Clinical handover within the emergency care pathway and the potential risks of clinical handover failure (ECHO): primary research

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Scientific summary

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Background

This report explores the risks to patient safety that are associated with failures of clinical handover within the emergency care pathway, and it investigates organisational factors that affect the quality of handover across organisational boundaries and organisational cultures.

This research was justified by the broad agreement among organisations, such as the British Medical Association (BMA), the Joint Commission and the World Health Organization (WHO), that clinical handover represents a crucial element in patient care, and that handover failures constitute considerable risks to patients. This is particularly true for the dynamic and time-critical emergency care pathway, where there is a recognised need for further research.

A review of the literature suggests that further research is required to understand handover across departments and organisations, where health-care professionals have to achieve alignment of their different individual and organisational motivations and backgrounds.

What this research adds:

- a systematic description of the risks associated with handover failures across the emergency care pathway and their underlying causes taking into consideration the social and organisational context
- an understanding of risks that arise from unclear allocation of responsibility for patient care across boundaries
- a description of the competing nature of different individuals' goals regarding the purpose of handover, and how this can lead to patient safety risks
- a description of the tensions present in the activity of handover, and how practitioners make trade-offs to resolve such tensions in order to provide good-quality care.

How this may benefit practice and research:

- It supports stakeholders in developing necessary systems of collaboration, communication, allocation of responsibility and escalation across care boundaries.
- It provides insights into when and how standardisation of handover may lead to improvements in practice.
- It contributes to safety science by describing an interpretation of safety that regards safety not as the absence of failure, but as the result of local adaptations by practitioners.

Objectives

The purpose of this study was to provide a systematic description of the risks associated with failures of clinical handover within the emergency care pathway, and to elicit and to describe staff perceptions on common organisational factors that impact on the quality of handover. The study focused on investigating interorganisational and interdepartmental handover.

The project addressed the following research questions:

- R1 What is the potential risk of clinical handover failures along the emergency care pathway?
- R2 What are common organisational deficiencies that affect clinical handover in the emergency care pathway, and what impact does the organisational model of emergency care delivery have?

Methods

Setting

Two English NHS ambulance services and three English NHS hospitals [emergency department (ED) and acute medical ward or clinical decision unit]. Each ambulance service provides emergency care in the catchment area of one particular study hospital and conveys patients there. Participating organisations were chosen to reflect a range of characteristics in terms of the population they serve and their organisational structure. Ambulance service A and hospital C formed research site 1, ambulance service B and hospital D formed research site 2, and hospital E formed research site 3.

Study design

The study design utilised a multidisciplinary qualitative research approach organised into two research strands.

Research strand 1

The aim of this research strand was to identify and to analyse systematically the risks of clinical handover failures within the emergency care pathway. The identification and analysis of risks was based on nine focus group-based risk analysis sessions [failure mode and effects analysis (FMEA)] with purposive convenience samples of staff from the participating ambulance services, EDs and acute medical wards. A total of 270 audio-recordings of three different types of handovers were collected (ambulance to ED staff for resuscitation patients; ambulance to ED staff for major injuries; ED doctor to acute medicine staff), transcribed and analysed using conversation analysis (CA). Coding was done using a coding scheme for describing handover content and language forms adapted from the literature. Two members of the project team coded an initial sample of 30 transcripts of audio-recordings collaboratively in order to allow familiarisation with the coding scheme. Ambiguities and uncertainties were resolved in discussion. One researcher subsequently coded the remaining audio-recordings independently. Frequency counts of handover content and language form were performed for each type of handover and for each study site.

Research strand 2

The aim of this research strand was to describe common organisational deficiencies that affect clinical handover in the emergency care pathway, and to describe the impact of the organisational model of emergency care delivery. An initial purposive convenience sample of 15 front-line staff (five per site) participated in semistructured interviews. Selection of participants was based on their role and actual involvement with handover in the emergency care pathway, and their availability for participating in an interview on scheduled dates. A second round of semistructured interviews was carried out subsequently with a purposive convenience sample of 24 additional staff. Interviews lasted between 20 and 50 minutes. Interviews were audio-recorded or, if the interviewee preferred, the researcher took written notes. The audio-recordings were transcribed and all identifiers were removed to ensure anonymity. Transcripts were analysed using thematic analysis. In a first step, all interviews were read in order to allow familiarisation with the data. Subsequently, each interview was coded using a mixture of descriptive, open and in vivo coding. An analytic memo was produced for each interview summarising the researcher's thoughts and issues of particular interest. Using the codes and the analytic memos categories were identified through clustering of codes in meetings of the project team. Subsequent interviews were coded using the existing codes and additional codes where appropriate. Categories were constantly compared with the data and revised until new data added no further conceptual insights.

