Protocol for a qualitative exploration of knowledge sharing for improved discharge from a mental health ward

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ABSTRACT

Introduction: Strategies to reduce hospital admissions for mental health service users have received vast amounts of attention, yet the transfer of care from hospital to the community has been ignored. The discharge process is complex, messy, disjointed and inefficient, relying on cross agency and organisational working. Focusing on one acute mental health admission ward, we will investigate whether the discharge process for people with severe mental health problems can be enhanced, through the creation, implementation and utilisation of a knowledge sharing proforma which is used upon their admission to the ward.

Methods & analysis: The project uses qualitative interviews to understand the complex processes associated with being admitted and discharged from inpatient mental health wards. Practitioners will be asked to identify and map the relevant stakeholders involved in admission and discharge, and discuss any problems with the process. Following this, the study team will work with clinicians to develop a knowledge collection proforma. This will be piloted for 2 months, after which qualitative interviews will be carried out to collect reflections on the experiences of using the tool, with data used for further refinement of the intervention. Baseline and repeat quantitative measures will be taken to illustrate any changes to length of stay and readmission rates achieved as a result of the study.

Ethics & dissemination: A key issue is that participants are able to comment frankly on something which is a core part of their work, without fear or reprise. It is equally important that all participants are offered the opportunity to develop and co-produce the knowledge collection proforma, in order that the intervention produced is fit for purpose and usable in the real world, away from a research environment. The study has received ethical approval from Nottingham University Business School, and has all appropriate NHS governance clearances.

INTRODUCTION

The Care Quality Commission, the UK's healthcare regulator, has recently suggested that the lack of psychiatric inpatient beds is causing stress to services and patients. [1] At the same time, there is growing evidence that Approved Mental Health Professionals are detaining people under a section, illegally, in order to obtain a bed (Hudson and Webber 2012, Chopra 2013).[2 3]

In the UK, 10% of psychiatric beds (1,700 beds) have been cut over the last year.[4] Conversely, the numbers of people detained under the Mental Health Act reached a record high in 2011/12 with 48,600 people being detained, a 5% rise on 2010/11 levels.[4]

Many NHS Mental Health Trusts have adopted functional splits to inpatient and outpatient care, whereby different teams lead care and treatment with an individual at different phases of their illness. However, rather than continue to work in these operational silos, inpatient and outpatient teams need to seamlessly interact with the admitted service user to develop a single narrative and purpose to the admission, while also participating fully in the process of discharge. We believe that there is scope to improve this practice, with the increased efficiency in knowledge sharing leading to timelier, safer and higher quality discharges.

Strategies to reduce hospital admissions and to help mental health service users remain in the community have received the attention of researchers. Studies have explored the efficacy of crisis care planning,[5] recovery planning[6] and the effectiveness of service delivery models such as Assertive Outreach.[7] However, the same cannot be said for the transfer of care from hospital back to home, or from hospital-based to community-based care. Locally, about 10% of patients are readmitted within a month of discharge, although this figure varies between different wards. There is no published national data on readmission rates. Readmission rates act as a proxy measure, albeit a crude one, for failed discharge. There has been no study looking at the factors that are associated with higher readmission rates.

We completed a literature review using search terms: mental health, discharge, adult (aged 18-65 years), acute and inpatient, using the ASSIA, CINAHL, EMBASE, MEDLINE and

PSYCHINFO electronic databases. This returned only 139 citations, of which just six full text empirical papers were obtained. To be included in our review, papers needed to be published since 2000, so that they explored relatively contemporary healthcare issues and experiences. Of the papers included, two were from the UK, one each from Australia, Canada, Germany and the USA. Due to the heterogeneity in the study designs (one systematic literature review, one qualitative study, one retrospective case note analysis and four surveys) a narrative approach to the synthesis of the identified literature and the key areas highlighted were:

- The handover of information between professionals.[8]
- Facilitative discharge approaches.[9]
- The challenges of delayed discharge.[10 11]
- Discharge planning interventions specifically in relation to outpatient follow–up appointments.[12]
- The use of an inpatient keyworker and peer support worker to assist service users with the transition from hospital to the community.[13]

Although these studies have highlighted some interesting findings, the lack of a robust evidence base indicates a need for further research into the transfer of care process, particularly as a 'critical period' of post-discharge care (the first seven days) when people with mental health problems are at increased risk of suicide has been identified.[14] Suicide is a devastating consequence for the individual, their families and mental health professionals, but is also relatively rare. In contrast, a range of more frequent and 'mundane' care problems often arise from care transition planning that impact the costs and quality of life for people with mental health problems and their carers. Although there is a lack of evidence exploring these factors, anecdotal reports highlight difficulties such as medication not being available for service users on their return to the community, community nurses and social workers not being aware that an individual has been discharged and disruption in social security benefits leaving services users without an income and being financially dependent on others. In relation to delayed discharge from hospital, each additional day on the ward incurs a cost in excess of £400, whilst the Care Services Partnership and the

National Institute for Mental Health in England identify the following 'human' consequences:

- Stressed, bored and anxious inpatients.
- Increased lengths of time other service users wait for therapeutic intervention and arrangement of care packages.
- Overstretched and insufficient staff.
- An increased risk of serious incidents, substance misuse, self-harm, violence and aggression on the wards.
- Potential delays in admitting appropriate at risk service users or the premature discharge of others.
- Inappropriate transfer of service users between wards and services.
- An increased risk of service user dependence on inpatient care and subsequent loss of coping skills post discharge.
- The loss of community contacts and supports such as friends, tenancies and employment.
- A negative impact on staff morale, retention and recruitment.[15]

Discharge is also often perceived as a one-off event at the end of an admission. Research by Waring and colleagues shows that discharge planning and the transition of care is located within complex systems of interacting and inter-dependent actors.[16] Strategies to coordinate the work of heterogeneous actors and mitigate system complexity are increasingly recognised within the social science literature,[17] but have not been applied to the problems of hospital discharge for people with mental health problems. In particular, the social science literature highlights the importance of knowledge sharing as a basis of collaboration and coordination.[18-21]

Sullivan and Williams suggest that "the health, social care and wellbeing needs of vulnerable people are complex and interrelated. They require carefully planned, co-ordinated and delivered interventions from a number of different professional groups working together",[22] yet healthcare delivery is increasingly categorised by its fragmented, multi-professional

teams and partnerships that cross organisational boundaries, and as such, "the provision of seamless health and social care remains problematic".[22]

A recent audit carried out in the study site has shown that the admission and discharge process is complex, multi-faceted and involves a significant number of healthcare practitioners from across a variety of different occupations and agencies. Significantly, although all these practitioners hold knowledge about the patient's transition of care, there is no central knowledge repository where all this information is being collated in a manner that allows for its readily available access and utility. Rather, information is variously recorded in different sections of the patient's notes, where each clinical grouping makes notes in 'their' section, often without cross-referral to other sections. The other main source of information is personal notes often carried around by the individual practitioner, for example, those taken during the nursing handover. This has led to an inconsistent information collection process, where gaps in knowledge about service users have resulted. Such information deficits have led to practitioners repeatedly collecting the same information as their colleagues and thus duplicating work. Moreover, the gaps in knowledge about the patient which need to be addressed in order to plan a safe and effective discharge, are often not identified in a timely enough manner, and are instead only being flagged once discharge is imminent. We therefore suggest that the problem is one of knowledge sharing – and in particular, the breakdown in sharing knowledge and the resultant gaps in knowledge which appear.

Public policies advocate collaborative partnerships to foster more inclusive and 'joined-up' service delivery mechanisms.[23] This is largely premised on improved knowledge sharing, whereby actors are able to communicate information across occupational, organisational and sectoral boundaries, and meet a mutual set of objectives which should ultimately result in a more streamlined and integrated way of working.[24] Knowledge sharing can represent a powerful source of service integration, efficiency and, importantly safety. However, there are major challenges to this; communication 'breakdowns' represent a major barrier to service efficiency and safety; NHS 'collaboratives' and 'mandated networks' are bedevilled by professional cleavages and power differentials that inhibit knowledge sharing.[24 25]

There is growing evidence of the social and organisational processes involved in care transitions, including the importance of communication, yet this rarely takes account of the complex social and cultural dynamics of knowledge sharing. The literature on knowledge sharing relates, more broadly, to theories and concepts associated with inter-personal and occupational communication; knowledge exchange and brokering; translational research; and organisational learning. This diverse literature shows that various interpersonal, social and organisational factors influence knowledge sharing and learning within complex organisations, including the appreciation of distinct knowledge domains, social hierarchy, accessibility, and psychological safety and trust.[26] Knowledge is shown to be both 'slippery', where it is too difficult to codify, as well as 'sticky' or difficult to share across cultural or institutional boundaries.[27 28] Such research also highlights the various strategies for facilitating knowledge sharing, such as 'knowledge brokers' who can translate and transfer knowledge between isolated groups, information and communication technology to provide easy access and retrieval to knowledge and 'communities of practice' that engender cultural and organisational alignment through knowledge sharing.[29 30]

Given the clinical risks associated with hospital discharge, it continues to be a national policy priority,[31] with the advice that care transitions should be seen as "a process not an isolated event"[32] involving the active participation of health and social care professionals, as well as service users and carers, to effectively plan and co-ordinate discharge. This whole system approach highlights the inter-dependency of individuals and organisations from different care delivery settings. However, the most common threats to timely and efficient hospital discharge are associated with notifying and organising 'external services'.[33] This highlights the importance of communication between care providers, yet the literature on hospital discharge offers little in way of this, especially in relation to discharge from acute mental health services. As highlighted previously, our literature review identified only one study which explicitly explored information and communication provision in relation to discharge between primary care providers and inpatient services in the USA.[8]

It is important to understand the barriers and drivers to a patient's care transition not as linear casual chains within single or isolated care settings, but as complex and enmeshed 'constellations' of factors found within and between care processes and teams. This

includes the deeper 'darksides' of service organisation and delivery,[34] such as organisational boundaries and the shifting of responsibility and endemic problems of inter-professional and inter-organisational working, which typically relate to problems in communication or knowledge sharing.[35] Glasby suggests three prominent factors influence the participation and co-ordination of these different stakeholders, which are also consistent with the whole systems and systems thinking approaches.[36] These include: 1) occupational factors, related to the particular knowledge, culture and practice domains of care providers, such as doctors, social workers and nurses; 2) organisational factors, related to the routine working patterns, facilities, capacities and resources of individuals agencies; and 3) compatibility and co-ordinating factors, related to how occupational, organisational and institutional factors align, including communication, decision-making and resources.

Consequently, in piecing together the jigsaw of contemporary, complex, integrated healthcare, individual practitioners and healthcare workers must mediate boundaries to their knowledge sharing, which act to decipher what constitutes the expert and legitimate participation of particular groups of people in particular circumstances.[37] These boundaries can be "physical, cognitive, relational, structural, knowledge based or any other delineation that separates one boundary from another".[38]

The resulting gaps have been described as structural holes, fissures and silos;[39] they act to "shine a light on how communication breaks down, interactivity fails or where teamwork is weak or floundering. Structural holes are often at the boundaries of organisational silos and this can enable and impede inter-professional relations or inter-unit knowledge transmission.[39] Boundaries or silos between different professions and professional practices have long been recognised (for example, medical tribalism;[22 40] they are known to inhibit knowledge sharing,[35] to the extent that they are "a significant brake on quality improvement initiatives".[41]

Crossing boundaries and connecting separate work and knowledge domains requires co-ordination for effective knowledge sharing to occur. Boundary crossing describes the actions and activities of a person, a group or an intervention that makes "transactions and interactions" across different sites.[37] Boundary crossing is a "challenge of negotiating and combining ingredients from different contexts to achieve hybrid solutions",[42] and is a means

of acquiring and controlling knowledge.[16] Thus for activities that require linking or brokering across and between boundaries, there is a need to search for connections in order to mobilise and share knowledge across the professional territories, and create links to avoid fragmentation, disconnection and ultimately, to prevent patient need from being left unaddressed.

