

### Background & Significance

- Healthcare systems have made great strides in the advancement of technology. As technology usage continues to increase, alarms from patient monitoring become more abundant which inadvertently desensitizes nursing to the alarm sounds. This phenomenon is called alarm fatigue and has created an environment in which nurses fail to notice or react to true, critical alarms that signify a patient is in danger.
- The Joint Commission identified alarm safety as a National Patient Safety Goal in 2014 after realizing patient deaths, permanent disability, and prolonged hospital stays were attributed to alarm fatigue<sup>2</sup>. The American Association of Critical Care Nurses (AACN) created an alarm management program to assist healthcare facilities with reducing alarms and improving nurses response times to true emergencies.

### Project Aims

- To improve the care provided to patients and decrease the risk of a patient safety event, the AACN Alarm Management Program was implemented. The alarm management program was implemented to:
- Improve staff knowledge of basic lethal arrhythmias.
- Change the culture of the unit to make alarm fatigue a priority.
- Reduce alarm fatigue by implementing evidence-based guidelines
- Decrease nurses response times to true critical emergencies

### Methods

#### Setting

- 16-bed, Gold Beacon award, medical-surgical ICU at a Magnet designated acute care facility.
- V-shaped unit which allows for direct visualization of all patient rooms.
- Alarms reviewed included: High priority (red) and low priority (yellow) arrhythmia and bed alarms.
- Examples of arrhythmia alarms: asystole, ventricular fibrillation, atrial fibrillation, and bigeminy.
- Examples of bed alarms: blood pressure, respiratory rate, oxygenation, and temperature.

### Methods (cont.)

#### Sample

- 44 registered nurses with experience ranging from 6 months to 27 years.
- Average number of patients per day was 11.3

#### Interventions

- Pre- and post-implementation survey using The Healthcare Technology Foundation Clinical Alarms Survey
- All 44 registered nurses attended an alarm management class that discussed:
  - current number of alarms
  - evidence-based guidelines to reduce alarms
  - implementing bedside alarm customization
- Basic arrhythmia pre-testing, remediation, and post-remediation testing

### Results

#### Survey Results

The Healthcare Technology Foundation Clinical Alarms survey did not show a statistically significant change in the culture of the unit. A culture change may take longer than 6 months to develop. However, 96% of the staff state they will continue to implement the alarm management interventions in their daily practice. 94% of the staff state the alarm management program improved their response times to true critical emergencies.

#### Alarm Results

The ICU reduced the number of patient alarms by **17.1%**. The most statistically significant difference was noted in the pre-implementation versus post-implementation low priority (yellow) arrhythmia alarms. (Figure 1.)

#### Basic Arrhythmia Test Scores

The ICU RNs improved their basic arrhythmia test scores by **21%**. Average test scores increased from **71.8%** to **94.5%**. (Figure 2.)

