

The European HANDOVER Project: a multi-nation program to improve transitions at the primary care—inpatient interface

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Over the past decade, awareness has grown that transitions of care are particularly vulnerable periods in the patient's journey. Evidence suggests that during these transitions vital information often is lost, distorted or misinterpreted.^{1–3} When transitions between the primary care setting and the inpatient hospital are less than optimal, the repercussions can be far-reaching—including hospital readmission, and avoidable morbidity and even mortality. This supplement of BMJ Quality and Safety reports the findings of the HANDOVER Project, initiated in 2008 as the first multi-year, multi-million-euro effort to improve handovers at the interface between the hospital and the home.^{4 5}

Six European nations (Italy, the Netherlands, Poland, UK, Spain, and Sweden) participated in the Project, along with researchers from the United States and Australia. The aims entailed optimising the continuum of clinical care between primary care and the hospital to reduce unnecessary treatment, medical errors, and avoidable harm. Specific objectives included identifying and studying best practices, creating standardised

approaches to handover communication, and measuring their effectiveness in terms of impacts on patients and health care costs. The Project was initiated by a group of health services researchers and clinicians from the six participating nations. Countries were specifically selected to represent different European systems for the organisation and funding of healthcare. The HANDOVER Project was funded by the European Union's (EU's) Seventh Framework Programme (FP7),⁶ which brings EU research initiatives under a common roof to foster growth in research and innovation through competitiveness, training programmes, and funding to support regional and cross-national collaborations.⁷

GOOD HANDOVERS – FACILITATORS AND BARRIERS

The HANDOVER Project included research that identified attributes of handovers that facilitate or impede the transition of care and directly or indirectly affect patient outcomes. This supplement presents detailed descriptions of the work of investigators, participants and stakeholders to define the scope of handovers between the primary care and acute inpatient settings, discuss and incorporate intermediate findings into the further development and refinement of the Project, and aggregate stakeholders' interpretations of the findings and their relevance to future research and implementation. The multi-method, multi-level qualitative

research approach used for the Project entailed interviews, focus groups, concept mapping and, process redesign. These were coupled with the application of quality improvement tools, including exploration of 'near miss' events, patient and clinician stories, artifact analysis and Ishikawa (fish bone) diagrams, social science techniques, and implementation research to explore and improve transitions between the primary care and inpatient setting.⁸ Challenges created by the multi-nation, multi-language aspects of the project required the development of quality control mechanisms to meet expectations for methodological rigour, promote the reproducibility of approaches, and enhance the confidence of the larger community in the findings and tools.⁸ The findings underwent reinterpretation by stakeholders to contextualise them and deepen insights.⁸

Studies completed under the Project include the work of Hesselink and colleagues that identified barriers and facilitators to transitions between primary care and the hospital setting.⁹ They found that time constraints and low prioritisation of discharge communication, pressure on available hospital beds, and variability in patient and family member involvement in discharge planning resulted in a sizable portion of patients feeling unprepared for discharge, and post-discharge care that did not meet patients' needs and preferences.⁹ Process mapping of the transition at discharge for patients in the United States by Johnson *et al* found similar barriers to providing accurate and timely information, and a lack of feedback to the healthcare professionals involved in handovers.¹⁰ Frankel and colleagues studied non-verbal communication during handovers, identifying 'joint focus of attention' as the optimal model, and commenting on the importance of attention to non-verbal communications as an added strategy to improve

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the quality and reliability of handovers.¹¹