Swan and Scarborough call for dedicated knowledge brokering roles, arguing that these enable "the transfer of knowledge across organisational and inter-organisational boundaries".[43] Braithwaite et al. develop this line of argument further, referring to the dissemination of information via ''grapevines'',[44] which interweave between individuals who are linked through a common purpose. Effective and timely communication, for instance, between hospital and the community mental health team is essential in ensuring appropriate transition from the hospital into the community. Yet, it is hypothesised that in the acute in-patient mental health experience, given the complexity and inter-agency working that occurs, there is no one or nothing carrying out this brokering role across the boundaries, and being the central information repository resource.

In other healthcare sectors, it is possible that the patient would be an ideal candidate to act as a knowledge broker – as it is the patient that is the constant across the various health and social care interactions that take place. However, a service user being admitted onto an acute mental health ward, often without their explicit consent (i.e. they are on a section of the Mental Health Act), is quite likely to lack the capacity to act in this knowledge broker role. For example, Owen and colleagues report that up to 80% of service users admitted to an inpatient ward in London lacked the capacity to make decisions regarding their own treatment.[45] What's more, as their care will have been delivered by multiple providers and agencies, as well as family members and significant others, there is not a central knowledge repository that can be drawn upon. Rather, information presented upon admission to the ward can be sketchy and incomplete, with practitioners and administrators searching for information from multiple sources. This is not just a waste of valuable resources, but also delays the admission procedure, and in turn, failure to identify complete knowledge about the patient can delay their treatment and eventual discharge from the ward.

We suggest that knowledge sharing between the service user (where possible), professionals and carers during the admission and discharge planning processes can speed up the process and reduce the knowledge gaps which are known to create delays and blockages to discharge. We will focus on one acute mental health admission ward to investigate how the discharge planning and transition process can be enhanced, in terms of making discharge more effective through improved knowledge sharing. We will test this assertion through the development, implementation and utilisation of a knowledge collection proforma that will be completed by healthcare staff upon the service user's arrival onto the ward. We do this in anticipation of the implementation of the recently announced electronic health record, intended to be in practice by 2015, and the vision of a paperless NHS by 2018.[46] This study is the first step towards the production of a shared knowledge collection resource, which can be used by all health and social care practitioners involved in the admission and discharge of patients from an acute mental health ward. If this is shown to be effective, further funding will be sought to develop and roll out an electronic version.

METHODS AND ANALYSIS

This study follows an improvement science approach. Although a relatively new term, which is often interchangeably used along with translational science, implementation science, evidence-based practice, knowledge translation, and research utilisation, the overarching goal of improvement science is to ensure that quality improvement efforts are evidence based.[47] Improvement science offers a rigorous yet practical approach to understanding and implementing quality improvement, as it "inhabits the sphere between research and quality improvement by applying research methods to help understand what impacts on quality improvement".[48] As such, it "focuses on systematically and rigorously exploring 'what works' to improve quality in healthcare and the best ways to measure and disseminate this to ensure positive change".[48]

The study will address the following hypothesis:

"Inappropriate discharge and subsequent readmission will be reduced if greater knowledge is shared, known and utilised to support collaboration during inpatient admission and discharge planning".

Secondary objectives are:

1. To explore the knowledge sharing process and procedure upon admission to an adult acute mental health ward.
2. To seek to improve knowledge sharing to prevent delayed discharge because of information gaps.

Qualitative data will be collected to understand the complex processes and blockages involved in knowledge sharing during in a patient's admission and discharge from the acute ward. This will enable the research team to produce a knowledge collection proforma, which will prompt healthcare practitioners to be aware of knowledge gaps in the patient's history, and raise questions /take action where this is needed.

Using a mixed methods approach, an in-depth understanding of the complex processes associated with being admitted and discharged from inpatient mental health wards will be ascertained. Healthcare practitioners' (acute and community based) perceptions of the appropriateness of this new knowledge collection tool will be evaluated using qualitative methods, and will be supplemented by quantitative data analysis, through baseline and repeat measures of anonymised patient length of stay and readmission rates.

Anonymised baseline data collected at the start of the study will be repeated at the completion of the pilot, to measure any change has occurred in both average length of stay, and patient readmission rates. Readmission is defined locally as 'patient readmitted within a month of initial discharge'. Length of stay and readmission rate measures have been selected as they are both aligned to a CQUIN target (21 days median length of stay) and are requested by the local Clinical Commissioning Groups to inform their decision-making.

The project is structured across a number work packages. The initial phase of the project will identify the relevant stakeholders and information sources involved in mental health admission and discharge. Subsequent work will engage and work with clinicians and

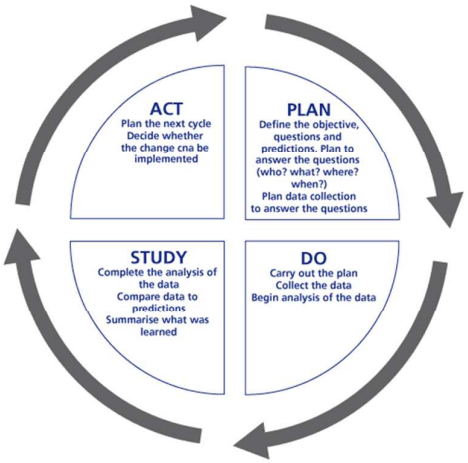
healthcare workers to develop the intervention (the knowledge capture proforma) which will be piloted in the latter phases of the project. Following this we will ask those involved to reflect on their experiences of using the proforma, so that this can be used to further develop the intervention and apply for further funds for a larger scale study.

- *Work package 1* will see anonymised baseline data taken on the average length of stay on the study site (Ward A) and readmission rates over the last calendar year. The study team will carry out a series of qualitative interviews with clinicians and healthcare practitioners working in acute and community care settings who are involved in the admission and discharge processes of patients into/out of Ward A. Additionally, any admission and discharge packs, or other knowledge collation documents, will be collected and studied, to identify what information is currently assembled, by whom and when, where it is stored and when it is used.
- *Work package 2* will draw on the learning from work package one, and will involve the production of a new knowledge capture proforma to be used at the time of the patient's admission onto the acute ward. Following the initial analysis of the data from work package one, the new proforma will be co-produced with members of the acute and community teams in a series of workshops. By co-designing the proforma in this manner – similar to a user-based design approach, it ensures that the resulting product is fit for use by the practitioners, as they have had a role in co-producing the outcome.
- *Work package 3* will involve the roll-out of the knowledge collection proforma produced in work package two. Its introduction will be supported by a series of short presentations made by the study team to members of the care team. The proforma will be piloted for two calendar months on Ward A.
- *Work package 4* will comprise of a series of evaluative qualitative interviews with the clinicians and practitioners who will have been using the new knowledge capture proforma. These interviews will collect data on perceptions and experiences of using the proforma, and whether practitioners feel its implementation and use has enhanced the admission and discharge process in relation to being able to having cohesive knowledge about the patient. Repeated baseline measures on anonymised

length of stay and readmission rates will be taken, to cover the pilot dates, in order to provide quantitative evidence of any effect that the form may have had.

The study follows a Plan-Do-Study-Act cycle.

Work packages 1 and 2 fall under the PLAN stage; work package 3 comprises of the DO stage; work package 4 fulfils the STUDY stage, whilst the final ACT stage will be covered in a future funding application, to develop this pilot study further, and to cover its rollout and evaluation across the whole of the NHS Trust involved.



(Image courtesy of NHS Scotland) http://uat.qihub.scot.nhs.uk/programmes/improvement-tools/search-results/improvement-tool.aspx?id=66

Study configuration

This is a single site study; the predominant focus is on a single acute mental health ward. However, in order to respond to the hypothesis and research objectives, it will also be necessary to include healthcare staff working in community care (employed by the same NHS Trust as the ward based staff) who are involved in the referral and admission/discharge process into / from Ward A.

Ward A is a busy acute mental health ward in an urban setting within the UK. It has 20 beds for male patients. Patients typically have been diagnosed with schizophrenia, bipolar disorder, severe depression or borderline or anti-social personality disorder, often with co-morbid substance misuse problems and sometimes with other physical health problems.

Recruitment

Participants for the study will all be employed by the NHS Trust, and either be working on Ward A or be a member of a community team (e.g. Crisis Teams, Community Assessment and Treatment, Early Intervention in Psychosis, Recovery and Assertive Outreach, CMHTs) which admits service users to the ward or is involved in their care following discharge. No service users or their carers / family members will be recruited to participate in the study at this stage. The initial approach will be from AC, who is a consultant on the ward, and will be made verbally and followed up in writing, accompanied by a participant information sheet and consent form.

Sample size and justification

Sample size is determined by the number of relevant stakeholders working in / into Ward A, rather than by power calculations or expectations about study dropout. The sample size will be approximately 50 healthcare practitioners. This number covers all those healthcare workers who would reasonably be expected to have some interaction with Ward A in relation to the admission or discharge of a patient.

Eligibility criteria

In order to be eligible to be involved in the study, participants should be employed by the NHS Trust and have a role in the admission and/or discharge of patients from Ward A.

Consequently, in order to be eligible to be included in the study, participants should be:

- Aged between 18 and 65 years of age.
- Working in the NHS.
- Able to give consent.
- Involved in the admission and/or discharge of patients from Ward A

Conversely, individuals will be excluded from participating in the study if they are not employed by the NHS Trust; have no experience of admission / discharge of patients into / from Ward A, and are unable to give consent.

All participants will provide informed consent before being enrolled in the study.

Data collection

As illustrated in table 1, two sets of qualitative interviews will be held with all health and social care practitioners who interact with Ward A regarding the admission and discharge of patients; these are scheduled to take place during work packages one and three. Qualitative interviews have been chosen as a data collection technique as enable the space for reflective reporting and open discussion of the phenomena under investigation. To this end, a topic guide will be utilised (see table 2 for an indicative illustration of the topics that might be covered). Interviews will be carried out by NW and ER, recorded with participants' consent, and transcribed verbatim.

Work package two involves a series of co-design workshops with the health and social care practitioners previously interviewed. These workshops will be practical in focus, and will seek to produce a knowledge capture proforma, that will ensure that knowledge regarding admission and discharge is shared between the different health and social care practitioners. Co-design is founded on the principle that "making it ''better'' is possible if users are involved in the design process.[49] The approach, while practical, also enables discussion of ''how well people understand [the intervention being designed], how they feel about it while they are using it, how well it serves its purpose, and how well it fits into the context in which they are using it''.[49] It is this "knowledge of the experience" in relation to the problems and potential solutions to knowledge sharing and capture in relation admission and discharge from the acute mental health ward, that is "unique and precious".[49]

Marshall and colleagues argue how "improvement science needs a genuine partnership between academics and front-line practitioners.[50] Researchers bring scepticism, scientific rigour, and methodological technical expertise, whereas practitioners bring content knowledge, a thorough understanding of working contexts, and practical wisdom. Academics and service partners need to collaborate to design, undertake, and interpret the work of improvement science". Together, the two approaches of co-design and

improvement science offer potential to produce a step change in knowledge sharing, and reduce the delays to discharge caused by communication failure.

Table 1: Study Regime

	Timeline	Research team activities	Participant involvement
Work package 1: 	Late Autumn 2013 – January 2014	• Baseline data collection • Collection & analysis of admission and discharge documents • Analysis	i. Participants to be identified (by AC, acting as gatekeeper to the clinical setting) ii. Invitations issued, accompanied by Participant Information Sheet and Consent Form) iii. Interview scheduled iv. Interview takes place
Work package 2: 	January – February 2014	• Analysis	i. Participants invited to participate in co-production / co-design workshops for knowledge capture tool / proforma ii. Workshops arranged and take place
Work package 3: 	March – April 2014	• Roll out of the knowledge capture tool, supported by training presentations	

Work package 4: 	May – November 2014	• Repeat measures • Analysis • Reporting and dissemination	i. Staff interviews regarding their perceptions and experiences of using the knowledge capture tool.

