Clinical Alarm Research:
- Physiological monitor alarms are intended to notify clinicians when vital signs are outside of pre-set limits.
- Research has shown that over 90% of physiological alarms are false, clinically insignificant, and/or do not warrant any intervention.
- One recent study on a medical ward found that 89% of alarms were non-actionable and the median alarm response time is 7 minutes.

Alarm Fatigue:
- A high frequency of nonactionable alarms can cause alarm fatigue, a desensitization to alarms that can lead to longer response times or no response at all.
- In 2013, the Joint Commission named alarm fatigue as the most common contributing factor to alarm-related sentinel events in hospitals.

Children’s Hospital of Philadelphia (CHOP) Alarm Management Team
- Conceived in 2014 to improve clinical safety.
- 2014-2015: identified devices and alarms contributing to alarm fatigue.
- 2015-2016: implemented new/upated policies and procedures to address alarm fatigue.

This project builds on previous alarm management work, taking a quality improvement approach to impact clinical safety.

AIM & BASELINE DATA

The global aim of the project is to improve the salience of physiological monitor alarms and thereby decrease the rate of alarms per hospital day.

PROJECT STRATEGY

The team used the CHOP Improvement Framework (Figure 1) to apply quality improvement (QI) methods to the alarm management problem. The interdisciplinary team comprised of physicians, nurses, improvement advisor, and data analyst.

CONCLUSIONS & NEXT STEPS

Conclusions:
- Success is attributed to default parameter changes.
- Observed minor alarm reduction with POSAs #4 & #6.
- Observed that changes requiring minimal behavior change were more successful.
- The alarm fatigue alarm remained unchanged, likely due to the challenge of needing continuous monitoring, but limitations in setting actionable parameters.

Next Steps:
- Scale successful interventions to all non-ICU inpatient units.
- Identify and address unique needs on other units.
- Future work:
  - Reduce the use of continuous monitoring, when appropriate.
  - Improve parameter setting for individual needs.
  - Adopt new technology that improves identification of actionable vital sign changes.

We recognize that there is need for continued improvement in the balance of alarms and reducing the level of alarm fatigue to a point where clinicians receive alarms that are meaningful and actionable.

The Alarm Management Journey is continuous and we look forward to the future of improvements in clinical alarm safety.

REFERENCES

6. Using evidence and guidelines to determine need for monitoring.
7. Recurring clinical discussion about monitoring, alarm parameter defaults, and how to mitigate alarm fatigue.
8. For each, look for opportunities to sustain and spread.