

Achieving a high quality, fully-integrated falls service in Sheffield: a clinical microsystems nurse-led redesign

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The Burdett Trust for Nursing

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1. Background

Introduction

This report presents an overview of a project to develop an integrated falls service across the city of Sheffield. The project was funded by a grant from The Burdett Trust for Nursing as part of its Empowerment Programme focusing on transforming services at the hospital-community interface.

The project ran from September 2012 to March 2015 and was undertaken by Sheffield Teaching Hospitals NHS Foundation Trust (STHFT), an organisation that employs around 15,500 staff serving a population in excess of one million patients each year over five hospitals and adult community services. The Trust provides a full range of local hospital and community services for people in Sheffield as well as specialist services to patients from further afield.

Sheffield's adult community services became part of STH on 1st April 2011 as part of the national Transforming Community Services Programme. The integration of adult acute and community services in Sheffield provided an ideal opportunity to develop a more integrated evidence-based approach to the prevention and management of falls across the city.

Falls prevention: a national and local priority

Falls pose a local and national challenge to the ageing population who have an increasingly high expectation of active living. People aged 65 and older are at most risk of falling, with a third of people older than 65 years and half of people older than 80 years falling at least once per year (NICE 2013). People who have fallen once are at greater risk of falling again within the following twelve months (Lord et al 2001). The human cost of falling is significant in that falls cause distress, pain, injury, loss of confidence and loss of independence to the individual. Experiencing a fall impacts upon a person's quality of life as well as affecting relatives and carers (NICE 2013).

The immediate healthcare treatment costs for falls in England and Wales is considerable. In 2007 it was estimated to be in excess of £15 million per year (NPSA 2007) and will have risen substantially in the intervening years. However, this figure rises to an estimated £2.3 billion per year when associated costs such as fracture management and long term care provision are taken into account (NICE 2013). Fragility fracture management alone is estimated to cost the NHS about £1.7 billion per year, and the major determinant of this cost is length of hospital stay.

The reasons why people fall are complex and influenced by contributing factors such as physical illness, cognitive impairment, side effects of medication, problems with balance and mobility, and increasing age. A change in environment, for example admission to hospital, significantly increases the risk of falling in older people, especially when compounded by problems of poor sight or poor memory. Hospital patients have a greater risk of falling than people in the community and falls in hospital are the most common patient safety incident reported in UK hospital trusts. Across England and Wales approximately 152,000 falls are reported in acute hospitals each year with a further 28,000 from community hospitals (Patient Safety First 2009 Reducing harm from falls).

NICE has issued guidance on the assessment and prevention of falls in older people (NICE guideline CG161) including actions to be taken to prevent falls in hospital and community settings. Successful implementation of this guidance requires appropriate processes, systems and services to identify people at risk of falling, undertake a multi-factorial assessment and provide appropriate falls prevention programmes.

Falls prevention is a complex issue that crosses the boundaries of healthcare, social care, public health and accident prevention. With increasing emphasis at national and local level to develop services that move towards primary and preventative care instead of secondary hospitalisation, there is considerable potential to provide a more integrated approach to falls prevention across the city of Sheffield.

A review of falls in Sheffield undertaken in December 2011 identified that the hip fracture rate resulting from falls in Sheffield was 17% higher than the national average (Sheffield City Council 2011). More recently, Age UK Sheffield identified that 39,651 people aged over 50 attended Sheffield hospitals after suffering a fall during 2013. The three most common types of fall were stumbling or tripping, falling while getting out of bed, or slipping on ice or snow. Preventing older people from falling, as well as

ensuring services are integrated, well organised and evidence-based in line with national standards are key challenges for the NHS and local authorities in Sheffield. Whereas hospital, community and the local authority provide falls services, the number of people accessing these services in Sheffield is low in comparison to those who have the capacity to benefit from them.

At the time this project commenced, the Sheffield Falls Care Pathway developed in 2010, followed a three-tiered service of assessment and intervention:

- Level 1 Screening for at risk patients
- Level 2 Nurse and therapy led community multi-factorial intervention
- Level 3 Hospital-based multidisciplinary model for diagnosis of unexplained falls

This pathway has a strong evidence-base, employs highly skilled staff, and has delivered high quality care over several years. However, prior to the current project commencing, it was recognised that its ongoing success was constrained by inconsistent co-ordination and integration at the hospital-community interface. Access to the pathway was unclear and there was a referral overlap.

In 2011, the hospital falls clinic service underwent a highly successful patient-centred redesign that used the clinical microsystems methodology developed by the Dartmouth Institute, USA (Dartmouth Institute 2011). The project achieved improved efficacy, safety, patient satisfaction and a return on investment efficiency improvement of 5:1 (saving £48,000 per year for an £8,000 investment).

The clinical microsystems methodology encourages a flattened hierarchy approach to service improvement that is ideally suited to empowering nurses and other members of the multi-disciplinary team to develop patient focused services. It was therefore considered a suitable approach to inform the development of a more integrated falls pathway in Sheffield in order to promote greater uptake of services and improve health outcomes for older people in Sheffield.

Clinical microsystems approach to improvement

Dartmouth Clinical Microsystems (CMS) approach to quality improvement (Dartmouth Institute 2011) informed the various stages of this project. Clinical microsystems are small, functional, front-line units that provide care to discrete patient populations (Nelson et al 2002). They are the essential building blocks of larger organisations and of the health system. The CMS approach to quality improvement involves engaging microsystem team members (the multidisciplinary members of staff that work in the microsystem) in a structured approach to improve the quality of care for patients and staff.

The CMS approach is based on the assumption that the quality of care produced by a large health system can be no better than the services generated by the small systems of which it is composed (Splaine et al 2012). The CMS methodology is designed to enable transformation of the care experience of patients, to change the behaviour of health care staff and create a patient-centred culture. The Dartmouth approach to improvement has been implemented successfully in a number of countries, most notably the USA, Sweden and the UK.

The CMS approach is built on a '5Ps' framework of components: purpose, patients, professionals, processes and patterns. Analysis of these components effects change by progressing through the following steps, involving every member of the microsystem team, including patients and carers:

1. Process mapping to define the current and ideal care pathway
2. Brainstorming to produce ideas to close the gap between current and ideal processes
3. Focus groups with patients and carers who have experienced conventional systems
4. PDSA tests of improvement
 - *Plan* - the change to be tested or implemented
 - *Do* - carry out the test or change
 - *Study* - data before and after the change and reflect on what was learned
 - *Act* - plan the next change cycle or full implementation
5. SDSA to sustain improvement
 - *Standardise* - the process is integrated into daily work.
 - *Do* - what is being done to ensure the new standardised process is being maintained?
 - *Study* - measures that tell you that the process is being done consistently.

- *Act* - ask 'are the standardised processes occurring all the time?' Reflect on what changes need to occur and be tested.
6. Minimise waste with the '5Ss'
- *Sort* - Sort through items, keep only what is needed, and dispose of what is not.
 - *Straighten* - Orderliness.
 - *Shine* - Cleanliness. The cleaning process allows us to inspect and expose abnormal or failure conditions that affect quality.
 - *Standardise* - Create rules to monitor first 3 S's.
 - *Sustain* - Self discipline. Maintaining a stabilised work place is an ongoing process.

The Dartmouth CMS approach involves training coaches in the art of team coaching and the science of quality improvement in order that they can facilitate microsystem teams to progress through the improvement stages identified above. Coaches are drawn from within the organisation and for best effect, coach teams from a different microsystem to the one in which they work.

Patient involvement in clinical microsystems

The CMS approach emphasises the importance of taking account of the patient perspective when initiating improvement. This can be achieved through a variety of different means.

- Patients, and where appropriate relatives and carers, who have direct experience of the service can be involved in project team meetings at key stages of improvement process.
- Team members can present patient stories, based in their experiences of providing care, to draw attention to the patient experience of the service under consideration.
- The use of a 'virtual patient' was pioneered in an approach to using CMS in Jonkoping, Sweden. The characteristics and experiences of the virtual patient were constructed by members of the microsystem drawing upon their experiences of the service under review. The earlier clinical microsystems initiative in STH which focused on the hospital falls clinic developed a virtual patient 'Evie' whom the team referred to at each stage of the quality improvement process in order to ensure that patients' needs were considered throughout the change process.

Prior to this project commencing, staff within STH had successful experience of CMS improvement work in a variety of clinical settings including the hospital falls clinic, ambulatory haemato-oncology and the cystic fibrosis service. However, this previous experience had been small-scale use of clinical microsystems in a defined closely bound service. In contrast this project is larger scale and spans the hospital / community interface involving a range of health and social care services.

Clinical microsystems and empowerment

The CMS approach sits within the emergent theory of change (Burnes 2009), which is based on the proposition that planned, top-down, imposed change does not work in modern complex organisations. These organisations are continually responding to unplanned changes, making it impossible for managers to have a complete understanding of all the issues and to plan responses appropriately. A bottom-up approach to change is advocated whereby individuals and groups throughout the organisation are empowered to design and implement change at a local level in response to the challenges they face. This is strongly reflected within the CMS methodology, where frontline staff in the microsystem identify the areas of their service that need to change, design the change, implement the modifications and measure its success.

Previous experience of using the CMS in STH, identified that the individuals involved developed greater ownership for improvement work and felt more empowered to effect change in their working practices. There is further evidence to suggest that staff involved in CMS initiatives viewed very positively their active input into change and that, notwithstanding grade or status within the organisation, they felt empowered to contribute to improvement through a receptiveness to and a broader ownership of, the CMS process (Williams 2009).

