

Using Technology to Improve Efficacy of Patient Repositioning

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Background

Hospital acquired pressure injuries (HAPIs):

- ❖ Associated with poor patient outcomes
- ❖ Costs can range from \$2,159 - \$21,410 (CALNOC, 2017)
- ❖ Can result in an increased length of stay, 6-10 additional days

Orange Coast Memorial Critical Care Unit (CCU):

- ❖ In 2016, 45 HAPI's with potential costs of \$97,155 – \$963,450
- ❖ After evaluation of our practice, the incidence of HAPIs was above CALNOC benchmark

Patient repositioning is the gold standard of care

Question: Does our practice of repositioning result in adequate offloading of pressure?

Purpose

The purpose of this performance improvement project was to pilot the efficacy of a wireless monitoring system in the CCU to measure:

- ❖ Patient repositioning ≤ every 2 hours
- ❖ Adequacy of offloading pressure areas ≥ 20°
- ❖ Incidence of HAPI's

Acknowledgements

Lynda Steele, BSN, RN CCU Manager, Debbie Tracy, MSN, RN Director Critical Care Services

Vendor Support Kelly Meacham, RN, Annmari Cooley.

Administrative and Research support: Shela Kaneshiro, RN CNO; Sadeeka Al-Majid, PhD, RN, Research Scientist; Nika Carlson RN Director Clinical/Quality Improvement.

Description of Innovation



Leaf Sensor

- ❖ A wireless, wearable single use sensor, placed on the sternum
- ❖ Sensor battery life is 21 days and costs \$199
- ❖ The sensor provides real time visual turn cues on patient's individual needs

Compliance

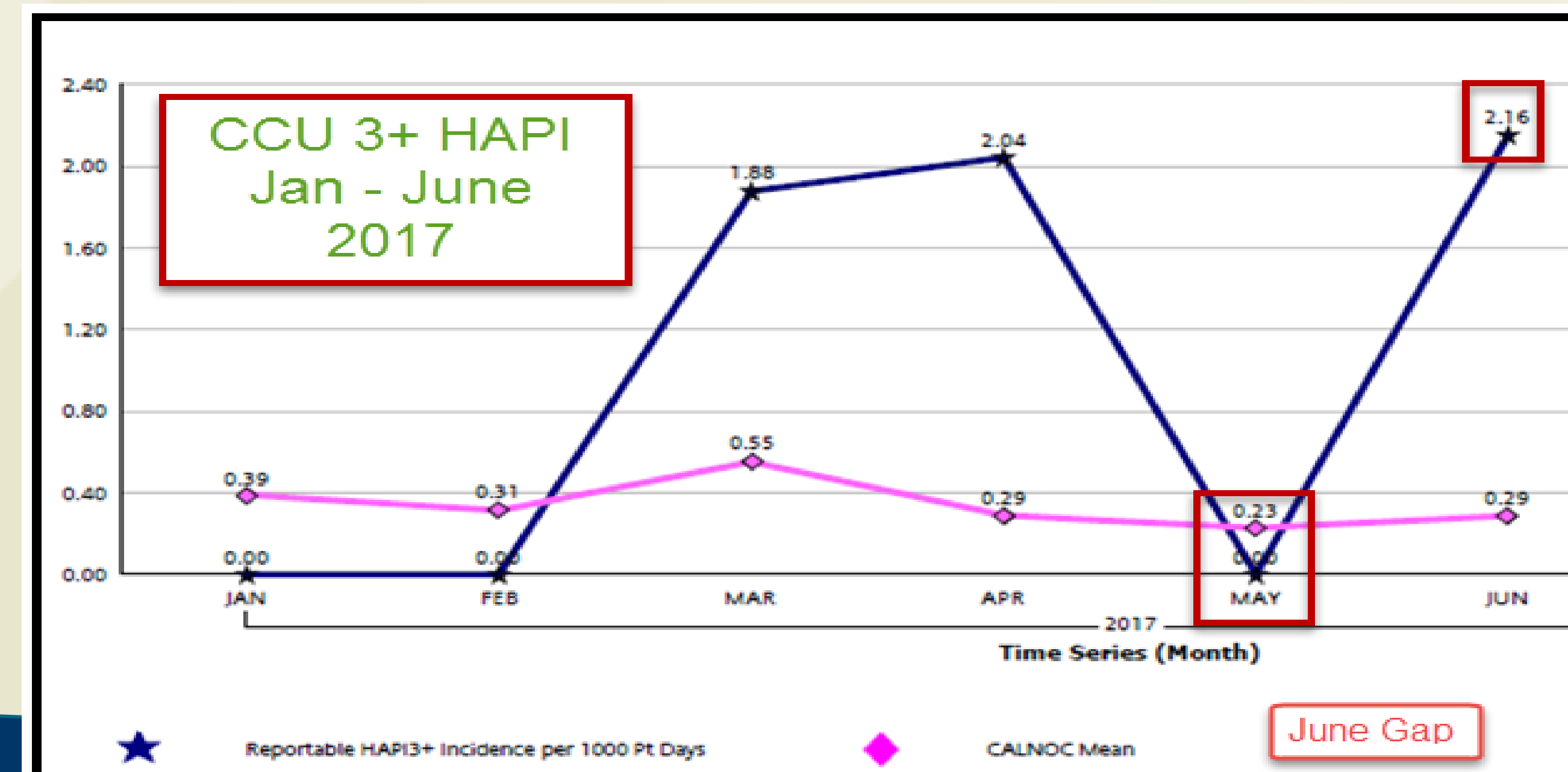
- ❖ Defined as offloading pressure ≥ 20° to reperfusion tissue
- ❖ Green visual cue indicates offloading ≥ 20° achieved
- ❖ Turn Angle: turn is of sufficient magnitude to provide adequate offloading
- ❖ Frequency: turns provided as often as necessary, but not more often than necessary
- ❖ Reperfusion time: Pressurized tissue is given enough time for reperfusion between turns
- ❖ Research illustrates turn compliance > 85% reduces risk of pressure injury five times

