Bedside Monitor Configuration Upgrades to Reduce False Alarms and Increase Event Summary Report Reliability

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**BC WOMEN'S HOSPITAL + HEALTH CENTRE**

BACKGROUND

In the NICU, bedside monitors are crucial for providing care, but

- 90% of alarms are non-actionable
- Alarm fatigue (response time to alarms) is longer for infants with higher non-actionable alarms

LOCAL PROBLEMS WITH BEDSIDE MONITORING

- High frequency of alarms (median 50 per patient/day), mostly non-actionable alarms (75%).
- Clinically insignificant events (apnea, bradycardia, desaturation) were stored, hindering meaningful communication during rounds
- Root causes were inaccurately set alarm thresholds and event capture criteria on bedside monitors.
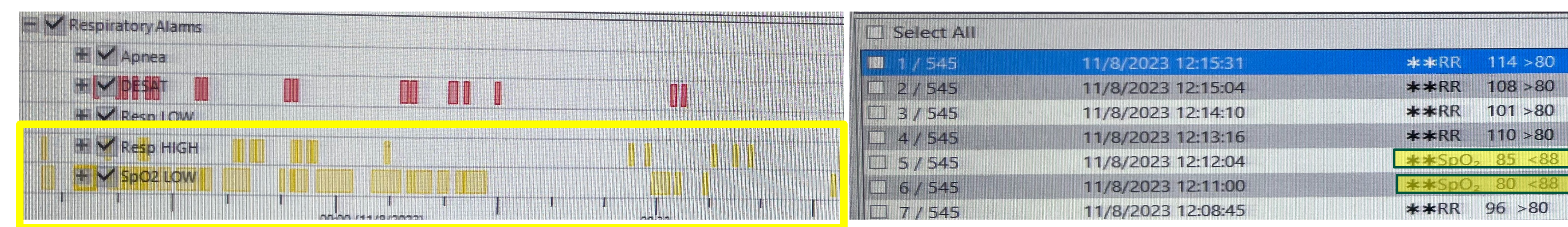
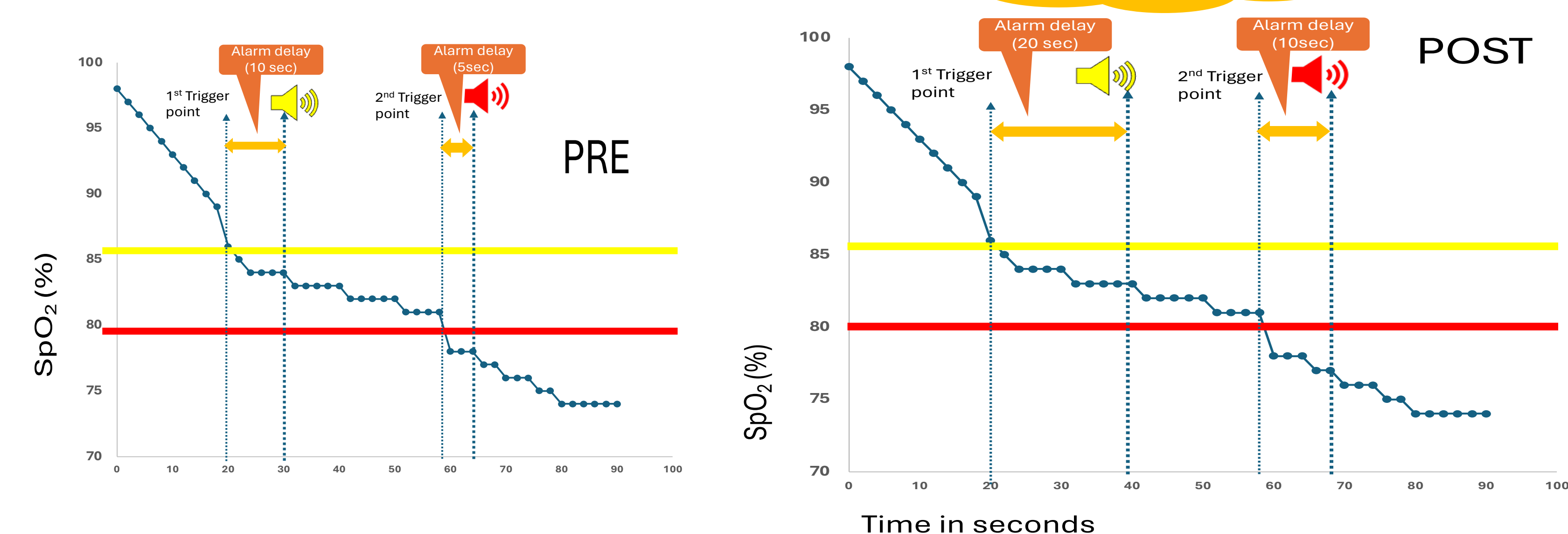*Yellow alarms captured on central station monitors*

