up-to-the-second data.

While it seems like it could never hurt to have more information rather than otherwise, there are several problems with making telemetry a default component of patient intake.

The chronic overuse of telemetry in the acute care setting is cognitively taxing for providers, expensive for the facility, and overwhelming for patients – all without necessarily offering relevant information to guide optimal care. It can even increase the length of stay by more than a day for people who could be safely discharged home, decreasing satisfaction, and ratcheting up avoidable costs.

Inappropriate use of telemetry ranges from 12 to 73 percent in the medical-surgical setting, largely due to a lack of adherence to evidence-based guidelines for correct technology use. Instead of treating telemetry as a must-have for every patient from admission to discharge, providers must be more aware of their decision-making around continuous monitoring tools.

Improving adherence to recognized standards and applying emerging technologies to manage the problem more proactively, can make it easier and more efficient to manage patients, particularly as organizations are struggling with staffing shortages and financial pressures in a rapidly changing economic environment.

Correctly Identifying Patients Who Can Benefit From Telemetry

Over the past decade, the American Heart Association has released several telemetry guidelines, including the most recent update in 2017.

However, only 30 percent of physicians say they are aware of this guidance, and just 20 percent said they felt confident in applying them in practice. That could be because 20 percent have received formal training on the framework.

The AHA guidelines divide admitted patients into three categories based on high, moderate, or low risk of arrhythmia and suggests telemetry decision-making accordingly:

Class 1

High risk of arrhythmia: Acute coronary syndrome, new arrhythmia (eg. atrial fibrillation or flutter), severe electrolyte imbalance; telemetry is warranted.

Class 2

Moderate risk: Acute decompensated heart failure with stable hemodynamic status, a surgical or medical diagnosis with underlying paced rhythms (i.e. with a pacemaker) and chronic arrhythmia (artial fibrillation or flutter). In these cases, telemetry monitoring may be considered.

Class 3

Low risk: No history of cardiac disease or arrhythmias, admitted for medical or surgical reasons; in these cases, telemetry is generally not indicated. Telemetry should also be considered in patients admitted with syncope or stroke, critical illness, or palpitations.

> *"Many of the electronic tools and processes providers have adopted or developed in-house fall short of meeting their true interoperability needs while requiring significant development work."*

Accompanying practice standards dive into details about patients who fall into each category, offering recommendations about the duration of monitoring, as well. This is important for providers in the inpatient setting, who may need to discontinue telemetry initially ordered in the ED.

This evidence-based clinical advice is intended to help physicians avoid making the misstep of using continuous monitoring for patients with sepsis, respiratory infections, and gastrointestinal bleeding – some of the most common conditions for which telemetry is ordered but not necessarily clinically indicated.

Currently, however, close to a quarter of patients prescribed telemetry fall into Class 3. Even among the 77 percent of Class 1 and Class 2 patients who can benefit from digital monitoring, 56 percent receive monitoring for the incorrect duration during their hospital stay.

Physicians tend to err on the side of caution with telemetry because they are concerned about missing important cardiac clues if they follow these guidelines. In fact, between 68 and 87 percent of physicians say they rely more on instinct or experience to decide on telemetry use rather than clinical guidelines. But academic research firmly backs up the validity of these criteria.

For example, a study from 2015 found that life threatening arrhythmias are exceptionally rare, occurring in just 0.04 percent of patients, or 1 out of the 2645 individuals observed. No participants in that study experienced a life-threatening arrhythmia for which telemetry led to immediate treatment.

Other research indicates similarly low levels of risk in these patient groups. Of 8932 patients undergoing telemetry in a separate study, only 0.02 percent, or 1 in 5000, were survivors of cardiac arrest in whom telemetry signaled the cardiac arrest.

A third retrospective cohort review showed just 1 of 141, or 0.71 percent, of unclassified patients, had a clear change in management due to continuous monitoring. Telemetry did not capture a rapid response, code blue, or mortality event for any individuals.

Telemetry has high value for specific groups of patients and should be used in cases where the technology is warranted. When applied correctly, the AHA guidelines are likely to bring more benefits to patients and providers.

Exploring the Wide-Ranging Impacts of Excessive Telemetry Use

In stark contrast, unnecessary telemetry can produce tangible negative effects for the patient and their care teams, exacerbating existing challenges with nursing workflows, patient experiences, and access to care.

Alarm Fatigue

Alarm fatigue is a perennial problem in healthcare which affects both patients and staff members. Excessive exposure to a cacophony of similar-sounding beeps and bells can induce anxiety and disrupt rest for patients. Meanwhile, nurses and other bedside providers become desensitized to the noise, which can cause them to ignore important alerts or delay responses to vital information unintentionally.

Avoiding unnecessary telemetry can reduce sensory overload and allow patients and providers to focus on what is most important. One study found nurses achieved a 27 percent reduction in the perception of alarm fatigue when telemetry was used correctly.