Table 2: Interview topic guides

Topics to be covered in Work package 1 interviews	Topics to be covered in Work package 3 interviews
• Experiences of patient admission process onto Ward A – what is involved, who is involved, how long does it take? • Perceived problems with the patient admission process. • How, when and by whom is knowledge and information is gained, stored and shared? • Experiences of patient discharge process from Ward A – what is involved, who is involved, how long does it take? • Perceived problems with the patient admission process. • How, when and by whom is knowledge and information is gained, stored and shared? • About delays in discharge – how often? Caused by what? What knock-on effects?	• About using the new knowledge capture form • Did knowledge sharing in relation to patient admission process onto Ward A improve whilst the form was being used? • Any problems with the form? • How might it be improved? • Having used the form, how, when and by whom is knowledge and information is gained, stored and shared? • Following using the form, what have been the experiences of patient discharge process from Ward A – what is involved, who is involved, how long does it take? • Have delays in discharge through gaps in knowledge about a patient's circumstances, been reduced?

Data analysis

The data will be analysed using conventional qualitative methods, and will identify analytical patterns from across individual respondent and wider service.[51 52] Analysis will be inductive, although it will be influenced by the study's theoretical framework of knowledge brokering and knowledge mobilisation.[30 53-55]

Thematic analysis has been chosen as it "provides a concise, coherent, logical, non–repetitive and interesting account of the story the data tell".[56] Although time intensive - it requires the research team to spend time engaging with the data, reading and rereading the interview transcriptions and listening to the audio recordings of interviews – we believe that it offers unparalleled advantages in 'getting to know' your data. In turn, this "generates understanding, insight and familiarity, which are the building blocks of analysis".[56] The research team will start to identify and code (by highlighting) parts or chunks of the data that they deem to be about the same topic, concept or idea. It is likely that many sections of the data will be given multiple codes, implying that the section/extract is about more than one topic, or idea. As codes are developed it is also important to revisit the rest of the data to see if that code also applies to other parts of the data. Initially, the data will be analysed separately by each member of the research team; following initial coding, the research team will hold regular data meetings in which they will work collaboratively on the analysis of the interview materials.

Due to the need for the research team to analyse the data collaboratively, a CAQDAS (Computer Assisted Qualitative Data Analysis) package, NVivo, will be used. This will allow each member of the research team to add their own comments and analysis. The use of NVivo allows for sections of the transcript to be tagged, or highlighted and named with a certain code or label; these programmes do not undertake the analysis of the data for you, but they do allow the electronic data to be coded and searched, for notes to be written to accompany codes and data extracts, for the data to be more easily navigated, and for the accumulating analytical work to be located on a single data corpus. While early reading and immersion in the data can be done using hard copies of the transcripts, once a number of initial codes have been generated, transcripts will be imported into NVivo, with all coding of the data undertaken on the electronic versions of the transcripts from then on.

Following this preliminary analysis stage, in which all the data extracts will have been coded in a general sense, data will again be examined in order to identify the wider themes and analytical narrative.

ETHICS AND DISSEMINATION

Whilst the ethical issues faced in policy−oriented, qualitative research are not of the same order as those facing research involving invasive clinical interventions, this is not to say that they can be brushed aside. The ethical and design issues that are of particular importance in this kind of research relate to the need to recognise the ways in which the social relationships relating to the phenomena being studied may impact on the research process, by impeding some participants from fully expressing their views while encouraging others to do so.

A key issue is that participants in this research will be asked to comment frankly on something which is a core part of their work, as this relates to the actions of other individuals and organisations involved in knowledge sharing and brokering during the admission and discharge processes. From the point of view of us as researchers, of good research practice, and of the participants themselves, it is clearly important that those involved are as frank as possible, so that we might get a clear picture of the what has helped and obstructed the knowledge brokering during admission and discharge process in the particular context of acute mental health. If some respondents are franker than others, we may get a skewed view, and of the role of different factors and individuals in the process. This quandary is amplified by the fact that there may well be entrenched power relationships within the groups of individuals being studied, with certain parties exerting considerably more influence than others, which may make those less influential parties more reluctant to be frank. For example, senior consultants are likely to be perceived by other participants, as more powerful than a healthcare assistant or an occupational therapist. For this reason, we will carefully manage group dynamics during the co-design workshops, to ensure that all parties are able to equally and fully participate.

When discussing the research with participants at the recruitment stage, we will emphasise that the views of all involved are equally important, and that we will make every effort to use what they tell us in a non−attributable way.

Service users will be involved at every stage of the planning and management of the study. We will convene a small group of approximately five members who have had recent experience of being admitted and discharged from hospital. This group will be facilitated by a member of the research team and will meet approximately bimonthly. They will discuss the planning and development of the project and intervention, be involved in data analysis and disseminate the study findings to service user forums and in service user focused publications. They will also be invited to be involved in the development of any subsequent research grant applications and follow on studies should these occur. If any members of the service user group wish to join the full study management team, they will be enabled to do this; otherwise their views and work will be relayed to the full team by the individual who facilitates the group. Service users will be paid a 'disruption' fee to cover their time and travel costs incurred through being involved in the study

Dissemination

Study results will be published and disseminated in a variety of ways. A report of the study will be produced, including an executive summary which will be distributed to participants and any other interested party. Peer-reviewed publications in academic outlets will be pursued, as will outputs in practitioner-oriented publications. Participants will not be identified in any publications.

This study sets out to co-produce a solution to an enduring problem in healthcare practice. Knowledge sharing amongst different health and social care teams is neither a new phenomenon nor something that is recognised as easily solved. It is also something that many researchers before us have attempted to improve. However, our focus on knowledge sharing upon admission and discharge from an acute mental health ward, informed by improvement science and co-design approaches, offers a potential solution that is locally produced and owned. We hope that this approach will offer sustained benefits to patients and health and social care practitioners.

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Authors' contributions: ER led the development of the study protocol and this paper. NW, JW, KG and AC commented on drafts of the protocol and the paper.

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Competing interests statement: AC is the main consultant psychiatrist on the ward where the study will be conducted, and is the problem owner, having identified the issue requiring improvement and bringing it to other members of the research team. KG is a senior nurse on the ward. To maintain objectivity and minimise threats of bias, neither AC nor KG will be involved in data collection and will only have access to anonymised data.

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Protocol for an exploration of knowledge sharing for improved discharge from a mental health ward

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ABSTRACT

Introduction: Strategies to reduce hospital admissions for mental health service users have received vast amounts of attention, yet the transfer of care from hospital to the community has been ignored. The discharge process is complex, messy, disjointed and inefficient, relying on cross agency and organisational working. Focusing on one acute mental health admission ward, we will investigate whether the discharge process for people with severe mental health problems can be enhanced, through the creation, implementation and utilisation of a knowledge sharing proforma which is used upon their admission to the ward.

Methods & analysis: The project uses qualitative interviews to understand the complex processes associated with being admitted and discharged from inpatient mental health wards. Practitioners will be asked to identify and map the relevant stakeholders involved in admission and discharge, and discuss any problems with the process. The study team will work with clinicians to develop a knowledge collection proforma, which will be piloted for 2 months. Qualitative interviews will be carried out to collect reflections on the experiences of using the tool, with data used for further refinement of the intervention. Baseline and repeat quantitative measures will be taken to illustrate any changes to length of stay and readmission rates achieved as a result of the study.

Ethics & dissemination: A key issue is that participants are able to comment frankly on something which is a core part of their work, without fear or reprise. It is equally important that all participants are offered the opportunity to develop and co-produce the knowledge collection proforma, in order that the intervention produced is fit for purpose and usable in the real world, away from a research environment. The study has received ethical approval from Nottingham University Business School ethics committee, and has all appropriate NHS research governance clearances.

Strengths and limitations of this study

Strengths:

- Applied health research – takes complex social theory ideas and applies them to an area of healthcare that is often ignored (mental health)
- Study and intervention is co-produced with end-users

Limitations:

- Exploratory study – data collection on only one ward
- Quantitative measures likely to influenced by complex healthcare context

INTRODUCTION

The Care Quality Commission, the UK's healthcare regulator, has recently suggested that the lack of psychiatric inpatient beds is causing stress to services and patients. [1] At the same time, there is growing evidence that Approved Mental Health Professionals are detaining people under a section, illegally, in order to obtain a bed (Hudson and Webber 2012, Chopra 2013).[2 3]

In the UK, 10% of psychiatric beds (1,700 beds) have been cut since 2011.[4] Conversely, the numbers of people detained under the Mental Health Act reached a record high in 2011/12 with 48,600 people being detained, a 5% rise on 2010/11 levels.[4]

Many NHS Mental Health Trusts have adopted functional splits to inpatient and outpatient care, whereby different teams lead care and treatment with an individual at different phases of their illness. However, rather than continue to work in these operational silos, inpatient and outpatient teams need to seamlessly interact with the admitted service user to develop a single narrative and purpose to the admission, while also participating fully in the process of discharge. We believe that there is scope to improve this practice, with the increased efficiency in knowledge sharing leading to timelier, safer and higher quality discharges.

Strategies to reduce hospital admissions and to help mental health service users remain in the community have received the attention of researchers. Studies have explored the efficacy of crisis care planning,[5] recovery planning[6] and the effectiveness of service delivery models such as Assertive Outreach.[7] However, the same cannot be said for the transfer of care from hospital back to home, or from hospital-based to community-based care. In the East Midlands (UK), about 10% of patients are readmitted within a month of discharge, although this figure varies between different wards. There is no published national data on readmission rates. Readmission rates act as a proxy measure, albeit a crude one, for failed discharge. There has been no study looking at the factors that are associated with higher readmission rates.

We completed a literature review using search terms: mental health, discharge, adult (aged 18-65 years), acute and inpatient, using the ASSIA, CINAHL, EMBASE, MEDLINE and PSYCHINFO electronic databases. This returned only 139 citations, of which just six full text empirical papers were obtained. To be included in our review, papers needed to be published since 2000. This was justified on the basis that studies needed to be relevant to current mental healthcare provision. In total, 139 citations were returned, and following the removal of duplicates, non-empirical literature and studies not conducted within mental health services, six full-text papers were obtained.

Of the papers included, two were from the UK, one each from Australia, Canada, Germany and the USA. Due to the heterogeneity in the study designs (one systematic literature review, one qualitative study, one retrospective case note analysis and four surveys) a narrative approach to the synthesis of the identified literature was adopted and the key areas highlighted were:

- The handover of information between professionals.[8]
- Facilitative discharge approaches.[9]
- The challenges of delayed discharge.[10 11]
- Discharge planning interventions specifically in relation to outpatient follow–up appointments.[12]
- The use of an inpatient keyworker and peer support worker to assist service users with the transition from hospital to the community.[13]

Despite the different methods employed, these studies have highlighted some useful findings. Regardless of the service and organizational variations across the different countries these papers originated from, the problems and difficulties encountered in sharing information between professionals working in inpatient and community settings was consistent. For example, Durbin *et al.*[8] describe the quality of information sharing and reporting between primary care and mental health services that takes place at referral and post discharge as, at bast, variable. However, the use of interventions, such as liaison services[12] and specific workers to assist service users with the transition from hospital to community, were found to produce improvements[8 9 12] and therefore demonstrate that this process is amenable to intervention. The issue of 'delayed discharge' at an organizational

level was explored by the two UK based studies[10 11]. Although they both highlight that there are differences in the reporting and definition of 'delayed discharges' across the UK, delayed discharges remain a concern with potential financial ramifications. Lewis and Glasby[11] suggest that organisations are desperate to tackle delayed discharges by any means possible. This includes supporting policy directives, such as reimbursement, when in other circumstances they would not do so.

Although these studies have highlighted some interesting findings, the lack of a robust evidence base indicates a need for further research into the transfer of care process, particularly as a 'critical period' of post-discharge care (the first seven days) when people with mental health problems are at increased risk of suicide has been identified.[14] Suicide is a devastating consequence for the individual, their families and mental health professionals, but is also relatively rare. In contrast, a range of more frequent and 'mundane' care problems often arise from care transition planning that impact the costs and quality of life for people with mental health problems and their carers. Although there is a lack of evidence exploring these problems, anecdotal reports highlight difficulties such as medication not being available for service users on their return to the community, community nurses and social workers not being aware that an individual has been discharged and disruption in social security benefits leaving services users without an income and being financially dependent on others. In relation to delayed discharge from hospital, each additional day on the ward incurs a cost in excess of £340[15], whilst the Care Services Partnership and the National Institute for Mental Health in England identify the following 'human' consequences:

- Stressed, bored and anxious inpatients.
- Increased lengths of time other service users wait for therapeutic intervention and arrangement of care packages.
- Overstretched and insufficient staff.
- An increased risk of serious incidents, substance misuse, self-harm, violence and aggression on the wards.
- Potential delays in admitting appropriate at risk service users or the premature discharge of others.