Spreitzer (2009) identifies two dimensions to empowerment within the workplace: structural and psychological empowerment. Structural or organisational empowerment describes the individuals'

work environment or setting, and the way in which it allows them to work. This includes the extent to which they have access to:

- opportunity;
- information regarding the broader goals of the team or organisation;
- support and feedback in the work they are doing;
- resources to help them to carry out their task effectively.

In contrast psychological empowerment acknowledges that an individual can have access to all of the above and remain disempowered if they do not have self-efficacy in their tasks. Psychological empowerment therefore addresses:

- how meaningful the job is to the individual;
- how competent they feel in their ability to do their work;
- the extent to which they can control their work activities;
- the impact their work has on others

The bottom-up, clinician focused approach to change underpinning the CMS approach is framed to enhance and capitalise on the empowerment of individual microsystem team members. The process allows staff to focus on the purpose, the people, the patterns and the processes within their work, which may well have bearing on their organisational and structural empowerment.

Microsystems, Meso-systems and Macro-systems

Whereas the clinical microsystem is an important unit through which quality improvement can be addressed, it does not operate in isolation, but sits within a complex multi-level context which impacts on the microsystem’s ability to achieve change. This context comprises the broader macrosystem (health and social care system) and the mesosystem (organisation) that impact upon the work undertaken at microsystem level. Within the NHS, the organisational structures which comprise the Trust within which the microsystem is located is the mesosystem while the external NHS and other agencies/structures at local, regional and national level is the macrosystem.

The relationship between these three systems is shown below in Figure 1.

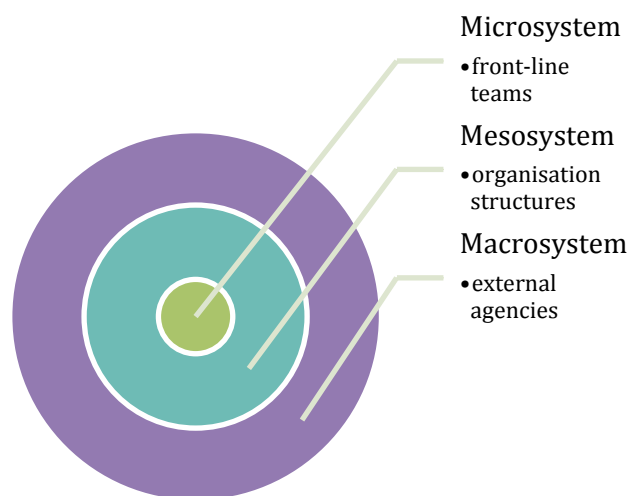


Figure 1: Relationship between micro-, meso- and macrosystems

Whereas the focus of this project was on the microsystems that comprised the falls pathway, the pathway itself operated at both meso and macrosystem levels. This added to the complexity of the project as there was limited evidence of using the CMS approach to initiate change across a mesosystem.

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2. Project overview

Introduction

The project commenced in September 2012, some 17 months after the adult community services in Sheffield integrated with STH. As a short-term measure at the time of integration, adult community services became a separate care group within the Trust. However, the intention from the outset was to develop a fully integrated hospital and community service across a number of care pathways, especially in relation to meeting the needs of an ageing population. Following integration, the new Primary and Community Services care group undertook an internal review of a number of its services over a 2 year period. This was followed in 2014 by a merger between primary and community services and geriatric and stroke medicine services. The review and reconfiguration of services inevitably impacted upon this project, creating both challenges and opportunities to progress work in redesigning the falls pathway. The project team had to adapt the project plan on an ongoing basis to address the challenges and opportunities arising from the organisational changes.

The project was initially planned to run over two years, from September 2012. However, due to the delays incurred in progressing work associated with the extensive review and reconfiguration of community services, the project team was able to secure approval from the Burdett Trust for a no cost extension of 6 months. The project was therefore completed in early March 2015.

Project team

The project team comprised the following members:

Core team	Project role	Profile
Judith Palfreyman 2 days per week	Project lead CMS coach	Experienced registered nurse with extensive experience of hospital nursing of older people in STH
Adele Eckhardt 2 days per week	CMS coach	Physiotherapist with extensive experience in musculo-skeletal work. Expertise in research methods.
Angela Wright 2 days per week	CMS coach (until Sept 2014)	Physiotherapist with extensive experience of hospital falls service. Involvement in CMS falls clinic project.
Sue Hunter 1 day per week	CMS coach (until Sept 2014)	Community matron with extensive experience of community nursing prior to and following the integration of community services into STH
Wider project team		
Tom Downes	Lead applicant Clinical and quality improvement leadership support	Consultant Geriatrician with responsibility for falls services. Clinical lead for quality improvement in STH. Led the CMS falls clinic project. Clinical lead for Sheffield Microsystems Coaching Academy
Beccy McGeehan	Quality improvement / CMS support (until Dec 2013)	Experience registered nurse working in service improvement Trained as a CMS coach and trainer for Sheffield Microsystems Coaching Academy.
Evaluation team		
Kate Gerrish	Evaluation lead	Professor of Nursing Research with joint post between STH and University of Sheffield. Extensive clinical experience in hospital and community nursing. Implementation theme lead NIHR CLAHRC SY/YH evaluation partner
Carol Keen	Evaluation team	Physiotherapist with extensive experience of rehabilitation. Expertise in evaluation methods. Seconded to CLAHRC to assist in evaluation
Simon Dixon, Nick Latimer, Abu Alshreef	Economic Evaluation team	School of Health & Related Research (SchARR), University of Sheffield

In July 2012, just prior to this project commencing, STH was successful in securing a substantial award from the Health Foundation to establish the Sheffield Microsystems Coaching Academy (MCA). The MCA was approved by Dartmouth Institute to deliver training in microsystems coaching over a 3 year period for staff within STH and partner NHS Trusts. As the MCA initiative gained momentum, it provided an additional support mechanism for the CMS coaches involved in the project.

Aims

The aims of the project were to:

1. Empower nurses and other staff to lead, integrate and transform a citywide falls service drawing upon the clinical microsystems quality improvement methodology.
2. Develop an integrated hospital and community service designed by staff and patients to optimise patient-centred evidence-based care in falls prevention and management.
3. Build capacity among nurses and other healthcare professionals to sustain continuous quality improvement.
4. Evaluate the initiative in order to capture learning.
5. Ascertain the economic benefits of the new service.

Approach

The project comprised three separate but related phases: developing a climate for change; initiating change; and achieving and embedding change. Each phase drew upon the principles of clinical microsystems methodology developed by the Dartmouth Institute as outlined above. Each phase is summarised below and discussed in more detail in subsequent chapters.

Phase 1 Developing a climate for change

This phase involved creating a climate for change among front-line practitioners involved in different microsystems across the falls pathway by engaging them in CMS improvement initiatives. Core project team members received training in the CMS methodology and in improvement science in order to equip them with the skills to coach microsystems activity. Building upon the earlier CMS initiative focusing on the hospital falls clinic, project team members coached four clinical microsystems based in community services. Phase 1 commenced in September 2012 and continued until September 2013.

Phase 2 Initiating change

This phase built upon the initial focus on clinical microsystems in Phase 1 to consider the mesosystem across the falls pathway. Members of individual microsystems from different parts of the pathway in STH came together to form the Sheffield Falls Project Group (SFPG). The group met fortnightly in order to review different components of the pathway and initiate tests of change to improve aspects of the service. Meetings were facilitated by the project team who drew upon the CMS methodology to progress work. Phase 2 commenced in March 2013 and continued until February 2015.

Phase 3 Achieving change

Phase 3 extended the focus on the mesosystem in Phase 2 to include consideration of aspects of the macrosystem that impacted upon the falls pathway. This phase coincided with a major restructuring of older peoples services across STH as geriatric and stroke medicine services were integrated with the community services care group. The new care group provided the impetus to examine closer working across the different services involved in the falls mesosystem and to engage with the wider macrosystem involving other health and social care agencies across the city. An integrated falls pathway group was established led by the project's Lead Applicant and facilitated by the project lead. Aspects of the CMS methodology informed the service redesign undertaken. Phase 3 commenced in July 2014 and is ongoing.

Capturing learning through evaluation

The evaluation was undertaken in partnership with former NIHR CLAHRC for South Yorkshire. In January 2014, CLAHRC SY was superseded by the NIHR CLAHRC Yorkshire and Humber and the new CLAHRC continued as the evaluation partner. The evaluation was led by Professor Kate Gerrish, implementation theme lead across both CLAHRCs.

The aims of the evaluation were:

1. To capture learning arising from the project in order to advance an understanding of the complexity of service redesign in a rapidly changing context.
2. To explore the impact of clinical microsystems work on staff empowerment and engagement in service improvement.
3. To examine the process of using clinical microsystems methodology within the context of mesosystem change.

A participatory evaluation approach was developed whereby the evaluation team agreed the aims of the evaluation and methods of data collection with the project team. Interim findings from the evaluation were fed back to the project team at regular intervals in order to inform subsequent phases of the project.

