

Its Not Just About the Alarms Reducing Failure to Rescue



Our Clinical Challenge

Reduce Failure to Rescue outside of the ICU

 Empower clinicians through technology that reliably detects deterioration while enhancing clinician, patient and family satisfaction

Project Intro

Wake Forest Baptist Medical Center Readiness

- Executive Sponsor
- Nurse leadership on floor
- Cross functional team
- Cultural Assessment

Trial Details

- Full integration
- 20 weeks
- Primarily post neurosurgery patients

Desired Workflow

Point of Care



Incorporation Into Practice

- Clinical Guidelines
- Physician Engagement
- Nurse Training
- Alarm Management Protocol

Physician Call Parameters vs Alarm Management

	CALL PARAMETERS LOW	ALARM PARAMETERS LOW	CALL PARAMETERS HIGH	ALARM PARAMETERS <i>HIGH</i>
SpO ₂	90%	85%	NA	NA
Pulse Rate	40	39	120	1 50
Heart Rate	40	39	120	150
Respiration Rate	12	8	24	1 35
Systolic BP	90	89	180	191
Diastolic BP	NA	NA	100	↓ NA
Mean Arterial Pressure	NA	NA	NA	NA

Iterative Alarm Optimization

Simulate



500k⁺ hours of patient data



Low Threshold

		81	83	85	87
	0	0.88	1.60	3.54	8.42
belay	60	0.44	0.87	1.96	4.74
	90	0.29	0.56	1.31	3.36
	120	0.18	0.41	1.00	2.59



Optimize

Parameter	Alarms/ Patient/ Day		
SpO2	1.1		
Cardiac Rate	0.8		
Resp Rate	0.4		
Continuous BP	0.4		
TOTAL	2.7		



Wake Forest Baptist Medical Center

Final Iteration of Alarm Parameters

	ALARM PARAMETERS	TIME DELAY (seconds)	ALARM PARAMETERS	TIME DELAY (seconds)
	LOW	LOW	HIGH	HIGH
SpO ₂	85%	90	OFF	NA
Pulse Rate	30 🖊	30	150	30
Heart Rate	30 📕	15	150	15
Respiration Rate	4 📕	120	35	120
Systolic BP	OFF ★	30	200 🕇	240
Diastolic BP	OFF	30	OFF	30
Mean Arterial Pressure	58 ★	60	OFF	60

Maintaining Alarm Vigilance



Clinical Outcomes



- A total of 1,500 patients were monitored for 60,000 hours
- At least 19 events that would have likely resulted in failure to rescue
- "Too Numerous to Count" interventions based upon alarms overall

Early Detection Events by Alarm Type



- cNIBP was the most common early detection parameter
- All vital signs are needed for an effective surveillance monitoring system

Next Steps

