Handover — Enabling Learning in Communication for Safety (HELiCS): a report on achievements at two hospital sites

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ABSTRACT

- Clinical handover is an area of critical concern, because deficiencies in handover pose a patient safety risk. Redesign of handover must allow for input from frontline staff to ensure that designs fit into existing practices and settings.
- The HELiCS (Handover — Enabling Learning in Communication for Safety) tool uses a "video-reflexive" technique: handover encounters are videotaped and played back to the practitioners involved for analysis and discussion.
- Using the video-reflexive process, staff of an emergency department and an intensive care unit at two different tertiary hospitals redesigned their handover processes.
- The HELiCS study gave staff greater insight into previously unrecognised clinical and operational problems, enhanced coordination and efficiency of care, and strengthened junior–senior communication and teaching.
- Our study showed that reflexive and "bottom-up" handover redesign can produce outcomes that harbour local fit, practitioner ownership and (to date) sustainability.

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The provision of health care is becoming increasingly complex and fragmented.[1,2] As a result, to ensure continuity of care, the handover of clinical tasks is becoming more frequent and important. However, the general lack of clinical handover planning and training in handover communication creates unacceptable risks for patients.[1] Not surprisingly, clinical handover has been identified as a major international policy and research priority.[3]

Clinical handover has been defined as the successful transfer of responsibility (personal task commitment) and accountability (organisational role obligation) among health care practitioners.[4-6] Handover encompasses transfers between shifts, departments and organisations, including transfers during medical ward rounds and between medical specialties.

Research into clinical handover is of three main types. The first focuses on redeploying handover procedures in health from other industries such as aviation and the military.[7,8] The second maps existing handover practices in health care settings against handover procedures.[5,9] Both approach in-situ handover practices as being deficient, and see a need for clearer handover procedures and stricter compliance.

There is a third type of handover research that examines how frontline staff (and patients) themselves experience handover, and what factors they regard as important for improving handover practice.[10,11] These studies, when successful, can galvanise staff to design handover innovations and mobilise practitioners' own insights to systematise handover. By involving frontline staff in resolving work process problems with which they are familiar, these improvement processes can circumvent the "implementation gap",[12] enabling practitioners to strengthen handover practice in ways they know are feasible, practical and sustainable.

Working with frontline health care staff on improving practice in this way is becoming increasingly recognised as critical to producing workable solutions:

> To meet the challenges posed by changing and complex environments, local solutions have to be found to local problems. What works for one setting or patient may not be suitable for another.[13]

Thus, besides addressing generic, large-scale service problems, practice improvement also needs to enable clinicians to focus on problems inherent in their local work processes. To do this, frontline staff need approaches and resources that help them address the complexities that define their day-to-day work and strengthen their capacity to intervene in their own ways of working.[14]

We report on a handover research project that focused on enabling frontline staff in two tertiary hospital departments to design their own handover processes. The study deployed a tool called HELiCS (Handover — Enabling Learning in Communication for Safety).[15]

Implementation of the HELiCS program

HELiCS is a "video-reflexive" method[16] that harnesses practitioners' knowledge, expertise, and insights into the dynamics of their own work processes.[17] Real-life encounters are videotaped and later played back to the practitioners involved for analysis and discussion. Deployed extensively in education and community development,[18] video-reflexivity provides a powerful form of feedback, enabling people to confront and intervene in everyday complexity.[19]

Using HELiCS in the context of clinical handover, health care practitioners can begin to articulate the practical contingencies that enable and constrain their practices. The process of articulating these issues, in tandem with viewing actual handovers on a screen, produces insight into aspects of practice that will benefit from redesign. Observation and filming of handover practice initially focuses on areas that health care practitioners themselves identify, but can also include aspects subsequently identified by the researcher(s) or facilitators. The six phases of the HELiCS process are set out in Box 1.

In our study, conducted between October 2007 and June 2008, HELiCS was used to enable health care practitioners to review and redesign their own handover processes. The study engaged practitioners from two clinical settings: the emergency department of a regional teaching hospital and the adult intensive care service of a large metropolitan teaching hospital. Ninety-five health care practitioners and five patients consented to be involved in the study.

Evaluation of the HELiCS method involved interviewing selected staff about their perceptions of the impact of the research 2 months after initiating the new practice.