A range of data collection methods were used:

- *Focus groups and individual interviews with project team members*

Focus groups were conducted with core members of the project team at 6 monthly intervals throughout the project. A total of five focus groups were held over the 30 month project cycle. Focus groups in Phase 1 explored the experiences of coaching the clinical microsystems, challenges encountered, perceived impact of microsystems work on their own empowerment and that of microsystem team members, and learning that had taken place. Focus groups in Phases 2 and 3 explored how the team had adapted the microsystems approach to working in the mesosystem / macrosystem level, challenges encountered, progress made, empowerment of project team members and members of mesosystem, and the learning that had taken place.

Four individual interviews were also held with the project lead, and three individual interviews with the lead applicant. Interviews provided the opportunity to gain insight into how contextual factors operating in the meso and macrosystem levels influenced the direction of the project.

Focus groups and interviews were audio-recorded and subsequently transcribed. Following each focus group a synopsis of the issues raised was provided for the project team.

- *Observation of Project Stakeholder Group meetings*

Members of the evaluation team observed Project Stakeholder Group meetings. Detailed fieldnotes were recorded of discussions pertinent to the focus of this evaluation, in particular the influence of the meso and macrosystems on the work being taken forward. A total of four meetings were observed.

- *Observation of clinical microsystem and mesosystem meetings*

The CMS approach is structured around a series of meetings, facilitated by a trained coach, through which the stages of the quality improvement methodology are advanced. During Phase 1, a member of the evaluation team observed each microsystem in action. The purpose was to observe group activity, behaviour and interaction in order to identify staff engagement with the microsystems project. During Phase 2, a member of the evaluation team observed a sample of the meetings of the Sheffield Falls Project Group in order to examine factors influencing the progress of this group. A total of 10 meetings were observed. The notes produced by the project team of other meetings in Phase 2 that were not observed were reviewed in order to monitor progress in achieving the project aims. Detailed field notes were recorded of each meeting.

- *Semi-structured interviews*

Semi-structured interviews were undertaken with a purposive sample of members of the Sheffield Falls Project Group who were involved with different microsystems within the falls pathway. A total of nine interviews were undertaken. Interviewees ranged from senior managers, senior clinicians involved in the falls pathway, managers of various microsystems, and junior frontline staff. Interviews explored participants' engagement in the falls initiative, their views of the microsystems approach, and the broader impact that it may have on staff and quality improvement in their work area. Interviews were audio-recorded and subsequently transcribed.

- *Survey by self-completed questionnaire of microsystem team members*

A questionnaire was designed to capture staff empowerment at work based on validated questionnaires which measure psychological (Spreitzer 1995) and organisational empowerment (Laschinger et al 2001). The intention was to administer the questionnaire to microsystem participants in Phase 1 at the start of the microsystems work and as the work drew to a close. However due to the early termination of three of the four microsystems it was not possible to administer the follow up questionnaires.

Data analysis drew upon the principles of the 'Framework' approach to qualitative analysis (Ritchie et al 2003) which involved five stages.

1. Members of the evaluation team familiarised themselves with the data by reading the transcripts several times.
2. A thematic framework for coding the data was developed based on the interview agendas and issues arising from initial scrutiny of the transcripts.
3. Individual transcripts were coded by applying the thematic framework.
4. The coded data were subsequently organised into major themes.
5. The relationships between different themes were mapped by analysing the data set as a whole.

Economic evaluation

The economic evaluation of the falls prevention service redesign was undertaken by a team of health economists at the School of Health and Social Research (SCHARR) at the University of Sheffield. The findings of the economic evaluation are presented as a separate report.

Governance

The project was registered with the Service Improvement Department and logged on the database of service evaluation projects managed by the Clinical Effectiveness and Audit Department within the trust. The evaluation complied with the ethical principles for service evaluation undertaken in STH outlined in the Simple Rules Toolkit (Somers et al 2006).

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3. Phase 1: Developing a climate for change

Introduction

Phase 1 commenced in September 2012 and continued for 12 months until September 2013. The focus of this first Phase was to establish the project team, and undertake foundational work that could be built upon in subsequent phases. A key aspect of this Phase involved developing the knowledge and skills of project team members in CMS methodology so that they could subsequently coach clinical microsystems within the falls pathway. It also entailed the project team developing a detailed understanding of the strengths and limitations of the existing falls pathway in order to identify areas for improvement. Throughout this Phase the team had to adapt to the changing organisational context in which the project was being undertaken.

Aim and objectives

The overall aim of Phase 1 was to develop a climate for change among frontline staff and managers involved in the falls pathway.

The specific objectives were:

1. To develop coaching skills in the CMS methodology and in improvement science in order to equip the core team with the skills to coach microsystems activity.
2. To develop an understanding of the falls pathway and engage key stakeholders involved in different part of the pathway with the project.
3. To coach community-based microsystems across the falls care pathway in order to develop an understanding of, and ownership for, quality improvement among frontline staff.

Approach

Objective 1: To develop coaching skills in the CMS methodology and in improvement science in order to equip the team with the skills to coach microsystems activity.

At the start of the project in September 2012, the four team members attended intensive training in clinical microsystems methodology and improvement science provided by the Dartmouth Institute for Health Policy and Practice. The 2 day intensive taught course was delivered in Vermont, USA, with follow up provided by tutors in the USA via monthly Adobe connect sessions until January 2013.

The course provided team members with the knowledge and skills to start to coach a clinical microsystem, although it was recognised that their skills would develop through experience. Additional support for coaching was available to the project team from the Sheffield Microsystems Coaching Academy.

Team members, together with the lead applicant also attended the annual international Microsystem Festival in Jonkoping, Sweden in February 2013. This provided them with the opportunity to learn more about the use of microsystems methodology and its application in different settings.

Objective 2: To develop an understanding of the falls pathway and engage key stakeholders involved in the pathway with the project.

The first step in the project was for the project team to gain an in-depth understanding of the existing falls pathway and identify problems associated with its implementation. The pathway followed a three-tiered level of assessment and intervention:

- Level 1 Case finding of at risk patients through screening
- Level 2 Nurse and therapy led community multi-factorial intervention
- Level 3 Hospital-based multidisciplinary model for diagnosis of unexplained falls

Team members met initially with individual stakeholders in order to gain an in-depth understanding of individual hospital and community falls services. These services included:

Level 1	
Initial screening assessment	Undertaken opportunistically by individuals in health and social care.
Level 2	
Completion of Multi-Factorial Fall Risk Assessment (MFFRA) by falls services listed below, and appropriate intervention	
Community Intermediate Care Service (CICS)	A multi-disciplinary service providing short-term care and rehabilitation following hospital discharge. The service comprises two functions: hospital admission avoidance and discharge support, both of which provide support to patients who have fallen.
Front Door Response Team (FDRT)	A multi-disciplinary service providing comprehensive assessment of patients in A&E, medical and surgical assessment units and frailty unit with the intention of reducing hospital admissions by referring patients to appropriate services or enabling patients to return home sooner with appropriate support in place.
Falls Prevention Team (FPT)	A therapy led service providing a tailored package of intervention and support to people who have fallen in order to reduce the risk of subsequent falls. Therapy assistants assess patients at home, teach the OTAGO falls prevention exercise programme and monitor patient's progress.
Physiotherapy clinic	Physiotherapy led service providing one to one assessment and interventions. Balance and Independence Groups provided in community venues, designed to improve strength, balance and offer support
Level 3	
Falls out-patient clinic	Provides a referral initiated medical diagnostic assessment of patients who have fallen and been discharged from hospital or referred by GPs in the community. Targeted at syncope or 'unexplained' falls, with referral (where appropriate) onto other services, e.g. cardiology, metabolic bone.

In addition, the team made contact with stakeholders from agencies across the wider falls pathway in order to gain a broader understanding of how the pathway was used and problems with its implementation. Links were made with the following stakeholders: GPs, care home managers, specialists from the Low Vision Centre, City Wider Care Alarms, and Yorkshire Ambulance Services.

A process mapping exercise was undertaken in December 2012 involving team members and key stakeholders (managers and senior clinicians) involved in hospital and community falls services for each of the three levels. The process mapping identified an uncoordinated pathway with a lack of integration at the community-hospital interface. It was also evident that access to different points on the pathway was unclear and there was an overlap in referral processes. Key stakeholders involved in different falls services lacked understanding of other falls services and how patients were referred on to and then progressed along the pathway. Whereas there was willingness and enthusiasm among stakeholders for change, the process mapping identified the challenges of cross-boundary working involving a number of different teams.

Process mapping the falls pathway and discussing different aspects of the service with key stakeholders identified a number of challenges in moving towards a more integrated pathway, namely:

- The referral process was problematic with overlap
- There was a lack of understanding among both staff and patients of how patients accessed different services across the pathway according to their needs.
- Services appeared fragmented with little evidence of co-ordination.
- There was lack of communication between services and limited understanding of what other services provided. This resulted in inappropriate referrals to some parts of the service.

Objective 3: To coach up to four community-based microsystems across the falls care pathway in order to develop an understanding of and ownership for quality improvement among frontline staff.

Following initial training in the clinical microsystems methodology the project team met with managers / senior clinicians providing community falls services along the falls pathway in order to identify clinical microsystems for coaching. Three discrete services that covered most of the level 2 services in the pathway were identified: Community Intermediate Care Services (CICS) the Falls Prevention Team (FPT) and the Front Door Response Team (FDRT). Two microsystems were initiated within CICS and one in each of the other two services.

