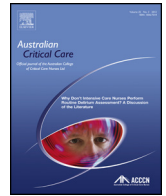


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## Review Paper

# Clinical handover of the critically ill postoperative patient: An integrative review



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## ABSTRACT

**Objectives:** The clinical handover of critically ill postoperative patients from the operating theatre to the intensive care unit is a dynamic and complex process that can lead to communication and technical errors. The objectives of this integrative review were to illustrate how the use of structured handover processes between the operating theatre and intensive care unit impacts information transfer, handover duration, post-handover technical error and high risk events.

**Review method used:** Integrative review methodology was used to allow for the inclusion of broad research designs, summarising current knowledge from existing research and identify gaps in the literature.

**Data sources:** A systematic search of electronic databases including the Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane library, Embase, ProQuest central and PubMed were performed. Original research articles, in either adults or paediatrics, specific to handover between an operating theatre and intensive care unit were included.

**Review methods:** Data extracted from studies included country of origin, sample size, number of hospital sites, study design, study aim, measures, key findings and limitations. The quality of the integrative review articles was assessed against the 'Standard Quality Assessment Criteria for Evaluating Primary Research Papers'.

**Results:** Ten articles meeting the inclusion criteria were included in the final analysis. Information transfer, post-handover technical errors and high risk events were positively influenced by the use of structured clinical handover tools. Handover duration did not change when using structured handover protocols.

**Conclusions:** The body of literature on clinical handover between operating theatre and the intensive care unit is in its early stages of development. Future research using rigorous study designs, broader populations and varied surgical procedures are needed to further evaluate the effect of clinical handover protocols.

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## 1. Introduction

Patient harm from potentially avoidable medical error continues to occur frequently in health care settings world-wide.<sup>1–3</sup> Both the Institute of Medicine and the Joint Commission on Accreditation

of Health Care Organizations have reported that communication failure is the most common cause of preventable medical error.<sup>2</sup> Communication error in clinical practice reportedly contributes up to 70% of preventable medical error resulting in death, serious physical or psychological injury to patients.<sup>2,3</sup> Several studies have reported higher observed rates of preventable error occur in operating theatres (OT) and intensive care units (ICUs), when compared to other health care areas.<sup>4–6</sup> Similarly, the Joint Commission reported that approximately half of communication failures were related to the clinical handover period.<sup>2</sup> In 2007, communication during patient handover was listed as one of the World Health

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Organization “High Five” patient safety initiatives.<sup>7</sup> The Joint Commission and the Australian Commission on Safety and Quality in Health Care have also identified clinical handover as an important area of focus for patient safety.<sup>2,3</sup>

### 1.1. Background

The clinical handover of critically ill postoperative patients from OT to the ICU involves a dynamic and complex set of processes which can influence the recovery and outcomes of vulnerable patients.<sup>8,9</sup> Clinical handover is broadly defined as the transfer of the patient, information, equipment, professional responsibility and accountability from one professional person or group to another, and may also include strategies that promote education and teamwork.<sup>3,8</sup> Table 1 defines other terms and definitions used in this review. Information handover involves many different people at a single point of time, each of whom has a specific perspective and focus for patient care, potentially increasing the risk of ineffective communication.<sup>8</sup> For example, admitting a patient to the ICU from OT involves transferring the patient and any related equipment. If patient and equipment transfer is undertaken at the same time as information handover, then the effectiveness of communication may be compromised, shifting team focus to the disconnection, transfer and reconnection of equipment rather than on the information being relayed.<sup>10</sup>

Ineffective communication during clinical handover can have immediate and long term consequences for the delivery of safe patient care.<sup>2,3,11</sup> In the short term, an ineffective handover may result in information loss and technical error, delays in medical diagnosis, wrong treatment and higher incidence of life threatening adverse events.<sup>9,11,12</sup> Potential longer term effects of ineffective handover have been reported to include increased patient complaints, hospital length of stay, and health care costs.<sup>9,11,13</sup>

The importance of clinical handover from OT to ICU is emphasised in Segall et al.’s<sup>14</sup> 2012 review of handover from OT to the post anaesthesia care unit (PACU) or ICU. The majority ( $n = 20/31$ , 65%) of studies included in this review were specific to PACU, with fewer studies being focusing on handover from OT to ICU. The applicability of research conducted in the context of post-anaesthetic recovery to ICU practice is questionable given the higher level of patient acuity and surgical complexity of patients transferred from the OT to the ICU. Consequently, the handover process between OT and ICU is likely to be more complex because patients are sicker, require more monitoring and equipment, may be on life support, and have more interdisciplinary team members involved in care. Potentially, this higher level of complexity requires sophisticated processes of communication and consequently there is an increased likelihood of technical error during the handover process from OT to ICU. Since this review was published in 2012 there have been a further five articles published specific to handover between OT and ICU.<sup>11,15–18</sup> To our knowledge this integrative literature review is the first in the area of handover from the OT to the ICU that has used robust systematic assessment criteria (Standard Quality Assessment Criteria for Evaluating Primary Research Papers).

## 2. Aims

This paper reports the findings of an integrative review which provides a synthesis and critique of existing research relating to OT to ICU clinical handover. A description of the state of the science in this important patient safety area is described. Specifically, we illustrate how the use of structured handover processes between the OT and ICU impacts information transfer,

**Table 1**  
Definitions used in the review.

Term	Definition	Source
Clinical handover	The transfer of the patient, information, equipment, professional responsibility and accountability from one professional person or group to another.	3,8
Verbal handover	The delivery of information by a team member without following a pre-existing structure or protocol; includes handovers made before standardisation of structured handover processes.	12
Structured handover	Contextual standardisation of technical and information handover by required team members in a structured format; may include the use of checklists; in a face to face format.	3
Information handover	Has previously been defined as the transfer of important information that is crucial for the continuation of patient care.	19
Information handover error	The omission of important information that is crucial for the continuation of patient care.	19
Technical handover	Has previously been defined as the transfer of equipment or technology, and includes ventilation, monitoring, pumps, equipment, drains, and lines.	19
Technical handover error	Any transfer of equipment or technology that has been performed incorrectly or with unusual difficulty.	19
Handover duration	The time interval from the moment the patient enters the ICU to the moment the OT team leave the bedside.	19
Team members present	Any health care professional present for the handover and such as surgical, medical, anaesthetic, nursing and other health care staff, having varied levels of experience and qualifications.	17
A high risk event	Any unplanned change in a patient’s condition that may have serious impact on their recovery. High risk events include accidental extubation, high carbon dioxide, pneumothorax, cardiac arrest, return to theatre, arrhythmias, loss of arterial or central lines, loss of drains, pH < 7.25 or >7.55, seizure or death.	3,15

handover duration, post-handover technical error and high risk events.

## 3. Methods

Integrative review methodology was used to allow for the inclusion of both experimental and non-experimental research designs<sup>19</sup> broadly summarising the current state of the science from existing research and to identifying gaps in the literature.<sup>19</sup> This review process provides broad understanding of healthcare problems whilst identifying areas for future research focus, contributing to nursing science, with the potential to influence policy and nursing care.<sup>19,20</sup>

### 3.1. Literature search strategies

A systematic search of electronic databases including the Cumulative Index to Nursing and Allied Health Literature (CINAHL),

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