Two studies focused on special populations or circumstances. Groene and colleagues researched the needs and potential added risks of handovers involving 'vulnerable patients' with limited language, cognitive and social resources. They identified quality and safety problems including a lack of medication reconciliation at discharge, loss of discharge information, and absence of plans for follow up care in the community, which that occurred more frequently for this population, suggesting that transitions between the primary care and hospital setting may pose a particular risk for 'vulnerable patients'.¹² Toccafondi *et al.* studied transitions of care between two services within the hospital – the intensive care unit and the inpatient floor.¹³ This showed that exclusion of some health-care professionals from informal, ad-hoc communications resulted in a lack of "common ground" among all members of the team, which placed patients at greater risk.¹³ In a commentary on the ideal attributes of information technology to support transitions of care, Patterson advocates that when electronic handover information may be viewed by other healthcare professionals who are not immediately involved in these transfers, 'common ground' needs to be expanded to enable accurate interpretation by these secondary recipients.¹⁴ She proposed narrative structures to enhance comprehension of information and sense-making.¹⁴ Fabri also comments that in their current form, electronic health records (EHRs) store large amounts of information, yet are not configured to optimally support continuity of care.¹⁵

ROLES AND RESPONSIBILITIES FOR THE HANDOVER

Several studies under the Project's aegis revealed that patients and the healthcare system rely on general

practitioners to take the lead in coordinating patient care between the primary care and hospital settings.^{9 12 16–18} Goebel and colleagues found that multiple factors, such as the lack of direct contact between professionals in the two settings, involvement of multiple individuals and a lack of explicit feedback, made it difficult for general practitioners in several nations to fulfil this expectation in a satisfactory way. Moreover, general practitioners did not feel appreciated or rewarded for the challenging role of care coordination.¹⁶

The need for an active patient role in the handover between the hospital and primary care was emphasized by the majority of patients and health-care professionals participating in surveys, interviews and focus groups that explored the patient's role in the handover.^{17 18} Flink *et al* found that patients preferred a transition process where responsibility was clear and unambiguous, regardless of whether it rested with the healthcare professional or was shared with the patient. Patients expressed a need for health-care organisations to have a clear system of responsibility for the handover that takes into account the patients' need for clarity, and tailored support in relation to their own resources.¹⁷ Patients actively participated in handovers when they felt a need for involvement to ensure continuity (based on prior bad experiences or a general distrust of the system), and were less active when they perceived their contribution was not needed, respected or valued.¹⁸ Both professionals and the patients expressed concern about the amount of responsibility for information transfer placed on patients and family members. When patients are expected to contribute to their own handovers, it may create unmet expectations and a new 'weak link' in the handover chain, resulting from patients being poorly informed about their role in these transitions or not

able to carry out the activities required as part of this added responsibility.^{9 12 16–18} A commentary by Moore highlights nursing's established role in and emphasis on incorporating patients' values and preferences in plans of care, including during transitions.¹⁹

EDUCATION AND TOOLS TO IMPROVE HANDOVERS

A key contribution of the HANDOVER Project is the development of an open-access 'handover toolbox', containing ready-to-use tools clinicians and educators can adopt or adapt to their local needs and context, allowing them to create or customise training content or approaches for assessment.²⁰ The toolbox was designed using a Technology Enhanced Learning Design Process that explored user requirements, and included usability testing of the tools and educational offerings, in keeping with the principles of 'participatory design'.²⁰ Stoyanov and colleagues analysed handover training interventions, prioritising them by importance and feasibility, and identified a set of solutions to be applied in formal handover training, work-place based learning, and informal social learning at the organisational level.²¹ Kicken *et al* propose mass customisation as a means for addressing healthcare professionals' preferences for handover training, which include brief conventional training sessions in multidisciplinary groups, with active feedback, as well as training adapted to local context.²² In a commentary, Wohlaer notes that standardisation is effective in dealing with the complex healthcare environment, yet adoption of standard handover tools without teaching the principles of systems thinking and risk management may result in suboptimal solutions.²³ He recommends that tools and standardised approaches be introduced as part of an explicit educational curriculum on transitions of

Table 1 Interventions to improve the effectiveness of transfer between the inpatient hospital and primary care