Research ethics

The study had full NHS research ethics approval from South Birmingham Research Ethics Committee (reference 11/WM/0087) as well as institutional approval at all participating organisations.

Results

Research strand 1

Detailed representations of how handover is linked to clinical practice, and the different goals and functions it can serve, were produced. A systematic risk analysis to identify the most significant risks and their possible causes was carried out at each site. This provided the following results:

- *Handover serves different goals and functions* Staff involved in handover may have different and not necessarily overlapping goals. These can relate to issues such as the management of capacity and demand, the transfer of responsibility and the delegation of aspects of care, the communication of different types of information, and the prioritisation of patients or highlighting of specific aspects of their care.
- *Many handover failure modes are linked causally to capacity and resource issues* At research site 1, 10 handover failure modes with significant risk were identified; at site 2, nine; and at site 3 also nine. Many of the identified failure modes are linked causally to capacity and resource issues. For example, inadequate patient flow may lead to overcrowding in the ED, giving rise to several potential handover failures: delays in ambulance crew (AC) handover, more difficult prioritisation decisions, and inadequate patient transfer handover due to unfamiliarity with the patient. In addition, in order to manage patient flows, handover from the AC may be taken by a senior nurse with an overview of capacity of the whole ED. The senior nurse has different information needs, which may result in information such as social history not being communicated or not being consciously heard. Inadequate patient flow into the hospital further contributes to overcrowding. This may be caused by resource constraints on the wards themselves.
- *Similar vulnerabilities were identified across the three sites* The vulnerabilities identified across the three sites were similar, and no failure mode with significant risk was particular to any one site. There existed differences in the evaluation of risk. This is a limitation of the application of FMEA in health-care settings.

During the CA of the different types of handover, the focus was temporarily narrowed to the actual communication act. The results of this analysis demonstrated that:

- *Ambulance service handover is shorter than referrals* Across the sites, resuscitation handovers lasted between 38 seconds and 4 minutes, handovers for patients with major injuries lasted between 30 seconds and 6 minutes, and referrals to acute medicine lasted between 1 minute and 7 minutes. The shorter duration of ambulance service handover is not surprising, as this consists normally of a descriptive monologue by the AC, possibly followed by some clinical questioning at the end, for example around pain management or allergies.
- *Ambulance service handover is descriptive and focused on patient presentation* Around 80% of handover communication content for resuscitation patients and 75% of handover communication content for patients with major injuries was around patient presentation. Of the remainder, another 10–15% of handover communication served the purpose of establishing a friendly and professional relationship. The language forms used support this view, with around 60–65% of utterances being purely descriptive. Questions were used less frequently, with around 16–17% in resuscitation cases and 8–10% for patients with major injuries. The difference in frequency of questions between these two types of handover may be down to the fact that in resuscitation the team leader often adds a number of focused questions, as treatment needs to start immediately. The use of questions in the handover communication for patients with major injuries is frequently centred on elicitation of specific information on a limited number of topics, such as pain and allergy status.
- *Referrals entail discussion and can be forward-looking* Referrals tend to be slightly longer conversations than ambulance service handovers. These conversations are more of a dialogue, and the handover communication content is more forward looking than the ambulance service handover. Approximately 15–25% of handover communication content was concerned with consideration of the patient's future journey, as opposed to 4–8% for ambulance service handovers.

- *Social issues are not communicated routinely* The data further showed that approximately 2–5% of ambulance service handover communication content related to the social circumstances of the patient, compared with 1.5–2.8% for referrals. These data suggest that social issues are not discussed routinely. There may be an assumption that these issues are documented and will be consulted once the patient has been transferred.