### Results (cont.)

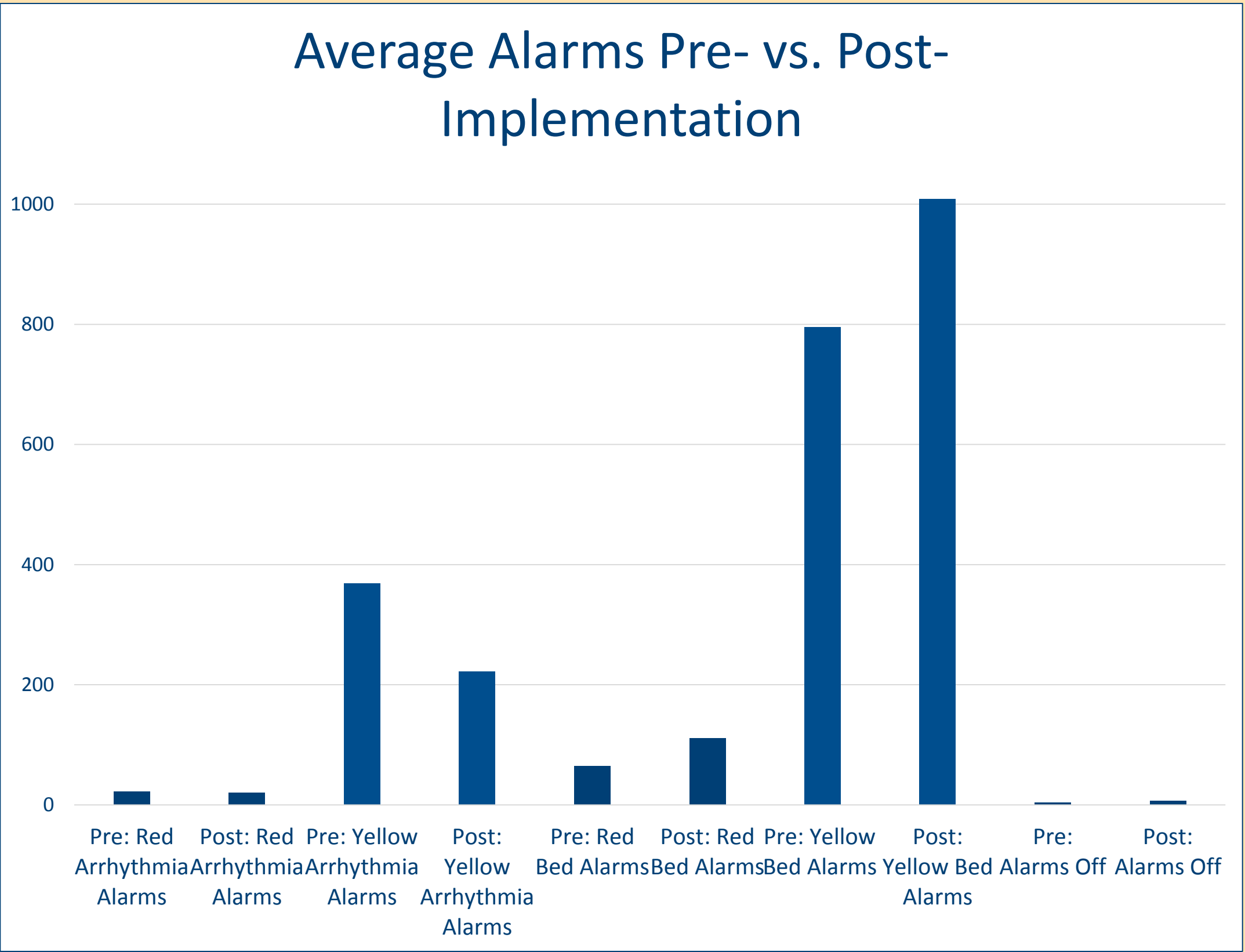


Figure 1. Average Alarms Pre- vs. Post-Implementation

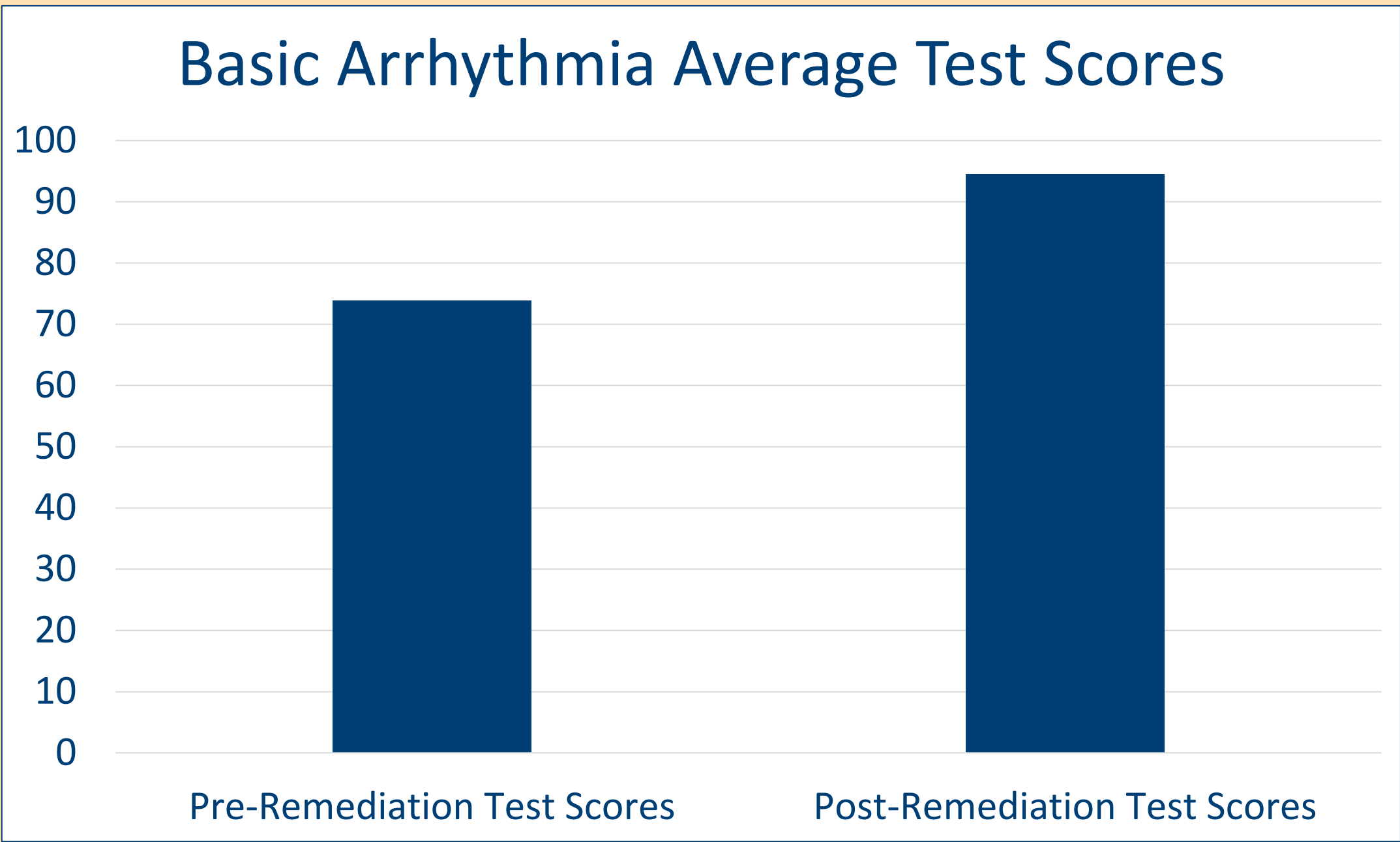


Figure 2. Basic Arrhythmia Average Test Scores

### Conclusions

Alarm fatigue will remain a national focus and will continue to have profound affects on patient safety. The alarm management program reduced the number of patient alarms and improved nurses subjective feelings of responding to patient alarms quicker. The ICU has decided to continue to implement the evidence-based guidelines into their daily practice. The staff now discuss alarm customization during bedside shift report and hold each other accountable to keeping our patients safe. As healthcare continues to face challenges with increased alarms, implementing an alarm management program will be an important aspect of patient safety and improving patient outcomes.

### Implications for Future Practice

- Healthcare facilities should consider implementing an evidence-based program to reduce alarm fatigue and improve patient safety and outcomes.
- As technology continues to increase, the importance of having a sustainable alarm management program substantially intensifies.

### References

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- Peterson, E. M. & Costanzo, C. L. Assessment of clinical alarms influencing nurses’ perceptions of alarm fatigue. *Dimensions of Crit Care Nurs*. 2016;36(1):36-44.

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