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Nursing Workflow Management

In addition to all their other duties, nurses are tasked with monitoring the large number of bedside devices in the inpatient setting. Managing telemetry for a single patient can add an extra 20 minutes to 90 minutes to a nurse's day, further compressing his or her already-limited time to care for patients.

With experienced nurses in short supply and staffing ratios already under extreme pressure, nurses simply cannot afford to spend time using technologies that do not add clinical value to an individual's care.

Availability of Telemetry Beds

In some wards, only a limited number of beds are equipped with the full suite of telemetry equipment. These resources should be reserved for patients who can benefit most from monitoring technologies.

When telemetry is not used correctly, patients who need additional monitoring may not be able to get it. This could lead to delayed admissions and/or transfers from higher levels of care, such as the ED or ICU, for people who need telemetry but cannot get it from the most appropriate service. This is both costly and disruptive to patients and staff.

Poor Patient Experiences

While more and more devices are going wireless, patients may still experience challenges when being attached to numerous machines. They may not be able to ambulate according to provider instructions or easily care for their personal hygiene. Or they might simply be uncomfortable with sticky pads on their skin and cords draped around their limbs. They may also perceive themselves as being much sicker than they actually are due to unnecessary continuous monitoring.

Sleep loss due to this discomfort or excessive alarms from monitoring equipment can be a serious problem for hospitalized individuals, particularly older adults, and those with cognitive impairments, such as dementia. Lack of sleep is associated with poor outcomes and increases in episodes of delirium, even among generally healthy individuals.

Other patients may be concerned about what will happen upon discharge when they are no longer monitored around the clock. The sudden removal of devices that appear so vital to their health in the hospital could produce heightened anxiety when returning home.

Excess anxiety and general stress may contribute to higher readmission rates. Weaning patients off telemetry according to AHA guidelines while they are still in the hospital could help to avoid these negative experiences and reassure patients that they are well enough to go home.

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Excess Spending for the Hosptial

The costs associated with inappropriate telemetry use are highly variable ranging from $34-$1500 per patient per day. Studies examining the costs of telemetry misuse have focused on patient per-day costs of operating telemetry or nursing time but a wholistic assessment of the total costs (including extended ED wait times, delayed transfers, diversions, additional LOS, alarm fatigue/cognitive burden, and consequences of missed or delayed alarm action, etc.) have not been wholistically studied. As such the true cost of telemetry misuse is likely underestimated.

Hospitals may also safely reduce patient length of stay for some patients inappropriately prescribed telemetry by up to one full day by adjusting their telemetry habits. In 2017, researchers found that patients with respiratory infections who received telemetry without indications had a length of stay of 3.0 days instead of 2.0 days for non-telemetry patients. Telemetry use did not reduce their readmission risk or 90-day mortality rate.

How to Leverage Technology and Education to Reduce Avoidable Telemetry

With the advancement and adoption of new automation, there are solutions to address the overuse of monitoring devices. Unfortunately, the sustainability of these solutions is variable. Expanded education, emerging analytics technologies, and EHR optimization can all help ensure clinicians admitting and caring for patients in the med surg settings are prescribing telemetry correctly and adhering to recommendations around the duration of patient monitoring.

> *"Research indicates a 35% overuse of telemetry monitoring, which may result in excessive alarms, contributing to alarm fatigue for care teams."*

Educating Clinicians about Appropriate Use

Making physicians aware of the latest AHA guidelines is the first step for success in optimizing the use of telemetry units and the caring of patients. Health systems should offer formal and regular training on practice standards that includes information on which patients can benefit most from cardiac telemetry.

These sessions should include specific information about decision-making in the emergency department, where inappropriate telemetry use often begins. Both ED providers, hospitalists, and residents should receive education about coordinating across departments to ensure that orders are clearly communicated, and patients are getting the best possible care throughout their journey.

Nurses should also be involved in educational opportunities and should be supplied with tailored resources to help them reduce alarm fatigue, identify patient safety issues, and collaborate with physicians and other caregivers to deliver optimal care.

Using the EHR to Support Clinical Decision-Making

The EHR is a valuable tool for guiding clinical decisions around telemetry. For example, health systems can implement flow check pop-ups and guideline-adherent order entry workflows to ensure providers are considering evidence-based standards when ordering telemetry.

These strategies can be highly effective. In three regional hospitals in Kansas, the use of a pop-up reduces inappropriate telemetry by 37 percent. And a separate multi-center study found that incorporation of EHR order entry reduced the unclassified patients on telemetry significantly from 57 percent to 44 percent and the number of Class 1 and Class 2 patients on telemetry increased from 38 percent to 53 percent.

> *"Incorporating EHR order entry reduced the unclassified patients (no guidelines indication) on telemetry significantly from 57% to 44% and Class 1 and Class 2 patients on telemetry increased from 38% to 53%."*

Using EHR features to prompt regular review of telemetry orders or limit the duration of orders also achieves positive results without compromising clinical autonomy.