The CMS process is based on the 'Dartmouth microsystem improvement ramp' which provides a systematic approach that helps ensure microsystem teams gain an understanding of their systems and processes, specify appropriate aims, generate change ideas and run rigorous tests of change within their system. The Improvement Ramp consists of seven steps designed to be undertaken consecutively. The steps are:

1. Assessment of the microsystem focusing on the '5P's' – purpose, patients, professionals, processes and patterns.
2. Generation of the list of themes around which to concentrate improvement efforts and selection of a single theme for initial focus.
3. Generation of a global aim which sets out the scope of the improvement process, the benefits that are expected to arise from working on the process and why it is important to work on it at this point in time.
4. Identification of a specific aim based upon the theme and global aim which details the desired measurable outcomes.
5. Generation of ideas for achieving change.
6. Identification of robust measures in order to determine whether or not the changes have led to improvement.
7. Introducing small tests of changes using Plan, Do, Study, Act (PDSA) cycles, and once the aim is met the focus moves to standardising (SDSA).

A number of tools and techniques, such as process mapping, fishbone diagrams, run charts and effective meeting skills are used to support the different steps involved. The role of the coach in the CMS process is to facilitate microsystem participants to progress along the steps of the improvement ramp with the intention that participants take responsibility for the change process, rather than relying on the coach.

The first microsystem team coaching started in March 2013 within the Falls Prevention Team (FPT), closely followed by two microsystems within the Community Integrated Care Services (CICS) and one in the Front Door Response Team (FDRT). The project team decided initially to co-coach each microsystem in order to support each other as they further developed their coaching skills. Meetings were organised on a fortnightly basis for one hour at a time that was best suited to frontline staff attending. Consistent attendance of individuals at CMS meetings was difficult to achieve due to shift work with the result that there were often new members at each meeting. Issues addressed at previous meetings had to be reviewed before work could progress.

Membership of each microsystem varied between 4 and 10 participants, and with the exception of the FPT included a range for staff from AfC band 7 managers, practitioners and clerical staff. The FPT microsystem comprised AfC band 4 therapy technicians; initially their manager was involved but subsequently withdrew as she was concerned that her presence was influencing the group's ownership of the improvement process.

Progression along the improvement ramp was slow for all four microsystems, in part because participants had very limited understanding of quality improvement methods and little experience of initiating change within their service. Junior staff were particularly disempowered at the start of the process as they had not been involved previously in 'bottom up' approaches to change, rather they felt that they were subject to 'top-down' change with little opportunity to influence decisions. Coaches spent considerable time in the early stages of the microsystem developing understanding and ownership of the process, initially amongst managers and then with frontline staff.

It took considerable time for microsystem participants to progress to identifying the specific issue that they wished to address (specific aim). There was a tension between the 'bottom up' approach of the CMS methodology and the need to address aspects of the falls pathway considered to be problematic. Individual microsystems identified priorities for change that were not linked directly to areas of concern within the falls pathway. For example, team communication was seen as a priority by several microsystem teams. Coaches took the decision to address the priorities of the microsystem members in the first instance in order to develop ownership of the initiative and to empower individuals involved to influence their own practice. Furthermore, it was reasoned that if team communication could be improved then this would have a knock on effect on improving the falls services. The following priority areas for improvement were identified by the CMS.

CICS: Internal communication, using technology to improve patient handover information

FDRT: Team working and communication

FPT: Standardisation across multiple bases of the patient registration process for community transport

Challenges

Shortly after the project commenced in September 2012, the Community Services Directorate undertook a major service review which resulted in significant changes in the way that community services were organised. During Phase 1 of the study, the changes affected the existing community services, including falls services. As will become clear in subsequent sections of this report, the change has been on-going throughout the duration of the project as plans to integrate some acute hospital services and community services have evolved.

During Phase 1, the service review and subsequent reconfiguration caused considerable anxiety amongst clinical managers and frontline staff that adversely affected their engagement with CMS activity. Each of the falls services were reviewed as part of the reconfiguration. The FDRT microsystem ceased as a result of the manager withdrawing support for frontline staff to attend due to changes occurring. However, frontline staff were motivated by the CMS approach and expressed a wish to be involved in subsequent initiatives once the reconfiguration was complete. CICS was subsequently reorganised and became part of the wider integrated care team. As CICS no longer functioned as a microsystem, the two CMS initiatives in CICS were unfortunately closed down before they had progressed to implementing change. However, the staff involved in the CICS microsystems subsequently became involved in the mesosystem initiative take forward in Phase 2. The FPT continued as a functional microsystem, and achieved beneficial tests of change in relation to the following: standardisation of community transport procedures across different bases, introducing an electronic booking system for patients requiring community transport, introducing a triage process for all referrals to the service, improving recording of referrals and patient contacts on SystmOne.

The service redesign also adversely affected overall progress with engaging stakeholders in the redesign of the falls pathways. Senior managers inevitably prioritised the service review and dealing with staff anxiety associated with the changes.

As part of the reconfiguration affecting falls services, a decision was made to integrate the hospital based falls service within the Day Rehabilitation Unit with the community based Assessment and Rehabilitation Centre (ARC). As a result of the process mapping undertaken in Phase 1, a group was established which drew upon the CMS approach but which considered change at the mesosystem level across a number of teams. The Sheffield Falls Project Group (SFPG) included staff from the original microsystem teams (CICS, FDRT, FPT) and other teams from across the falls pathway. The work taken forward by this group formed Phase 2 of the project.

Achievements

The following achievements were identified in relation to each of the objectives for this Phase.

Core team member's development of coaching skills in CMS methodology and in improvement science

The project team developed knowledge and skills in coaching microsystems quality improvement activity through specialist training and their confidence in using this approach increased significantly as they coached individual microsystems.

Initiating coaching activity contributed significantly to project team members becoming more psychologically empowered. Whereas initially they were concerned about their lack of confidence in leading quality improvement, they began to feel more competent in undertaking this work and their ability to influence the development of the microsystem members whom they coached. Although the team initially found the demands of managing the different parts of the project challenging alongside their clinical roles, they began to exert more control over the various activities. This was achieved by applying tools and techniques they had developed through the training provided by the Dartmouth Institute, including 'managing up', effective meetings techniques, collecting and interpreting data.

Mapping of the falls pathway and stakeholder engagement

The team established a good working relationship with all key stakeholders involved in hospital and community falls services across STH. In addition, the team initiated contact with stakeholders from other health and social care agencies involved in falls services across the city.

A shared understanding of the complexity of the existing falls pathway, the lack of co-ordination of different services and problems with the referral process was developed among the project team and stakeholders.

Project team members gained an understanding of the organisation as a whole, and the interface between hospital and community services. This helped develop a greater understanding of the complexity of introducing change and the influence of individuals as well as groups on the change process.

Project team members reported feeling more empowered through the process of engaging stakeholders in the project. Their prior involvement in the organisation had been restricted primarily to the clinical services in which they worked. However, the project required them to become more outward facing, working across boundaries and engaging with senior managers, middle managers and frontline staff with whom they had no previous contact. This contributed to structural empowerment whereby they felt more able to influence change across the organisation through an enhanced understanding of the falls pathway and access to key people to help them start to achieve the aims of the project.

Understanding of and ownership for quality improvement among frontline staff through clinical microsystems activity

Although three of the four microsystems did not follow through their quality improvement initiatives to fruition because of the service reconfiguration occurring at this time, microsystem participants developed an understanding of how they could set about initiating change. They all reported an increased understanding of quality improvement and the steps involved. In particular, participants reported a greater awareness of the importance of measurement and the need for accurate data to identify the need for change and to demonstrate the impact of change. Several participants subsequently joined the mesosystem group that took forward wider change in Phase 2 and were able to apply their learning to this new group.

The early steps involved in the CMS process enabled microsystem team members to reflect upon and critically analyse the falls service they provided and identify some of the assumptions that underpinned their way of working. For example, CICS microsystem team identified a reluctance to refer to the Falls Prevention Team because they were uncertain as to whether FPT provided an equivalent standard of evidence-based individualised care.

Whereas members of all four microsystems showed some evidence of psychological empowerment through the process of engaging in microsystems activity, this was most evident in the FPT. This microsystem comprised AfC Band 4 therapy assistants who initially felt disempowered in terms of their ability to influence their work activities. However, through the coaching process they began to review their practice, identify and prioritise areas that required improvement and embark on the change process. Microsystem participants required considerable encouragement and reinforcement by their coach of their potential to implement change. The community matron who coached this team reported a growing belief among microsystem team members that they could influence change, and that the changes they introduced were valued more widely by managers.

The previous work undertaken to redesign the falls clinic using the CMS approach that formed the basis of this project, was drawn upon in a successful bid by STH to the Health Foundation Shared Purpose initiative. The Trust secured considerable funding from the Health Foundation to establish the Sheffield Microsystems Coaching Academy (MCA), which trains healthcare staff in the knowledge and skills required to coach quality improvement using the CMS methodology. A symbiotic relationship between this project and the MCA developed during Phase 1 and extended to subsequent phases, whereby learning from this project about using the CMS approach informed the work of the MCA, and *vice versa*. This symbiosis provided clarity of the commitment of STH to develop consistent sustainable quality improvement capability to achieve culture change.

Learning from Phase 1

The following learning points were identified from this Phase of the project.

