Examining communication and team performance during clinical handover in a complex environment: the private sector post-anaesthetic care unit

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ABSTRACT

- Threats to patient safety during clinical handover have been identified as an ongoing problem in health care delivery.
- In complex handover situations, organisational, cultural, behavioural and environmental factors associated with team performance can affect patient safety by undermining the stability of team functioning and the effectiveness of interprofessional communication.
- We present a practical framework for promoting systematic, comprehensive measurement of the factors involved in clinical handover. The framework can be used to develop viable solutions to the problems of clinical handover.
- The framework was devised and used in a recent project examining interprofessional communication and team performance during clinical handover in post-anaesthetic care units.
- The framework combines five key concepts: clinical governance, clinician engagement, ecological validity, safety culture and team climate, and sustainability.
- We believe that use of this framework will help overcome the limitations of previous research that has not taken into account the complex and multifaceted influences on clinical handover and interprofessional communication.

MJA 2009; 190: S157–S160

Threats to patient safety attributed to the highly variable process of clinical handover have been identified as an ongoing problem in health care delivery.[1,2] In practice, clinical handover is often a routine task, performed many times a day.[3] It needs to be comprehensive, time-efficient and specific. As noted by Kerr, "[T]here is a tension between ensuring a comprehensive handover and avoiding time or information overload".[4] In the post-anaesthetic care unit (PACU), where care is provided by health professional teams, high-frequency handovers occur between different professional groups. These handovers, which are often brief but complex, involve clinical tasks and the transfer of information and responsibility for patient care.

In complex handover situations, cultural, behavioural and environmental factors associated with team performance[5-7] can affect patient safety outcomes by undermining the stability of team functioning and the effectiveness of interprofessional communication.[8,9] Previous attempts to improve clinical handover have had limited success, due largely to the focus on a single dimension of handover. Arguably, these attempts have not considered the multifaceted influences on clinical handover.

We present a practical framework that was devised and used in a recent project examining interprofessional communication and team performance during clinical handover in the PACU.[10] The objective was to promote systematic, comprehensive measurement of the complex interplay of factors involved in clinical handover as an aid to developing viable solutions. Our method combined five concepts that are commonly used in quality improvement processes and are prominent in the literature on organisational safety, high-reliability organisations and change management in health care environments.

Background

In its *Safe handover: safe patients* guideline, the Australian Medical Association has adopted the United Kingdom National Patient Safety Agency's definition of clinical handover:

> . . . 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.[11]

Acknowledgement of the notions of accountability and responsibility in handover are reinforced by Jeffcott and colleagues,[12] who argue that measures of safety and quality in handover must consider three key aspects: (a) information; (b) responsibility and accountability; and (c) the context of the handover, including the composition of the teams, their work environments and the structure of the organisation. Any attempts to analyse "gaps" in handover must consider these multiple dimensions. Further, it cannot be assumed that any one improvement strategy will be appropriate for all.

In a recent UK study,[13] handovers between anaesthetists and nurses in a PACU were observed. Informal and locally negotiated aspects of handover were identified. These informal elements included where and when the transfer of knowledge occurred and whether professional responsibility for the patient was transferred or delegated by anaesthetists to recovery room nurses. The authors argued that these informal elements must be acknowledged before any attempts to standardise handover procedures. It is likely that locally negotiated aspects of handover are influenced by organisational and local contexts.

The context of clinical handover is an important determinant of interprofessional interactions. Key system differences in organisational structure and underlying values of health care institutions contribute to varying perspectives of users and providers and affect the processes of care delivery. In Australia, differences between private and public health care sectors have a potentially important influence on interprofessional relationships. The differences between sectors that have implications for quality improvement relate to external regulation, internal governance and the financial relationships between patients, doctors, health insurers and the health service.[14-16] Successful implementation of quality improvement activities requires good will and partnership between each of these groups.