Adopting Analytics Tools to Enhance Visibility Into Provider Performance

Analytics solutions are playing an increasingly important role in safeguarding patients and fine-tuning provider performance. Telemetry is a promising use case for these technologies. By collecting information on key factors, such as which patients are on telemetry and the number of false positive or false negative alarms, then merging these datasets with information on patient outcomes and provider decision-making, health system leaders can gain actionable insight into opportunities to improve.

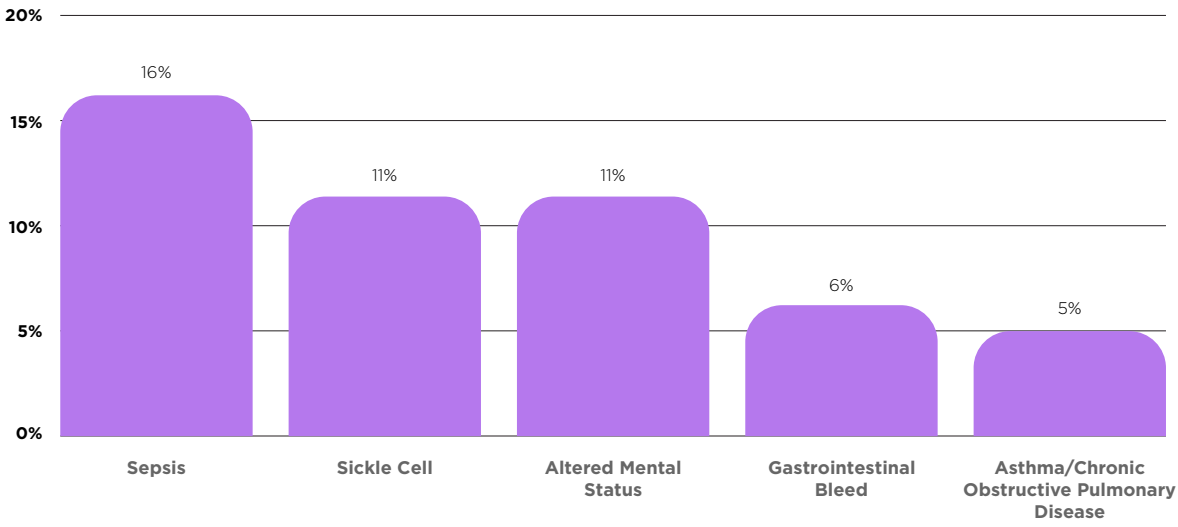
These data points can be used during educational sessions and clinical reviews to support more appropriate decision-making and optimize processes accordingly.

Investing in Alternative Monitoring and Workflow Technologies

With the proliferation of new technologies in the healthcare space, providers can now move beyond the traditional suite of telemetry devices to keep patients safe, and providers informed. Wireless devices can reduce discomfort for patients and transfer more patient data seamlessly from the hospital to the home when necessary. A combination of mobile technology paired with patient monitoring device integration, alarm management with patient visualization technology and smart beds can provide real-time monitoring for heart rate, respiration, and even incontinence while helping to avoid a tangle of machinery at the bedside.

5 Most Common Diagnoses for Unclassified Telemetry Patients

Of the 51% of the patients who did not receive telemetry orders based on AHA guidelines, these are the five most common admission diagnoses for unclassified patients.



Telemetry Overuse and the Effect of Educational and Electronic Health Record-Based Interventions on an Academic Internal Medicine Ward - https://pubmed.ncbi.nlm.nih.gov/34480188/

In Conclusion

Telemetry is an extremely valuable part of the clinical toolkit, but only when it is used with the right patients for the right amount of time. Unfortunately, overuse of telemetry technologies is extremely common, starting in the emergency department and continuing throughout the course of a patient's stay in the hospital.

Inappropriate use of telemetry is not a benign condition. There are real consequences for patients, providers, and the health system at large.

While robust guidelines are available to help providers make better decisions about patient monitoring, health system leaders need to do more to ensure that physicians are aware of the standards and are equipped to apply them to everyday practice.

Increasing adherence to telemetry guidelines can dramatically improve patient safety, streamline clinical workflows, and avoid excess costs. With the assistance of innovative technologies, smart devices in patient rooms, and advanced analytics solutions with documentation into the EHR, healthcare organizations can develop greater awareness, make better decisions, and enhance the experiences of everyone involved in patient care.

Upcoming Event

The burden of cardiac telemetry overuse: How data and technology can help build better care workflows

A hospital system's strategy and profitability rely on evidence-based recommendations to reduce telemetry misuse and build guidelines to optimize workflows that streamline and standardize cardiac monitoring care. These are essential considerations during any digital transformation initiative. Join Angela Murray, BScN, MN, and executive director of Global HEOR at Baxter Healthcare, as she walks through her clinical telemetry research and shares insights into how you can improve telemetry workflows at your hospital.

Join Dr. Kannan Mutharasan, a cardiologist and the medical director at Bluhm Cardiovascular Institute, and Angela Murray, BScN, MN, and executive director of Global HEOR at Baster Healthcare, as they discuss clinical telemetry research and the path forward to improve telemetry workflows at your hospital.

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