- Inappropriate transfer of service users between wards and services.
- An increased risk of service user dependence on inpatient care and subsequent loss of coping skills post discharge.
- The loss of community contacts and supports such as friends, tenancies and employment.
- A negative impact on staff morale, retention and recruitment.[16]

Research by Waring and colleagues shows that discharge planning and the transition of care is located within complex systems of interacting and inter-dependent actors.[17] Strategies to coordinate the work of heterogeneous actors and mitigate system complexity are increasingly recognised within the social science literature,[18] but have not been applied to the problems of hospital discharge for people with mental health problems. In particular, the social science literature highlights the importance of knowledge sharing as a basis of collaboration and coordination.[19-22]

Sullivan and Williams suggest that "the health, social care and wellbeing needs of vulnerable people are complex and interrelated. They require carefully planned, co-ordinated and delivered interventions from a number of different professional groups working together",[23] yet healthcare delivery is increasingly categorised by its fragmented, multi-professional teams and partnerships that cross organisational boundaries, and as such, "the provision of seamless health and social care remains problematic".[23]

A recent (unpublished) audit in the NHS Trust where this research is to take place has shown that the admission and discharge process is complex, multi-faceted and involves a significant number of healthcare practitioners from across a variety of different occupations and agencies. Significantly, although all these practitioners hold knowledge about the patient's transition of care, there is no central knowledge repository where all this information is being collated in a manner that allows for its readily available access and utility. Although the Trust has recently introduced electronic patient records, the number of computers on the ward is limited, which means timely and immediate access to records (as well as updating them) can be problematic. This results in information being variously recorded in different sections of the patient's notes, where each clinical grouping makes

notes in 'their' section, often without cross-referral to other sections. This information is then later transposed onto the electronic health record, often by ward administrative staff.

A further consequence of the difficulty in accessing electronic health records in a timely manner is that apart from the paper-based patient files, the other main source of information collected and used are personal notes often carried around by the individual practitioner, for example, those taken during the nursing handover or when taking a telephone call about an incoming patient admission. This has led to an inconsistent information collection process, where gaps in knowledge about service users have resulted. Such information deficits have led to practitioners repeatedly collecting the same information as their colleagues and thus duplicating work. Moreover, the gaps in knowledge about the patient which need to be addressed in order to plan a safe and effective discharge, are often not identified in a timely enough manner, and are instead only being flagged once discharge is imminent. We therefore suggest that the problem is one of knowledge sharing – and in particular, the breakdown in sharing knowledge and the resultant gaps in knowledge which appear.

Public policies advocate collaborative partnerships to foster more inclusive and 'joined-up' service delivery mechanisms.[24] This is largely premised on improved knowledge sharing, whereby actors are able to communicate information across occupational, organisational and sectoral boundaries, and meet a mutual set of objectives which should ultimately result in a more streamlined and integrated way of working.[25] Knowledge sharing can represent a powerful source of service integration, efficiency and, importantly safety. However, there are major challenges to this; communication 'breakdowns' represent a major barrier to service efficiency and safety; NHS 'collaboratives' and 'mandated networks' are bedevilled by professional cleavages and power differentials that inhibit knowledge sharing.[25 26]

There is growing evidence of the social and organisational processes involved in care transitions, including the importance of communication, yet this rarely takes account of the complex social and cultural dynamics of knowledge sharing. The literature on knowledge sharing relates, more broadly, to theories and concepts associated with inter-personal and occupational communication; knowledge exchange and brokering; translational research; and organisational learning. This diverse literature shows that various interpersonal, social

and organisational factors influence knowledge sharing and learning within complex organisations, including the appreciation of distinct knowledge domains, social hierarchy, accessibility, and psychological safety and trust.[27] Knowledge is shown to be both 'slippery', where it is too difficult to codify, as well as 'sticky' or difficult to share across cultural or institutional boundaries.[28 29] Such research also highlights the various strategies for facilitating knowledge sharing, such as 'knowledge brokers' who can translate and transfer knowledge between isolated groups, information and communication technology to provide easy access and retrieval to knowledge and 'communities of practice' that engender cultural and organisational alignment through knowledge sharing.[30 31]

Given the clinical risks associated with hospital discharge, it continues to be a national policy priority,[32] with the advice that care transitions should be seen as "a process not an isolated event"[33] involving the active participation of health and social care professionals, as well as service users and carers, to effectively plan and co-ordinate discharge. This whole system approach highlights the inter-dependency of individuals and organisations from different care delivery settings. However, the most common threats to timely and efficient hospital discharge are associated with notifying and organising 'external services'.[34] This highlights the importance of communication between care providers, yet the literature on hospital discharge offers little in way of this, especially in relation to discharge from acute mental health services. As highlighted previously, our literature review identified only one study which explicitly explored information and communication provision in relation to discharge between primary care providers and inpatient services in the USA.[8]

It is important to understand the barriers and drivers to a patient's care transition not as linear casual chains within single or isolated care settings, but as complex and enmeshed 'constellations' of factors found within and between care processes and teams. This includes the deeper 'darksides' of service organisation and delivery,[35] such as organisational boundaries and the shifting of responsibility and endemic problems of inter-professional and inter-organisational working, which typically relate to problems in communication or knowledge sharing.[36] Glasby suggests three prominent factors influence the participation and co-ordination of these different stakeholders, which are also consistent with the whole systems and systems thinking approaches.[37] These include: 1) occupational factors, related

to the particular knowledge, culture and practice domains of care providers, such as doctors, social workers and nurses; 2) organisational factors, related to the routine working patterns, facilities, capacities and resources of individuals agencies; and 3) compatibility and co-ordinating factors, related to how occupational, organisational and institutional factors align, including communication, decision-making and resources.

Consequently, in piecing together the jigsaw of contemporary, complex, integrated healthcare, individual practitioners and healthcare workers must mediate boundaries to their knowledge sharing, which act to decipher what constitutes the expert and legitimate participation of particular groups of people in particular circumstances.[38] These boundaries can be "physical, cognitive, relational, structural, knowledge based or any other delineation that separates one boundary from another".[39]

The resulting gaps have been described as structural holes, fissures and silos;[40] they act to "shine a light on how communication breaks down, interactivity fails or where teamwork is weak or floundering. Structural holes are often at the boundaries of organisational silos and this can enable and impede inter-professional relations or inter-unit knowledge transmission.[40] Boundaries or silos between different professions and professional practices have long been recognised (for example, medical tribalism;[23 41] they are known to inhibit knowledge sharing,[36] to the extent that they are "a significant brake on quality improvement initiatives".[42]

Crossing boundaries and connecting separate work and knowledge domains requires co-ordination for effective knowledge sharing to occur. Boundary crossing describes the actions and activities of a person, a group or an intervention that makes "transactions and interactions" across different sites.[38] Boundary crossing is a "challenge of negotiating and combining ingredients from different contexts to achieve hybrid solutions",[43] and is a means of acquiring and controlling knowledge.[17] Thus for activities that require linking or brokering across and between boundaries, there is a need to search for connections in order to mobilise and share knowledge across the professional territories, and create links to avoid fragmentation, disconnection and ultimately, to prevent patient need from being left unaddressed.

Swan and Scarborough call for dedicated knowledge brokering roles, arguing that these enable "the transfer of knowledge across organisational and inter-organisational boundaries".[44] Braithwaite et al. develop this line of argument further, referring to the dissemination of information via ''grapevines'',[45] which interweave between individuals who are linked through a common purpose. Effective and timely communication, for instance, between hospital and the community mental health team is essential in ensuring appropriate transition from the hospital into the community. Yet, it is hypothesised that in the acute in-patient mental health experience, given the complexity and inter-agency working that occurs, there is no one or nothing carrying out this brokering role across the boundaries, and being the central information repository resource.

In other healthcare sectors, it is possible that the patient would be an ideal candidate to act as a knowledge broker and facilitate the sharing of knowledge and information about their care requirements and medical history to different practitioners – as it is the patient that is the constant across the various health and social care interactions that take place. However, a service user being admitted onto an acute mental health ward, often without their explicit consent (i.e. they are on a section of the Mental Health Act), is quite likely to lack the capacity and ability to act in this knowledge broker role at the moment of their admission onto the ward. What's more, as their care will have been delivered by multiple providers and agencies, as well as family members and significant others, there is not a central knowledge repository that can be drawn upon. Rather, information presented upon admission to the ward can be sketchy and incomplete, with practitioners and administrators searching for information from multiple sources. This is not just a waste of valuable resources, but also delays the admission procedure, and in turn, failure to identify complete knowledge about the patient can delay their treatment and eventual discharge from the ward.

We suggest that knowledge sharing between the service user (where possible), professionals and carers during the admission and discharge planning processes can speed up the process and reduce the knowledge gaps which are known to create delays and blockages to discharge. We will focus on one acute mental health admission ward to investigate how the discharge planning and transition process can be enhanced, in terms of

making discharge more effective through improved knowledge sharing. Knowledge sharing requires collaboration and co-ordination in order to be effective[19-22], as planned rather than ad-hoc actions are required in order to address the difficulties in information sharing in fragmented care settings[23]. As we have already described, staff on the ward are known to keep 'personal notes' containing information about a patient. Through the development, implementation and utilisation of a knowledge collection proforma that will be completed by healthcare staff upon the service user's arrival onto the ward, we will seek to formalise these personal notes, so that they are stored in a patient's (paper-based) notes folder rather than remain in the pocket of a healthcare practitioner. This study is the first step towards the production of a shared knowledge collection resource, which can be used by all health and social care practitioners involved in the admission and discharge of patients from an acute mental health ward. If this is shown to be effective, further funding will be sought to develop and roll out an electronic version.

METHODS AND ANALYSIS

Service users will be involved at every stage of the planning and management of the study. We will convene a small group of approximately five members who have had recent experience of being admitted and discharged from hospital. This group will be facilitated by a member of the research team and will meet approximately bimonthly. They will discuss the planning and development of the project and intervention, be involved in data analysis and disseminate the study findings to service user forums and in service user focused publications. They will also be invited to be involved in the development of any subsequent research grant applications and follow on studies should these occur. If any members of the service user group wish to join the full study management team, they will be enabled to do this; otherwise their views and work will be relayed to the full team by the individual who facilitates the group. Service users will be paid a 'disruption' fee to cover their time and travel costs incurred through being involved in the study.

This study follows an improvement science approach. Although a relatively new term, which is often interchangeably used along with translational science, implementation science,

evidence-based practice, knowledge translation, and research utilisation, the overarching goal of improvement science is to ensure that quality improvement efforts are evidence based.[47] Improvement science offers a rigorous yet practical approach to understanding and implementing quality improvement, as it "inhabits the sphere between research and quality improvement by applying research methods to help understand what impacts on quality improvement".[48] As such, it "focuses on systematically and rigorously exploring 'what works' to improve quality in healthcare and the best ways to measure and disseminate this to ensure positive change".[48]

The study will address the following research question:

> How can inappropriate discharge and subsequent readmission be reduced through greater knowledge sharing during inpatient admission and discharge planning?

Secondary objectives are:

1. To explore the knowledge sharing process and procedure upon admission to an adult acute mental health ward.
2. To seek to improve knowledge sharing to prevent delayed discharge because of information gaps.

Qualitative data collected will seek to understand the complex processes and blockages occurring during knowledge sharing linked to a patient's admission and discharge from the acute ward. This will then be used by the research team to produce a knowledge collection proforma, which will aim to prompt healthcare practitioners to be aware of knowledge gaps in the patient's history, and raise questions /take action where this is needed.

