

Impact of Unit-Level Nurse Staffing on Hospital Acquired Pressure Ulcers

Nancy E. Donaldson RN, DNSc., FAAN, Principal Investigator

Diane S. Brown RN, PhD, Co-Investigator

Linda Burnes Bolton RN, Dr. PH, FAAN, Co-Investigator

Carolyn E. Aydin Ph.D, Co-Investigator

Bruce Cooper PhD., Co-Investigator

Kathleen Yule RN, MS, Project Coordinator

The aims of this 2-year AHRQ Working Conditions and Patient Safety study (AHRQ Grant # RO1HS 11954) build on the established capacity of the California Nursing Outcomes Coalition (CalNOC) to engage California acute care hospitals in voluntarily using ANA nursing quality indicators for reporting standardized nurse staffing, patient safety and quality indicators in a collaborative research, repository development and benchmarking project. As one component of a larger study, this paper examines associations between the structure of nurse staffing in adult acute medical-surgical units and a common patient safety concern, hospital acquired pressure ulcers (HAPU). Pressure ulcers (PU) were defined as hospital acquired based a computed protocol that factored in stage of the ulcer on the day of discovery, medical record confirmation and date of discovery within the context of the length of stay.

Prospective, descriptive and correlational, each participating hospital was FWA and IRB approved and collected daily nurse staffing data 1-7 weeks prior to conducting a structured, standardized prevalence study in which patient skin was assessed and observed pressure ulcers staged using an established coding scale. Additional data documenting date of PU discovery were obtained from the patient record. Unit level nurse staffing skill mix, hours of care and workload variables were gleaned from hospital generated acuity and payroll systems and submitted electronically to the investigative team, along with number of patient days. Computed staffing variables included hours of care, skill mix, percent licensed hours of care, percent contract worker hours of care, required and actual hours of care.

This study was conducted in a convenience sample of 25 acute care, not-for-profit hospitals in California who were concurrently participating in the ongoing California Nursing Outcomes Coalition (CalNOC) Project. The pressure ulcer prevalence study was conducted on 64 adult medical surgical patient care units, accounting for 2164 patient beds. The hospital sample included urban and rural sites and with an average daily census ranging from 100 to 400+ beds. A majority of patients studied had a principal diagnosis that was medical (66%).

Hospital acquired pressure ulcer prevalence, all stages across all hospital sites, was 8% with 4% noted to be Stage 2 or greater. Hospitals with an ADC of 300-399 reported greater variation in staffing during the 7 days prior to the prevalence study with 60% reporting the ratio of actual to required RN hours under 100%. Small but significant Spearman correlations were observed between the % of HAPU and ratio of actual to required hours, total hours of care per patient day and total RN hours of care per patient day.

These findings add to a growing body of evidence affirming the relationship between the 'dose' of direct care nurse staffing and patient care outcomes, in this example, skin integrity. This study also advances methodological precision in measuring HAPU and staffing in a large multisite study using hospital generated data.

The prevalence of hospital acquired pressure ulcers in adult acute care may be considered a sensitive and useful indicator of nurse staffing effectiveness at the institutional and systems levels.