Sample and Setting

- ❖ The sample included 189 patients monitored in the CCU over a 90-day period (May, July, & Aug)

Table 1: Inclusion	Exclusion
Patient with Braden ≤ 18	Comfort care patients
Nurse clinical judgement	Hemodynamically unstable patients

Results



- ❖ CCU HAPI 3+ above CALNOC benchmark
- ❖ LEAF pilot began May of 2017:
 - May CCU HAPI 3+ performance below CALNOC benchmark
- ❖ LEAF sensor not used in June:
 - June performance above benchmark

Results (Cont'd)

Table 2: Pilot HAPI Outcomes	Baseline:	Intervention:
	May July Aug 2016	May July Aug 2017
Stage I	2	0
Stage II	4	0
Stage III	0	0
DTI	2	5
Unstageable (reportable)	2	0
Total (Sacral-coccyx)	10	5

- ❖ 4 of the HAPI's were on unmonitored patients
- ❖ 50% reduction in development of HAPI during pilot period

Table 3: Pilot Financial Outcomes	Dollars
Unreimbursed treatment cost per HAPI (Avg)	\$11,784
Potential HAPI Costs (\$58,922 x 5)	\$58,920
LEAF Sensor Cost (through 8/31/2017)	(\$38,606)
Potential Cost Savings	\$20,314

- ❖ Potential cost savings \$20,314 during 90-day pilot period

Nursing Implications

- ❖ The use of technology can ensure appropriate offloading
- ❖ Nurses must use clinical judgment in initiating the Leaf sensor. Don't focus on the Braden Score
- ❖ Device related HAPI's continue to be a challenge (i.e. CPAP, oxygen tubing, waffle boots)
- ❖ Leaf can provide visual cues to assist the nurse with patient care and prioritization
- ❖ Leaf daily reports increase visibility of turn compliance