Using a mixed methods approach, an in-depth understanding of the complex processes associated with being admitted and discharged from inpatient mental health wards will be ascertained. Healthcare practitioners' (acute and community based) perceptions of the appropriateness of this new knowledge collection tool will be evaluated using qualitative methods, and will be supplemented by quantitative data analysis, through baseline and repeat measures of anonymised patient length of stay and readmission rates.

Anonymised baseline data collected at the start of the study will be repeated at the completion of the pilot, to measure any change has occurred in both average length of stay, and patient readmission rates. Readmission is defined locally as 'patient readmitted within a month of initial discharge'. Length of stay and readmission rate measures have been selected as they are both aligned to a CQUIN target (21 days median length of stay) and are requested by the local Clinical Commissioning Groups to inform their decision-making.

The project is structured across a number work packages. The initial phase of the project will identify the relevant stakeholders and information sources involved in mental health admission and discharge. Subsequent work will engage and work with clinicians and healthcare workers to develop the intervention (the knowledge capture proforma) which will be piloted in the latter phases of the project. Following this we will ask those involved to reflect on their experiences of using the proforma, so that this can be used to further develop the intervention and apply for further funds for a larger scale study.

- *Work package 1* will see anonymised baseline data taken on the average length of stay on the study site (Ward A) and readmission rates over the last calendar year. The study team will carry out a series of qualitative interviews with clinicians and healthcare practitioners working in acute and community care settings who are involved in the admission and discharge processes of patients into/out of Ward A. Additionally, any admission and discharge packs, or other knowledge collation documents, will be collected and studied, to identify what information is currently assembled, by whom and when, where it is stored and when it is used.
- *Work package 2* will draw on the learning from work package one, and will involve the production of a new knowledge capture proforma to be used at the time of the patient's admission onto the acute ward. Following the initial analysis of the data from work package one, the new proforma will be co-produced with members of the acute and community teams in a series of workshops. By co-designing the proforma in this manner – similar to a user-based design approach, it ensures that the resulting product is fit for use by the practitioners, as they have had a role in co-producing the outcome.

- *Work package 3* will involve the roll-out of the knowledge collection proforma produced in work package two. Its introduction will be supported by a series of short presentations made by the study team to healthcare staff working in Ward A, as well as to those healthcare staff who are involved in the admission or discharge of patients from Ward A. The proforma will be piloted for two calendar months on Ward A.
- *Work package 4* will comprise of a series of evaluative qualitative interviews with the clinicians and practitioners who will have been using the new knowledge capture proforma. These interviews will collect data on perceptions and experiences of using the proforma, and whether practitioners feel its implementation and use has enhanced the admission and discharge process through having access to more knowledge about the patient. Repeated baseline measures on anonymised length of stay and readmission rates will be taken, to cover the pilot dates, in order to provide quantitative evidence of any effect that the form may have had.

The study follows a Plan-Do-Study-Act cycle.

Work packages 1 and 2 fall under the PLAN stage; work package 3 comprises of the DO stage; work package 4 fulfils the STUDY stage, whilst the final ACT stage will be covered in a future funding application, to develop this pilot study further, and to cover its rollout and evaluation across the whole of the NHS Trust involved.

Study configuration

This is a single site study; the predominant focus is on a single acute mental health ward. However, in order to respond to the hypothesis and research objectives, it will also be necessary to include healthcare staff working in community care (employed by the same NHS Trust as the ward based staff) who are involved in the referral and admission/discharge process into / from Ward A.

Ward A is a busy acute mental health ward in an urban setting within the UK. It has 20 beds for male patients. Patients typically have been diagnosed with schizophrenia, bipolar disorder, severe depression or borderline or anti-social personality disorder, often with co-morbid substance misuse problems and sometimes with other physical health problems.

Recruitment

Participants for the study will all be employed by the NHS Trust, and either be working on Ward A or be a member of a community team (e.g. Crisis Teams, Community Assessment and Treatment, Early Intervention in Psychosis, Recovery and Assertive Outreach, CMHTs) which admits service users to the ward or is involved in their care following discharge. No service users or their carers / family members will be recruited to participate in the study at this stage. The initial approach will be from AC, who is a consultant on the ward, and will be made verbally and followed up in writing, accompanied by a participant information sheet and consent form.

Sample size and justification

Sample size is determined by the number of relevant stakeholders working in / into Ward A, rather than by power calculations or expectations about study dropout. The sample size will be approximately 50 healthcare practitioners. This number covers all those healthcare

workers who would reasonably be expected to have some interaction with Ward A in relation to the admission or discharge of a patient.

Eligibility criteria

In order to be eligible to be involved in the study, participants should be employed by the NHS Trust and have a role in the admission and/or discharge of patients from Ward A.

Consequently, in order to be eligible to be included in the study, participants should be:

- Aged between 18 and 65 years of age.
- Working in the NHS.
- Involved in the admission and/or discharge of patients from Ward A

Conversely, individuals will be excluded from participating in the study if they are not employed by the NHS Trust; have no experience of admission / discharge of patients into / from Ward A, and are unable to give consent.

All participants will provide informed consent before being enrolled in the study.

Data collection

As illustrated in table 1, two sets of qualitative interviews will be held with all healthcare practitioners who interact with Ward A regarding the admission and discharge of patients; these are scheduled to take place during work packages one and three. Qualitative interviews have been chosen as a data collection technique as enable the space for reflective reporting and open discussion of the phenomena under investigation. To this end, a topic guide will be utilised (see table 2 for an indicative illustration of the topics that might be covered). Interviews will be carried out by NW and ER, recorded with participants' consent, and transcribed verbatim.

Work package two involves a series of co-design workshops with the health care practitioners previously interviewed. These workshops will be practical in focus, and will seek to produce a knowledge capture proforma, that will ensure that knowledge regarding admission and discharge is shared between the different healthcare practitioners. Co-design

is founded on the principle that "making it ''better'' is possible if users are involved in the design process.[49] The approach, while practical, also enables discussion of ''how well people understand [the intervention being designed], how they feel about it while they are using it, how well it serves its purpose, and how well it fits into the context in which they are using it''.[49] It is this "knowledge of the experience" in relation to the problems and potential solutions to knowledge sharing and capture in relation admission and discharge from the acute mental health ward, that is "unique and precious".[49]

Marshall and colleagues argue how "improvement science needs a genuine partnership between academics and front-line practitioners.[50] Researchers bring scepticism, scientific rigour, and methodological technical expertise, whereas practitioners bring content knowledge, a thorough understanding of working contexts, and practical wisdom. Academics and service partners need to collaborate to design, undertake, and interpret the work of improvement science". Together, the two approaches of co-design and improvement science offer potential to produce a step change in knowledge sharing, and reduce the delays to discharge caused by communication failure.

Table 1: Study Regime

	Timeline	Research team activities	Participant involvement
Work package 1: 	Late Autumn 2013 – January 2014	• Baseline data collection • Collection & analysis of admission and discharge documents • Analysis	i. Participants to be identified (by AC, acting as gatekeeper to the clinical setting) ii. Invitations issued, accompanied by Participant Information Sheet and Consent Form) iii. Interview scheduled

			iv. Interview takes place
Work package 2: 	January – February 2014	• Analysis	i. Participants invited to participate in co-production / co-design workshops for knowledge capture tool / proforma ii. Workshops arranged and take place
Work package 3: 	March – April 2014	• Roll out of the knowledge capture tool, supported by training presentations	
Work package 4: 	May – November 2014	• Repeat measures • Analysis • Reporting and dissemination	i. Staff interviews regarding their perceptions and experiences of using the knowledge capture tool.

Table 2: Interview topic guides

Topics to be covered in Work package 1 interviews	Topics to be covered in Work package 3 interviews
• Experiences of patient admission process onto Ward A – what is involved, who is	• About using the new knowledge capture form

involved, how long does it take? • Perceived problems with the patient admission process. • How, when and by whom is knowledge and information is gained, stored and shared? • Experiences of patient discharge process from Ward A – what is involved, who is involved, how long does it take? • Perceived problems with the patient admission process. • How, when and by whom is knowledge and information is gained, stored and shared? • About delays in discharge – how often? Caused by what? What knock-on effects?	• Did knowledge sharing in relation to patient admission process onto Ward A improve whilst the form was being used? • Any problems with the form? • How might it be improved? • Having used the form, how, when and by whom is knowledge and information is gained, stored and shared? • Following using the form, what have been the experiences of patient discharge process from Ward A – what is involved, who is involved, how long does it take? • Have delays in discharge through gaps in knowledge about a patient's circumstances, been reduced?

Data analysis

The interview data will be analysed using conventional qualitative methods, and will identify analytical patterns from across individual respondent and wider service.[51 52] Analysis will be inductive, although it will be influenced by the study's theoretical framework of knowledge brokering and knowledge mobilisation.[31 53-55]

Thematic analysis has been chosen as it "provides a concise, coherent, logical, non–repetitive and interesting account of the story the data tell".[56] Although time intensive - it requires the research team to spend time engaging with the data, reading and rereading the interview transcriptions and listening to the audio recordings of interviews – we believe that it offers unparalleled advantages in 'getting to know' your data. In turn, this "generates understanding, insight and familiarity, which are the building blocks of analysis".[56] The research team will start to identify and code (by highlighting) parts or chunks of the data that they deem to be about the same topic, concept or idea. It is likely that many sections of

the data will be given multiple codes, implying that the section/extract is about more than one topic, or idea. As codes are developed it is also important to revisit the rest of the data to see if that code also applies to other parts of the data. Initially, the data will be analysed separately by each member of the research team; following initial coding, the research team will hold regular data meetings in which they will work collaboratively on the analysis of the interview materials.

Due to the need for the research team to analyse the data collaboratively, a CAQDAS (Computer Assisted Qualitative Data Analysis) package, NVivo, will be used. This will allow each member of the research team to add their own comments and analysis. The use of NVivo allows for sections of the transcript to be tagged, or highlighted and named with a certain code or label; these programmes do not undertake the analysis of the data for you, but they do allow the electronic data to be coded and searched, for notes to be written to accompany codes and data extracts, for the data to be more easily navigated, and for the accumulating analytical work to be located on a single data corpus. While early reading and immersion in the data can be done using hard copies of the transcripts, once a number of initial codes have been generated, transcripts will be imported into NVivo, with all coding of the data undertaken on the electronic versions of the transcripts from then on.

Following this preliminary analysis stage, in which all the data extracts will have been coded in a general sense, data will again be examined in order to identify the wider themes and analytical narrative.

The quantitative data from the baseline and repeat measures (Length of Stay; Readmission Rates) will be analysed simply; given the complexity of the admission/discharge process, it will not be possible to statistically show the 'effect' of the proforma due to so many confounding influences. However, by running simple statistical tests (such as median length of stay, and average readmission rates) over two time periods (before / during the use of the proforma), we may be able to see some difference, which would then suggest the need for more detailed, subsequent investigation if the research were to be repeated on a larger scale.

ETHICS AND DISSEMINATION

Whilst the ethical issues faced in policy−oriented, qualitative research are not of the same order as those facing research involving invasive clinical interventions, this is not to say that they can be brushed aside. The ethical and design issues that are of particular importance in this kind of research relate to the need to recognise the ways in which the social relationships relating to the phenomena being studied may impact on the research process, by impeding some participants from fully expressing their views while encouraging others to do so.

A key issue is that participants in this research will be asked to comment frankly on something which is a core part of their work, as this relates to the actions of other individuals and organisations involved in knowledge sharing and brokering during the admission and discharge processes. From the point of view of us as researchers, of good research practice, and of the participants themselves, it is clearly important that those involved are as frank as possible, so that we might get a clear picture of the what has helped and obstructed the knowledge brokering during admission and discharge process in the particular context of acute mental health. If some respondents are franker than others, we may get a skewed view, and of the role of different factors and individuals in the process. This quandary is amplified by the fact that there may well be entrenched power relationships within the groups of individuals being studied, with certain parties exerting considerably more influence than others, which may make those less influential parties more reluctant to be frank. For example, senior consultants are likely to be perceived by other participants, as more powerful than a healthcare assistant or an occupational therapist. For this reason, we will carefully manage group dynamics during the co-design workshops, to ensure that all parties are able to equally and fully participate.