Level	Intervention	Example	Effectiveness
Patient/Family	Patient Involvement: Involve patients and family members as active participants in the handover	Empowering patients to actively participate in the information exchange between the hospital and the primary care setting	Variable: While patient participation in their health care generally has been shown to enhance safety, capacity for participation depends on patients'/families' sophistication and willingness to accept the responsibilities of the added role. Not suitable for all patients, and requires screening of patients. May reduce patient safety if the (sole) intervention at the system level is the expectation for patient/ family involvement in handovers. ^{16–18}
Individual healthcare professionals and healthcare teams	Education and Training: Improve knowledge about handovers, attitudinal change to consider handovers important to safety and teach handover skills	Handover toolbox, ²⁰ Lectures, on-line modules, case based discussions, multi-disciplinary team training, handovers as entrustable professional activities (EPA) ²⁴	Moderate to high, depending on the systems for transfer of training to the workplace and the need for and availability of periodic refresher training: Training in multi-disciplinary teams was considered more desirable by healthcare professionals and may aid in transfer of training to the workplace. ²¹ Mass customization, with local communities of practice adapting generic handover education materials and tools to local circumstances adds efficiency and cost-effectiveness. ²²
Healthcare Team/ Micro-system	Shared Coordination: Shared responsibility for continuity and transfers by considering the professionals involved in the hospital to primary care handover at discharge as a 'virtual microsystem'	Discharge planning, shared involvement in follow-up by hospital and community care providers, use of electronic discharge notifications and web-based access to discharge information for general practitioners (GPs)	Effectiveness depends on a shared understanding of roles: Not effective if roles are unclear. ^{9 12 16} Shared coordination requires tools for efficient communication that establish or build on existing 'common ground' between microsystem members. Effectiveness can be facilitated by shared information systems, or hampered by lack of shared information or the structure of the information itself. ^{8 9 10 11 12 16}
Healthcare Team/ Micro-system	Local Communities of Practise: Engaging local stakeholders in communities of practise to improve handovers		Potentially high: Facilitated by the creation of systems tailored to local circumstances, although engaging health care professionals in frontline improvement work is time consuming and individuals may lack preparation. Communities of practise are effective in designing or adapting low-cost approaches that effectively address local circumstances. ^{8 20–22}
Within and across microsystems with shared responsibility for continuity	Standardisation: Standardise elements of handover practise between sending and receiving individuals, teams or units.	Standardised paper/ electronic handover protocols in intensive care, discharge summaries, medication reconciliation forms	Variable: Sustained benefits are more likely when standardised tools are adapt to local circumstances and are implemented as part of a larger educational strategy that ensures the tools are embedded in local practise and context. ²³
Institutional 'meso' systems and potentially across institutional systems	Records, data support and technology: Create handover data depositories, including handover features as part of the medical record or discharge form.	Electronic tools to facilitate quick, clear and structured summary generation, shared records across micro- and meso-systems that participate in the coordination of care.	Effectiveness depends on shared data systems and seamlessness of information: Lack of fully shared systems across settings hamper efforts to ensure continuity of care. ^{9 12 16–18} Electronic health record (EHR) organisation is moving to narrative structures to make transparent 'common ground' in handover communications, and allow interpretation by individuals who are not the primary recipients of information. ^{13 14}

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Table 1 Continued

Level	Intervention	Example	Effectiveness
Macrosystem	Research Funding: Funding research to improve handovers.	EU Seventh Framework Programme support of the HANDOVER Project effort to improve transitions at the primary care—hospital interface ^{6 7}	Effective in producing initial research to develop and test interventions and assess their financial and societal benefit. Less funding to date for projects focused on post-implementation effectiveness, cost/benefits analyses or comparative effectiveness. ²⁶
Macrosystem	Regulation/Policy: Incentives or sanctions as a force function to improve handover practise.	Payers' threat of reducing payments for readmissions attributed to suboptimal handovers.	Influences handover practise by creating pressure on/incentives for organisations to improve handovers: Benefits from post-implementation research to identify effective, broadly adaptable approaches, and the ability adapt 'regulated' practise to incorporate new knowledge.

care.²³ Ten Cate proposes entrustable professional activities (EPAs) as a model for delegating responsibility for handovers to learners in formal health professions training programmes, and offers a detailed assessment plan to ensure trainees have the competencies to reliably conduct handovers safely and effectively.²⁴