1 The six phases of the HELiCS process and their purpose

Phase		Purpose
1	Focus groups with health care practitioners	• To allow staff to articulate their thoughts and concerns about their own handover practices
2	Observation of handover practices	• To enable researchers to become familiar with handover practices, identify areas in need of being targeted, and negotiate opportunities for filming
3	Video-filming of units' existing handover practices	• To gather "reviewable data" that can be processed into feedback material
4	Reflexive viewing of units' handover practices	• To allow staff to view and discuss their own ways of working • To enable staff to build up work process awareness
5	Redesign of units' handover practices	• To improve how handover is being done using practitioners' (and patients') insights and "practical wisdom"
6	Embedding of reflexive practice	• To ensure staff have appropriated ways of raising work process awareness

HELiCS = Handover — Enabling Learning in Communication for Safety.[15] ◆

Ethics approval

Our study was approved by the relevant university and both area health services (details are withheld to preserve anonymity).

Results

The implementation of the HELiCS program led to significant handover practice changes in the sites targeted, such as junior doctor ward rounds moving from casual tearoom gatherings to active dialogues at the patient's bedside, and tenuous doctor–nurse relations transforming into structured information-sharing processes. We describe these and other achievements in detail below.

The emergency department

Initial focus groups revealed that emergency clinicians were interested in focusing on interprofessional handovers as well as on the dynamics between junior and senior staff. Once captured and witnessed on video, these concerns were confirmed: there was inadequate communication between junior and senior staff and between the different professions. Staff deduced that the information disseminated during ward rounds required more modelling of expert medical judgement to make sense to junior staff. Revealing the challenge of enhancing interprofessional communication, the footage showed that handover took place on a virtually continual basis but did not visibly connect to more formal shift change handovers and ward rounds. This alerted staff to having to find more efficient ways to coordinate the negotiation of clinical and operational information. For example, they realised there was a need to link patient treatment to ward transfer information and to connect staffing, patient acuity and access block information. Staff further recognised, when viewing the footage, that the physical space in which handover takes place

2 Emergency department: issues, problems, solutions and objectives

Issue	Problem	Solution	Objective
Need to complement clinical and operational information	Uncertainty regarding the clinical and operational roles of colleagues	Medical and nursing team leader bedside rounds	**Enable team leaders to:** • assess baseline clinical information • communicate the plan of care to members of their teams • coordinate tasks to facilitate expedient patient care • respond more directly to patient, family/care giver concerns and questions • minimise non-critical interruptions to handover • provide "time aside" for teaching and learning
Need to develop the use of clinical judgement in handover	Vital educational opportunities are forfeited in favour of task completion		
Location of handover leads to frequent interruptions	Interruptions can provide emerging information or disturb the flow of clinical information		

critically influences both whether senior staff will model expert practice for junior staff, and how cross-professional information is coordinated. Conducting handover in busy ward corridors renders it prone to interruption, thus heightening risk to patients. In quieter settings, in contrast, corridor encounters can enhance interprofessional communication and vigilance.[20]

These realisations led to discussion about what could be done to improve handover. Together, clinicians agreed on trialling what they termed the "twice-daily bedside nursing–medicine team leader ward round". This new ward round was designed to ensure that senior medical and nursing staff discuss and coordinate care at the bedside and across their respective roles, responsibilities and teams. This change also gave senior staff a better view of the tasks and pedagogic issues relevant for junior staff, and of patient developments that warrant interruption. These matters are summarised in Box 2.

Two months after initiation of the new practice, all staff interviewed commented positively on the learning and improvement processes. (Video footage of these interviews is included in the HELiCS DVD.[15]) For example, one of the emergency specialists commented:

> I think what the video footage did was it provided a really good stimulator for discussion. I think for our handover process you get a lot of information [from the video] because all the interruptions that you get, you hear, like you hear the vacuum cleaner going and you hear someone saying "Oh, can you look at this ECG", and you hear and you get a really good feeling for the chaos that happens.

Another clinician commented on the immediate appeal of the video format:

> I think if you chucked down a mountain of paperwork and said, "Read this and tell me what you think", you wouldn't get as much

> excitement or interest or useful information than actually, "Here, watch something on TV, this is what actually happens".

The hospital has since made a request to extend the project into neighbouring clinical domains.

The intensive care unit

In the intensive care unit, clinicians identified cross-professional and shift-to-shift handovers as warranting attention. On viewing their own handover footage, clinicians recognised there was a general need to create a tighter link between handover-based care planning and up-to-date clinical information. They commented that historical clinical data (patient progress notes; biochemical and radiological results) should be complemented by an on-the-spot assessment of the patient. It was further evident that handovers by and to junior staff would benefit from more assistance from senior staff with ranking the clinical status of specific issues and tasks. Equally, the footage made clear that nursing staff needed more opportunities to interact with medical staff. Finally, it became very clear that conducting handover away from the patient's bedside could lead to incorrect patient identification and assessment.