- It was extremely difficult to take forward microsystems quality improvement activity when organisational change was taking place at the same time. It was difficult to implement meaningful change in a service where there was uncertainty over the future of that service. The uncertainty about the future also made it hard to engage staff whose morale was low.
- The 'bottom-up' approach inherent in the CMS methodology can be at variance with implementing change to address an organisational priority – in this case the falls pathway. Individual microsystems identify their own priorities for improvement that may not link directly to the organisational priority. Coaches needed to step out of their coaching role in order to help direct microsystem activity towards the organisational priority.
- The CMS methodology required a long lead in time that involved analysing current practice and collecting baseline data before priorities for improvement could be identified. Keeping team members engaged in the work was challenging when the rate of change was perceived to be slow.
- Engaging frontline staff in the CMS approach, increased their understanding of quality improvement techniques, equipped them with skills to implement changes in practice and helped to develop a climate for continuous improvement.
- A care pathway, such as the falls pathway, operates at a mesosystem level that is comprised of multiple microsystems. Instigating change in the mesosystem requires a co-ordinated approach across the different microsystems. Individual microsystems working in isolation are unlikely to achieve the change required within the mesosystem.
- Engaging frontline staff in CMS activity contributed to their psychological empowerment through increasing their self-efficacy.
- Engaging in process mapping of the mesosystem level pathway and coaching CMS resulted in both psychological and structural empowerment of project team members who were front-line staff.

4. Phase 2: Initiating change

Introduction

Phase 2 began in April 2013 during the reconfiguration of community services, which included the level 2 falls services and extended until March 2015.

This phase built upon the initial focus on clinical microsystems in Phase 1 to consider the mesosystem across the STH falls pathway. It became evident in Phase 1 that the focus on individual microsystems operating within the falls pathway was no longer appropriate as some of these services would cease to exist in their current form as the service reconfiguration progressed. Whereas Phase 1 had served an extremely useful purpose in developing a climate for change through engaging key stakeholders involved in the community focused elements of the falls pathway, developing capacity and capability among team members in CMS methodology, and creating a climate to support quality improvement among front-line staff, it was recognised that on-going work needed to focus on the mesosystem level in the organisation.

Aim and objectives

The overall aim of Phase 2 was to initiate change in key areas for improvement in the falls pathway within the Trust – i.e. at mesosystem level.

The specific objectives were:

- To establish a functional clinical mesosystem group by bringing together representatives from different falls services across the Trust.
- Identify key priorities for improvement in the falls pathway in the Trust and apply the principles of the clinical microsystems methodology to introduce small tests of change.
- Engage stakeholders from a broad range of health and social care agencies and commissioners at macrosystem level in reviewing the city-wide falls pathway.

Approach

Objective 1: To establish a functional mesosystem group by bringing together representatives from different falls services across the Trust.

Consistent with the project's aim of achieving a single community based integrated service, the level 3 falls clinic was transferred from the hospital based Day Rehabilitation Unit to the community Assessment and Rehabilitation Centre (ARC). In order to achieve change across the falls pathway in STH, representatives from key services within the pathway needed to come together to form a functional group operating at the mesosystem level. This group evolved from the Assessment and Rehabilitation Centre (ARC) but included members of other microsystems involved in the falls pathway. ARC was selected as it now provided a weekly level 3 falls clinic and a level 2 falls clinic and therapy led falls movement group. In addition, ARC provided a range of older people's medical services such as stroke and Parkinson's disease where falls prevention formed an integral part of these services.

Following the transfer of the falls clinic from the Day Rehabilitation Unit, ARC had established a working group which met regularly to review working practices and this provided the basis of an extended mesosystem level group across the falls pathway. Members of individual microsystems from different parts of the falls pathway in STH, including those involved in Phase 1, were brought together to form the Sheffield Falls Project Group (SFPG). Staff within the multidisciplinary group included clinical managers, a medical consultant (project lead applicant), senior clinical staff from nursing, physiotherapy and occupational therapy, and therapy assistants.

Several members of the SFPG had been involved in the earlier project using CMS methodology to redesign level 3 falls clinic and so were familiar to this approach to driving quality improvement and the ARC manager had trained as a CMS coach through the Sheffield Microsystems Coaching Academy.

The group met fortnightly for one hour, in order to review different components of the pathway and initiate tests of change to improve aspects of the service. Meetings were facilitated by the project team who drew upon the CMS methodology to progress work. In between meetings, the project team liaised

with individuals and other services outside the SFPG in order to progress aspects of the work the SFPG had decided to take forward. Where appropriate individuals involved in other services that impacted upon the falls pathway were co-opted onto the group.

Objective 2: Identify key priorities for improvement in the falls pathway in the Trust and apply the principles of the clinical microsystems methodology to test and embed change.

The SFPG became the means through which improvements in the STH components of the falls pathway could progress. The project team drew upon the clinical microsystems methodology to facilitate change. Whereas project team members had coached microsystems throughout the duration of Phase 1, and began by coaching the SFPG, the expertise in CMS methodology within the SFPG meant that other members became confident to lead individual meetings.

Initially, there was a need to develop a shared understanding of the falls pathway among SFPG members. The process mapping undertaken in Phase 1 formed the basis of the first step in the Improvement Ramp and enabled the SFPG to gain a good understanding of the problems associated with the lack of co-ordination across the pathway. Subsequently, the SFPG undertook an analysis of the pathway using the 5 P's (purpose, patients, professionals, processes and patterns) and progressed to identifying key priorities for improvement, together with the outcome measures by which improvement would be assessed. The group subsequently initiated small tests of change using the PDSA cycle in order to pilot, refine and subsequently embed change, for example redesigning the patient information leaflet for ARC so that it was more specific to the falls service

Work initially focused on encouraging teams to start collecting baseline data about their services, for example referral rates, attendance, inappropriate referrals etc. in order to identify priorities for change and a means of monitoring the impact of change.

In reviewing the pathway it became apparent that staff in A&E were not as actively engaged in falls prevention as they could be. Although the FDRT was based in A&E, frontline A&E staff were not referring patients appropriately to this service. Working on behalf of the SFPG, the project team began to work closely with A&E staff to raise awareness of their important contribution to the falls pathway and explore means whereby they could be more effective in identifying patients at risk of falling and referring them to the FDRT.

Work was also instigated on streamlining the referral process from level 2 to level 3 services, with the intention of removing what was considered to be an unnecessary referral back to the GP.

Objective 3: Engage stakeholders from a broad range of health and social care agencies and commissioners at the mesosystem level in reviewing the city-wide falls pathway.

The project team had established initial links during Phase 1 with health and social care agencies across the city involved in the falls pathway. These links were extended during Phase 2 in order to gain a more detailed understanding of how different services external to STH contributed to the falls pathway, and the challenges involved in providing a more cohesive and timely experience for patients along the pathway. Meetings were set up with the commissioner responsible for older people's services, GPs, South Yorkshire Ambulance Services, care homes and social services. As appropriate, individuals from these services were co-opted onto to SFPG in order to progress particular aspects of work.

The project team also established a stakeholder group that has met every 6 months. The group comprised senior community managers, clinical service managers, senior clinicians and patient governors from within the Trust and representatives from external organisations including commissioners, ambulance services, care homes and social services. The stakeholder group has acted as a sounding board for the project team, and has been a catalyst in promoting cross agency dialogue in relation to the falls pathway.

From the project outset, the team identified the need to involve the public and patients as important stakeholders. Whereas CMS activities in Phase 1 were focused on reviewing services from the patient's perspective, this had been done largely by proxy with healthcare professionals sharing their understanding of the patient's experience.

Identifying and engaging patients who had personal experience of the falls service and who were willing to be involved directly in the project proved challenging. Patients identified were frail and elderly so that attendance at meetings was not easy. However, in order to gain a patient perspective project team members met with individual patients to gain a detailed account of their experiences and used these patient stories as a point of focus in meetings. The team also presented their work to the city wide 'Sheffield 50+' group, a voluntary group for older people residing in Sheffield that seeks to promote and support active participation of older people in society. The group provided a rigorous and constructive critique of the project aims and the work being taken forward.

The project team has been proactive in creating a greater understanding of the falls pathway by presenting patient stories at stakeholder meetings. In one meeting, a patient called John who experienced an initial fall, attended A&E, returned home without referral to the falls service, subsequently succumbed to a second and more serious fall which necessitated a long hospital stay, and encountered a delay following discharge before the falls service referral was made, was used to illustrate shortfalls with the existing referral process and stimulate ownership of the need to change.

Challenges

The SFPG was convened in the midst of the service reconfiguration affecting the community services within the Trust. In the early period of the group's work, uncertainty about the future of certain falls services, and the roles of individuals providing these services, presented particular challenges. Understandably, some staff were defensive of the service they provided and it took time and skilled facilitation by the project team, to enable group members to feel confident at being challenged in relation their contribution to the falls pathway. However as time progressed, the group became more cohesive and was able to work collaboratively.

In order for the SFPG to function effectively there was a need to challenge staff to think differently and more critically about the services they provided and move outside their specific service 'silos'. Initially, some staff felt threatened by this approach, and it took some time before individual members felt confident to challenge each other in a constructive manner and not to be defensive when challenged themselves.

Frontline staff were not used to working with other services in order to achieve change. This was evident with the initial work undertaken to redesign a new falls referral form to be used by the Single Point of Access team in A&E. Members of the SFPG designed a new form without consultation with A&E and the first test of change indicated that the form was not appropriate for its intended purpose. Subsequent involvement of A&E in modifying the form resulted in the new form being successfully piloted.