When discussing the research with participants at the recruitment stage, we will emphasise that the views of all involved are equally important, and that we will make every effort to use what they tell us in a non−attributable way.

Dissemination

Study results will be published and disseminated in a variety of ways. A report of the study will be produced, including an executive summary which will be distributed to participants

and any other interested party. Peer-reviewed publications in academic outlets will be pursued, as will outputs in practitioner-oriented publications. Participants will not be identified in any publications.

This study sets out to co-produce a solution to an enduring problem in healthcare practice. Knowledge sharing amongst different healthcare teams is neither a new phenomenon nor something that is recognised as easily solved. It is also something that many researchers before us have attempted to improve. However, our focus on knowledge sharing upon admission and discharge from an acute mental health ward, informed by improvement science and co-design approaches, offers a potential solution that is locally produced and owned. We hope that this approach will offer sustained benefits to patients and healthcare practitioners.

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Authors' contributions: ER led the development of the study protocol and this paper. NW, JW, KG and AC commented on drafts of the protocol and the paper.

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Competing interests statement: AC is the main consultant psychiatrist on the ward where the study will be conducted, and is the problem owner, having identified the issue requiring improvement and bringing it to other members of the research team. KG is a senior nurse on the ward. To maintain objectivity and minimise threats of bias, neither AC nor KG will be involved in data collection or preliminary analysis. They will only have access to anonymised data that is used by the research team in producing the analytical narrative. At all times, the team will be mindful of any potential loss of objectivity, and as such, data analysis will be led by ER and NW.

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Title:

Protocol for an ~~qualitative~~ exploration of knowledge sharing for improved discharge from a mental health ward.

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ABSTRACT

Introduction: Strategies to reduce hospital admissions for mental health service users have received vast amounts of attention, yet the transfer of care from hospital to the community has been ignored. The discharge process is complex, messy, disjointed and inefficient, relying on cross agency and organisational working. Focusing on one acute mental health admission ward, we will investigate whether the discharge process for people with severe mental health problems can be enhanced, through the creation, implementation and utilisation of a knowledge sharing proforma which is used upon their admission to the ward.

Methods & analysis: The project uses qualitative interviews to understand the complex processes associated with being admitted and discharged from inpatient mental health wards. Practitioners will be asked to identify and map the relevant stakeholders involved in admission and discharge, and discuss any problems with the process. ~~Following this, t~~The study team will work with clinicians to develop a knowledge collection proforma, which ~~. This~~ will be piloted for 2 months. ~~, after which q~~Qualitative interviews will be carried out to collect reflections on the experiences of using the tool, with data used for further refinement of the intervention. Baseline and repeat quantitative measures will be taken to illustrate any changes to length of stay and readmission rates achieved as a result of the study.

Ethics & dissemination: A key issue is that participants are able to comment frankly on something which is a core part of their work, without fear or reprise. It is equally important that all participants are offered the opportunity to develop and co-produce the knowledge collection proforma, in order that the intervention produced is fit for purpose and usable in the real world, away from a research environment. The study has received ethical approval from Nottingham University Business School ethics committee, and has all appropriate NHS research governance clearances.

Strengths and limitations of this study

Strengths:

- Applied health research – takes complex social theory ideas and applies them to an area of healthcare that is often ignored (mental health)

- Study and intervention is co-produced with end-users

Limitations:

- Exploratory study – data collection on only one ward
- Quantitative measures likely to influenced by complex healthcare context

INTRODUCTION

The Care Quality Commission, the UK's healthcare regulator, has recently suggested that the lack of psychiatric inpatient beds is causing stress to services and patients. [1] At the same time, there is growing evidence that Approved Mental Health Professionals are detaining people under a section, illegally, in order to obtain a bed (Hudson and Webber 2012, Chopra 2013).[2 3]

In the UK, 10% of psychiatric beds (1,700 beds) have been cut ~~over the last year~~since 2011.[4] Conversely, the numbers of people detained under the Mental Health Act reached a record high in 2011/12 with 48,600 people being detained, a 5% rise on 2010/11 levels.[4]

Many NHS Mental Health Trusts have adopted functional splits to inpatient and outpatient care, whereby different teams lead care and treatment with an individual at different phases of their illness. However, rather than continue to work in these operational silos, inpatient and outpatient teams need to seamlessly interact with the admitted service user to develop a single narrative and purpose to the admission, while also participating fully in the process of discharge. We believe that there is scope to improve this practice, with the increased efficiency in knowledge sharing leading to timelier, safer and higher quality discharges.

Strategies to reduce hospital admissions and to help mental health service users remain in the community have received the attention of researchers. Studies have explored the efficacy of crisis care planning,[5] recovery planning[6] and the effectiveness of service delivery models such as Assertive Outreach.[7] However, the same cannot be said for the transfer of care from hospital back to home, or from hospital-based to community-based care. ~~Locally~~In the East Midlands (UK), about 10% of patients are readmitted within a month of discharge, although this figure varies between different wards. There is no published national data on readmission rates. Readmission rates act as a proxy measure, albeit a crude one, for failed discharge. There has been no study looking at the factors that are associated with higher readmission rates.

We completed a literature review using search terms: mental health, discharge, adult (aged 18-65 years), acute and inpatient, using the ASSIA, CINAHL, EMBASE, MEDLINE and PSYCHINFO electronic databases. This returned only 139 citations, of which just six full text empirical papers were obtained. To be included in our review, papers needed to be published since 2000. This was justified on the basis that studies needed to be relevant to current mental healthcare provision. In total, 139 citations were returned, and following the removal of duplicates, non-empirical literature and studies not conducted within mental health services, six full-text papers were obtained. ~~, so that they explored relatively contemporary healthcare issues and experiences.~~

Of the papers included, two were from the UK, one each from Australia, Canada, Germany and the USA. Due to the heterogeneity in the study designs (one systematic literature review, one qualitative study, one retrospective case note analysis and four surveys) a narrative approach to the synthesis of the identified literature was adopted and the key areas highlighted were:

- The handover of information between professionals.[8]
- Facilitative discharge approaches.[9]
- The challenges of delayed discharge.[10 11]
- Discharge planning interventions specifically in relation to outpatient follow–up appointments.[12]
- The use of an inpatient keyworker and peer support worker to assist service users with the transition from hospital to the community.[13]

Despite the different methods employed, these studies have highlighted some useful findings. Regardless of the service and organizational variations across the different countries these papers originated from, the problems and difficulties encountered in sharing information between professionals working in inpatient and community settings was consistent. For example, Durbin *et al.*[8] describe the quality of information sharing and reporting between primary care and mental health services that takes place at referral and post discharge as, at bast, variable. However, the use of interventions, such as liaison services[12] and specific workers to assist service users with the transition from hospital to community, were found to produce improvements[8 9 12] and therefore demonstrate that this

process is amenable to intervention. The issue of 'delayed discharge' at an organizational level was explored by the two UK based studies[10 11]. Although they both highlight that there are differences in the reporting and definition of 'delayed discharges' across the UK, delayed discharges remain a concern with potential financial ramifications. Lewis and Glasby[11] suggest that organisations are desperate to tackle delayed discharges by any means possible. This includes supporting policy directives, such as reimbursement, when in other circumstances they would not do so.

Although these studies have highlighted some interesting findings, the lack of a robust evidence base indicates a need for further research into the transfer of care process, particularly as a 'critical period' of post-discharge care (the first seven days) when people with mental health problems are at increased risk of suicide has been identified.[14] Suicide is a devastating consequence for the individual, their families and mental health professionals, but is also relatively rare. In contrast, a range of more frequent and 'mundane' care problems often arise from care transition planning that impact the costs and quality of life for people with mental health problems and their carers. Although there is a lack of evidence exploring these ~~factors~~problems, anecdotal reports highlight difficulties such as medication not being available for service users on their return to the community, community nurses and social workers not being aware that an individual has been discharged and disruption in social security benefits leaving services users without an income and being financially dependent on others. In relation to delayed discharge from hospital, each additional day on the ward incurs a cost in excess of ~~£400~~£340[15], whilst the Care Services Partnership and the National Institute for Mental Health in England identify the following 'human' consequences:

- Stressed, bored and anxious inpatients.
- Increased lengths of time other service users wait for therapeutic intervention and arrangement of care packages.
- Overstretched and insufficient staff.
- An increased risk of serious incidents, substance misuse, self-harm, violence and aggression on the wards.

- Potential delays in admitting appropriate at risk service users or the premature discharge of others.
- Inappropriate transfer of service users between wards and services.
- An increased risk of service user dependence on inpatient care and subsequent loss of coping skills post discharge.
- The loss of community contacts and supports such as friends, tenancies and employment.
- A negative impact on staff morale, retention and recruitment.[16]

~~Discharge is also often perceived as a one-off event at the end of an admission.~~ Research by Waring and colleagues shows that discharge planning and the transition of care is located within complex systems of interacting and inter-dependent actors.[17] Strategies to coordinate the work of heterogeneous actors and mitigate system complexity are increasingly recognised within the social science literature,[18] but have not been applied to the problems of hospital discharge for people with mental health problems. In particular, the social science literature highlights the importance of knowledge sharing as a basis of collaboration and coordination.[19-22]

Sullivan and Williams suggest that "the health, social care and wellbeing needs of vulnerable people are complex and interrelated. They require carefully planned, co-ordinated and delivered interventions from a number of different professional groups working together",[23] yet healthcare delivery is increasingly categorised by its fragmented, multi-professional teams and partnerships that cross organisational boundaries, and as such, "the provision of seamless health and social care remains problematic".[23]

A recent (unpublished) audit ~~carried out in the study site~~in the NHS Trust where this research is to take place has shown that the admission and discharge process is complex, multi-faceted and involves a significant number of healthcare practitioners from across a variety of different occupations and agencies. Significantly, although all these practitioners hold knowledge about the patient's transition of care, there is no central knowledge repository where all this information is being collated in a manner that allows for its readily available access and utility. Although the Trust has recently introduced electronic patient records, the number of computers on the ward is limited, which means timely and

immediate access to records (as well as updating them) can be problematic. This results in ~~Rather,~~ information ~~is~~ being variously recorded in different sections of the patient's notes, where each clinical grouping makes notes in 'their' section, often without cross-referral to other sections. This information is then later transposed onto the electronic health record, often by ward administrative staff.

A further consequence of the difficulty in accessing electronic health records in a timely manner is that apart from the paper-based patient files, t~~T~~he other main source of information collected and used ~~is~~ are personal notes often carried around by the individual practitioner, for example, those taken during the nursing handover or when taking a telephone call about an incoming patient admission. This has led to an inconsistent information collection process, where gaps in knowledge about service users have resulted. Such information deficits have led to practitioners repeatedly collecting the same information as their colleagues and thus duplicating work. Moreover, the gaps in knowledge about the patient which need to be addressed in order to plan a safe and effective discharge, are often not identified in a timely enough manner, and are instead only being flagged once discharge is imminent. We therefore suggest that the problem is one of knowledge sharing – and in particular, the breakdown in sharing knowledge and the resultant gaps in knowledge which appear.

