Implementing Evidence-Based Use of Continuous ECG Monitoring

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PRESENTED BY
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ECU Internal Medicine
• Continuous Telemetry in hospitalized patients is utilized to rapidly identify life-threatening dysrhythmias and myocardial ischemia

• The ACC* and the AHA* published a comprehensive set of Practice Standards based on expert opinion regarding indications for telemetry (ECG) monitoring

• These standards are considered the best available evidence to guide clinical management

*American College of Cardiology
*American Heart Association
Practice Standards for Electrocardiographic Monitoring in Hospital Settings

An American Heart Association Scientific Statement From the Councils on Cardiovascular Nursing, Clinical Cardiology, and Cardiovascular Disease in the Young: Endorsed by the International Society of Computerized Electrocardiology and the American Association of Critical-Care Nurses

Barbara J. Drew, Robert M. Califf, Marjorie Funk, Elizabeth S. Kaufman, Mitchell W. Krucoff, Michael M. Laks, Peter W. Macfarlane, Claire Sommargren, Steven Swiryn and George F. Van Hare

AHA Classifications:

• Class I - patients require telemetry
• Class II - consider telemetry
• Class III - patients do not require telemetry
# AHA Class Indications

<table>
<thead>
<tr>
<th>CLASS I</th>
<th>CLASS II</th>
<th>CLASS III</th>
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</table>
| • Acute coronary syndromes  
• Following implantation of ICD/PPM if patients are pacemaker dependent  
• High-grade symptomatic AV block – Mobitz II, 2:1 AV block, complete heart block  
• Long QT syndrome and associated ventricular arrhythmias  
• Acute heart failure (requiring diuresis, etc.)  
• Loading of an antiarrhythmic medication known to cause long QT  
• Following any cardiac surgery | • Syncope evaluation  
• Atrial fibrillation with RVR (in hemodynamically stable cases)  
• ACS rule out  
• Following MI after 48 hours | • Following low-risk surgery  
• During routine labor and delivery  
• Chronic stable atrial fibrillation (whether rate- or rhythm-controlled)  
• Asymptomatic PVCs or NSVT in patients hospitalized for other reasons |
Despite the defined criteria per AHA practice standards, ECG monitoring is overused.

- Studies that examined the appropriate use of ECG monitoring, based on the 2004 practice standards criteria, found that up to 43% of non-ICU patients on telemetry had no indications for being on it.

- Inappropriate ECG use in non-critical patients with low risk of arrhythmias or continuation beyond the recommended duration of monitoring can lead to numerous obstacles in health care quality, safety, value, and experience.
CONSEQUENCES OF INAPPROPRIATE ECG MONITORING

- Inefficient use of resources
- Additional machinery maintenance, repair, and replacement costs
- Inefficient use of staff with frequent workflow interruptions
- Alarm fatigue
- Limited patient mobility creates higher risk of developing a venous thromboembolism
- Increased patient & family anxiety
- Delays necessary treatments and procedures
- Limits time to provide other indicated care to patients
- Triggers inappropriate testing and interventions
- Makes advancing care more difficult
- Unnecessary diagnostic tests, consults and treatments
- Effects smooth patient transition across the whole health system

LEAD TO INCREASED
INAPPROPRIATE ECG MONITORING

SAFETY

- Increased patient & family anxiety

VALUE

- Ease of ordering and renewing

QUALITY

Experience

- Closer monitoring perception

Experienc
AIM STATEMENT

Our Objective

Goal of the Study
To reduce the percentage of patients receiving continuous ECG monitoring that does not adhere to AHA recommendations by 10%.

Target Population
Patients at the ECU Health Medical Center (ECUHMC) on the Internal Medicine teaching teams.

Study Design
Plan-Do-Study-Act (PDSA) cycles with Chart Review for pre- and post-intervention measurement collection.
PROPOSED TIMELINE

Methodology

January

Phase 1
Pre-intervention data collection and analysis (6 weeks)

April

Phase 2
Implementation of an Electronic Medical Record (EMR) dot phrase note template

May

Phase 3
Post-intervention data collection and analysis (6 weeks)

July

Analyze and Prepare for PDSA Cycle 2...

• The data points studied include:
  ◦ Patient MRN
  ◦ Ordered duration of ECG monitoring (24 hours, 48 hours, or indefinite)
  ◦ Reason for ordering
  ◦ Actual indication and corresponding AHA class recommendation
### PRE-INTERVENTION ANALYSIS

<table>
<thead>
<tr>
<th># of Patients</th>
<th>Percent of ECG monitoring orders not adherent to AHA recommendations</th>
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<tbody>
<tr>
<td>Total Patients</td>
<td>284 (55.29%)</td>
</tr>
<tr>
<td>Patients on continuous ECG monitoring (tele)</td>
<td>85 (57.57%)</td>
</tr>
<tr>
<td>Appropriately on tele</td>
<td>38 (45.96%)</td>
</tr>
<tr>
<td>Inappropriately on tele</td>
<td>47 (59.57%)</td>
</tr>
<tr>
<td>Not on tele</td>
<td>199 (53.70%)</td>
</tr>
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**Total percentage of patients on inappropriate tele: 55.29%**
CONCLUSION

• There is a definite challenge present to ensuring evidence-based use of ECG monitoring in hospitals

• Overuse can result in negative patient outcomes, making our interventions crucial and necessary for quality improvement at ECUHMC

• We hope for the following outcomes post-intervention:
  ○ Improve adherence to AHA recommendation for continuous ECG monitoring
  ○ Improve patient outcomes
  ○ Reduce healthcare costs
  ○ Create a collaborative team-based culture in healthcare to use resources more efficiently
FUTURE DIRECTIONS

Post-intervention Data Collection & Analysis

**Phase 3**
We have started implementing a new smart list phrase in the EMR to direct caregivers to utilize updated AHA guidelines when ordering tele

**Timeline**
The goal is to pilot this new intervention for a few weeks and then begin data collection in May

**Research Question**
Has the introduction of our intervention reduced the percentage of patients receiving inappropriate continuous ECG monitoring by 10%?