Achievements

The following achievements were identified in relation to each of the objectives for this Phase.

Establish a functional mesosystem group from different falls services across the Trust.

Ownership of the falls care pathway redesign by the multi-disciplinary members of the SFPG was achieved through the project team's facilitation of the SFPG. In addition, the group became more inclusive in its membership with care home educators and the commissioner with responsibility for falls services attending regularly. As the project team progressed to Phase 3, they were able to take a more 'backseat' role with members of the SFPG taking more ownership and responsibility for taking work forward.

Identifying priorities for improvement in the falls pathway and applying CMS methodology to achieve small tests of change.

When introducing the CMS methodology to the SFPG, it became evident that collecting data to demonstrate how a service was operating was not routine practice in some services. Such baseline data was needed in order to identify the need for and subsequently measure the impact of change: some services therefore needed to start collecting data. There was some initial reluctance to do this. However, as the work progressed group members came to own the need to base decisions on accurate

data and to measure outcomes arising from change. This change in mindset was a significant step in empowering frontline staff to initiate and evaluate change on the basis of sound judgment. The lack of robust baseline data at the start of the project inevitably impacted upon the data available to inform the economic analysis work undertaken as part of the project.

Although operating at a mesosystem level, applying the principles of the microsystems approach proved successful in empowering front-line staff to identify the need for change and to take greater ownership of the proposed changes. With the support of the project team, the SFPG achieved the following changes in relation to the falls pathway.

- Revising the patient information sheet to provide more explicit information on the falls services available within the pathway.
- Greater ownership among A&E staff of their contribution to the falls pathway.
- The establishment of a 'falls champion' role at charge nurse level to lead on the falls pathway initiatives in A&E.
- The development of a new streamlined referral form for use in A&E.
- A reduction in the waiting time to be assessed in the falls clinic from ten to five weeks.

Engaging stakeholders from health and social care agencies.

The project team was successful in securing the involvement of a broader range of staff from across the falls pathway (e.g. pharmacists, care homes, referral agencies) in addition to staff with direct responsibility for falls services. The team also established a close working relationship with the commissioners in order to discuss proposed changes to the falls care pathway.

A proposal was developed for removal of a referral step involving GPs within the pathway, whereby GPs could refer direct to level 3 services rather than initially having to refer to level 2.

The project team also worked with Community Pharmacists to put together a bid supporting the role of a pharmacist within the Falls Pathway.

Despite the challenges involved in securing meaningful public and patient engagement, the team established links with local community action groups to enable them to inform the falls care pathway redesign, and drew upon patient stories they had gathered to stimulate the need for change.

In addition, the project team achieved the following broader impacts during this Phase of the study.

- The project's achievements were drawn upon to strengthen a successful bid from the Trust to the Health Foundation to implement a 'FrailSAFE' assessment tool that will contribute to assessing frail elderly people who are at risk of falls.
- The project team drew upon their work to support a bid under the Olympic Legacy for new clinical facilities that will be used to provide some falls services within the city and provide an integrated IT platform to support falls referrals. A decision was made to align proposed IT developments in this project with the Olympic Legacy in order to provide an integrated IT platform across hospital and community falls services.

Empowerment

The experience of working at a mesosystem level and engaging with stakeholders at a macrosystem level resulted in greater structural empowerment of project team members. They developed a deeper understanding of organisational structures and processes and became more confident in negotiating with different parts of the system, for example staff within the A&E department. Project team members also gained more insight into the challenges of achieving change at the mesosystem level. There was further evidence of psychological empowerment of project team members as they became more proficient at managing group dynamics within the SFPG and in facilitating change.

There was also evidence of structural empowerment among members of the SFPG who developed a much greater understanding of the different components of the falls pathway and experience of implementing change across different parts of the pathway.

Patient involvement

The CMS approach emphasises the importance of taking account of the patient's perspective when initiating quality improvement. During this Phase, the project team refined their approach to using 'patient stories' derived from patients who had direct experience of the Sheffield falls services, to promote a greater understanding and critical analysis of problems with the existing pathway and identifying shared priorities for improvement. Patient stories were used regularly at the SFPG meetings to keep the patient at the centre of any proposed changes. They were also used at the Stakeholder Group meetings in order to generate a greater understanding and ownership of the need for change at the macrosystem level.

Learning from Phase 2

The following learning points were identified from this Phase of the project.

- The clinical microsystems approach to improvement can be effective in identifying priorities for change, however this approach to achieving change can be difficult when it requires change at the meso and / or macro system levels.
- Instigating change in the mesosystem requires a co-ordinated approach across the different microsystems. It takes time to build trust between different services, especially at a time of organisational change.
- Engaging frontline staff in CMS activity at the mesosystem level promotes structural empowerment through developing their understanding of and engagement with broader organisational goals, in this case the need to improve the patient experience of the falls pathway. Staff were presented with the opportunity to develop their own service and influence services which impacted upon their work. The SFPG, operating at mesosystem level, also provided them with resources to help them carry out the work effectively.
- Whereas engaging frontline staff and clinical managers at the mesosystem level was effective in identifying and initiating some improvements in the falls pathway, other changes required the engagement of stakeholders from the wider mesosystem across the organisation or from the macrosystem. For example, the proposal to streamline the referral pathway from level 2 to level 3 services required wider agreement beyond the membership of the SFPG: it required the involvement of the Trust's contracting department in order to present a business case to the commissioners and was subsequently taken forward in Phase 3.
- Whereas some key improvements could be achieved through negotiating new responsibilities for existing staff, for example a senior falls champion nurse in A&E, proposed initiatives that led to more radical staff changes required wider organisational approval from senior decision makers. For example the proposal to create a community pharmacist linked to the falls services, was not actioned during this Phase as it required the business case to be approved by senior managers.
- Viewing the mesosystem as a single level within an organisation is inappropriate as there are a number of mesosystems that operate at different levels within an organisation. Whereas the SFPG operated as a mesosystem in bringing together members of different clinical microsystems that formed the falls pathway, other mesosystems within the organisation impacted upon the project. For example, approval of the community pharmacist role linked to the falls pathway required the approval of senior managers operating at the care group mesosystem level.

5. Phase 3: Achieving change

Introduction

Phase 3 commenced in June 2014 and is ongoing beyond the end of the project in March 2015.

The learning to arise from Phase 2 of the study identified the need to consider how mesosystems operating at different levels within the organisation impacted upon the redesign of the falls pathway. Whereas the SFPG, which formed a mesosystem bringing together the clinical microsystems involved in the falls pathway, had made progress in initiating small tests of change in relation to different parts of the referral pathway, it became apparent in Phase 2 that a number of priorities for change required the engagement of more senior decision makers within the care group. These decision makers comprised a different mesosystem that linked together other mesosystems that provided other pathways within the care group and in the wider Trust. The need to engage more senior decision makers in instigating change became a key focus of Phase 3 of the project.

Early in 2014, a decision was made by the Board of Directors to merge geriatric medicine and stroke services with the primary and community care group in order to provide a more coherent and integrated service. In June 2014, in advance of the merger which was formalised in October 2014, separate workstreams were established to review three key pathways which would benefit from the closer integration of services in the new care group, namely stroke, Parkinson's disease and falls. The creation of the Falls Pathway Workstream Group (FPWG) enabled the project team to engage more effectively with senior decision makers in order to achieve the improvements in the pathway that had been identified in Phase 2.

Aim and objectives

The overall aim of Phase 3 was to implement change in key areas for improvement in the falls pathway within the Trust by working across different mesosystems.

The specific objectives were:

- To facilitate the Falls Pathway Workstream Group (mesosystem) in implementing change across the falls pathway.
- To facilitate networking across different workstreams addressing improvements in the falls pathway within the Trust (mesosystem) and city wide health and social care agencies (macrosystem).
- To disseminate learning from the project, both within and outside the organisation.

Approach

Objective 1: To facilitate the Falls Pathway Workstream Group (mesosystem) in implementing change across the falls pathway.

The creation of the Falls Pathway Workstream Group (FPWG) following the merger of geriatric medicine and stroke services with the primary and community services care group, provided the project team with the opportunity to work more closely with senior decision makers in order to implement change. The FPWG was chaired by the lead applicant for this project, a geriatrician with lead clinical responsibility for falls. In addition to the project team, the FPWG involved senior clinical and service managers, senior clinicians, and front-line staff from across the new care group and other relevant services within the Trust. The remit of the FPWG was to build upon the work undertaken by the project team to develop and implement a programme of transformation to enable the delivery of an integrated falls pathway. The group met monthly from June 2014 and will continue beyond the completion of this project.

Key priorities for change identified in Phase 2 of the project have been taken forward by the FPWG with the support of the project team. These include streamlining the referral process from level 2 to level 3 services, developing the pharmacist role within the falls pathway, and revising the Multi-factoral Falls Risk Assessment tool to ensure that it is fit for purpose. The project team also worked closely with the link for IT in the FPWG to ensure that the Trust's initiative for 'Transformation Through Technology'

would take account of ways in which technological developments could support the prevention, assessment and management of falls.

In addition to facilitating the work of the FPWG, the project team ensured the ongoing engagement of the SFPG (established in Phase 2) with developments in the falls pathway. By acting as a conduit for information and ideas between the two groups, the project team was able to ensure the wider participation of frontline staff in the proposed changes.