Public policies advocate collaborative partnerships to foster more inclusive and 'joined-up' service delivery mechanisms.[24] This is largely premised on improved knowledge sharing, whereby actors are able to communicate information across occupational, organisational and sectoral boundaries, and meet a mutual set of objectives which should ultimately result in a more streamlined and integrated way of working.[25] Knowledge sharing can represent a powerful source of service integration, efficiency and, importantly safety. However, there are major challenges to this; communication 'breakdowns' represent a major barrier to service efficiency and safety; NHS 'collaboratives' and 'mandated networks' are bedevilled by professional cleavages and power differentials that inhibit knowledge sharing.[25 26]

There is growing evidence of the social and organisational processes involved in care transitions, including the importance of communication, yet this rarely takes account of the complex social and cultural dynamics of knowledge sharing. The literature on knowledge

sharing relates, more broadly, to theories and concepts associated with inter-personal and occupational communication; knowledge exchange and brokering; translational research; and organisational learning. This diverse literature shows that various interpersonal, social and organisational factors influence knowledge sharing and learning within complex organisations, including the appreciation of distinct knowledge domains, social hierarchy, accessibility, and psychological safety and trust.[27] Knowledge is shown to be both 'slippery', where it is too difficult to codify, as well as 'sticky' or difficult to share across cultural or institutional boundaries.[28] [29] Such research also highlights the various strategies for facilitating knowledge sharing, such as 'knowledge brokers' who can translate and transfer knowledge between isolated groups, information and communication technology to provide easy access and retrieval to knowledge and 'communities of practice' that engender cultural and organisational alignment through knowledge sharing.[30] [31]

Given the clinical risks associated with hospital discharge, it continues to be a national policy priority,[32] with the advice that care transitions should be seen as "a process not an isolated event"[33] involving the active participation of health and social care professionals, as well as service users and carers, to effectively plan and co-ordinate discharge. This whole system approach highlights the inter-dependency of individuals and organisations from different care delivery settings. However, the most common threats to timely and efficient hospital discharge are associated with notifying and organising 'external services'.[34] This highlights the importance of communication between care providers, yet the literature on hospital discharge offers little in way of this, especially in relation to discharge from acute mental health services. As highlighted previously, our literature review identified only one study which explicitly explored information and communication provision in relation to discharge between primary care providers and inpatient services in the USA.[8]

It is important to understand the barriers and drivers to a patient's care transition not as linear casual chains within single or isolated care settings, but as complex and enmeshed 'constellations' of factors found within and between care processes and teams. This includes the deeper 'darksides' of service organisation and delivery,[35] such as organisational boundaries and the shifting of responsibility and endemic problems of inter-professional and inter-organisational working, which typically relate to problems in communication or

knowledge sharing.[36] Glasby suggests three prominent factors influence the participation and co-ordination of these different stakeholders, which are also consistent with the whole systems and systems thinking approaches.[37] These include: 1) occupational factors, related to the particular knowledge, culture and practice domains of care providers, such as doctors, social workers and nurses; 2) organisational factors, related to the routine working patterns, facilities, capacities and resources of individuals agencies; and 3) compatibility and co-ordinating factors, related to how occupational, organisational and institutional factors align, including communication, decision-making and resources.

Consequently, in piecing together the jigsaw of contemporary, complex, integrated healthcare, individual practitioners and healthcare workers must mediate boundaries to their knowledge sharing, which act to decipher what constitutes the expert and legitimate participation of particular groups of people in particular circumstances.[38] These boundaries can be "physical, cognitive, relational, structural, knowledge based or any other delineation that separates one boundary from another".[39]

The resulting gaps have been described as structural holes, fissures and silos;[40] they act to "shine a light on how communication breaks down, interactivity fails or where teamwork is weak or floundering. Structural holes are often at the boundaries of organisational silos and this can enable and impede inter-professional relations or inter-unit knowledge transmission.[40] Boundaries or silos between different professions and professional practices have long been recognised (for example, medical tribalism;[23 41] they are known to inhibit knowledge sharing,[36] to the extent that they are "a significant brake on quality improvement initiatives".[42]

Crossing boundaries and connecting separate work and knowledge domains requires co-ordination for effective knowledge sharing to occur. Boundary crossing describes the actions and activities of a person, a group or an intervention that makes "transactions and interactions" across different sites.[38] Boundary crossing is a "challenge of negotiating and combining ingredients from different contexts to achieve hybrid solutions",[43] and is a means of acquiring and controlling knowledge.[17] Thus for activities that require linking or brokering across and between boundaries, there is a need to search for connections in order to mobilise and share knowledge across the professional territories, and create links to avoid

fragmentation, disconnection and ultimately, to prevent patient need from being left unaddressed.

Swan and Scarborough call for dedicated knowledge brokering roles, arguing that these enable "the transfer of knowledge across organisational and inter-organisational boundaries".[44] Braithwaite et al. develop this line of argument further, referring to the dissemination of information via ''grapevines'',[45] which interweave between individuals who are linked through a common purpose. Effective and timely communication, for instance, between hospital and the community mental health team is essential in ensuring appropriate transition from the hospital into the community. Yet, it is hypothesised that in the acute in-patient mental health experience, given the complexity and inter-agency working that occurs, there is no one or nothing carrying out this brokering role across the boundaries, and being the central information repository resource.

In other healthcare sectors, it is possible that the patient would be an ideal candidate to act as a knowledge broker and facilitate the sharing of knowledge and information about their care requirements and medical history to different practitioners – as it is the patient that is the constant across the various health and social care interactions that take place. However, a service user being admitted onto an acute mental health ward, often without their explicit consent (i.e. they are on a section of the Mental Health Act), is quite likely to lack the capacity and ability to act in this knowledge broker role at the moment of their admission onto the ward. ~~For example, Owen and colleagues report that up to 80% of service users admitted to an inpatient ward in London lacked the capacity to make decisions regarding their own treatment.[46]~~ What's more, as their care will have been delivered by multiple providers and agencies, as well as family members and significant others, there is not a central knowledge repository that can be drawn upon. Rather, information presented upon admission to the ward can be sketchy and incomplete, with practitioners and administrators searching for information from multiple sources. This is not just a waste of valuable resources, but also delays the admission procedure, and in turn, failure to identify complete knowledge about the patient can delay their treatment and eventual discharge from the ward.

We suggest that knowledge sharing between the service user (where possible), professionals and carers during the admission and discharge planning processes can speed up the process and reduce the knowledge gaps which are known to create delays and blockages to discharge. We will focus on one acute mental health admission ward to investigate how the discharge planning and transition process can be enhanced, in terms of making discharge more effective through improved knowledge sharing. Knowledge sharing requires collaboration and co-ordination in order to be effective[19-22], as planned rather than ad-hoc actions are required in order to address the difficulties in information sharing in fragmented care settings[23]. As we have already described, staff on the ward are known to keep 'personal notes' containing information about a patient. ~~We will test this assertion t~~Through the development, implementation and utilisation of a knowledge collection proforma that will be completed by healthcare staff upon the service user's arrival onto the ward, we will seek to formalise these personal notes, so that they are stored in a patient's (paper-based) notes folder rather than remain in the pocket of a healthcare practitioner. ~~We do this in anticipation of the implementation of the recently announced electronic health record, intended to be in practice by 2015, and the vision of a paperless NHS by 2018.[46]~~ This study is the first step towards the production of a shared knowledge collection resource, which can be used by all health and social care practitioners involved in the admission and discharge of patients from an acute mental health ward. If this is shown to be effective, further funding will be sought to develop and roll out an electronic version.

METHODS AND ANALYSIS

Service users will be involved at every stage of the planning and management of the study. We will convene a small group of approximately five members who have had recent experience of being admitted and discharged from hospital. This group will be facilitated by a member of the research team and will meet approximately bimonthly. They will discuss the planning and development of the project and intervention, be involved in data analysis and disseminate the study findings to service user forums and in service user focused publications. They will also be invited to be involved in the development of any subsequent research grant applications and follow on studies should these occur. If any members of the

service user group wish to join the full study management team, they will be enabled to do this; otherwise their views and work will be relayed to the full team by the individual who facilitates the group. Service users will be paid a 'disruption' fee to cover their time and travel costs incurred through being involved in the study.

This study follows an improvement science approach. Although a relatively new term, which is often interchangeably used along with translational science, implementation science, evidence-based practice, knowledge translation, and research utilisation, the overarching goal of improvement science is to ensure that quality improvement efforts are evidence based.[47] Improvement science offers a rigorous yet practical approach to understanding and implementing quality improvement, as it "inhabits the sphere between research and quality improvement by applying research methods to help understand what impacts on quality improvement".[48] As such, it "focuses on systematically and rigorously exploring 'what works' to improve quality in healthcare and the best ways to measure and disseminate this to ensure positive change".[48]

The study will address the following ~~hypothesis~~research question:

> How can ~~"I~~inappropriate discharge and subsequent readmission ~~will~~ be reduced ~~if~~ through greater knowledge ~~is shared~~sharing ~~, known and utilised to support collaboration~~ during inpatient admission and discharge planning~~".~~?

Secondary objectives are:

1. To explore the knowledge sharing process and procedure upon admission to an adult acute mental health ward.
2. To seek to improve knowledge sharing to prevent delayed discharge because of information gaps.

Qualitative data ~~will be~~ collected will seek to understand the complex processes and blockages ~~involved~~ occurring during~~in~~ knowledge sharing ~~during in~~ linked to a patient's admission and discharge from the acute ward. This will then be used ~~enable~~by the research team to produce a knowledge collection proforma, which will aim to prompt healthcare

practitioners to be aware of knowledge gaps in the patient's history, and raise questions /take action where this is needed.

Using a mixed methods approach, an in-depth understanding of the complex processes associated with being admitted and discharged from inpatient mental health wards will be ascertained. Healthcare practitioners' (acute and community based) perceptions of the appropriateness of this new knowledge collection tool will be evaluated using qualitative methods, and will be supplemented by quantitative data analysis, through baseline and repeat measures of anonymised patient length of stay and readmission rates.

Anonymised baseline data collected at the start of the study will be repeated at the completion of the pilot, to measure any change has occurred in both average length of stay, and patient readmission rates. Readmission is defined locally as 'patient readmitted within a month of initial discharge'. Length of stay and readmission rate measures have been selected as they are both aligned to a CQUIN target (21 days median length of stay) and are requested by the local Clinical Commissioning Groups to inform their decision-making.

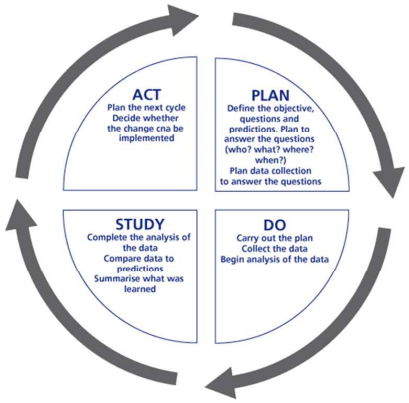
The project is structured across a number work packages. The initial phase of the project will identify the relevant stakeholders and information sources involved in mental health admission and discharge. Subsequent work will engage and work with clinicians and healthcare workers to develop the intervention (the knowledge capture proforma) which will be piloted in the latter phases of the project. Following this we will ask those involved to reflect on their experiences of using the proforma, so that this can be used to further develop the intervention and apply for further funds for a larger scale study.

- *Work package 1* will see anonymised baseline data taken on the average length of stay on the study site (Ward A) and readmission rates over the last calendar year. The study team will carry out a series of qualitative interviews with clinicians and healthcare practitioners working in acute and community care settings who are involved in the admission and discharge processes of patients into/out of Ward A. Additionally, any admission and discharge packs, or other knowledge collation documents, will be collected and studied, to identify what information is currently assembled, by whom and when, where it is stored and when it is used.

- *Work package 2* will draw on the learning from work package one, and will involve the production of a new knowledge capture proforma to be used at the time of the patient's admission onto the acute ward. Following the initial analysis of the data from work package one, the new proforma will be co-produced with members of the acute and community teams in a series of workshops. By co-designing the proforma in this manner – similar to a user-based design approach, it ensures that the resulting product is fit for use by the practitioners, as they have had a role in co-producing the outcome.
- *Work package 3* will involve the roll-out of the knowledge collection proforma produced in work package two. Its introduction will be supported by a series of short presentations made by the study team to healthcare staff working in Ward A, as well as to those healthcare staff who are involved in the admission or discharge of patients from Ward A~~members of the care team~~. The proforma will be piloted for two calendar months on Ward A.
- *Work package 4* will comprise of a series of evaluative qualitative interviews with the clinicians and practitioners who will have been using the new knowledge capture proforma. These interviews will collect data on perceptions and experiences of using the proforma, and whether practitioners feel its implementation and use has enhanced the admission and discharge ~~process in relation to being able to~~process through having access to more ~~cohesive~~ knowledge about the patient. Repeated baseline measures on anonymised length of stay and readmission rates will be taken, to cover the pilot dates, in order to provide quantitative evidence of any effect that the form may have had.

