

Telemetry: Appropriateness of Initial Assignment and Duration in Nonintensive Setting

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Inappropriately implemented telemetry monitoring can lead to potential harms to patients and increased unnecessary costs to health care. Several studies report that the decision to initiate telemetry monitoring is driven by concerns of overall patient clinical deterioration as opposed to concerns for monitoring for arrhythmias.^{1,2} The inappropriate use of telemetry can lead to overdiagnoses and detection of artifacts resulting in unnecessary invasive interventions.³ Hence, the benefits of utilizing a telemetry monitoring system in detecting clinically indicated cardiac arrhythmias need to be balanced with the risk of potential harm to patients. In addition, telemetry monitoring requires telemetry technicians, trained nursing staff, and instruments, increasing cost burden if not used efficiently.

The 2017 American Heart Association scientific statement divides the indications for telemetry use into 3 classes—class I (monitoring is indicated), class II (monitoring may be of some benefit), and class III (monitoring is not indicated)—and expounds upon the duration of its use in different clinical settings.⁴ We hypothesized inappropriate initial assignment of telemetry monitoring and continuation of telemetry longer than indicated in a large community hospital. After institutional review board approval, we conducted a retrospective chart review of 695 consecutive adult patients (≥ 18 years), over 3 months, admitted under medicine service and assigned telemetry at the time of admission. Data on indication of telemetry monitoring were extracted from the (1) electronic health record (EHR) order, (2) emergency department note, and/or (3) admission note. All statistical analyses were performed with IBM SPSS Statistics 22.

The mean (SD) age was 68 (10) years, and 59% of patients were women. In the total population, the median (interquartile range [IQR]) days of telemetry were 3 (2-4) per patient. Overall, 155 (22.3%) patients had been inappropriately assigned telemetry at the time of initial assignment (class III) (Figure). Diagnoses among patients with inappropriate initial assignment were community-acquired pneumonia (24%), urinary tract infection (21%), mild exacerbation of chronic obstructive pulmonary disease (18%), and others (37%). Of the 540 patients appropriately assigned

ABSTRACT

OBJECTIVES: Inappropriate use of telemetry monitoring is associated with alarm fatigue, an increase in health care expenditures, and the potential for patient harm from interventions in clinically inconsequential arrhythmias. We explored adherence to current guidelines for appropriateness of (1) initial telemetry assignment and (2) duration of the assignment.

STUDY DESIGN: Retrospective study.

METHODS: After institutional review board approval, 695 consecutive adult patients (≥ 18 years) who were admitted with any diagnosis to general medical floors and assigned telemetry at the time of admission over 3 months were enrolled. Patients on surgical service and transferred from critical care were excluded. Data were collected from electronic health records (EHRs).

RESULTS: We observed that 155 of 695 (22.3%) patients had been inappropriately assigned telemetry at the time of initial assignment. Of the 540 patients appropriately assigned telemetry, 56.3% of patients had longer than the recommended duration of telemetry monitoring with a median (interquartile range) of 3 (2-4) nonindicated days per patient. The annualized additional cost of telemetry monitoring due to the inefficient utilization was found to be more than \$500,000 per year.

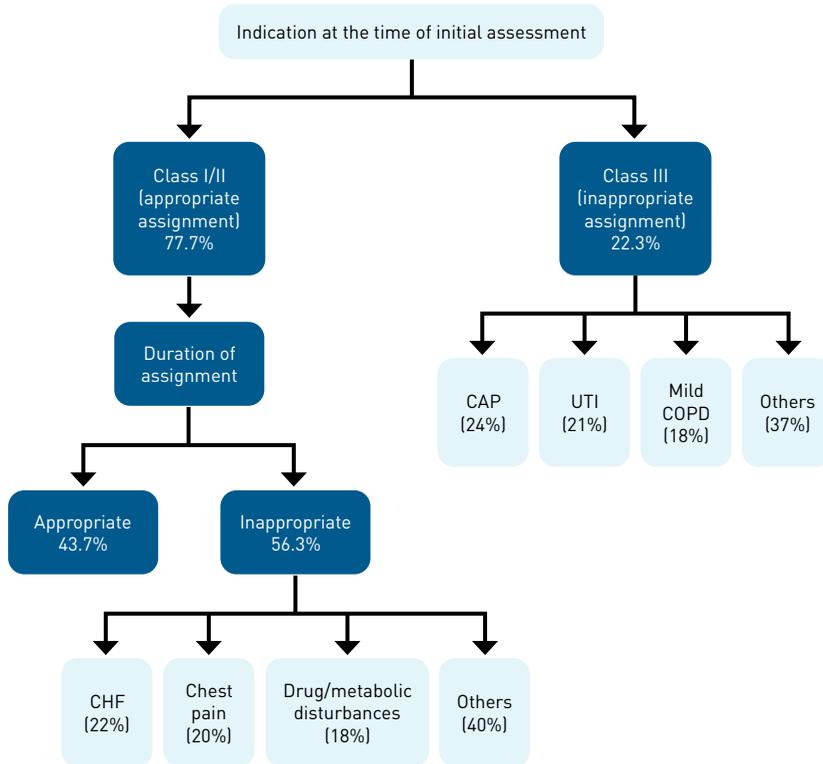
CONCLUSIONS: Our data further support the need for frequent reassessment of telemetry indication, which can be facilitated by the utilization of EHR-based automated monitoring.

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TAKEAWAY POINTS

- ▶ Rising health care costs necessitate process and quality improvement. We explored the contribution of inappropriate guideline-directed telemetry monitoring to health care expenditures.
- ▶ Retrospectively, 695 adult patients were evaluated for appropriate assignment and duration of telemetry. We found that 22.3% had an inappropriate assignment and 56.3% had longer than recommended use of telemetry.
- ▶ The overuse resulted in more than \$500,000 per year of wasted health care expenditures. Electronic health record prompts for telemetry reassessment may improve adherence and reduce health care waste.

FIGURE. Classification of Patients According to Appropriate Assignment Criteria



CAP, community-acquired pneumonia; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; UTI, urinary tract infection.

telemetry, 37.2% of patients had class I and 62.8% patients had class II indications. Of the 540 patients with appropriately assigned telemetry, 304 (56.3%) had longer than recommended duration of monitoring. Their median (IQR) number of nonindicated days was 3 (2-4) per patient. Diagnoses among patients with more than the indicated duration of telemetry were congestive heart failure

(22%), chest pain (20%), drug/metabolic disturbances (18%), and others (40%). No invasive procedures were noted in patients with either inappropriate initial assignment of telemetry or additional nonindicated days of telemetry. The annualized additional cost of telemetry monitoring due to the inappropriate utilization was more than \$500,000 per year (including time from technicians and nurses, as well as costs of instrument battery).

Our study demonstrates the importance of efficient and appropriate telemetry utilization in both the initial assignment and timely discontinuation when no longer indicated. These findings support the need for frequent reassessment of telemetry indication, which can be facilitated by the utilization of EHR-based automated tracking. ■

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