To address these concerns, staff agreed to redesign handovers to facilitate the sharing of interdisciplinary knowledge and perspectives on care, provide opportunities for teaching about how to synthesise data into a meaningful clinical narrative, and allow all staff the opportunity to make a contribution to patient care and to the strategic objectives of care. Viewing and discussing the video footage led to the proposal of three complementary strategies. First, for the benefit of the medical team, the bedside nurse should initiate patient handovers to the medical team with his or her assessment of the patient's condition. Second, medical shift change handovers should occur at the patient's bedside rather than in a staff area away from the clinical floor, to obviate misidentification and link handover information to up-to-date patient observation. Third, there was a need to address skill-mix issues for staff caring for patients in single rooms and to provide greater professional support for these staff (this strategy was yet to be translated into handover design at the time of writing). These issues are detailed in Box 3.

An additional finding was that conversations on handover redesign among clinicians started to become part of ward-based discussions, showing that video-reflexivity resulted not just in handover improvements but also in staff adopting reflexivity in practice.[14]

Two months after implementation of these new practices, we interviewed staff to evaluate their views of the impact of the research. Here too, all interviewees expressed satisfaction with the process. (Video footage of these interviews is also included in the HELiCS DVD.[15]) One senior clinical nurse commented:

> I think that by having discussions like this, by filming people, by sitting them down and actually looking at it, seeing ways to improve it and then actually going about putting protocols and processes in place … to get them on board, [clinicians] take ownership of this project.

Discussion

The teams engaged in our study achieved considerable change in their handover practices. The video-reflexive method was commented on positively by all involved. Two months after the conclusion of the study, the effects of HELiCS as a redesign approach were still evident. Staff had begun to develop a capacity for renegotiating handover processes as part of their everyday work.[14]

The strengths of video feedback as an intervention method can be summarised as follows. First, real-life footage intensifies people's experience of what happened.[11] Footage is powerful because it brings the complex dimensions of practice closer (by presenting events and viewpoints that staff might normally not be attuned to), while at the same time distancing them (by compressing what happens into a two-dimensional screen).[21] These two effects produce "reflection on action"[17] by enabling staff to question and redesign their previously taken-as-given ways of working.

A second strength of video-reflexivity is that it enables clinicians to move from reflection *on* action to reflection *in* action (ie, the ability to scrutinise an action at the time of carrying it out, rather than retrospectively).[22] When the clinician quoted above talks about getting a good feeling for the chaos that happens, he shows awareness of what might previously have been unnoticed or taken for granted. This awareness heralds reflection in action as a form of learning about practice as it happens.[22] This learning becomes possible because viewing video footage "unsettle[s] how people experience their own life-worlds",[11] and this renders people mindful[23] towards what they and others do. In that regard, video-reflexivity is a key technique to improve communication, strengthen attentiveness, and further patient safety.

Previous attempts to improve handover practice have focused on imposing predetermined communication models.[7,8] These models continue to struggle with limited uptake and sustainability.[24] The video-reflexive study outlined here brought together learning, design and implementation, empowering frontline staff and mobilising their enthusiasm. The study's achievements are indeed a tribute to front-

3 Intensive care unit: issues, problems, solutions and objectives

Issue	Problem	Solution	Objective
• Lack of interdisciplinary handover due to incompatibility of handover times	• Failure to link macro care planning to micro clinical data	• Incorporation of nurse handovers into medical rounds • Medical shift change handover at the patient bedside	• Build and encourage a supportive and inclusive clinical/organisational culture • Bring together the ongoing clinical assessment of nursing staff and the objectives and goals of care • Increase opportunities for teaching and leadership development • Complement historical data with immediate patient assessment • Verify clinical information
• Staff caring for patients in single rooms feel professionally isolated	• Isolation increases clinical risk and limits informal support and training		
• Need to increase staff ability to bring clinical judgement to bear on determining information relevance for handover	• Inappropriate approaches to information structuring lead to patient risk and missed opportunities for training leadership development		

line clinicians' intelligence, commitment and insight in addressing handover processes and problems.

That said, this approach also has limitations. As uptake of HELiCS in hospitals has only been recent, there is as yet no evidence that viewing handover footage and redesigning handover processes from the bottom up lead to improved clinical outcomes. However, this method is being adopted with enthusiasm in additional sites both locally and overseas, no doubt because it strengthens capacity among staff to design their own work processes in ways that target unit-specific complexities and risks.[20]

Concluding comments

As a practice improvement initiative, the work presented here harbours both methodological and policy significance. Methodological significance is evident from key outcomes to date. Staff used video footage to articulate handover knowledge and to redesign the handover process. Reflexive engagement with in-situ complexity heightened staff awareness of the impact of existing processes on continuity of care, on colleagues, and on patients. This provided the necessary insight and inspiration to redesign handover and to strengthen clinicians' reflection in action. When enabled and trusted to develop and redesign work processes that make sense to them, clinicians gain ownership over the solutions proposed and designs instituted. This ownership is critical to engendering and consolidating safe practice.