AIM

To decrease non-actionable yellow alarms in the NICU by 50% within 3 months, achieved by revising bedside monitor alarm and event capture settings.
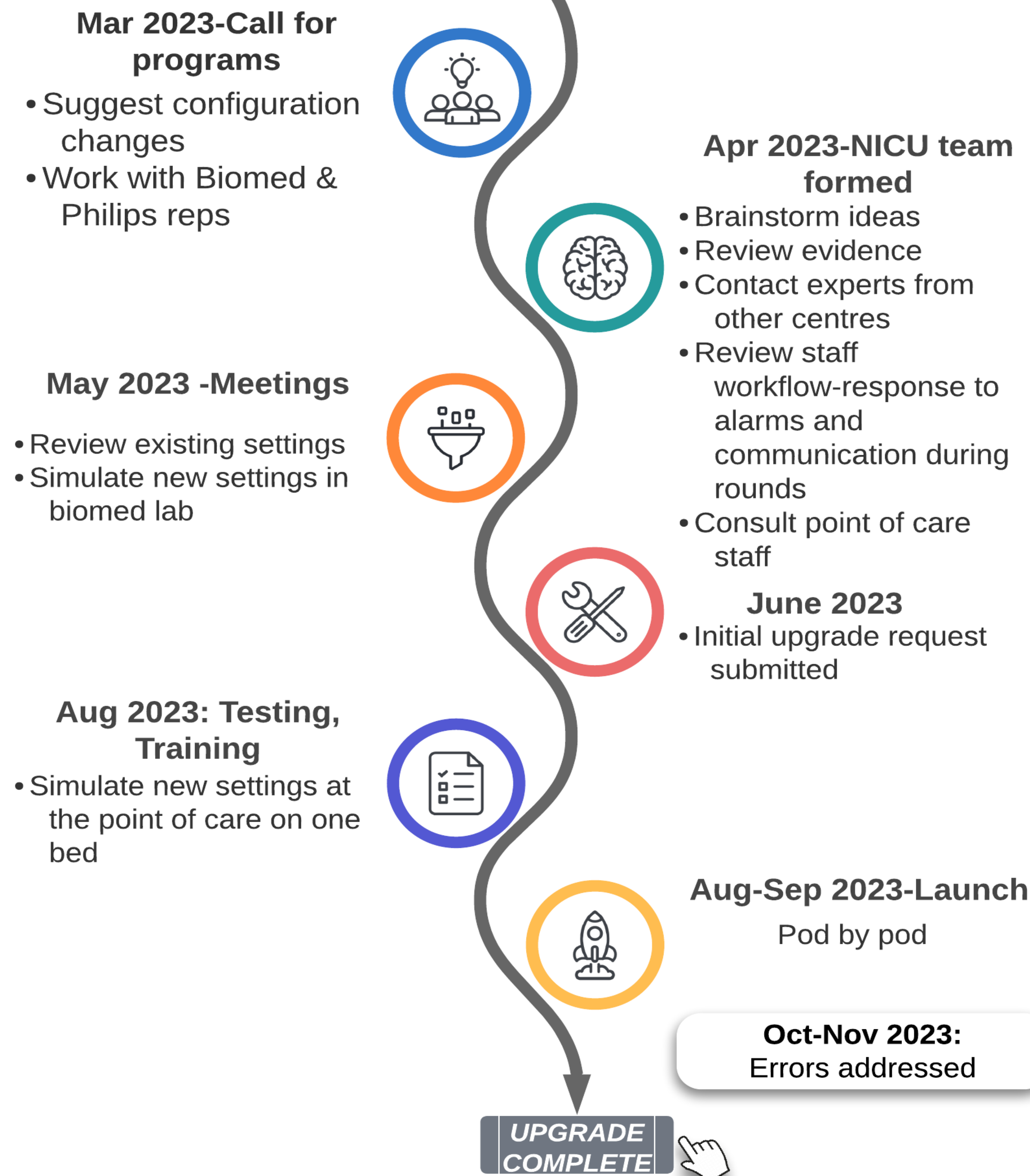
CHANGES

