User-centered design in clinical handover: Exploring post-implementation outcomes for clinicians

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Background

- eHealth Services Research Group’s (eHSRG) aims to understand and improve handover by integrating clinical and information systems expertise with qualitative field techniques and user-centred education, training and UCD techniques. [www.ehsrg.net](http://www.ehsrg.net)

- eHSRG research has directly contributed to: **Australian national clinical handover initiatives** including - guidelines on clinical handover improvement; Guidelines on safe use of electronic handover tools; and, input into the national implementation tool kit for handover improvement. [http://www.safetyandquality.gov.au/](http://www.safetyandquality.gov.au/)

For more information:
Australian Commission on Safety & Quality in HealthCare
Introduction

• Effective design and implementation of health information systems to support clinical handover involves coordination of a complex set of inter-related processes to ensure that system content and functionality are relevant and can be integrated into routine clinical workflow

• Benefits from involving the users include improved technology adoption and utilization, increased user-satisfaction, trust and usability
Introduction

• There are differences between approaches advocating a role for users (e.g. human factors engineering; participatory design; user-centered design, universal design, human-computer interaction) but all consider users as integral to systems design, & implementation processes.

• Conventional e-health evaluations tend to emphasize technology-related (mostly positive) outcomes.

• More recently, unintended (mostly negative) consequences arising from the implementation of e-health technologies have also been reported.
Introduction

• But despite a lot of research being conducted on user-centered e-health, few studies provide detailed analysis of user outcomes post-implementation.

• This is particularly the case where users were directly involved in e-health system design processes.

• This research examines the outcomes for a sub-cohort of junior clinicians working in a Department of General Medicine arising from their involvement in the development and implementation of an electronic hand tool developed using principles of UCD.
Introduction

• Clinical handover is a complex & dynamic aspect of clinical practice.

• It involves the Transfer of information, responsibility, & accountability to support continuity of care

• Strong evidence that clinical handover is a high risk scenario for patient safety with dangers of discontinuity of care adverse events and legal claims of malpractice
Study context

• Based on research conducted as part of a broader handover improvement initiative conducted at the Royal Hobart Hospital.

• Research was conducted over more than 12 months framed by an overarching user-centered approach consisting of a combination of qualitative data collection and analysis techniques in three phases.

• All medical registrars and medical interns at DGM invited to participate + senior consultants (not primary focus)

• Paper based on data from 7 registrars and 7 interns who agreed to participate.
Study context

Phase One
To obtain an in-depth understanding of the clinical handover process and clinician insights on clinical handover improvement

Phase Two
To develop the electronic clinical handover tool in conjunction with clinicians

Phase Three
To explore the post-implementation outcomes associated with involving clinicians in the design and development of the electronic clinical handover tool
Methodology

Data collection
- 10 observations consisting of a combination of morning, evening and night handover sessions over a 5 day extended holiday period
- 14 semi-structured interviews conducted face-to-face and audio-recorded and transcribed with consent
- Clinical handover notes

Data analysis
- Principles of grounded theory using open, axial, selective coding, constant comparison and analytical memos
Results

Anticipated benefits

• Resulted in a more efficient clinical handover process
• Real time, simultaneous access to data
• Up-to-date information
• Indication of workload which assisted in planning and execution of tasks
• Structured information – issue, actions and comments
INT S: “Yeah...so um we’re not wasting our time and being told all this random crap about a patient, like who cares, just get to the point like you can see some guys are so tired they’re just reading the sheet they’ve got in front of them word for word and it’s like...I don’t care mate, I don’t care just give me relevant positives, relative negatives so that I can get out of here”
Results

Problems encountered

• Utilization of tool not mandatory and therefore not used consistently → inaccurate data
• Resistance from some clinicians despite efforts made to cater to all users
• Safety mechanisms incorporated in the tool to promote patient safety did not produce desirable effects eg. Clinicians did not tick check box when they completed tasks
Results

Problems encountered

- Prioritization not used appropriately and hence, all patients were Level 1 → had to be attended to immediately
- Increased workload as they had to arrive earlier or stay behind to key in handover information
- Deficiencies in current hospital IT infrastructure and maintenance
Results

Unanticipated positive outcomes

- Improved understanding of clinical handover and role in clinical handover
- Use of clinical handover guidelines and manuals
- Handover sessions more structured and organized
- Higher expectations of the handover process
- Clinical handover culture
Discussion

• Actively engaging users in the development of an implementation of an e-health system is beneficial **BUT not infallible** – it does not necessarily mitigate risks associated with failure

• Clinicians are limited in their view of what is required in an electronic tool and how they plan to use it until after it is implemented in practice.
Discussion

• Whilst clinicians acknowledged that the electronic tool was a good end product that met their needs, problems still arose in the way it was used that could compromise patient safety.

• Involving clinicians in the process transformed and awareness and a change in attitude towards the practice of clinical handover itself independent of the electronic clinical handover tool
Questions / Comments?
I'm so sick of these bloody boat people!
They come to our country,
disrespect our way of life!
Take our jobs!
Take our land!
Disrespect our laws!
Form criminal gangs!
Deal drugs to our kids!
They don't assimilate into our communities... And they don't even bother trying to learn our language!