In an important contribution to the assessment of clinical service redesign cost effectiveness, Lilford *et al* propose a new classification of policy and service interventions in which they distinguish between two types of interventions: narrowly targeted service interventions that are aimed at the local level, and policy interventions that are aimed at the population of organisations in the field.^{25 26} They emphasise that efforts to improve handovers are affected by multiple local factors beyond the scope of the intervention, and recommend that process measures may be a more efficient primary end point for assessing benefits. In addition, while the effect of generic interventions on outcomes might be small, they are cost-effective if their costs are lower than the benefits they produce. Lilford and colleagues suggest that studies should use surrogate (process) outcomes, with Bayesian methods useful in

determining the 'value of information' of various data types and data sources.²⁶

CONCLUSIONS

The Project's findings of significant variation in practise and a lack of appreciation of the systems of care around the patient mirror results from the United States, showing that handovers at discharge are far from seamless. Direct communication between hospital physicians and primary care physicians occurs only in a small percentage of cases, and discharge summaries are frequently not available at the post-discharge visit or lack important information, with negative consequences for the quality of care for up to one-fourth of patients, and attendant low patient and provider satisfaction.¹ The HANDOVER Project created an inventory of barriers to effective and safe transitions present across the six participating nations, including attributes of the healthcare delivery care model, culture and conflicting professional role and values. It also produced a series of evidence-based recommendations for how to overcome these barriers and improve transitions between the hospital and

the home, to be applied at different levels of the healthcare system (see [table 1](#)). Some of the work offers recommendations for improving handovers; other studies supply promising ideas for further development. A third group highlights concepts discovered but largely left unexplored. These can serve as the starting point for future work. Tantalizing concepts that require further study include 1) an expanded notion of 'work group' that crosses the different 'clinical jurisdictions' of primary care and the inpatient setting, with 'shared common ground' among individuals who work in different components of the system and are expected to collaborate around the transition of patients and their information; and 2) the idea that approaches to make handovers more robust could be "wired" into the system through novel uses of technology, potentially including social media, to directly link patients and healthcare professionals or professionals in different settings.^{27 28}

The HANDOVER Project used participatory design to involve healthcare professionals and patients in the redesign of handover systems and tools.²⁹ Involvement of healthcare professionals in local improvement efforts is an important element in the successful implementation of complex

interventions, and is an integral component of the work of the profession.³⁰ At the same time, healthcare professionals may be ambivalent about these new responsibilities, and whether they extend to advocacy,³¹ cost containment or management, roles for which they may feel ill-prepared or lack interest. Yet, stakeholder involvement at the local level is instrumental to a shared understanding of the strengths and limitations of proposed interventions, and helps develop comfort, support and trust among participants that contributes to a broader discussion of problems and the development of meaningful solutions.⁸ That trust and shared understanding by stakeholders are important is known to social science researchers and quality improvement experts.³² The work in healthcare is carried out in clinical microsystem groups that develop norms that govern their mission, primary tasks, manifest and latent functions, and consensus on the criteria used to measure results.³³ Social norms used in the medical and nursing professions, and organisational control systems, including rules and culture are important in reducing variability in individuals' behaviours,³⁴ yet may present sizable barriers to the success and sustainability of interventions. Unfortunately, in the design of large scale evaluations, particularly in the areas of policy research or assessing the effectiveness of interventions, these attributes of group and organisational context frequently are passed over in favour of traditional 'positivist scientific' approaches aimed at identifying the intervention with the greatest potential for generalisability to multiple settings and, potentially, nations.

The work resulting from the HANDOVER Project sets the stage for the next phase of efforts to improve transitions between the hospital and the home, with aims including to show a measurable impact on medical errors, patient readmissions and associated costs, and enhancing patient

satisfaction with their care. These outcomes will come with longer application of the interventions developed through the Project. Further research is needed to better understand and implement effective educational and work place interventions that address the Project's findings. Justification of interventions, whether systemic, educational or regulatory, ultimately will require generating economic evidence about the costs of ineffective handovers, and estimates of economic and human benefits of improving the transition between primary care and the hospital to inform policy and future practice.

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