		Pre	Post
1	Increase alarm thresholds-SpO_2 alarm delays		
	• Yellow alarm trigger delay	10 sec	20 sec
	• Red alarm trigger delay	5 sec	10 sec
2	Increase event criteria for triggering storage		
	• SpO_2 < 80% for	5 sec	10 sec
	• HR < 80 beats per min for	2 sec	5 sec
	• RR of 0 per min	15 sec	15 sec
3	Increase display and profiles	5	8

SpO2 desaturation episode / PRE / POST

PROJECT COURSE

Mar 2023-Call for programs
- Suggest configuration changes
- Work with Biomed & Philips reps

Apr 2023-NICU team formed
- Brainstorm ideas
- Review evidence
- Contact experts from other centres
- Review staff workflow-response to alarms and communication during rounds
- Consult point of care staff

May 2023 -Meetings
- Review existing settings
- Simulate new settings in biomed lab

June 2023
- Initial upgrade request submitted

Aug 2023: Testing, Training
- Simulate new settings at the point of care on one bed

Aug-Sep 2023-Launch
Pod by pod

Oct-Nov 2023: Errors addressed

UPGRADE COMPLETE

MEASURES

***Non-actionable alarm-** Alarm that does not lead to a clinical intervention or consultation with another clinician i.e. self-limiting or self-resetting*

PROCESS: Median yellow alarms per patient per day*, Median event review reports use / 100 patient days

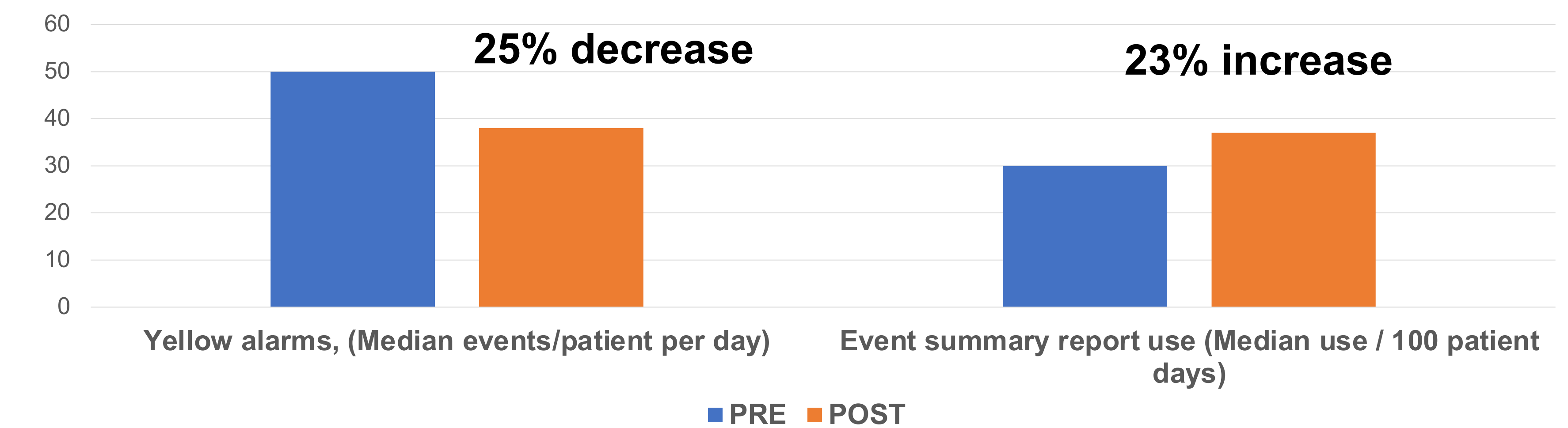IMPLEMENTATION: Attendee satisfaction with educational sessions

*Captured on 100 random patient days from central monitor stations

- **Scan the QR code to access the e-version of the poster**

SCAN ME

PRELIMINARY RESULTS

25% decrease / 23% increase

Yellow alarms, (Median events/patient per day) / Event summary report use (Median use / 100 patient days)

■ PRE ■ POST

- 100% attendees (n=32) reported satisfaction
- 0 monitor related adverse events reported

VISUAL DISPLAY OPTIONS

CONCLUSIONS

- Non-actionable alarms were reduced by ~ 25%.
- Event summary reports use increased by 23%.

FUTURE DIRECTIONS

- Revision of central monitoring station configuration for enhanced efficiency.
- Implementation of automated export of event and SpO_2 histogram daily reports to electronic health record (CERNER) for seamless integration and accessibility

ACKNOWLEDGEMENTS

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