



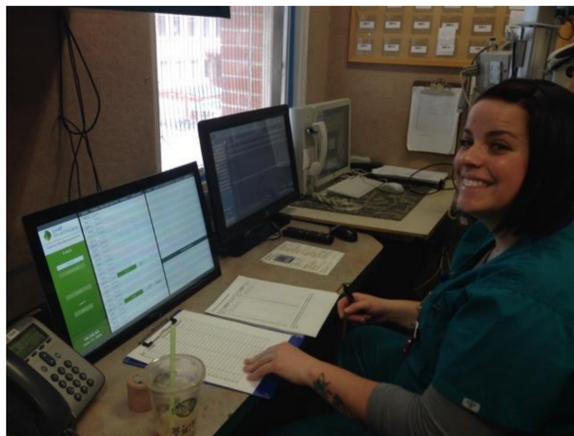
“LOOK WHO’S TURNING?” IMPLEMENTATION OF A WIRELESS PATIENT MOVEMENT MONITORING SYSTEM AS PART OF PRESSURE ULCER PREVENTION PROCESS IMPROVEMENT ON A MEDICAL/SURGICAL UNIT

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Purpose

Patient turning is the mainstay of pressure ulcer prevention. Literature shows that compliance to turn protocols varies from 15%-66%^{1 2 3 4 5}

This performance improvement project intended to identify characteristics in patient turning practices on a busy 27-bed medical/surgical unit by using a novel technology that continuously monitors patient position and alerts nurses when turns are due.



A sensor is applied to a patient's upper torso. The sensor continuously monitors the patient's movement and position. Sensor data is wirelessly communicated through a network of relay antennas and viewable on computer terminals or mobile devices.

Methods

A FDA-cleared, wireless patient monitoring system (Leaf Healthcare, Pleasanton, CA) was deployed on the unit. The system continuously monitors patient movement and records all patient turns. Individualized turning parameters could be prescribed for each patient. The turn clock automatically resets for any turn that meets prescribed angle and tissue decompression thresholds.

Room	Patient	Time Until Next Turn	Position	Information
2301	M.S.	1:57	L B R	Upright
2302	C.M.	0:14	L B R	
2303	S.S.	Turn Due 0:03 Over	L B R	
2304	M.L.	1:51	B R	

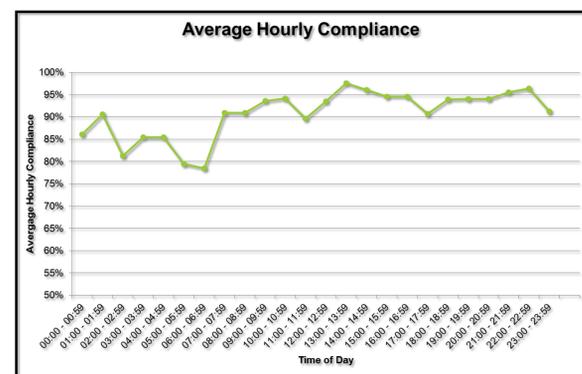


A user-interface displays the real-time position and turn history for each patient.

Number of Monitoring Days	31
Number of patients	69
Number of monitoring hours	3287
Average monitoring hours per patient	47
Min monitoring hours / patient	2.8
Max monitoring hours / patient	172
Braden Scale mean (min,max) on admission	19.4 (13,23)
Medical Patients	76%
Surgical Patients	24%

Results

3287 hours of turn data were gathered from 69 patients over 31 days. Average turn protocol compliance was 90.3% and varied between 78% and 98% throughout a 24-hour period.



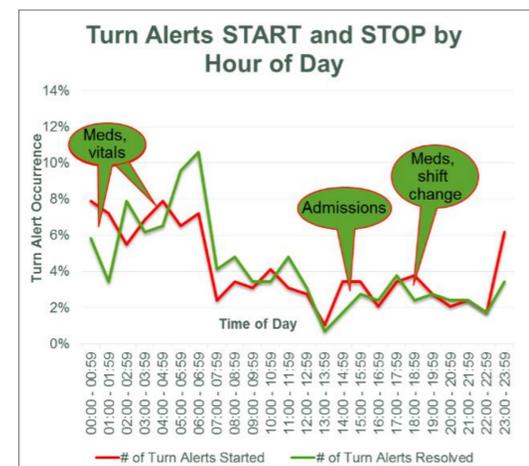
Periods of reduced compliance coincided with shift changes, high patient admit days and medication delivery times.

Times with the most overdue turns

- Medication administration times
- Vital signs recording times
- Admissions
- Shift changes
- Mon, Wed, and Thurs (high admit days)

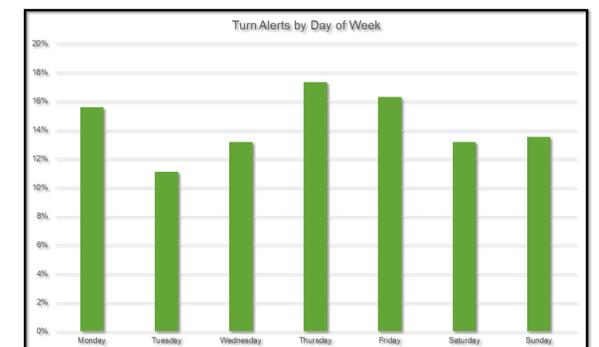
Times with the fewest overdue turns

- Night shift (nursing down-time)
- When more CNAs are present



Conclusions

This process improvement project demonstrates that continuous position monitoring technology provides high patient turning protocol compliance. Our correlation analysis identified 1) busy admit/discharge days and 2) shift changes as the periods with lowest compliance. This evidence-based analysis was used by nursing management to adjust staffing levels during these periods when turning demands tended to exceed available resources.



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