Objective 2: To facilitate networking across different workstreams addressing improvements in the falls pathway across the Trust (mesosystem) and city-wide health and social care agencies (macrosystem).

In addition to the work being taken forward by the FPWG, the project team was able to facilitate and support other initiatives on falls prevention occurring within the Trust and across the city. The work undertaken in earlier phases of the project informed this wider programme of activities. In particular, the team has continued to support work taken forward in the Trust by the Front Door Response Team and the A&E department. The project team also fed back on these initiatives to the FPWG in order to ensure the group had a comprehensive understanding of falls work across the city.

In September 2014, Sue Hunter (community matron), stepped down from direct involvement in the project to take a lead on other falls work within the newly extended care group. However, she continued to coach the FPT microsystem, recently transitioning out of the coaching role as the team had become confident in initiating quality improvement work themselves. She has also attended the SFPG meetings in order to provide a link between the current project and related work she is taking forward. She has initiated training to raise awareness of falls among community nursing teams and is leading work within the A&E department and local ambulance service to develop more effective ways of assessing and referring patients who fall in the community in order to reduce inappropriate A&E attendance and hospital admissions.

The project team also continued to liaise with Social Services, the City Wide Alarms Service, and Yorkshire Ambulance Services in order to raise awareness of falls services across the city and to promote closer working between different organisations.

Objective 3: To disseminate learning from the project both within and outside the organisation.

Through links that the project team had made in Phase 2, they were invited to join the Yorkshire and Humber Falls Prevention Network, a regional group representing a range of NHS organisations, including acute, community, commissioning and emergency services, and third sector and local authority organisations across the region. The objectives of the network are to share good practice in falls prevention and initiate and support the change needed for wider implementation of good practice across the region. The project team was invited to share the work they were undertaking in Sheffield which was viewed by the network as an exemplar of good practice. They were subsequently invited to meet with individuals from the network who were initiating falls work in their own organisations. The team met with individuals from Doncaster and Bassetlaw NHS Foundation Trust to advise on the development of a falls prevention pathway and with Airedale NHS Foundation Trust to discuss the inclusion of falls assessment within the electronic patient record.

The project team also extended their networks outside the region by establishing links with NHS Trusts in Nottingham to learn about innovation in falls prevention. Drawing upon the information gained from networking, the team proposed including bone health assessment into falls work in Sheffield. They also shared information on the falls ambulance service in Nottingham that assesses patients and makes referrals within the community, thereby avoiding unnecessary A&E attendance with the leads in Sheffield taking forward work with the Yorkshire Ambulance Service.

Challenges

From December 2014 until February 2015 STH, alongside many other NHS Trusts across England, STH experienced an unprecedented increase in A&E attendances and emergency hospital admissions. The Trust instigated a number of measures to successfully manage the situation, but these measures inevitably impacted upon progress with some aspects of the project. For example, some meetings of the FPWG and the SFPG were cancelled as staff prioritised clinical care delivery. Nevertheless, despite some

aspects of the work being delayed the team were still able to make progress with a number of initiatives.

From September 2014, two members of the project team stepped down, as less funding was available during the 6 month no-cost extension. Unfortunately, one of the remaining team members went on long-term sick leave, which left the project lead working alone for the final 5 months of the project. Whereas she was able to prioritise key initiatives that needed to be taken forward, some other aspects of the project, for example wider dissemination, have been delayed.

Whereas the decision to align the IT platform to support the falls referral process with the Olympic Legacy, has been very positive in terms its potential to provide a more integrated system, the timescale for these developments is now out of the control of the project team. Additionally, STH has made a considerable investment of £35million taking forward a 3 year 'Transformation through Technology' initiative. This will include an electronic patient record system and other significant developments that will support a more integrated falls pathway. However, this work is ongoing beyond the duration of this project.

Achievements

The following achievements were identified in relation to each of the objectives for this Phase.

Facilitating the implementation of change through the Falls Pathway Workstream Group

The earlier work undertaken in Phases 1 and 2 laid the foundations for the FPWG to build upon in implementing change. The earlier process mapping of the pathway, identifying priority areas for improvement and initial work undertaken on the referral process, reviewing documentation and work with pharmacy meant that the FPWG was able to make rapid progress in starting to implement change. Key achievements have included:

- Direct referral along the pathway from level 2 (therapy services) to level 3 (medical services) thereby avoiding referral back to the GP. Previously 8 out of 10 patients referred back to the GP for referral to level 3 did not get referred on. Outcome data is currently being collated to monitor the outcome of this change.
- Tentative approval of a business case to develop a pharmacist role within the falls pathway to undertake medicines review of at risk patients receiving polypharmacy. It is anticipated that the addition costs of the pharmacist will be offset by cost savings on medicines. The team was instrumental in involving key stakeholders in developing the case, and liaising with commissioners to gain their support.
- On-going work to establish a single assessment team who will receive all initial referrals and following assessment, will refer on to the most appropriate level 2 or 3 service.
- Redesign and system-wide standardisation of the Multi-factorial Falls Risk Assessment tool to ensure that it is fit for purpose and reduce the waste of repetitive assessment.

Facilitating networking across work streams addressing falls

The CMS work that the team undertook with the FDRT in Phase 1 to developing a culture for quality improvement was built upon following the review of this service. The FDRT subsequently initiated improvements which resulted in a threefold increase in the number of patients being seen through more effective referral processes, streamlined assessment and more flexible working patterns. This achievement received national recognition when the FDRT was shortlisted for the Health Service Journal awards for secondary care service redesign.

The work that the project team undertook in Phase 2 with staff in the A&E department to establish a senior falls champion nurse, has been instrumental in enabling staff within the A&E department to engage more effectively in falls prevention work. The achievements of the FDRT referred to above, were enabled by the changes taking place in A&E. Staff within the A&E department have instigated further changes, for example including falls within the on-going regular risk assessment of all patients in A&E undertaken by nursing staff.

Use of CMS methodology to reduce inpatient falls

Staff involved in CMS work in this project have used the knowledge and skills they developed in clinical microsystems methodology to redesign internal ward processes on the ward that volunteered to pilot integrated working with community colleagues. The mesosystem redesign of novel discharge pathways allowed for patients ongoing care needs to be assessed immediately on return to their own home rather than the traditional approach of multi-disciplinary ward based assessment of further need. This has achieved a 7 day reduction of length of stay on the ward and a 29% reduction in inpatient falls. The process includes assessing the patient's risk of falling.

Disseminating learning from the project

The project team has presented their work at local, regional, national and international conferences. The project has attracted considerable external interest, and resulted in collaborations that will extend beyond the end of the project. The main dissemination activities are listed below.

- February 2013: Microsystems and the Sheffield City-Wide Falls Project. Community Care Group Executive Meeting, STHFT, Sheffield
- March 2013: Introduction to the Sheffield City-Wide Falls Project. Sheffield Federation of AHPs, Sheffield
- April 2013: The Sheffield City-Wide Falls Project: A Clinical Microsystems Approach to Service Redesign. MCA Networking event, Sheffield.
- April 2013: A Story from the field. MCA Networking event, Sheffield.
- July 2013: Microsystems and Quality Improvement. Sharing Good Practice Festival, STHFT, Sheffield
- March 2014: The Sheffield Citywide Falls Project. Sheffield 50+ Group, Sheffield
- March 2014: Using a Clinical Microsystems approach to redesign a city-wide falls pathway. RCN Nursing Older People Conference, Birmingham
- April 2014: Improvement Science in Service Redesign; Critical Reflections on the Application of Microsystems Methodology in a UK Falls Pathway Redesign. RCN International Nursing Research Conference, Glasgow
- June 2014: The Challenges of Redesigning a City-Wide Falls Project, Nottingham Falls Symposium, Nottingham
- July 2014: Falls prevention in hospital and beyond: embedding NICE guidelines into practice. Sharing Good Practice Festival, STHFT, Sheffield
- February 2015: Transforming a citywide falls service into a coherent, patient centred resource. Microsystems Festival 2015, Jonkoping, Sweden
- March 2015: Transforming a fragmented citywide falls service into a coherent, patient centred resource. RCN Older People's forum and BGS joint conference. Manchester

In addition, the team has developed a publication plan in order to share the outcomes of the project more widely.

The project team has organised a major dissemination event to take place in May 2015 in order to share the learning from the project with key stakeholders from across the Trust and the city of Sheffield. The event will to show case progress in developing different aspects of the falls pathway and provide the opportunity for frontline staff as well as senior clinicians and managers to present their work.

Empowerment

The project team's engagement with senior decision makers across the new care group and the wider Trust has contributed to their ongoing psychological and structural empowerment. All team members have reported greater confidence in their ability to negotiate with a wide range of stakeholders and to instigate change. The positive effects of the psychological and structural empowerment of individual team members is clearly illustrated by Sue Hunter, the community matron who joined the project team with a modest understanding of the complexity of the falls pathway and is now leading important cross agency initiatives to reduce hospital admissions associated with falls, as well as acting as a champion for falls prevention among community nursing teams.

The ongoing psychological and structural empowerment of frontline staff involved in the project is also evident in the significant successes of the FDRT and the senior falls champion nurse in A&E who have instigated change in the clinical environment of A&E where falls prevention had previously been a low priority.

Patient involvement

The project team has facilitated the analysis of patient stories at FPWG meetings in order to draw attention to short falls with existing services and gain ownership for change. They have also shared this approach with the Yorkshire and Humber Falls Prevention Network, which is now adopting patient stories to support the need for innovation and to capture best practice.

