

Title: Reducing Pressure Ulcer Incidence in Critical Care Using Wearable Sensor Technology

Authors: Bernadette Walters, BSN, RN, CWON, Amanda Spitzer, BSN, RN, CWOCN, CFCN. John Peter Smith Hospital, Fort Worth, TX.

Category: Information/Education report (Quality improvement project)

Introduction

Patient turning has been a cornerstone of pressure ulcer prevention since Florence Nightingale, yet literature shows that ICU compliance to two-hour protocols is documented at 38%-51%.^{1,2} This project tested a strategy for monitoring compliance on a 36-bed ICU of 535-bed county hospital with prescribed turning protocols and its impact on hospital acquired pressure ulcer (HAPU) incidence.

Methods

Between January and May 2016, staff turn compliance for at-risk patients (n=451) was monitored via wearable patient sensor† shown to improve turn compliance.³ HAPU incidence before and after system implementation was collected through chart review. Descriptive analyses and tests of difference were performed to obtain percent compliance and change in compliance scores by patient, group, and HAPU incidence.

Results

Monitored patient care hours (44,021) had a 5-month mean turn compliance of 93%. Sacral HAPU incidence was 55% lower than same period previous year. Full-thickness HAPU's were reduced by 44%. Sensor data was used for HAPU root-cause analysis, nurse education and improving patient treatment plans.

Conclusions

Highly compliant turning regiment can reduce hospital-acquired pressure ulcer incidence and severity. Wearable technology can help sustain a high turn compliance as integral element in individualized patient care.

¹ Lynn Schallom, Norma A. Metheny, Jena Stewart, Renée Schnelker, Janet Ludwig, Glenda Sherman and Patrick Taylor. Effect of Frequency of Manual Turning on Pneumonia. *Am J Crit Care* 2005;14:476-478

² Krishnagopalan S, Johnson W, Low L, Kaufman L. Body positioning in Intensive Care patients: Clinical Practice versus Standards. *Crit Care Med* 2002; 30(11): 2588-2592

³ Schutt S, Tarver C, Pezzani M. Advancing pressure ulcer prevention efforts: Innovative technology improves compliance with patient turning protocols. *ANCC Magnet* 2014.