~~The study follows a Plan-Do-Study-Act cycle.~~

~~Work packages 1 and 2 fall under the PLAN stage; work package 3 comprises of the DO stage; work package 4 fulfils the STUDY stage, whilst the final ACT stage will be covered in a future funding application, to develop this pilot study further, and to cover its rollout and evaluation across the whole of the NHS Trust involved.~~



~~(Image courtesy of NHS Scotland) http://uat.qihub.scot.nhs.uk/programmes/improvement-tools/search-results/improvement-tool.aspx?id=66~~

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Study configuration

This is a single site study; the predominant focus is on a single acute mental health ward. However, in order to respond to the hypothesis and research objectives, it will also be necessary to include healthcare staff working in community care (employed by the same NHS Trust as the ward based staff) who are involved in the referral and admission/discharge process into / from Ward A.

Ward A is a busy acute mental health ward in an urban setting within the UK. It has 20 beds for male patients. Patients typically have been diagnosed with schizophrenia, bipolar disorder, severe depression or borderline or anti-social personality disorder, often with co-morbid substance misuse problems and sometimes with other physical health problems.

Recruitment

Participants for the study will all be employed by the NHS Trust, and either be working on Ward A or be a member of a community team (e.g. Crisis Teams, Community Assessment and Treatment, Early Intervention in Psychosis, Recovery and Assertive Outreach, CMHTs) which admits service users to the ward or is involved in their care following discharge. No service users or their carers / family members will be recruited to participate in the study at this stage. The initial approach will be from AC, who is a consultant on the ward, and will be made verbally and followed up in writing, accompanied by a participant information sheet and consent form.

Sample size and justification

Sample size is determined by the number of relevant stakeholders working in / into Ward A, rather than by power calculations or expectations about study dropout. The sample size will be approximately 50 healthcare practitioners. This number covers all those healthcare workers who would reasonably be expected to have some interaction with Ward A in relation to the admission or discharge of a patient.

Eligibility criteria

In order to be eligible to be involved in the study, participants should be employed by the NHS Trust and have a role in the admission and/or discharge of patients from Ward A.

Consequently, in order to be eligible to be included in the study, participants should be:

- Aged between 18 and 65 years of age.
- Working in the NHS.
- ~~Able to give consent.~~
- Involved in the admission and/or discharge of patients from Ward A

Conversely, individuals will be excluded from participating in the study if they are not employed by the NHS Trust; have no experience of admission / discharge of patients into / from Ward A, and are unable to give consent.

All participants will provide informed consent before being enrolled in the study.

Data collection

As illustrated in table 1, two sets of qualitative interviews will be held with all health ~~and social~~ care practitioners who interact with Ward A regarding the admission and discharge of patients; these are scheduled to take place during work packages one and three. Qualitative interviews have been chosen as a data collection technique as enable the space for reflective reporting and open discussion of the phenomena under investigation. To this end, a topic guide will be utilised (see table 2 for an indicative illustration of the topics that might be covered). Interviews will be carried out by NW and ER, recorded with participants' consent, and transcribed verbatim.

Work package two involves a series of co-design workshops with the health ~~and social~~ care practitioners previously interviewed. These workshops will be practical in focus, and will seek to produce a knowledge capture proforma, that will ensure that knowledge regarding admission and discharge is shared between the different health ~~and social~~ care practitioners. Co-design is founded on the principle that "making it ''better'' is possible if users are involved in the design process.[49] The approach, while practical, also enables discussion of ''how well people understand [the intervention being designed], how they feel about it while they are using it, how well it serves its purpose, and how well it fits into the context in which they are using it''.[49] It is this "knowledge of the experience" in relation to the problems and potential solutions to knowledge sharing and capture in relation admission and discharge from the acute mental health ward, that is "unique and precious".[49]

Marshall and colleagues argue how "improvement science needs a genuine partnership between academics and front-line practitioners.[50] Researchers bring scepticism, scientific rigour, and methodological technical expertise, whereas practitioners bring content

knowledge, a thorough understanding of working contexts, and practical wisdom. Academics and service partners need to collaborate to design, undertake, and interpret the work of improvement science". Together, the two approaches of co-design and improvement science offer potential to produce a step change in knowledge sharing, and reduce the delays to discharge caused by communication failure.

Table 1: Study Regime

	Timeline	Research team activities	Participant involvement
Work package 1: 	Late Autumn 2013 – January 2014	• Baseline data collection • Collection & analysis of admission and discharge documents • Analysis	i. Participants to be identified (by AC, acting as gatekeeper to the clinical setting) ii. Invitations issued, accompanied by Participant Information Sheet and Consent Form) iii. Interview scheduled iv. Interview takes place
Work package 2: 	January – February 2014	• Analysis	i. Participants invited to participate in co-production / co-design workshops for knowledge capture tool / proforma ii. Workshops arranged and take place

Work package 3: 	March – April 2014	• Roll out of the knowledge capture tool, supported by training presentations	
Work package 4: 	May – November 2014	• Repeat measures • Analysis • Reporting and dissemination	i. Staff interviews regarding their perceptions and experiences of using the knowledge capture tool.

Table 2: Interview topic guides

Topics to be covered in Work package 1 interviews	Topics to be covered in Work package 3 interviews
• Experiences of patient admission process onto Ward A – what is involved, who is involved, how long does it take? • Perceived problems with the patient admission process. • How, when and by whom is knowledge and information is gained, stored and shared? • Experiences of patient discharge process from Ward A – what is involved, who is involved, how long does it take? • Perceived problems with the patient admission process.	• About using the new knowledge capture form • Did knowledge sharing in relation to patient admission process onto Ward A improve whilst the form was being used? • Any problems with the form? • How might it be improved? • Having used the form, how, when and by whom is knowledge and information is gained, stored and shared? • Following using the form, what have been the experiences of patient discharge process from Ward A – what is involved,

• How, when and by whom is knowledge and information is gained, stored and shared? • About delays in discharge – how often? Caused by what? What knock-on effects?	who is involved, how long does it take? • Have delays in discharge through gaps in knowledge about a patient's circumstances, been reduced?

Data analysis

The interview data will be analysed using conventional qualitative methods, and will identify analytical patterns from across individual respondent and wider service.[51 52] Analysis will be inductive, although it will be influenced by the study's theoretical framework of knowledge brokering and knowledge mobilisation.[31 53-55]

Thematic analysis has been chosen as it "provides a concise, coherent, logical, non–repetitive and interesting account of the story the data tell".[56] Although time intensive - it requires the research team to spend time engaging with the data, reading and rereading the interview transcriptions and listening to the audio recordings of interviews – we believe that it offers unparalleled advantages in 'getting to know' your data. In turn, this "generates understanding, insight and familiarity, which are the building blocks of analysis".[56] The research team will start to identify and code (by highlighting) parts or chunks of the data that they deem to be about the same topic, concept or idea. It is likely that many sections of the data will be given multiple codes, implying that the section/extract is about more than one topic, or idea. As codes are developed it is also important to revisit the rest of the data to see if that code also applies to other parts of the data. Initially, the data will be analysed separately by each member of the research team; following initial coding, the research team will hold regular data meetings in which they will work collaboratively on the analysis of the interview materials.

Due to the need for the research team to analyse the data collaboratively, a CAQDAS (Computer Assisted Qualitative Data Analysis) package, NVivo, will be used. This will allow each member of the research team to add their own comments and analysis. The use of NVivo allows for sections of the transcript to be tagged, or highlighted and named with a

certain code or label; these programmes do not undertake the analysis of the data for you, but they do allow the electronic data to be coded and searched, for notes to be written to accompany codes and data extracts, for the data to be more easily navigated, and for the accumulating analytical work to be located on a single data corpus. While early reading and immersion in the data can be done using hard copies of the transcripts, once a number of initial codes have been generated, transcripts will be imported into NVivo, with all coding of the data undertaken on the electronic versions of the transcripts from then on.

Following this preliminary analysis stage, in which all the data extracts will have been coded in a general sense, data will again be examined in order to identify the wider themes and analytical narrative.

The quantitative data from the baseline and repeat measures (Length of Stay; Readmission Rates) will be analysed simply; given the complexity of the admission/discharge process, it will not be possible to statistically show the 'effect' of the proforma due to so many confounding influences. However, by running simple statistical tests (such as median length of stay, and average readmission rates) over two time periods (before / during the use of the proforma), we may be able to see some difference, which would then suggest the need for more detailed, subsequent investigation if the research were to be repeated on a larger scale.

ETHICS AND DISSEMINATION

Whilst the ethical issues faced in policy–oriented, qualitative research are not of the same order as those facing research involving invasive clinical interventions, this is not to say that they can be brushed aside. The ethical and design issues that are of particular importance in this kind of research relate to the need to recognise the ways in which the social relationships relating to the phenomena being studied may impact on the research process, by impeding some participants from fully expressing their views while encouraging others to do so.

A key issue is that participants in this research will be asked to comment frankly on something which is a core part of their work, as this relates to the actions of other

individuals and organisations involved in knowledge sharing and brokering during the admission and discharge processes. From the point of view of us as researchers, of good research practice, and of the participants themselves, it is clearly important that those involved are as frank as possible, so that we might get a clear picture of the what has helped and obstructed the knowledge brokering during admission and discharge process in the particular context of acute mental health. If some respondents are franker than others, we may get a skewed view, and of the role of different factors and individuals in the process. This quandary is amplified by the fact that there may well be entrenched power relationships within the groups of individuals being studied, with certain parties exerting considerably more influence than others, which may make those less influential parties more reluctant to be frank. For example, senior consultants are likely to be perceived by other participants, as more powerful than a healthcare assistant or an occupational therapist. For this reason, we will carefully manage group dynamics during the co-design workshops, to ensure that all parties are able to equally and fully participate.

When discussing the research with participants at the recruitment stage, we will emphasise that the views of all involved are equally important, and that we will make every effort to use what they tell us in a non−attributable way.

~~Service users will be involved at every stage of the planning and management of the study. We will convene a small group of approximately five members who have had recent experience of being admitted and discharged from hospital. This group will be facilitated by a member of the research team and will meet approximately bimonthly. They will discuss the planning and development of the project and intervention, be involved in data analysis and disseminate the study findings to service user forums and in service user focused publications. They will also be invited to be involved in the development of any subsequent research grant applications and follow on studies should these occur. If any members of the service user group wish to join the full study management team, they will be enabled to do this; otherwise their views and work will be relayed to the full team by the individual who facilitates the group. Service users will be paid a 'disruption' fee to cover their time and travel costs incurred through being involved in the study~~

Dissemination

Study results will be published and disseminated in a variety of ways. A report of the study will be produced, including an executive summary which will be distributed to participants and any other interested party. Peer-reviewed publications in academic outlets will be pursued, as will outputs in practitioner-oriented publications. Participants will not be identified in any publications.

This study sets out to co-produce a solution to an enduring problem in healthcare practice. Knowledge sharing amongst different health ~~and social~~ care teams is neither a new phenomenon nor something that is recognised as easily solved. It is also something that many researchers before us have attempted to improve. However, our focus on knowledge sharing upon admission and discharge from an acute mental health ward, informed by improvement science and co-design approaches, offers a potential solution that is locally produced and owned. We hope that this approach will offer sustained benefits to patients and health ~~and social~~ care practitioners.

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Authors' contributions: ER led the development of the study protocol and this paper. NW, JW, KG and AC commented on drafts of the protocol and the paper.

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Competing interests statement: AC is the main consultant psychiatrist on the ward where the study will be conducted, and is the problem owner, having identified the issue requiring improvement and bringing it to other members of the research team. KG is a senior nurse on the ward. To maintain objectivity and minimise threats of bias, neither AC nor KG will be involved in data collection or preliminary analysis. They ~~and~~ will only have access to anonymised data that is used by the research team in producing the analytical narrative. At all times, the team will be mindful of any potential loss of objectivity, and as such, data analysis will be led by ER and NW.

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