Research paper

Measurement of the frequency and source of interruptions occurring during bedside nursing handover in the intensive care unit: An observational study

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ARTICLE INFORMATION

ABSTRACT

Background: Effective clinical handover involves the communication of relevant patient information from one care provider to another and is critical in ensuring patient safety. Interruptions may contribute to errors and are potentially a significant barrier to the delivery of effective handovers.
Objectives: The study objective was to measure the frequency and source of interruptions during intensive care (ICU) bedside nursing handover.
Methods: Twenty observations of bedside handover in an ICU were performed and the frequency and source of interruptions were recorded by the observer for each handover. Observations occurred Monday to Friday during shift change; night to day shift and day to evening shift. Interruptions were defined as a break in performance of an activity.
Results: The mean handover time was 11 (±4) min with a range of 5–22 min. The mean number of interruptions was 2 (±2) per handover with a range of 0–7. The most frequent number of interruptions was seven, occurring during a 15 min handover. Doctors, nurses and alarming intravenous pumps were the most frequent source of interruptions, with administration staff and wards people also disrupting handovers.
Conclusion: Nurses, doctors and alarming intravenous pumps frequently interrupt ICU bedside handovers, which may lead to loss of critical information and result in adverse patient events. Increased knowledge in this area will ensure appropriate strategies are developed and implemented in healthcare areas to manage interruptions effectively and improve patient safety.

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1. Introduction

Effective clinical handover involves the communication of relevant patient information from one care provider to another and is critical to ensuring patient safety, quality care and optimal patient outcomes.[1] In 2010, communication breakdowns were implicated as root causes in over 80% of sentinel events reported by hospitals.[2] The World Health Organisation and national bodies such as the Australian Commission on Safety and Quality in Healthcare identify clinical handover as a top priority in reducing adverse patient events.[3] In Australia, this has lead to the introduction of a new National Health Service Standard targeting clinical handover.[4]

Although much work has been carried out to improve current handover processes, there are still several gaps in understanding interruptions which requires further examination. Currently

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there is widespread awareness nationally and internationally that interruptions are prevalent in healthcare areas and there is some speculation whether interruptions during handover are related to or responsible for adverse patient events.[5] Yet, it seems intuitive that minimising interruptions during handover may help to ensure it is both efficient and effective.

Several studies suggest that there may be greater risk for human error when interruptions are an accepted practice within healthcare facilities.[6–8] Interruptions occur when there is a break in the performance of an activity.[9] This break results in a momentary suspension of the initial task with the assumption that the initial task will be resumed.[8,9] Interrupt-driven environments can trigger cognitive failures, including lapses in attention, memory or perception.[10] This can lead to loss of critical information during handover and failure to complete or initiate clinical tasks.[10,11] Nurses and other healthcare providers are not always aware of the impact imposed on clinicians by interruptions.[14] Although it is important to respond to patient care needs, frequent distractions during handover may lead to delays in recognizing and communicating patient status changes, errors in clinical judgement,[6] loss of critical information during handover, failure to complete or initiate clinical tasks[10,11] and the inability to provide quality patient care.[7] This was demonstrated in a study conducted in three emergency departments that found that although interruptions were necessary to meet the multiple demands of changing situations, excessive interruptions led to breaks-in-task and were seen to impede clinical performance.[15]

Healthcare workers are constantly exposed to a myriad of interruptions that may be unnecessary and preventable. Gillespie et al.'s study[16] found that conversational (69.2%) and procedural (66.4%) interruptions were common during intra-operative procedures.[16] Healey's study[17] found that an average of 3.5 irrelevant conversations occurred per surgical procedure across 50 general surgical procedures studied. Yet, the actual effect of conversational interruptions on clinical practice is unknown.

The intensive care unit (ICU) is particularly susceptible to interruptions due to the complexity of patients, the high ratio of staff to patients and the frequency of treatments and therapies patients receive. Furthermore, critical care nurses make multiple, complex decisions in rapid succession. ICU handovers take place in an event-driven and time-pressured environment.[18] Nursing bedside handovers consist of detailed and complex information and nurses receiving handover rely on informative and thorough handovers to guide practice and to make complex decisions about patient care.[1,19] Although several studies have examined or reviewed the effect of interruptions on work flow,[8,15] communication,[14] communication loads,[20] task completion,[10] ward rounds[21] and adverse events[5] in critical care settings (e.g., ED and ICU), there remains a lack of evidence related to interruptions and handover in ICU.

Our study aimed to measure the frequency and source of interruptions during bedside nursing handover in the ICU to provide a foundation to develop handover resources specific to ICU.

2. Methods

2.1. Design

This study was carried out using a prospective observational design.

2.2. Sample and setting

The study was conducted in a busy 21-bed ICU at a tertiary referral hospital in Brisbane, Australia specialising in cardiothoracic surgery, as well as other medical and surgical specialties. The ICU caters for three types of patients – postoperative cardiac surgical (immediately post cardiac surgery), general (multi organ failure, sepsis, shock, general surgical) and long-term patients (>1 week in ICU). All nurses employed to work in ICU were eligible to participate in the study. Casual pool and agency nursing staff were excluded. Participant information sheets were distributed to all nursing staff working in the ICU and written informed consent was obtained during information sessions. Nurses were told that, depending on the shifts they worked during the data collection, they may not necessarily be observed, but if they were, verbal consent would be confirmed prior to observations on the day.

2.3. Data collection

An interruption was defined as a break in the performance of an activity.[9] To clearly identify the types of interruptions that occurred during handover Gillespie et al.'s approach to categorising interruptions was adapted. Interruptions were divided into two categories conversational (conversations not related to handover) and procedural (equipment alarming or interfering with handover).[16]

One episode (shift-to-shift bedside handover between an oncoming and outgoing nurse) of handover was observed each day for 20 days (20 handovers) during 2011 and only those nurses working at the time were observed. The decision to observe 20 handovers was pragmatic. With limited funding and an expectation that both qualitative and quantitative data would be collected, it was expected that trends would emerge from the data that could later be the focus for future research. Nurses were approached to participate if both the oncoming and outgoing nurse had consented to participate in the study. The first pair of consented nurses identified were approached for verbal consent and observations. If both individuals in the pair did not consent, the next identified pair were approached. Observations occurred Monday to Friday at shift change: night to day shift and day to evening shift, across three areas of the ICU.

Nurses conducting handover were situated at a desk at the end of the patient's bed. The observations were carried out by two research nurses (AS and AC) positioned up to one metre behind the oncoming and outgoing bedside nurse. In the event that an unsafe or emergency situation arose, it was planned that data collection would cease, however this situation did not occur during data collection.

The semi-structured observation tool was a paper based form developed from a review of the literature and the key principles of clinical handover recommended by the NSW Health Department.[22] The data form was also used for a larger study[1] and contained 10-items with yes/no responses along with a free text box to record the number and type of interruptions that occurred during handover. The tool underwent several iterations and was tested for inter-rater reliability. Two research nurses (AS and AC) carried out four observations simultaneously and showed 80% agreement, suggesting inter-rater reliability. Data on the years of experience and grade of the RN was also collected. A grade 5 nurse is a RN, that reports to and is supervised by a Clinical Nurse. A grade 6 nurse is a Clinical Nurse that oversees RNs and reports to the Nurse Unit Manager.

2.4. Data analysis

The data was entered into a password protected excel spreadsheet for descriptive analysis. Frequency and percentages were used to describe the data such as the types of patients that were handed over, the employment grade of the participants and the number and types of interruptions.