CVS.411 Cardiac Monitoring & Alarm Fatigue
Toward a Possible Solution: Are We Over-monitoring?

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Possible Solutions to Alarm Fatigue

1. False alarms (occur when there is no valid triggering event)
2. Non-actionable alarms (correctly sound, but for an event that has no clinical relevance)
3. Appropriateness of monitoring
Ways to Reduce False Alarms

1. Ensure good signal quality
   - Good skin prep to ensure electrode adherence
   - Change electrodes daily
   - Good quality electrodes & lead wires

2. Be aware of context in which patient care occurs
   - Silence alarms when doing patient care
   - Place BP cuffs on one arm & O₂ sat sensors on the other

3. Use “smart” monitors – consider other parameters before alarming
Ways to Reduce **Non-Actionable** Alarms

1. Customize alarm settings to individual patient
2. Widen alarm limits without compromising safety
3. Deactivate default alarms for conditions we no longer treat, eg, PVCs
Avoid Unnecessary Monitoring

- The more patients on monitors → the more alarms
- Invention does **not** have to be the mother of necessity
- AHA Practice Standards for ECG Monitoring*: who should be monitored & for how long
- Monitoring noninvasive → harmless?

* Drew et al, 2004
• Multisite RCT to evaluate the implementation of AHA Practice Standards on nurses’ knowledge, quality of care, & patient outcomes

• 17 hospitals with total of 64 cardiac units (ICU & telemetry)

• Quality of care: Research nurse on site for 5 days to collect data, including evaluating the appropriateness of monitoring

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Determining Appropriateness of Monitoring

• Review current medical record to determine if patient has Class I or II indication for monitoring, per AHA Practice Standards
  • Class I – indicated in most, if not all, patients
  • Class II – may be of benefit in some patients, but not considered essential for all patients
  • Class III – not indicated: a patient’s risk of serious event so low that monitoring has no therapeutic benefit

• If patients have class I indication, they should be monitored; if patients have neither class I or II indication, should not be monitored

• Check if pt on monitor
82.13% of 1,388 patients with no indication for monitoring were on a monitor.

If they had not been on a monitor, would we have missed any significant events, eg, important change in rhythm or cardiac arrest?

Monitoring justified?
Outcome: Rhythm Changes

- Significantly fewer rhythm changes in patients w/ no indication for monitoring vs. patients w/ indication (p < .0001)
- In >1,300 patients w/ no indication for monitoring:
  - Non-sustained VT: 23
  - SVT of ? etiology: 17
  - Atrial fibrillation / flutter: 12
  - Other arrhythmia: 11
2 of 1,310 (0.15%) patients w/ no indication for monitoring vs. 35 of 3,290 (1.06%) patients w/ indication had a cardiac arrest (p = .002)

2 w/ no indication who had a cardiac arrest:
1. 89 yo woman admitted for thyroidectomy (not an indication for monitoring). Had VF arrest associated with STEMI. Defibrillated → PCI to LAD w/ IABP. Died.
2. 27 yo man w/ endocarditis (not an indication for monitoring). While awaiting surgery, had VT → VF arrest. Survived & was discharged.

Monitoring justified?
Is Avoiding Unnecessary Monitoring a Solution to Alarm Fatigue?

• Patients on monitor may be watched more closely?
• Over-monitoring preferable to under-monitoring?

Yale Daily News
Cacophony of Alarm Sounds

Monitor
Infusion Pump
Bed Exit
Pulse Oximeter
Feeding Pump
Ventilator
Sequential Compression Device
IABP
What Do You Think?