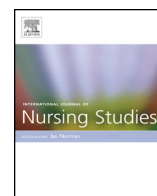




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Contents lists available at ScienceDirect

## International Journal of Nursing Studies

journal homepage: [www.elsevier.com/ijns](http://www.elsevier.com/ijns)

## Vital signs monitoring and nurse–patient interaction: A qualitative observational study of hospital practice



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## ARTICLE INFO

## Article history:

Received 1 October 2015

Received in revised form 6 December 2015

Accepted 18 December 2015

## Keywords:

Vital signs

Patient monitoring

Nurse–patient relations

Hospital

Physiological deterioration

qualitative study

## ABSTRACT

**Background:** High profile safety failures have demonstrated that recognising early warning signs of clinical and physiological deterioration can prevent or reduce harm resulting from serious adverse events. Early warning scoring systems are now routinely used in many places to detect and escalate deteriorating patients. Timely and accurate vital signs monitoring are critical for ensuring patient safety through providing data for early warning scoring systems, but little is known about current monitoring practices.

**Objective:** To establish a profile of nurses' vital signs monitoring practices, related dialogue, and adherence to health service protocol in New South Wales, Australia.

**Methods:** Direct observations of nurses' working practices were conducted in two wards. The observations focused on times of the day when vital signs were generally measured. Patient interactions were recorded if occurring any time during the observation periods. Participants ( $n = 42$ ) included nursing staff on one chronic disease medical and one acute surgical ward in a large urban teaching hospital in New South Wales.

**Results:** We observed 441 patient interactions. Measurement of vital signs occurred in 52% of interactions. The minimum five vital signs measures required by New South Wales Health policy were taken in only 6–21% of instances of vital signs monitoring. Vital signs were documented immediately on 93% of vitals-taking occasions and documented according to the policy in the patient's chart on 89% of these occasions. Nurse–patient interactions were initiated for the purpose of taking vital signs in 49% of interactions, with nurse–patient discourse observed during 88% of all interactions. Nurse–patient dialogue led to additional care being provided to patients in 12% of interactions.

**Conclusion:** The selection of appropriate vital signs measured and responses to these appears to rely on nurses' clinical judgement or time availability rather than on policy-mandated frequency. The prevalence of incomplete sets of vital signs may limit identification of deteriorating patients. The findings from this study present an important baseline profile against which to evaluate the impact of introducing continuous monitoring approaches on current hospital practice.

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## What is already known about the topic

- Identifying and responding to deteriorating patients is an essential component of high quality safe care.
- Vital signs monitoring at the bedside offers an opportunity for nurse–patient interaction in which patients can contribute to their care by identifying additional care needs.
- Early warning systems are routinely used in developed countries to identify and trigger escalation and clinical response for patients whose clinical or physiological condition is deteriorating.

## What this paper adds

- Vital signs monitoring practices in the study wards rarely adhered to the policy-mandated full set of five vital sign measures.
- The infrequency with which full sets of vital signs measures were taken suggest that nurses are confident about their clinical judgement, or lack time to comply with state policy to prevent deterioration.
- Incomplete monitoring could limit nurses' ability to recognise deteriorating patients and further exploration of the reasons behind this behaviour would be useful.
- The findings from this study present an important baseline profile against which to evaluate the impact of introducing continuous monitoring approaches on current hospital practice.

## 1. Introduction

The most common method for monitoring and documenting a patients' well-being or deterioration in hospitals is often through the assessment of five vital signs: blood pressure (BP), oxygen saturation of the blood (SpO<sub>2</sub>), pulse rate, respiratory rate, and body temperature (Ahrens, 2008). Hospital policies in many countries internationally mandate that these measures be taken in all wards, for all patients, at various frequencies per day and there is substantial research literature about the individual measures taken in the monitoring process (Ahrens, 2008). Yet since the introduction of vital signs monitoring and documentation, the practice of this critical aspect of nursing has received limited research attention (Cretikos et al., 2008; Hands et al., 2013). There is a dearth of literature around vital signs monitoring and documentation practices and a lack of data and recommendations about optimal practices (Evans et al., 2001; Lockwood et al., 2004).

Patient safety failures, such as system gaps or individual health care provider errors that put patients at risk of harm (Carayon and Wood, 2010; van Beuzekom et al., 2012), have demonstrated that recognising early warning signs of clinical and physiological deterioration can prevent or reduce harm resulting from serious adverse events (Beaumont et al., 2008; Kyriacos et al., 2011; Ludikhuijze et al., 2012; van Beuzekom et al., 2012). There is now international recognition of the need to identify and respond to clinical and physiological deterioration in the interest of providing high quality and safe care (ACSQHC,

2014; National Institute for Clinical Health Excellence, 2007; Agency for Healthcare Research Quality, 2011). In 2005, the United Kingdom (UK) National Patient Safety Agency conducted an analysis of serious incidents resulting in death; of these, 425 occurred in acute/general hospitals and 64 of those deaths resulted from a lack of recognition or response to patient deterioration (Beaumont et al., 2008). The Australian National Safety and Quality in Health Service standards now require all hospitals and day procedure services to support health care providers recognise and respond to a patient's deteriorating condition (Australian Commission on Safety Quality in Health Care, 2012).

Early warning scoring systems are used to protect patients by highlighting signs of deterioration and triggering an escalation of care from health care staff (Osborne et al., 2015). These systems are used routinely in both the UK and Australasia (Green and Williams, 2006; Hogan, 2006; Chaboyer et al., 2008). For example, in New South Wales the 'Between the Flags' system was introduced in 2010 to improve recognition of and response to deteriorating patients in public hospitals across the state (Clinical Excellence Commission, 2013; Hughes et al., 2014). This system is designed to identify patients who show early signs of deterioration using intermittent vital signs monitoring and documentation to identify when there is a need for on-site clinical review by a 'home team' or rapid response by the medical emergency team. Effective early warning systems rely on vigilant staff taking vital signs measures in accordance with health system policy to provide the necessary data from accurate and timely observations (Bellomo et al., 2012). The UK National Institute for Health and Clinical Excellence (NICE) recommend that physiological observations should be taken at least every 12 h and more frequently if abnormal physiology is detected (National Institute for Clinical Health Excellence, 2007). In New South Wales (NSW) Australia, a minimum set of vital signs must be monitored and documented at least three times per day at eight hourly intervals, unless more frequent monitoring is ordered by a clinician such as in the case of patients requiring rapid response calls (New South Wales Health, 2014). A minimum set of observations in our hospital includes five vital signs (respiratory rate, heart rate, blood pressure, temperature and SpO<sub>2</sub>) and two observations (level of consciousness, pain score) (New South Wales Health, 2014).

To date, vital signs monitoring has operated by nurses going to the patient's bedside at given intervals to collect clinical and physiological data and make an assessment of the patient's condition. This model is open to wide variation in practice between wards and hospitals due to the knowledge and experience of staff (Lockwood et al., 2004). Patients may experience substantial deterioration between monitoring intervals and the system is vulnerable to the delay or omission of critical data capture during busy periods or times when there are fewer staff available such as weekends and evenings (Buist and Stevens, 2013; Hands et al., 2013). This study explores current vital signs monitoring practices in an Australian health care setting, adherence to the health service policy in New South Wales,

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