Research strand 2

Two main themes were identified during the thematic analysis: inner tensions within the activity of handover that require trade-offs, and management of the flow of patients across organisational boundaries.

Participants described a range of tensions, inherent in handover, which require dynamic trade-offs:

- *Documentation* There is an organisational push to document everything for legal and quality assurance purposes, and there is an assumption that with comprehensive documentation multiple handover can be avoided. On the other hand, practitioners feel they cannot rely on documentation alone. Documentation cannot convey subtleties and does not allow for questions. Documentation can be variable or inaccurate. Producing comprehensive notes requires time, but when the environment is busy, practitioners may write less and those working off the notes may not read them.
- *Verbal communication* Verbal communication provides added value by conveying subtleties, and by allowing for questioning and feedback. The personal interaction contributes to building relationships. However, verbal communication relies on memory and the sender may filter information depending on perceived importance. The communication may be unstructured and confusing. Sender and receiver may have different goals and information needs. Interruptions, noise and lack of privacy may negatively affect verbal communication. Verbal communication can be delayed or skipped due to queues or unavailability of one party.
- *Transfer of responsibility* Explicit transfer of responsibility through verbal communication contributes to ensuring seamless transition of care. However, difficult conversations may result in refusal to accept responsibility for patient care. Lack of capacity may lead to situations with unclear allocation of responsibility and patients being stuck or lost in the system.
- *Goals* Actors may have different motivations and information needs. Staff managing patient flows require a short handover conveying the criticality of the patient. Staff providing patient care require a more detailed handover that conveys subtleties and provides an opportunity for discussion. Staff from different departments and organisations have to work together and trust one another in order to avoid duplication and to provide best possible care. However, time performance targets may affect trust among staff negatively. People may use purposeful misinformation and particular keywords in order to force others to prioritise and accept patients.

Participants also described the management of flow of patients and of information across organisational boundaries as one of the most important factors influencing the quality of handover. This includes management of patient flows in and out of departments, the influence of time-related performance targets, and the collaboration between organisations and departments. The two themes are related. The management of patient flow influences the way trade-offs around inner tensions are made, and, on the other hand, one of the goals of handover is ensuring adequate management of patient flows.

Overarching themes

The findings produced by the different research activities of the two research strands led to two key overarching findings:

- *Handover is a sociotechnical activity embedded in clinical and organisational practice* Handover can serve different goals and motivations. Inner tensions give rise to observable disturbances or problems. Inner tensions are always present and cannot be eliminated. Practitioners deal with tensions by adapting their behaviour, thereby possibly creating new tensions. Understanding handover as a

sociotechnical activity embedded in clinical and organisational practice means that improvement efforts should focus on providing flexibility to practitioners to make trade-offs in order to resolve tensions.
- *Quality of handover is frequently linked to issues of capacity and patient flow across organisational boundaries* Lack of capacity and patient flow negatively affects handover and contributes to tensions. Time-related performance targets provide a strong organisational focus for quality improvement, but pressures resulting from targets may negatively affect the quality of care and create risks for patients. Patient flow and patient safety need to be addressed by the whole system. Greater collaboration across departments and organisations, and cultural awareness are possible ways of achieving this.

Conclusions

The research findings suggest that there may be important implications for health-care stakeholders:

- Collaboration between general practitioners (GPs), ambulance services, ED and hospital services may be a prerequisite for sustainable improvement.
- Transitioning from a target-driven culture towards a culture of compassionate excellence may improve the quality of handover.
- Efforts at nurturing shop floor relationships in order to maintain trust and respect may contribute to sustainable improvements in handover.
- Flexible approaches to standardisation may support handover practices.
- Stakeholders in education and training should consider establishing handover priority as a cultural norm.

The research findings point to a number of areas that future research should seek to address:

- Evaluation of system-wide improvement efforts may provide insights about whether and how interventions lead to sustainable improvement of handover.
- Understanding the role of GPs and the contribution they can make may provide useful insights for system-based improvements. Understanding how staff make trade-offs in order to deal with tensions may provide novel insights about organisational resilience.
- Novel methods for system-based risk analysis in health care may overcome the limitations of current techniques.

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