The policy significance of our study is that a diversity of local initiatives need not obviate commonality across solutions or relevance to other sites. The commonalities among the emergency and intensive care unit solutions reported here included the desire to enhance the coordinating functions of handover, a need to ensure that the most up-to-date information is available to those handing over, and concern to enhance the educational efficacy of handover practice. In this regard, our study shows that policy-relevant initiatives focusing on systematisation and improvement can align with design "from the bottom up".[25]

Clinicians' concern is to deliver effective, high-quality and safe care. As professionals who thrive on challenges, problem-solving and creativity, clinicians are wary of "one size fits all" procedures and mechanistic solutions usurping the complexities that constitute their everyday work. Excessive complexity is counter-productive, but so is excessive standardisation of domains that harbour variability and contingency.[24] The principal contributions of this research are permitting clinicians to implement handover changes in ways that are functional for them and their patients; instilling reflection in action as an enhanced everyday attentiveness to safety risks; and showing that bottom-up design satisfies the overarching concerns of health policy reform in its pursuit of patient safety.

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Competing interests

None identified.

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References

1 Garling P. Final report of the Special Commission of Inquiry: acute care services in NSW public hospitals. Sydney: NSW Government, 2008. http://www.lawlink.nsw.gov.au/lawlink/Special_Projects/ll_splprojects.nsf/pages/acsi_finalreport (accessed Apr 2009).
2 Hindle D, Braithwaite J, Iedema R. Patient safety: a review of key international enquiries. Sydney: Clinical Excellence Commission, 2005.
3 World Health Organization. Action on patient safety — high 5s. http://www.who.int/patientsafety/solutions/high5s/project_plan/en (accessed May 2009).
4 Australian Medical Association. Safe handover: safe patients. Guidance on clinical handover for clinicians and managers. Canberra: AMA, 2006. http://www.ama.com.au/node/4064 (accessed Mar 2009).
5 Bomba DT, Prakash R. A description of handover processes in an Australian public hospital. *Aust Health Rev* 2005; 29: 68-79.
6 Saultz JW, Albedaiwi W. Interpersonal continuity of care and patient satisfaction: a critical review. *Ann Fam Med* 2004; 2: 445-451.
7 Haig KM, Sutton S, Whittington J. SBAR: a shared mental model for improving communication between clinicians. *Jt Comm J Qual Patient Saf* 2006; 32: 167-175.
8 Catchpole KR, de Leval MR, McEwan A, et al. Patient handover from surgery to intensive care: using Formula 1 pit-stop and aviation models to improve safety and quality. *Paediatr Anaesth* 2007; 17: 470-478.
9 Eisenberg EM, Murphy AG, Sutcliffe K, et al. Communication in emergency medicine: implications for patient safety 1. *Commun Monogr* 2005; 72: 390-413.
10 Broekhuis M, Veldkamp C. The usefulness and feasibility of a reflexivity method to improve clinical handover. *J Eval Clin Pract* 2007; 13: 109-115.
11 Carroll K, Iedema R, Kerridge R. Reshaping ICU ward round practices using video-reflexive ethnography. *Qual Health Res* 2008; 18: 380-390.
12 Bero L, Grilli R, Grimshaw JM, et al. Closing the gap between research and practice: an overview of systematic reviews of interventions to promote the implementation of research findings. *BMJ* 1998; 317: 465-468.
13 Grol R, Berwick D, Wensing M. On the trail of quality and safety in health care. *BMJ* 2008; 336: 74-76.
14 Iedema R, Merrick E, Rajbhandari D, et al. Viewing the taken-for-granted from under a different aspect: a video-based method in pursuit of patient safety. *Int J Mult Res Approach*. In press.
15 Iedema R, Merrick E. HELiCS: Handover — Enabling Learning in Communication for Safety: a handover improvement kit (booklet and DVD). Sydney: Australian Commission on Safety and Quality in Health Care, 2008.
16 Iedema R, Long D, Forsyth R, Lee B. Visibilizing clinical work: video ethnography in the contemporary hospital. *Health Sociol Rev* 2006; 15: 156-168.
17 Schön D. The reflective practitioner: how professionals think in action. New York: Basic Books, 1983.
18 White SA, editor. Participatory video: images that transform and empower. London: Sage, 2003.
19 Iedema R, Forsyth R, Georgiou A, et al. Video-research in health: visibilizing the effects of computerizing clinical care. *Qual Res J* 2007; 6: 15-30.
20 Iedema R, Long D, Carroll K. Corridor communication, spatial design and patient safety: enacting and managing complexities. In: van Marrewijk A, Yanow D, editors. Space, meaning and organisation. Cheltenham, UK: