

# **BEDSIDE MONITOR CONFIGURATION UPGRADES TO REDUCE FALSE ALARMS AND INCREASE EVENT SUMMARY REPORT RELIABILITY**

## BACKGROUND

In the NICU, bedside monitors are crucial for providing care because they:

- Quickly show vital signs at a glance.
- Alert caregivers with alarms.
- Create summaries of vital signs over 12-24 hours, to assess infant wellness and decide on care escalation or de-escalation

## **PROBLEMS WITH BEDSIDE MONITORING**

- High frequency of alarms (median 50 per patient/day), mostly non-actionable nuisance alarms (75%).
- Unreliable event summaries (apnea, bradycardia, desaturation counts) due to capturing insignificant events.
- Root cause: inaccurate alarm and event capture settings on bedside 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

### FOUR CHANGES IMPLEMENTED:

- Adjusted alarm thresholds and delays for improved sensitivity.
- Refined event capture criteria to focus on clinically significant occurrences.
- Enhanced visual display options to suit infant illness and staff preferences.
- Implemented staff training on interpreting and responding to alarms effectively.

### MEASURES

PROCESS: Median (IQR\*) yellow alarms per patient per day\*\*, Staff satisfaction survey

BALANCING: Monitoring related adverse events such as infant deterioration due to perceived delay in alarms

IMPLEMENTATION: Attendee satisfaction with educational sessions" \*Note: IQR stands for Interguartile Range.

\*\*Captured on 100 random patient days from central monitor stations

## References

Neuman Crit Rev Biomed Eng 1984;11(2):77-112 Fairchild. Pediatr Res. 2019 June ; 85(7): 987–99 Chandrasekharan J. Perinatol. 2018 January ; 38(1): 86–91 Shivananda S. Pediatr Qual Saf. 2023 Mar 13;8(2):e639

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Mar 2023-Call for programs Suggest configuration changes

• Work with Biomed & Philips reps

### May 2023 - Meetings

• Review manuals, You tube videos, Understand scope

Aug 2023: Testing, Training Superusers signed up

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### PRELIMINAR

25%

25%

**87**%

- bedside daily rounds.
- responders)
- No reported adverse events.

## **PROJECT TIMELINES**

	SPO2 SET UP			ECG (HR) SET UP		
	STANDARD ALARM DELAY ON			BRADY CLAMP	BPM	60 00
	SMART ALARM DELAY AVERAGING TIME	OFF SECONDS	10	EXTREME BRADY- $\Delta$		20
		SECONDS		EXTREME TACHY CLAMP EXTREME TACHY	BPM	240 20
			20 20	ASYSTOLE THRESHOLD	- $\Delta$ SECONDS	20
	LOW ALARM DELAY	SECONDS	<mark>20</mark>		SECONDS	3
	DESAT DELAY	SECONDS	10	RESP SET UP APNEA TIME	SECONDS	15
	DESAT LIMIT	%	80	DETECTION	OLOONDO	AUTO
	Trigger rules/configuration act up		Fuel	nt Setup (Group 1) X	Event Review	$\times$
	Trigger rules/configuration set up When ever monitor detects		Group Name: NER		: 2(0) AB(D): 1(0) D: 4 O: 0 M: 0 (To	tal: 7) (?)
			Group Type: NER Episode Type: High	Res Trend (4min): -2 / +2 min		
Apr 2023-NICU team	<ul> <li>HR ≤ 80 persisting for 5 sec or more</li> </ul>		Brady	80 bpm for 5 sec		90
formod	<ul> <li>SpO2 ≤ 80 persisting for 10 sec or mor</li> </ul>	е	HR	80 % for 10 sec Resp		70
AA	<ul> <li>RR of 0 persisting for 15 sec or more</li> </ul>		SpO <sub>2</sub>	80 & 101 A Resp Apnea	pnea	40 n
Brainstorm ideas	Retrigger-only after 2 mins		*** Apn	ea Manual 727	Oct 11:11)	
Review evidence			Resp		4:00 5:00 6:00 7:00	8:00 9:00 10:00 11:00
		ΙΟΙΙΟΙ		AV ODTIONS		
Contact experts	VISUAL DISPLAY OPTIONS					
<ul> <li>Consult point of care</li> </ul>			24		aw n	
staff	T4405 & Not Admitted 27 Oct 2033 19:29	G-CARS			* Not Admitted	ć post
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		Note 10:29	o an	26 Oct 640 940 1240 1340 117 20 120 150 10	1880 2160 080 380 680 980 1030 Sp0g (12hrs @ 1sec) 1000	2. RR (12hrs @ Smin) rum 1007 enz
June 2023			саяз з нахо			672 Ž
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<ul> <li>Initial upgrade request</li> </ul>			ANNO MARY CLISQAD ANNO MARY CLISQAD Really Conv GCC Low Market Transfer Co Really Conv Values Decime State		NED wmling         EEA1         11(777(00) 51/22(10)         NE         GO           Image: State Sta	Code
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	DHILDS Offerst Annual		P	HILIPS		
Aug-Sep 2023-Launch						
Pod by pod		CC	DNCLL	JSIONS		
Pod by pod						
	<ul> <li>Non-actionable nuisance alarms were effectively reduced.</li> </ul>					
	<ul> <li>The reliability of ever</li> </ul>	nt summar	ry reports	s was notably increa	ased.	
Oct-Nov 2023: Errors						
identified & addressed		FUTU		RECTIONS		
GRADE MPLETE		· · · · ·	L _ 1"			
	Revision of central mo	onitoring st	tation col	ntiguration for enha	ncea efficie	ncy.
				wort and Change Line		
Y RESULTS •	Implementation of aut	omated ex	kport of e	event and SpUZ hist	logram dally	reports
	to electronic health red	cord (CFR	NER) for	r seamless integrat	ion and acc	essibilitv

Reduction in non-actionable, yellow alarms.

increase in event review reports use during

 attendees were extremely satisfied or satisfied respectively with the educational session (n=32

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





## ACKNOWLEDGEMENTS

