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# Foundations of a nursing-sensitive outcome indicator suite for monitoring public patient safety in Western Australia



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## KEYWORDS

Assessment;  
Indicators;  
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outcomes;  
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## Summary

**Background:** The nursing workforce is critical to improving patient outcomes. Without adequate evidence to guide decision making, restructuring of the nursing workforce to meet increasingly complex patient care needs in the context of registered nurse shortages might fail to produce desired outcomes.

**Objective:** To develop a suite of nursing-sensitive outcome indicators for monitoring the safety of multi-day adult medical and surgical patients associated with nurse workloads and nursing workforce models.

**Design:** A feasibility study was conducted.

**Setting:** Adult acute metropolitan public hospitals in Western Australia.

**Data sources:** Patient data for testing the suite were sourced from 2006 to 2010 coded discharge morbidity abstracts.

**Method:** Indicator development followed the [American Nurses Association \(2011\)](#) approach: clarifying indicator scope and purpose; determining selection criteria; reviewing the literature for potential indicators; identifying data sources; review by experts; documenting each indicator; and determining baselines.

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**Results:** The proposed suite comprises 9 indicators pertaining to medical and surgical patients: failure-to-rescue; in-hospital 30-day mortality; average length of stay; hospital-acquired urinary tract infections, sepsis, pneumonia and pressure injuries; falls with injury occurring in hospital; nurse staffing levels (comprising skill mix and nursing care hours per patient day).

**Conclusions:** Sufficiently robust administrative data is available to calculate retrospective monthly and annual rates of nursing-sensitive outcomes at unit level and further analysed by ward category for metropolitan patients. Further work is required to pilot test the suite and develop processes for reporting to the Department of Health and hospitals on the impact of nurse staffing and care delivery models on patient outcomes.

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## 1. Introduction

As the largest staff component of Australia's health workforce, nurses are critical to improving patient outcomes. Higher nurse staffing levels, particularly the registered nurse (RN) proportion, have been associated with improved patient outcomes (Buerhaus & Needleman, 2000; Duffield et al., 2011). Nurses provide continuous surveillance, prompt detection and intervention when a patient's condition deteriorates (Twigg, Duffield, Bremner, Rapley, & Finn, 2011).

While a greater quantity or quality of nursing care will have a positive impact on patient outcomes (American Nurses Association (ANA), 2011), the quality of patient care is threatened by RN shortages from an ageing workforce, diminishing participation rates (Duffield & O'Brien-Pallas, 2003), and cost cutting focused on nurse staffing (Clarke & Donaldson, 2008). With global nursing shortages hospitals will be unable to meet escalating demands (Duffield et al., 2011). Even Australia, where the nursing workforce exit rate eased after the 2007–08 Global Financial Crisis, expects future major shortages (Creswell, 2011).

### 1.1. Background

In Australia (Carrigan, 2009), as in Canada (McGillis Hall, 1998), the United Kingdom (UK) (Tailby, 2005), the United States (US) (Buerhaus & Needleman, 2000) and New Zealand (NZ) (Gorman, Horsburgh, & Abbott, 2009), one response to projected shortfalls has been to fill RN positions with unregulated workers or employ them for low skilled tasks in order to free up highly skilled RNs. Downward substitution models with fewer RN hours of care to patients and a diluted skill mix, adversely impact nursing-sensitive outcomes (NSOs), those changes in patients' health status directly influenced by nursing care (Cheung, Aiken, Clarke, & Sloane, 2008; Duffield et al., 2011). Public hospitals in Western Australia (WA) use the mandatory nurse hours per patient day (NHpPD) staffing method to determine reasonable nurse workloads with wards classified according to diversity, complexity and nursing tasks (Twigg & Duffield, 2009). In 2008, unregulated workers were introduced in a complementary role (Department of Health, 2012), the impact of which has not been reported (Roche, Duffield, Aisbett, Diers, & Stasa, 2012).

Future manipulations of WA's nursing workforce in public hospitals will occur in the context of activity-based

funding with payment for patient number and mix (Solomon, 2014). As evidence of patient care quality and efficiencies under this funding model is needed (Solomon, 2014), measuring NSOs will elucidate the effects of nurse staffing levels and configurations on patient outcomes (Roche et al., 2012). The public inquiry into avoidable deaths in Mid Staffordshire NHS Foundation Trust hospitals (Francis, 2013) indicates the importance of monitoring the care quality and patient safety in relation to nurse staffing. The Trust reduced nursing staff numbers and diluted the skill mix with dire consequences for standards and patient outcomes (Francis, 2013). The UK Government has since published key ward-level patient safety indicators (Department of Health, 2014). These initial patient safety thermometers include pressure injuries (PIs), venous thromboembolism, harmful falls, catheter-associated urinary tract infections (UTIs), and nurse and midwife staffing levels.

In the US there has been considerable work on standardised measures of the association between quality of care and nurses, nursing care and the nursing care environment. A number of regional US nursing quality databases collaborate with the National Database for Nursing Quality Indicators on this (Clarke & Donaldson, 2008). In 2004, the National Quality Forum (NQF) published eight patient-centred outcome measures and four system-centred measures towards provider accountability and continuous improvement (NQF, 2004).

Australia's *National Safety and Quality Health Service Standards (NSQHSS)* provide a set of measures of safety and quality for all health service organisations linked to accreditation (Australian Commission on Safety and Quality in Health Care (ACSQHC), 2011), several of which are nursing-sensitive (Twigg, Geelhoed, Bremner, & Duffield, 2013). The lack of reliable baseline data for monitoring the quality of hospital care and patient safety has given rise to a number of recent developments. For example, the *Classification of Hospital-Acquired Diagnoses (CHADx)* has been proposed for internally monitoring hospital-acquired conditions using routine hospital data (Jackson, Roberts, Jorm, & Wakefield, 2009; Utz, Johnston, & Halech, 2012). The Joint Working Party of the ACSQHC and the Independent Hospital Pricing Authority is currently testing a national set of high-priority hospital complications also using hospital-level routine data (see KPMG, 2013). The Victorian Department of Health refined the set of patient safety indicators (PSIs) developed by the US Agency for Healthcare Research and Quality to suit Victorian hospital inpatient administrative data sets (State Government of Victoria, 2012). The set of 18

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