Learning from Phase 3

The following learning points were identified from this Phase of the project.

- External pressures at the mesosystem and macrosystem level, such as significant increases in A&E attendance, winter bed pressures, adversely affected the pace of change and necessitated on-going reappraisal of priorities.
- Implementing change within the falls pathway mesosystem required the active engagement of other mesosystems within the organisation (e.g. care group senior managers, A&E teams) as well as the macrosystem (e.g. commissioners, GPs).
- The bottom up approach inherent in the clinical microsystems methodology proved useful in developing ownership of the need for change among frontline staff and in identifying priority areas for improvement. However, instigating change at mesosystem level required the active engagement of senior decision makers from across the organisation, and where appropriate outside the organisation.
- The power of ownership of improvement skills caused the spread to be more organic than initially predicted. Staff in some areas involved in this project extended the use of the skillset beyond the original remit of the project, while in other areas system change disrupted the embedding of knowledge.
- Achieving change across a complex pathway such as falls, required considerable initial ground work in building relationships and trust within and across the clinical teams (microsystems) and to develop ownership of the need for change. Investing in groundwork can make the process of implementing change easier.
- Whereas the turbulence resulting from service review and reconfiguration can hinder the change process, it can also create new opportunities to make progress. Despite the upheaval caused by service review and reconfiguration in Phases 1 and 2, the new care group structure in Phase 3 created new opportunities to progress the work.

6. Conclusions

Introduction

This project set out to achieve the following aims:

1. Empower nurses and other staff to lead, integrate and transform a citywide falls service drawing upon the clinical microsystems quality improvement methodology.
2. Develop an integrated hospital and community service designed by staff and patients to optimise patient-centred evidence-based care in falls prevention and management.
3. Build capacity among nurses and other healthcare professionals to sustain continuous quality improvement.
4. Evaluate the initiative in order to capture learning.
5. Ascertain the economic benefits of the new service.

In this final section of the report the key achievements in relation to each of the aims are summarised, with the exception of the economic benefits of the new service that are addressed in a separate report. This account compliments the more detailed information on achievements included in earlier sections of the report.

Achievement of project aims

Empowering nurses and other staff to lead, integrate and transform a citywide falls service drawing upon the clinical microsystems quality improvement methodology.

The engagement of the project team, all of whom were frontline nurses and AHPs, in coaching quality improvement clinical microsystems and in facilitating wider changes across the falls pathway at mesosystem and macrosystem levels resulted in both their psychological and structural empowerment. In terms of psychological empowerment, as the project progressed project team members reported increasing confidence and competence in their ability to take the work forward. They also exerted increasing control in managing their work, in particular balancing the demands of the project with their other clinical roles as they all worked part-time on the project. Whereas, project teams members' enthusiasm for their role in the project was tempered initially with a degree of anxiety in terms of their responsibilities, as the project progressed, they became increasingly confident in all aspects of the project, and this in turn gave them increased job satisfaction.

With regard to structural empowerment, the project team's ongoing understanding of the wider organisation and engaging managers from across the Trust and senior health and social care professionals from organisations across the city, enabled them to achieve change at both the mesosystem and macrosystem levels of the falls pathway. Importantly, their increasing understanding of both hospital and community services enabled them to facilitate the development of a more integrated falls service.

The accumulative effects of psychological and structural empowerment are clearly evident in the additional roles that the two nurse members of the project team have taken on. The project lead, Judith Palfreyman has taken up a similar role in redesigning an integrated Parkinson's disease pathway across hospital and community services and is using the quality improvement skills developed in this project to inform this new work. Sue Hunter, Community Matron, is leading important cross agency initiatives to reduce hospital admissions associated with falls, as well as acting as a champion for falls prevention among community nursing teams.

The psychological and structural empowerment of the wider group of healthcare practitioners involved in the project was also clearly evident. Frontline staff who had previously felt they had very little influence over the work situation felt enabled to identify the need for and then to implement change which improved their own practice and the experiences of patients. The changes in the falls pathway outlined in earlier sections of this report were initiated and subsequently implemented by the staff who were directly involved in the falls services. This 'bottom-up' approach was viewed very positively by those involved. Frontline staff reported feeling more in control of their work, and better able to

influence what they did. They also reported greater personal fulfillment in their role through implementing improvements that benefited patients.

Develop an integrated hospital and community service designed by staff and patients to optimise patient-centred evidence-based care in falls prevention and management.

Earlier sections of this report have highlighted the considerable challenges that the project team experienced in developing an integrated falls prevention and management service, due to the considerable service review and redesign of community services that was taking place alongside the project. Nevertheless, considerable progress has been made towards achieving change in relation to key aspects of the falls pathway that were identified to be problematic, most notably in the referral process.

Streamlining the referral process to allow direct referral from level 2 to level 3 services, and improving the referral process in A&E to the falls service is leading to improvements in the number of patients being referred appropriately and in the timeliness of the referral. Patients assessed by the active recovery service are now seen with 2 hours when urgent and within 48 hours for non-urgent. The FPWS have agreed that this will be the standard pathway and are moving towards full implementation.

The waiting times of the level 3 service have been reduced. Patients referred to the service now receive home review on the week of referral and clinic assessment within two weeks – this compares very favorably with average waits of 6 weeks only 2 years ago.

Significant progress has been made in initiating a number of changes which are on-going. The work has spread to the redesign of the new discharge pathways ensuring equality of access to specialist falls care. A key paradigm of this work is the concept of ‘Discharge to Assess’ or D2A. Sheffield’s health and social care service has used improvement science including CMS methodology to redesign the standard approach of assessing patients’ ongoing care needs on completion of acute hospital care. Instead of the traditional approach of completing this assessment in hospital, patients are now transferred home for immediate assessment and provision of care. This has led to significant drops in length of stay, more timely falls risk assessments at home and reduced inpatient falls.

Build capacity among nurses and other healthcare professionals to sustain continuous quality improvement.

Whereas the CMS methodology was adhered to closely in Phase 1 when the project team coached clinical microsystems from across the falls pathway, the approach was used flexibly in Phases 2 and 3. The adoption of established tools and techniques for quality improvement enabled a rigorous approach to identifying the need for and subsequently achieving change.

At the outset, the participants involved in the clinical microsystems in Phase 1 had a very limited understanding of quality improvement. Involvement in the CMS enabled them to develop their knowledge and skills in improvement techniques, and also served to engender a culture for continuous improvement. Clinical staff and managers involved the Phase 2 (Sheffield Falls Project Group) and Phase 3 (Fall Pathway Workstream Group) further refined their skills in quality improvement.

Collectively, the initiatives taken forward in the three Phases of the project have contributed substantially towards making progress in developing both capacity and capability in quality improvement and engendering a culture of continuous quality improvement. This was clearly evident in the success of the Front Door Response Team, who following their involvement in a clinical microsystem, subsequently achieved significant improvements in patient referrals to their service which was recognised nationally through the Health Services Journal (HSJ) awards.

Across the wider hospital system the CMS methodology has been accepted as the standard consistent improvement methodology for health care providers across Sheffield. This work was instrumental in successfully winning a Health Foundation grant to launch the Sheffield Microsystem Coaching Academy. The Academy has trained in excess of 100 coaches over 5 cohorts including 26 nurses and 11 allied healthcare professionals. The coaches have facilitated over 60 microsystem measured improvements across Sheffield’s hospital and community services. The work was submitted and won a national Health Services Journal (HSJ) Safety and Care Award in 2014 for ‘Changing Culture’.

Evaluate the initiative in order to capture learning.

The evaluation of the project has provided valuable insights into the complexity of introducing change in a complex healthcare setting at a time of significant change. The turbulence caused by the on-going service review and subsequent reconfiguration of community services meant that the project team had to be both flexible and adaptive in taking forward the project. The uncertainty frontline staff experienced during a time of organisational change also meant that progress was at times slow. The project team had to engender a sense of trust amongst participants in order to lessen their sense of threat and enable them to be more open to changing their ways of working. Laying these foundations for change was time consuming and required considerable investment on the part of the project team.

The evaluation has also provided new insights into the use of clinical microsystems methodology as an approach to quality improvement. The CMS approach has served to develop the competence and confidence of frontline staff in quality improvement techniques, and helped to foster a culture for quality improvement. However, the approach requires considerable initial investment in developing an understanding of quality improvement methods among microsystem participants and therefore is time consuming. Nevertheless, the benefits of this initial investment in CMS teams were evident in participants' involvement in subsequent aspects of the project. The evaluation has also identified some of the difficulties of using the CMS approach at mesosystem level, and in working across different mesosystems.

Conclusion

This project set out to integrate and transform the falls prevention service in Sheffield through engaging nurses and other front-line staff in leading the change. The innovative clinical microsystems approach was the chosen quality improvement methodology. It involved the project team coaching clinical teams to initially review their services, identify priorities for change and then use PDSA cycles to undertake small tests of change.

The project was undertaken as a time of considerable change affecting both community and hospital services. Despite the turbulence caused by the wider review and redesign of community services considerable progress has been made in redesigning the falls prevention service to the greater benefit of patients. In addition, the clinical microsystems methodology contributed towards the structural and psychological empowerment of project team members (who were themselves frontline staff), other practitioners and clinical managers. This level of empowerment extends beyond the current project in that it provides a foundation upon which further service transformation can be based.

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