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# Clinical handover of immediate post-operative patients: A literature review

## Abstract

The transfer of professional responsibility for some or all aspects of patient care, within and between professional groups on a temporary or permanent basis, is termed clinical handover. Communication during clinical handover is considered a challenging patient safety problem. A key principle of transfer of professional responsibility for patient care is the minimum amount of information or content that must be contained and transferred in any particular type of clinical handover.

**Aim:** The purpose of this literature review was to establish the scope of the literature about clinical handover from the operating room to Post Anaesthesia Care Unit (PACU) published in the last ten years and identify relevant key sources, theories, concepts and ideas.

**Method:** The literature included in this review is divided into policy framework, practice, theoretical and primary research literature.

**Findings:** This literature review demonstrates that either clinicians perceive clinical handover as informal, unstructured and inconsistent or transfer of information in handover as incomplete or unclearly expressed. Anaesthetists and PACU nurses differed in expectations of content and timing of information transfer.

**Conclusion:** There is a need to develop training and educational strategies to improve clinical handover practice, particularly in a way that encourages collaboration.

**Keywords:** clinical handover, post-operative, literature review, observational studies, interventional studies.

## Background

The World Health Organization (WHO)<sup>1</sup> recognised communication during patient care handover as one of five challenging patient safety problems. This led to the launch of the 'High 5s project' in standardising efforts for patient safety<sup>1-3</sup>. The WHO<sup>4</sup> stated in an interim report that 'five standard operating procedures were drafted; however, due to resource constraints, only two were fully developed and implemented' which were namely 'medication reconciliation' and 'correct site surgery'<sup>(p.9)</sup>. The

Australian Commission on Safety and Quality in Health Care (ACSQHC) is the lead technical agency for conduct and governance of the WHO 'High 5s project' in Australia<sup>4</sup>.

Clinical handover has been defined in National Safety and Quality Health Service (NSQHS) Standards<sup>5</sup> as 'the transfer of professional responsibility and accountability for some or all aspects of care for a patient, or group of patients, to another person or professional group on a temporary or permanent basis'<sup>(p.5)</sup>. A standard key principle is the minimum amount of information to be transferred

in any clinical handover that is inherently involved with the transfer of responsibility. This is termed the 'minimum data set' and defined as 'the minimum set of information and content that must be contained and transferred in a particular type of clinical handover'<sup>5</sup>.

Clinical handover takes place at many transition points between professional interfaces within the perioperative setting and in the broader context of health service delivery<sup>6</sup>. Transfer of patients from the operating room to the PACU involves inter-professional communication. At this transitional point in care, when emerging from anaesthesia, patients are clinically at high risk due to altered level of consciousness and compromised airway<sup>7,8</sup>.

## Purpose

The purpose of this literature review was to establish the scope of the published literature available on clinical handover from the operating room to the PACU and identify relevant key sources, theories, concepts, and ideas to understand and ascertain the current knowledge base of this subject area.

A guiding research framework to improve clinical handover practice proposed by Jeffcott and others<sup>9</sup> identifies information transfer, responsibility and accountability within systems as the three elements of clinical handover. Measuring these elements together with policy, practice and evaluation will identify multi-dimensional gaps and underpin research to improve clinical handover. Therefore, the elements of information transfer, responsibility and/or accountability within systems were posed a priori in structuring and organising the research literature to date. Jeffcott et al.<sup>9</sup> emphasised, due to the complexities of handover,

qualitative and quantitative methods will enable exploration of the whole story. Qualitative methods will enable an understanding of clinicians' needs, perceptions and behaviours, in contrast to quantifying various objective outcome measures related to clinical handover that is specific to this type of research inquiry.

## Methods

This literature review of practice standards, theoretical frameworks and primary research literature published in the last ten years is focused on clinical handover practice from the operating room to the PACU of post-operative patients. Search strategy for the literature, conducted in March 2017, used key terms and combinations with Boolean operators and word truncations according to database requirements to source all possible keyword terms. Search terms included: post-operative, recovery, Post Anaesthesia Care Unit, handover, handoff, information transfer, communication, structured communication, checklist, standards, education, training, safety, quality, quality improvement, adverse events, omission and error. Search terms were entered for each of the following databases: Cochrane Database of Systematic Reviews, Cumulative Index to Nursing & Allied Health Literature, MEDLINE, EBSCO host research database, Ovid Technologies Incorporated, Joanna Briggs Institute and PubMed. Additional studies and literature were obtained from reference lists of retrieved papers. Other information sources were hand searched and included: Policy and Practice Standards, WHO website and their Institutional Repository for Information Sharing (IRIS) database.

## Inclusion and exclusion criteria

Literature that met all three of the following criteria was included in this review:

- published in the last ten years
- relevant to the perioperative setting
- incorporated the transition point of care from the operating room to the PACU.

Literature that met all three of the following criteria was excluded from this review:

- transition point of care from the operating room directly to intensive care unit or coronary care unit (not via the PACU)
- grey literature (unpublished literature without peer review)
- all information was available in the published literature report for data extraction.

There were 15 observational studies and 12 interventional (standardising) studies included in this review. The data that was extracted from each primary research study was included into a table format with the headings of lead investigator, year of publication, country of origin, setting, sample size, research design, methods, aims, intervention (if included), instrumentation, outcome measures, key findings and implications for practice.

## Results

The literature included in this review are divided into policy framework literature (n = 3), practice literature (n = 3), theoretical literature (n = 2) and primary research literature (n = 27).

## Policy framework literature

The ACSQHC developed the NSQHS Standard 6: Clinical handover<sup>5</sup> with the intention of ensuring 'timely,

relevant and structured clinical handover that supports safe patient care<sup>4(p.7)</sup>. Key criteria were outlined in three core or developmental areas to achieve this national clinical handover standard and for purposes of health service organisation accreditation which are as follows:

1. governance and leadership for effective clinical handover systems
2. documented and structured clinical handover processes
3. mechanisms to include patient and carer in clinical handover processes.

Training of clinical workforce is identified as a key task in implementation strategies in using policy, procedure and/or protocols surrounding clinical handover. Furthermore, policy surrounding clinical handover are suggestive of including mandatory education and training sessions for the clinical workforce. Resources have been provided by the ACSQHC that guide implementation to support structured processes and improvement in clinical handover<sup>10,11</sup>.

### Practice literature

In a statement of the handover responsibilities of the anaesthetist, the Australian and New Zealand College of Anaesthetists (ANSCA)<sup>12</sup> Professional standard 53 clearly outlines the responsibility and accountability of the anaesthetist during and after completion of anaesthesia<sup>12</sup>. Within this professional standard direct statements are made regarding effective communication between health professionals in sharing care. A background paper to this professional standard discusses clinical handover delivery as divided into four stages: prepare, organise, environmental awareness and use of communication tools<sup>13</sup>.

The Australian College of Perioperative Nurses (ACORN)<sup>14</sup> provides statements, criteria and rationale for both the anaesthetic nurse and PACU nurse roles which directly relate to clinical handover. Nursing role statements of clinical handover cover the systematic structure of clinical handover using evidence-based handover communication tools when actively engaged in the comprehensive exchange of information and in the reallocation of the nurses' responsibility.

### Theoretical literature and perspectives

Multiple interfaces between professionals, managers and administrators with differing focuses and priorities within complex health delivery systems makes quality improvement interventions to change clinical practice challenging and require well-informed theory-based strategies<sup>15</sup>. Theories about complexity of changing practice are comprehensively covered by Grol and Wensing<sup>16</sup>. Impact theories describe how a specific intervention will facilitate desired change and are directed at the ecological level of individual professional, social setting, organisational, political and economic context. Theories about social interaction and context are impact theories that encompass theory of communication, social learning theory, social network and influence theory, theories of teamwork, professionalism and leadership that overlap in implementation of clinical practice changes. To date, there is no theoretical framework published on the process and learning of clinical handover in the perioperative setting. Furthermore, in the assessment of learning, a needs assessment is required with consideration given to duration and space of educational activity, group composition (particularly inter-professional),

active participation and use of opinion leaders<sup>15,16</sup>.

### Discussion

Improving the measurement of clinical handover, with the elements of information transfer, responsibility and/or accountability within systems posed a priori in structuring and organising, was found in the research literature to date<sup>9</sup>. This is similar to findings of a qualitative observational study which reported that the three objectives of clinical handover in the PACU were knowledge transfer about the surgical patient, transition of responsibility, and provision of an 'audit point'<sup>17</sup>.

### Information transfer

The handover of post-operative patients has been qualitatively described as informal, unstructured, and inconsistent<sup>17,18</sup>, which is similar to incomplete information or information omissions consistently reported in quantitative observational studies<sup>18-23</sup>. Alternatively, in a separate study with differing outcome measurements, Randmaa et al.<sup>24</sup> described information was expressed unclearly by the sender and less than half of the verbally given information was remembered by the receiver in observed handovers. Critical incidents have also been associated with poor communication<sup>25,26</sup>. Incomplete handover has been associated with source, transmission and receiver failures in information transfer and communication in the post-operative setting<sup>18</sup>. Furthermore, inherent professional and organisational tensions have been described in the process of safely handing over a patient in the PACU<sup>17,21,25-30</sup>.

In observational studies, a large variation between instrumentation and outcomes measurements exists between studies reviewed. The countries of origin may

have impacted on some of this variation with differences in clinical governance and professional organisations, as studies have originated from the United States of America<sup>26</sup>, Canada<sup>21</sup>, Australia<sup>25,28</sup>, United Kingdom and Europe<sup>17-20,22,27,29,30</sup>, Netherlands<sup>31</sup>, Germany<sup>23</sup> and Sweden<sup>24</sup>.

Nonetheless, anaesthetists and PACU nurses differed in expectations of content and timing of information transfer<sup>17,21,27</sup>. An element of familiarity with and the briefness of handover has been described in several qualitative studies, with the sender often using terms such as 'my usual' or 'routine', and 'happy' with the completed handover process<sup>17,25,27,28</sup>.

The safe process of Connect, Observe, Listen and Delegate (acronym COLD) in transition of care from the operating room to the PACU occurs either simultaneously or sequentially<sup>25,28</sup>. PACU nurses have identified the need to connect and receive clinical information simultaneously as concerning. These nurses agreed it was necessary to stabilise the surgical patient before commencing clinical handover and that a clear sequence of clinical handover is required in content delivery<sup>28</sup>. Although receiving information and transferring equipment simultaneously is less preferred than doing these things sequentially, it was alarming that the most observed occurrence in the published studies was the simultaneous occurrence which contributes to reduced attention, disjointed focus, diminished listening ability and thus a negative effect on the memory of the receiver<sup>17,18,22,25,28,30,31</sup>.

The evidence base in support of standardising the process of clinical handover gained momentum with the realisation that there was wide variability in practice and with clinicians identifying lack of standard

content, structure, procedure or guidelines<sup>24,29-31</sup>. Minimum standards for content of clinical handover of verbal (ISOBAR mnemonic) and non-verbal information (ten-point safety checklist) have been proposed<sup>25,28</sup>. Despite differences in methodological approaches, consensus was reached that standardisation of information transfer improves patient safety<sup>17-31</sup>. Standardisation is proposed to assist with informal, unstructured and inconsistent transfer of information<sup>18,22,25,26,29-31</sup> and aids in memory<sup>18,24,30</sup>.

Standardising the content alone does not suffice to complete information transfer. The importance of assessment, planning and decision making with structuring communication tools, such as mnemonics like SBAR (situation, background, assessment, recommendation), should also be considered in the process of communication<sup>25,28,29</sup>. It is considered essential that the PACU nurse has complete information from previous transitions of care, particularly as PACU nurses are considered the only 'bridge' in transferring information from the operating room to the next point of transition in care<sup>17</sup>.

### Accountability and/or responsibility

Earlier observational studies have consistently cited ambiguity, failure to make plans and delegating responsibility as associated with error in clinical handover<sup>17,20,25-27,30</sup>. From Canadian origins, Siddiqui and others<sup>21</sup> proposed possible causes of inconsistent transfer of patient information between professional interfaces is the lack of guidelines from professional organisations about required content or conduct. Practice standards within Australia, for both anaesthetists and perioperative nurses clearly outline

responsibility and/or accountability of each professional interface<sup>12,14</sup>.

Communication tools have incorporated recommendation/responsibility/referral as part of a mnemonic structure<sup>22,24</sup>. However, worthy of exploration is clinicians' understanding of their responsibility and accountability for clinical handover from differing professional interfaces in assessing the current knowledge base.

### Systems

Lack of knowledge has been identified as associated with communication breakdowns and failures<sup>30,32</sup>. Developed communication tools such as information transfer assessment tool for surgery or the mnemonic-based SBAR provide quantifiable objective feedback to clinicians and organisations in targeting behaviours for improvement and training<sup>19</sup>. When developing training interventions, Manser and others<sup>29</sup> recommended attention be given to patient assessments and acknowledgement stages rather than just focusing on complete information transfer<sup>29</sup>. Importantly, as Siddiqui et al.<sup>21</sup> highlighted, the communication process is taught informally in professional practice in Canada.

The situation is similar in Australia, as highlighted in a recent survey of health professionals that was not setting specific, sampled from public health services in four states or territories in Australia (n = 707, response rate 14 per cent)<sup>32</sup>. Nurses (60 per cent), doctors (22 per cent) and allied health (18 per cent) made up the health professionals. Respondents acknowledged the value of communication skills (99 per cent) and considered handover training should be included in undergraduate (53 per cent) and postgraduate (36 per cent) university courses<sup>32</sup>. Participants reported receiving no handover training and that more

training was required (27 per cent), whereas other participants reported receiving handover training though also identifying that more training was required (38 per cent). Survey respondents perceived the most effective training methods were workshops (71 per cent), followed by online and print resources (47 per cent). Furthermore, in an open-ended question of suggestions to improve clinical handover, education was one of four themes that emerged alongside mode of delivery, standardisation and contextual issues.

### Standardising clinical handover

It is worth noting the clear differentiation between reviewed interventional studies and what each study was standardising in the process of clinical handover. The noted differences between standardisation included:

- standardising protocol of clinical handover<sup>33–36</sup>
- mnemonic communication tools in the transfer of content and structure of information such as situation, background, assessment, recommendation (SBAR)<sup>37–41</sup> and SBAR progressions including introduction (I) as ISBAR<sup>42</sup> and Questions (Q) as ISBARQ<sup>43</sup>. An American study used a mnemonic communication tool of illness severity (I), patient summary (P), action list (A), situation awareness (S) and synthesis by receiver (S) as I-PASS<sup>36</sup>, which was different to another American study that used key content items<sup>44</sup>
- an education or training component was included in some but not all studies when standardising content and structure of information transfer<sup>34,37,39–42</sup>.

Despite the noted differences in standardising techniques used in interventional studies, studies reported that standardising the content, structure and/or process improved information transfer, teamwork and satisfaction, whereas a reduction in patient length of stay and task errors was also a significant finding in reviewed studies<sup>33–37,43,44</sup>. The use of communication tools improves structure and/or content of information transfer between professionals<sup>36–40,43</sup>. Compliance with using communication tools is improved with training session/s or an education program<sup>37,39–42</sup>. Barriers to improvement of clinical handover were identified as lack of knowledge and the impact of time and shift work implications on undertaking training session/s<sup>41</sup>. Based on this review of interventional standardising studies, it is concluded that limited research attention has been given to the development of education and training strategies to improve clinical handover practice in the PACU setting. Furthermore, the theoretical basis of learning the process of clinical handover has received little exploration as a way to improve clinical handover practice in the perioperative setting and, perhaps, more broadly. Arguably, clinical handover involves multiple processes and professional interfaces that require consideration when guiding the development of education and training strategies for clinical handover improvement.

### Implications

This review identified a number of findings that have implications for perioperative nursing practice, education and research. These findings are summarised in Table 1.

Findings with implications for practice include:

- clinicians perceive that handover is informal, unstructured and

inconsistent in the reality of practice

- national standards for clinical handover in Australia were published in 2012
- consensus was reached across all studies that standardisation of information transfer improves patient safety
- anaesthetists and PACU nurses differed in expectations of content and timing of information transfer.

Findings with implications for education include:

- lack of knowledge has been associated with communication breakdown and failure
- needs assessment is required of the knowledge base in clinical handover process
- development of training interventions requires attention to patient assessment and acknowledgement phases
- the communication process is taught informally at undergraduate and postgraduate level in each professional interface
- education and workplace training needs to be targeted at individual, professional and organisational factors associated with communication breakdown.

Findings with implications for research include:

- workplace training and education in clinical handover is a unique and separate process that warrants research attention aside from the process of clinical handover itself
- no published theoretical framework exists for the process and learning of clinical handover
- few studies have focused on clinical handover training and education of anaesthetists and perioperative nurses.

## Conclusion

This literature review has presented that communication of patient handover is considered a challenging safety problem<sup>1</sup>. National standards for clinical handover provide best practice criteria at core and developmental areas<sup>5</sup>. Minimum standards for effective handover have been addressed by national standards and within interfaces of professional colleges of anaesthetists and perioperative nurses<sup>12,14</sup>. Strategies to improve clinical handover practice thus far have included standardising content and structure of information transfer; however, more attention needs to be given to a systems level in developing training and educational strategies to improve clinical handover to achieve core criteria of national standards and, in turn, best practice.

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Tracey and Flinders Medical Centre Nursing Director, Annette Boonen, at the 18<sup>th</sup> Annual Nursing and Midwifery Excellence Awards Gala Ceremony

On behalf of the ACORN board and members, we congratulate our very own Tracey Nicholls, Member Director 2016–2018, on winning the 2018 South Australia Nursing and Midwifery Excellence Award. The award was announced at the 18<sup>th</sup> Annual Nursing and Midwifery Excellence Awards Gala Ceremony on Friday 11 May 2018.

Tracey's nursing career spans over 40 years and more than half of these years have been in the operating room. She has presented at national and international events and, as immediate past president of the Otorhinolaryngology Head and Neck Nurses Group (OHNNG), has run many education sessions, study days and 12 national conferences as well as organising and assisting in surgical dissection/instructional courses.

Tracey has established a large personal and professional network with leaders of and members from many national and international nursing organisations. She serves on the SAPNA committee, South Australian committee for Australian College of Nurse Practitioners and is a member of the Coalition of National Nursing and Midwifery Organisations board.