Clinical handover in PACU environments involves a particularly complex set of processes that require effective and efficient interprofessional communication and cooperation. Individuals from different

Methods used to examine the dimensions of each concept in the framework

Concept	Methodological approach	Outcomes
Clinical governance	• Investigation of local processes for clinical governance	• Leadership by senior executives • Support of department managers
	• Regular local project-governance meetings	• Clinician champions participate in decision making
Clinician engagement	• Focus group interviews • Local clinician involvement in data collection and participant observations	• Increased validity of data • Local capability building • Stakeholder engagement and ownership
Ecological validity	• Observational Teamwork Assessment for Surgery (OTAS) tool[21,22]	• Identification of: ➢ Environmental and contextual influences on performance ➢ Content, tasks and behaviours associated with handover • Adaptation of observational tool to local context
	• Individual and focus group interviews	• Understanding of clinician perceptions, and acceptability
	• Analysis of critical incident reporting	• Local reporting practices identified • Exploration and learning from system failures,[23-25] patterns or practices associated with adverse events or near misses
Safety culture and team climate	• Safety Attitudes Questionnaire (operating-theatre version) (SAQ-OT)[26]	• Assessment of culture across six areas: teamwork climate, perceptions of management, safety climate, stress recognition, job satisfaction, and work environment[27]
	• Team Climate Inventory (TCI)[28]	• Examination of five dimensions: vision, participative safety, task orientation, support for innovation, and social desirability • Identification of targets for improvement[29]
	• Focus group interviews • Observation of practice	• Triangulation of multiple data sources
Sustainability	• Focus group interviews • Observation of practice	• Local adaptation of strategies and tools to measure and monitor clinical handover

occupational and organisational groups need to work collaboratively to respond to often unpredictable workloads and high patient acuity. Ineffective team communication in the PACU is a common cause of serious adverse events and preventable error.[17-20] Analysis of data from the Australian Incident Monitoring Study revealed that communication failure was a contributing factor in at least 14% of incidents that occurred in PACUs.[20]

A framework for examining clinical handover

We developed a framework to examine clinical handover in three PACU settings in Melbourne — one in the public sector and two in the private sector. Our aim was to develop valid, practical tools and measures of safety and quality in handover specific to PACUs in the private hospital setting. We sought to identify elements unique to the private and public sectors and those that could be transferred across the sectors, with a view to reducing miscommunication during clinical handover.

A thorough assessment of team performance during clinical handover requires data from multiple sources in the context of care delivery and in-depth analyses of all aspects of interprofessional communication during handover. Our framework was based on five concepts commonly used in health care environments:

- Clinical governance;
- Clinician engagement;
- Ecological validity;
- Safety culture and team climate; and
- Sustainability (quality improvement).

The methods used to examine dimensions of each of these concepts are summarised in the Box.

Clinical governance

Clinical governance is the framework through which organisations are accountable for creating an environment that maintains quality and safeguards standards of care.[30] Effective clinical governance involves clinicians at all levels and across clinical and professional boundaries.[31] The relevance of clinical governance in this framework is in ensuring that health service executives, local managers and clinical leaders support clinicians in delivering quality care in their organisation by putting systems in place to enable this.

The commitment of senior executive personnel is essential in enabling clinical staff to use local knowledge to drive quality improvement in their organisation. Local managers can provide leadership by participating in projects, facilitating participation of clinical staff, and supporting clinical champions. Local managers can work with project officers to disseminate aggregate findings to clinicians and with local clinicians to develop strategies for improving teamwork and safety culture where they are suboptimal. They can also support clinician champions in developing tools and strategies that can be tested and used in their own departments.

Clinician engagement

Clinical processes that are changed without engagement of clinicians risk being inappropriate and unsustainable.[31] Promoting local ownership by those working in the clinical area and ensuring that tools and strategies are context-specific and endorsed by clinical leaders improves the uptake and sustainability of innovations.[32-34]

The engagement strategy proposed here was based on models of change management.[31-33] Key elements of the strategy included promotion by influential role models, building capability of local

staff through participation, promoting local ownership through ongoing involvement in data collection and solution development, and ensuring compatibility with local values and needs. The complexity of change can be minimised by identifying effective practices and involving clinicians in testing and modifying solutions. Enlisting the support of clinicians to collect data and work with project staff offers several benefits:

- It promotes local ownership of both the data and potential solutions. Improvement strategies or tools developed in response to local issues are more likely to be accepted and used by clinicians.[32,33]
- Familiarity of clinical staff with the local environment and their intimate understanding of common tasks, language and processes helps in interpretation of data and complements the perspectives of external project staff.
- Engaging clinical staff to collect data through observation of interactions gives them a unique opportunity to gain new insights. This can enhance learning, inform change management processes, and potentially stimulate their desire for change.
- Training clinical staff in observational methods can enhance their capability and increase the feasibility of using observational methods in ongoing quality monitoring activities.

Ecological validity

Although various tools and strategies have been developed to improve communication during clinical handover,[3,31,35] uptake of such tools has generally been low,[36,37] even when developed in-house by clinicians.[1] This suggests that the tools and strategies have limited ecological validity. Ecological validity is the degree to which interpretations or innovations reflect the real-life situations in which they are to be applied.[38]

Considerations about ecological validity influence the sources and methods of data collection and highlight the importance of situating the investigation and the search for solutions within the local context. Tools to assist handover need to be customised to the setting in which they are to be used and must also be appropriate to the skill mix and expertise of the people involved.[16,31] Ecologically appropriate methods for understanding the environment in which handover occurs in the PACU include observation of practice in real-life, uncontrolled situations; incorporation of clinicians' perceptions of their work and workplace through surveys and interviews; and analyses of the ways in which critical incidents involving miscommunication during handover are reported in order to investigate reporting practices and systemic barriers to effective communication.[39,40]

Tools that allow for consistent and multidimensional data collection can assist in observation of practice. For example, the postoperative component of the Observational Teamwork Assessment for Surgery (OTAS) tool[21,22] allows for simultaneous examination of two complementary dimensions of interprofessional teamwork by two data collectors. A local clinician familiar with the clinical setting attends to the tasks and content of handover or knowledge transfer, and an outsider uses a behavioural observation scale to attend to clinician behaviour relating to teamwork, cooperation, leadership, coordination, awareness and communication.

Safety culture and team climate

Safety culture is the collective attitudes and behaviour that determine the commitment of staff to safety management within an organisation.[41] Team climate is a team's perceptions of the policies and procedures of an organisation, including shared vision, participation in safety activities, commitment to excellence, and support of innovation.[29] Culture and climate are both concerned with psychosocial processes associated with group performance and are both relevant to team processes. The effect of safety culture and team climate on interprofessional communication and safety outcomes is well established.[26,28,42,43] Non-technical team skills, including collaboration, teamwork and communication, can have a substantial effect on safety and the risk of human error in health care.[43-45] The sources of poor communication are generally related to personality, team instability, cultural hierarchy, and power relationships between different professional groups.[40] Attempts to improve safety outcomes need to account for the culture and climate within which communication takes place.

Organisational culture influences patient safety, as it provides the context in which care is delivered. Organisations with a positive safety culture have the characteristics of constructive communication, mutual trust, shared perceptions of the importance of safety, and confidence in the efficacy of safety measures.[39] The importance of transforming organisational culture to improve patient safety is widely acknowledged. The safety culture of an organisation is determined by individual and group values, attitudes, perceptions and competencies, as well as health and safety management behaviour.[39,46] A number of survey methods and tools have been developed for examining clinician perceptions of team climate and safety culture in the context of quality improvement activities.[29,47]

Sustainability

Sustaining quality improvement strategies and safety gains will not be achieved through short-term initiatives. Indeed, there is a risk that too many initiatives can result in "reform fatigue" and loss of interest. Stakeholder involvement and supportive clinical governance are fundamental to the success of quality improvement programs. To make improvements sustainable, strategies need to be embedded within organisational structures and processes to ensure ongoing clinician engagement and measurable outcomes.

Measuring performance outcomes is an important component of safety processes. Errors can be seen as opportunities to explore and learn from system failures.[43,48,49] Routine measurement and quality monitoring are not only key elements of quality improvement but also effective strategies to enhance teamwork, reduce clinical risk and improve care outcomes.[32,50] The multifaceted approach advocated here seeks to identify indicators of clinical handover processes in the PACU that are important and useful to clinicians, so they can be used for ongoing monitoring and evaluation of the effectiveness of innovations. Sustained changes are usually slow and can only be achieved by taking a well planned, consistent, long-term approach.

Conclusion

We have presented a practical framework for promoting systematic, comprehensive measurement of the complex factors involved in clinical handover, as a basis for developing viable solutions to handover problems. We believe that use of this framework will help overcome the limitations of previous research that has not taken into account the complex and multifaceted influences on clinical handover and interprofessional communication.

Acknowledgements

Our project was funded by the Australian Commission on Safety and Quality in Health Care clinical handover program.

Competing interests

None identified.

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(Received 27 Oct 2008, accepted 15 Mar 2009) ❑