Reducing Overuse of Cardiac Telemetry
Through Implementation of Guideline Specific Electronic Order Sets
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Introduction & Background

• Use of cardiac telemetry is ubiquitous among medical and surgical inpatient wards. Utilized to detect potentially life-threatening arrhythmias, cardiac telemetry is generally considered to be a relatively benign intervention with significant impact on patient outcomes.

• Overuse of telemetry can have unforeseen consequences: Telemetry monitoring is resource intensive, requiring a multidisciplinary staff with advanced training. Nurses spend an average of 20 minutes per day per patient on telemetry-related tasks (i.e., changing batteries and leads, addressing alarms, notifying clinicians), placing them at risk for alarm fatigue and detracting from other aspects of patient care. Telemetry may also provide clinicians with a false sense of security, leading to less frequent in-person assessments.

• In addition many hospitals have a limited number of telemetry beds. This often leads to admission delays for patients requiring telemetry, leading to delays in appropriate care, subsequently driving up healthcare costs.

• In 2004, the American Heart Association (AHA) developed guidelines for appropriate indications for telemetry use. However there is a paucity of literature outlining successful and safe strategies to address overuse of cardiac telemetry.

• In a recent study by Dressler et al., implementation of a revised telemetry order set within the electronic medical record (EMR) at a large healthcare institution resulted in an immediate and sustained reduction in the mean weekly number of telemetry orders.

Aim

• Reduce the number of unnecessary active cardiac telemetry orders (in a non-ICU setting) at an academic medical center (VA Boston Healthcare System – West Roxbury Campus) through implementation of guideline specific electronic order sets.

Methods

1. Current state of telemetry order sets within the electronic medical record was assessed.
   - A retrospective chart review was performed to collect baseline data on the indication selected for the initiation of cardiac telemetry as well as the total duration of telemetry utilized during a hospital admission (in a non-ICU setting).
   - The indications selected were matched with the AHA's published recommendations addressing the use of non-ICU cardiac telemetry which stratifies indications into three categories:
     • Class 1 – cardiac telemetry is indicated
     • Class 2 – cardiac telemetry may provide benefit
     • Class 3 – cardiac telemetry is not indicated

2. Cardiac telemetry order sets were redesigned and standardized within the electronic medical record in concordance with current American Heart Association guidelines (as discussed above).
   - Telemetry orders for which monitoring was not supported by AHA guidelines were removed.
   - Remaining indications were discussed with and approved by cardiology as appropriate cardiac telemetry indications for non-ICU hospital admissions.
   - New order sets required providers to select from a list of clinical indications, each with pre-determined telemetry duration (24, 48, 72 hours or greater) based on AHA guidelines.
   - New order sets were implemented on Go Live Date: December 29, 2014.

3. Post-intervention chart review was performed in order to assess impact on indication selected, total duration of telemetry and number of total active telemetry orders.

Pre-Intervention Order Set

• Current cardiac telemetry electronic order set was assessed and compared to American Heart Association guidelines. Analysis revealed:
  - Check-list style menu from which the provider selects an appropriate indication for cardiac telemetry monitoring.
  - Indications were not consistent with American Heart Association guidelines.
  - Default length of telemetry initiated was 14 days for all indications, inconsistent with American Heart Association guidelines.
  - Figure 1 depicts order set prior to intervention.

Post-Intervention Order Set

• Electronic order set was redesigned:
  - Check-box menu was removed
  - Indications were divided into Class 1, 2, or 3 per AHA guidelines with explanations of the level of evidence supporting these classes.
  - Orders were set to expire at pre-determined intervals of 24, 48, 72 hours or greater depending on selected indication. The 14 day default order expiration for all telemetry orders was removed.
  - For class 3 indications (alcohol withdrawal, post-op, etc.), a follow-up alert was created to educate provider that telemetry is not recommended for selected indication and would be unlikely to provide any clinical benefit (see Figure 3).
  - Figure 2 depicts post-intervention order set.

Results

• The redesigned order set was implemented on December 29, 2014. The total number of active telemetry orders on three medical wards at the was assessed from Nov. 1, 2014 to Feb 1, 2015. Order set intervention implemented on Dec 29, 2014.

• While there appeared to be a reduction in number of total active telemetry orders prior to initiation of revised order sets on Go Live Date, this reduction of total active orders seemed to be sustained over the following month as compared with pre-intervention numbers.

• Chart review was performed on 90 patients admitted with active telemetry orders pre- and post-intervention. Data was collected on average telemetry duration as well as AHA class associated with indication selected. Results are displayed in Table 1.

Conclusions

• Implementation of a revised cardiac telemetry order set resulted in what appeared to be a sustained reduction in total number of active telemetry orders over the following 30 days post-intervention. Further data will need to be collected to assess sustained reduction in telemetry use beyond 30 days.

• Analysis of AHA class indications selected by providers revealed increased numbers of class 2 and 3 indications post-intervention. This indicates that while providers are choosing indications more consistent with AHA guidelines, this information does not necessarily prevent initiation of telemetry.

• Key factors believed to contribute to this project’s success were simplicity and appropriateness of indications selected for non-ICU telemetry monitoring as well as implementation of order auto-expiration after pre-determined intervals in concordance with AHA guidelines.

• Average telemetry duration improved from 7 days to 5 days post-intervention. Unfortunately, further review revealed that some patients continued to physically remain on telemetry monitoring despite expiration of telemetry orders.

  • We are currently planning implementation of a nursing telemetry discontinuation protocol to resolve this discrepancy.

• This project did not assess patient safety factors such as rapid responses, code blues, or mortality post-intervention, which is an important future direction.

• This project is easily generalizable and reproducible at other medical centers that currently utilize electronic medical record order sets for initiation of cardiac telemetry.

References: