REALISING EVIDENCE BASED PRACTICE: A SYSTEMIC INVESTIGATION OF CORE KNOWLEDGE PROCESSES IN MENTAL HEALTH

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Abstract

Aims
To investigate the systemic circumstances required for mental health professionals to engage in the core processes of evidence based practice.

Background
Successful evidence based practice is the function of inter-related processes including knowledge acquisition, generation, and application, which occur in complex and dynamic circumstances. Dominant models and approaches to facilitating the use of knowledge in practice by health professionals remain based on linear, technical processes which aim to instigate behavioural changes at the individual level.

Emergent conceptualisations argue the need for strategies that consider systemic factors which can impede or facilitate the processes underpinning the operation of evidence based practices in mental health. As yet no efforts have been made to actively apply systems thinking in efforts to improve evidence based practice in mental health.

Method
A collective case-study research design was developed by adapting Soft Systems Methodology. Three cases were examined, each selected due to their ability to provide information about one of the core processes under investigation; knowledge acquisition, knowledge generation and knowledge application. Data was collected iteratively from thirteen participants through focus groups and semi-structured interviews. Analysis was undertaken through the inductive open coding of data into sub-categories, following which key categories were identified and considered against individual, group and organisational systems levels.

Findings
This study identified twenty-four key categories across the cases and located these against the three systems levels. As anticipated, complex dynamic interactions between different elements at the different levels were identified including, the role of motivation, perception and skill at the individual level, the importance of team wisdom, support and decision making, and the need for organisations to provide adequate infrastructures, ensure access to specialist expertise and a number of elements contributing to a culture of space and support for evidence based practice.

Key Words
Evidence based practice; mental health; soft systems methodology; systems thinking; knowledge acquisition; knowledge generation; knowledge application; knowledge-to-action; practice-based evidence; research utilisation; research implementation

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Glossary of Abbreviations and Terms Used by Participants

CORE	Clinical Outcomes in Routine Evaluation, a outcome measure battery used for assessing psychological distress
DoH	Department of Health
EBP	Evidence Based Practice
GMC	General Medical Council
HEAT	Health Improvement, Efficiency, Access and Treatment, core set of objectives, targets and performance measures set for the NHS by Scottish Government
ICP	Integrated Care Pathway
IT	Information Technology
KE	Knowledge Exchange
KM	Knowledge Management
KT	Knowledge Transfer
NHS	National Health Service
SSM	Soft Systems Methodology
ST4	Specialist Trainee Level 4 (equivalent to previous Registrar level doctor)
ST5	Specialist Trainee Level 5 (equivalent to previous Specialist Registrar Level doctor)
UK	United Kingdom
USA	United States of America

Chapter 1. Introduction

It is not reason which is the guide of life, but custom.

A wise man proportions his belief to the evidence.

David Hume

There can be little doubt that evidence based practice has increasingly become one of the most recognised concepts in modern healthcare. Its principles have become enshrined in policy and directly inform, or have led to the instigation of key movements in healthcare such as clinical governance, quality improvement, quality assurance and total quality management. The two quotes above from the most influential philosopher of the Scottish Enlightenment illuminate the inherent tension in efforts to realise evidence based practice in healthcare; the need to subjugate the natural human tendency to base decisions on experience or opinion in favour of rational and justified scientific knowledge.

Typing 'evidence based practice saves lives' into the Google search engine returns much information, but one of the top results to be returned will be entitled 'Evidence Based Practice As If Your Life Depended On It'. This web-page might reasonably be expected to contain information typical of online resources; perhaps a piece containing somebody's opinion or potentially a journal article repeating the now mantra-like assertion that evidence based practices in healthcare are essential to the process of delivering the best possible and most effective services. However, clicking this link takes you to something rather different.

It opens a letter from the now deceased Dr Len Gibbs who succumbed to prostate cancer in June 2008. Early in this letter written by Dr Gibbs and his wife Betsy appear the lines; "It is possible that, had I (Len) just followed the process of evidence-based practice to my own care--as I have helped others with their questions and taught my students--my family and I might have averted this event that has so profoundly affected our lives". The rest of the letter is dedicated to providing advice and a resource for those attempting to engage in

evidence based practice, but also remarkably contains systematic searches Len undertook for the research knowledge that might have helped the diagnosis of, and early treatment of the condition that ultimately took his life.

The ever-expanding literature, research, commentary and debate into evidence based practice can, as one becomes more immersed in it, seem to lose sight of the fact that basing practice on best evidence is ultimately geared towards saving lives and ameliorating pain, discomfort and disability. Bearing this in mind, the imperative to ensure that health professionals are able to access, understand and apply research knowledge in their routine clinical decision making remains of critical importance for the well-being of human beings, despite the associated benefits of more cost-effective service provision, or the language of better patient outcome that characterises texts.

Knowing is not enough; we must apply. Willing is not enough; we must do.

Goethe

How to ensure that health professionals are able to make decisions based on best evidence is less clear cut and there has been a phenomenal amount of discussion and investigation into evidence based practice since the concept was first developed and promoted in the late twentieth century. Whilst there is agreement that basing clinical practice on best available evidence is the right thing to do, agreement on how to achieve this in the reality of complex clinical situations and ever expanding and diversifying sources of knowledge is by no means established. Investigations into the ability of health professionals to apply research knowledge into practice are not particularly encouraging.

Balas and Boren (2000) calculated that it takes on average seventeen years for only fourteen per cent of evidence based findings to reach clinical practice. A large review in the USA by McGlynn et al. (2003) concluded that, of the 6,712 patient records examined, only 54.9% had received scientifically indicated care, with the conclusion being that the technical quality of care suffers a forty-five per cent defect rate.

The UK government has recently restated the importance of developing capacity to implement evidence based healthcare practices (DoH 2007). Efforts to develop mechanisms to support the process, such as the creation of best practice guidelines and educational materials by bodies such as the Scottish Intercollegiate Guideline Network (formed 1993) and the Institute for Healthcare Improvement (founded 1991), have continued since evidence based practice became more widely considered in the early 1990s. To date, the vast majority of these mechanisms have been based on linear, technically structured methods intended to improve health professionals' awareness of research knowledge. These approaches have been largely informed by psychological and cognitive explanations of how behaviour changes may be achieved (Godin et al. 2008). More recent efforts have been directed towards relational approaches based on collaborative learning and networking (Best et al. 2008a).

However, an alternative school of thought is emerging in which approaches to developing capacity for evidence based practice, by using systems thinking is being recommended. This approach conceptualises the process of evidence based practice as the function of the complex interactions that occur in the multi-level, multi-site and ever-changing context of healthcare. The intricacies of these contexts require a more systemic approach be taken during efforts to develop the capacity to enable knowledge to be routinely used in clinical practice.

To date, the literature surrounding systemic approaches to creating capacity for evidence based practice remains largely theoretical with little work being completed to examine how this approach might be used, and importantly what systemic capacities it might recommend. This study was undertaken to identify the systemic circumstances required for mental health professionals to engage in evidence based practice. It conceptualises successful evidence based practice as the integration of three sub-processes related to how knowledge is acquired, generated and applied by clinicians, and employs a methodology designed to explore how these processes might be facilitated at different levels of the healthcare system.

Study questions

RQ1) What systemic circumstances are required for mental health professionals to be able to engage in evidence based practice?

a) What circumstances are required to support successful knowledge acquisition processes in mental health at the individual, team and organisational levels of the healthcare system?

b) What circumstances are required to support successful knowledge generation processes in mental health at the individual, team and organisational levels of the healthcare system?

c) What circumstances are required to support successful knowledge application processes in mental health at the individual, team and organisational levels of the healthcare system?

RQ2) Are there common factors identified as central to driving the processes underpinning successful EBP common across the three identified processes?

Chapter 2. Background and Literature Review

2.1 Introduction

The requirement for health practitioners to use evidence to inform their practice is well established (Goodman 2003). The concept of basing decisions regarding the use of interventions, distribution of services and development of policy directions in health services on the best available evidence has become a central and embedded feature of healthcare practice and policy globally (Walshe and Rundall 2001; WHO 2003; Schunemann et al. 2006). Delivering healthcare based on current, reliable and valid evidence increases the quality of treatments and outcomes whilst moderating the provision of unnecessary or potentially harmful care (Dopson et al. 1994; Ordonez et al. 1998; Grol and Grimshaw 2003; Grol and Wensing 2004, Dawes et al. 2005). Furthermore, routine delivery of evidence based practice allows for individualisation of care that is increasingly focused on including service-user values and preferences in decision making and contributes to continuing quality improvement (Montori and Guyatt 2008). Consequently, healthcare policy and funding in Scotland and the UK is increasingly reflecting the global trend obliging health professionals to make more routine use of evidence in practice (Department of Health 2007; Scottish Government 2009). Policy is gradually becoming increasingly supportive of measures intended to ensure that research efforts result not only in worthwhile new treatments and technologies, but also implementable outcomes which will benefit the health of individual patients or populations (Woolf 2008).

Numerous approaches and frameworks have been embedded in healthcare structures that are intended to facilitate the routine accomplishment of the goals underlying evidence based practice yet, as will be seen; it often remains an elusive ambition.

2.2 Definitions of Evidence Based Practice

The central role of evidence based practice in contemporary healthcare will be discussed shortly but first, it is prudent to examine some associated definitions and explanations. Despite the centrality of the concept of evidence based practice to healthcare service provision and policy, its definitions and foundations are constantly evolving.

Rooted in the work of Cochrane in the 1970s, evidence based practice has grown steadily since the initial proclamation that gaps exist between clinical knowledge and clinical practice in healthcare (Cochrane 1972). More recent definitions such as that proposed by Appleby et al. (1995) emphasised the central role that research evidence has to play in the provision of best practice by directing decision making away from opinion and traditional practice towards a position in which research evidence is regularly considered.

However, perhaps the most well-known explanation offered by Sackett et al. (1996) in their influential editorial from the British Medical Journal arguably began to move the debate about the definition of evidence based practice to a position more sensitive to the realities of clinical practice. Sackett et al.'s (1996) definition understands evidence based medicine to be;

> The conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research (p.71).

An alternative definition has subsequently been offered to highlight the importance of including patient opinion and preference in to the decision making. Indeed the Muir-Gray's (1997) definition sees this element elevated significantly in as much that EBP should be; "an approach to decision making in which the clinician uses the best evidence available, in consultation with the patient, to decide upon the option which suits the patient best" (p.13).

Similarly, the Health Information Resources Unit at McMaster University attempted to consider all of these elements in its definition of evidence based practice which as "the best available evidence, moderated by patient circumstances and preferences, is applied to improve the quality of clinical judgements" (McKibbon et al. 1995, p.939). This definition is a clear attempt to reconcile the elements of clinical expertise, best research evidence, patient preference and individual circumstances that have at times, as the underlying concepts of evidence base practice have evolved, appeared to conflict with one another.

Despite some differences in the importance attributed to different elements, it can legitimately be argued that the underlying ideas in these varying definitions of evidence based practice have key characteristics in common. Using the three sources identified by

NHS Scotland (2007) as acceptable working definitions of evidence based practice these roles and characteristics are discussed below.

2.2.1 The role of research evidence

In all of the definitions above, upon closer examination, the concept of evidence can be refined to denote the results of research. McKibbon et al.'s (1995) initial definition implies the central role of research as evidence. Although initially suggesting that this is only one type of relevant evidence alongside patient-reports and clinician-observations, the latter two are later clarified to be moderating factors. In particular patient-report becomes patient-preference and clinical-observation is limited to denote the observation of patient-circumstances.

Likewise, Schoenfeld's (2008) clarification of the definition put forward by Sackett et al. (1996) notes that; "Conscientious use implies that physicians review articles about clinical research and apply this information to clinical decision making [whilst] current best evidence from clinical care research implies that physicians systematically appraise the methods and results of clinical research articles" (p.2965). The precedence that formal research takes in this case is clear.

Muir-Gary's (2001) updated commentary on evidence based practice categorises a clear separation between evidence as an outcome of research and other relevant types of knowledge such as audit data and clinical experience.

2.2.2 The clinician's role in evidence acquisition and appraisal

Similarly, all three of these definitions identify two fundamental roles for the clinician. Firstly, as is clear in the quotation above, clinicians are the key actors in the acquisition, interpretation and appraisal of research evidence. Schoenfeld (2008) notes the requirement for clinicians to review and systematically appraise research evidence before making decisions about its applicability in practice, likening this process to; "separating the wheat from the chaff" (p.2965), in which the clinician is responsible for discounting from their decision making the evidence from poorly designed research studies that may have resulted in unreliable conclusions.

Muir-Gray (2001) also notes the central role of the clinician in acquiring and appraising research evidence, identifying these activities in a list of key skills necessary for evidence

based decision making. McKibbon et al. (1995) are less specific about this role but still note the importance for health professionals of collecting and interpreting evidence.

2.2.3 The importance of patient inclusion

Perhaps the clearest element in all of these definitions is that patient opinion and preference should be considered in the determination of any decision relating to their care. Despite commentary which suggests the definition by Sackett et al. (1996) fails to attend to the views of patients (McKenna et al. 1999), this can be easily deduced from their frequently quoted passage. Indeed Schoenfeld (2008) again clarifies, noting that 'judicious use' allows patient preference to occupy a crucial position in the decision making process. Closer inspection of Sackett et al.'s (1996) explanation clearly locates this as part of evidence based practice noting that it should be a; "bottom up approach that integrates the best external evidence with individual clinical expertise and patients' choice" (p.72).

The definition offered by McKibbon et al. (1995) although appearing initially to elevate patient opinion to a level concurrent with research evidence does later clarify this as patient preference, which should be included as a moderating factor in the decision making of health professionals. Likewise, the importance of including patient opinion in the decision making process is clearly elucidated in Muir-Gray's conceptualisations of evidence based practice (1997; 2001). The importance of patient involvement has gained prominence in discussions about evidence based practice, including the idea that they should be better represented in various aspects of the process, most notably as collaborators in the process of generating knowledge for clinical practice.

However, important as patient preference is in clinical decision making, it is worth reiterating the role in evidence based practice as distinct from research evidence which appears to be implicit in many of the definitions noted above. Haynes, Devereaux and Guyatt (2002) helpfully illustrate EBP as comprised of three separate elements; the patient's clinical and physical circumstances, research evidence concerning the efficacy, effectiveness and efficiency of different options, and the consequences associated with each option in which the patient's preferences of what they are ready and able to accept should be considered. The skill and expertise of the clinician brings these elements together in recommending treatment. In this understanding, research evidence clearly exists as separate from patient preference and presenting pathology.

2.2.4 The clinician's role in responsive decision making

The final shared characteristic of these principal theorisations is that of the clinician as decision maker. As well as identifying individual health professionals as responsible for identifying, acquiring, critically appraising and interpreting research evidence most definitions also note their role in considering specific clinical contexts and patient opinion before deciding on which treatment options to recommend. Perhaps the hardest element to define independently, this characteristic is nonetheless discernible in its own right. Sackett et al. (1996) note that the; "proficiency and judgement that individual clinicians acquire through clinical experience and clinical practice" (p.71), acts as a balance to the application of best available evidence, with neither one being independently sufficient to provide the sole basis for decision making. In short;

> Without clinical expertise, practice risks becoming tyrannised by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient. Without current best evidence, practice risks becoming rapidly out of date, to the detriment of patients (p.71)

Likewise, the origins of McKibbon et al.'s (1995) definition reflect the need for clinicians to be able to base decisions on the consideration of several factors, the skill for which is typically a result of clinical experience and an ability to incorporate responsive judgements about the real world factors that might contradict even empirically derived evidence (McKenna et al. 1999). Muir-Gray (2001) has built on the earlier definition to which he contributed (Sackett et al. 1996), by expanding this concept to note that the decisions made by contemporary healthcare professionals are obliged to reflect both the most efficacious option and result in the delivery of the best quality services, or as he terms it; "doing the right things right" (p.48.) Basing decisions on a balance between the best available evidence, in line with patient expectations and sensitive to the factors unique to the specific context of decision making is inherent in this conceptualisation.

However, perhaps one element which is not consistently identified or discussed in these definitions relates to characteristics of the actual processes underpinning evidence based practice. For instance whilst the definitions discussed above note the need for current best evidence to be used and firmly locates these as elements underpinning a decision making process based on clinical expertise and patient involvement, little is said about the particular attributes which could be used to indicate how satisfactorily the process is being

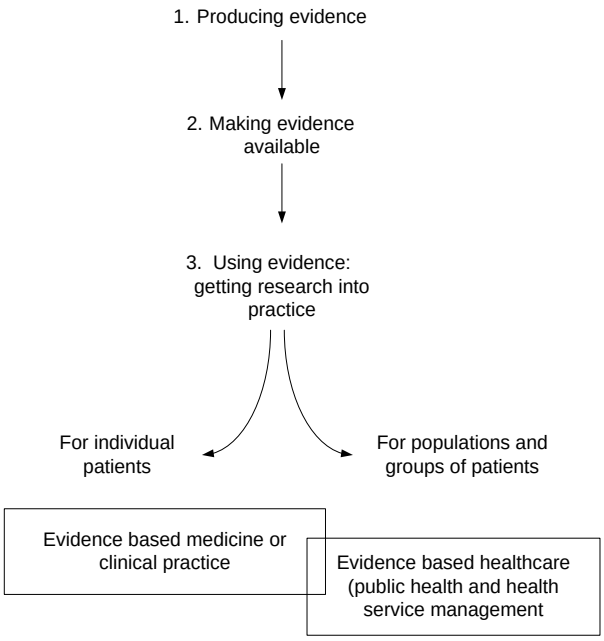
completed. Helpfully, one dictionary definition of evidence based practice supplies this noting that it is *"the practice of health care in which the practitioner systematically finds, appraises, and uses the most current and valid research findings as the basis for clinical decisions"* (Glanze et al. 2008). Particular attention should be drawn to the need for the component processes of research identification, appraisal and application to be undertaken systematically as this potentially adds to the complexity and effort required to realistically achieve evidence based practice.

2.2.5 A Process-Based View of Evidence Based Practice

It is possible to identify within existing literature a number of models detailing the theoretical form that evidence based practice may take in contemporary healthcare, illustrating the interaction of research knowledge, clinical expertise and patient opinion as identified in the discussion above. There have also been many attempts made to adopt a process based view in which component activities of these core elements are identified.

For instance, Muir Gray (2001, p.18) details a three stage linear process (Figure 2.1), in which research evidence in produced, made available to clinicians and then applied in practice.

Figure 2.1: Muir Gray's EBP Process

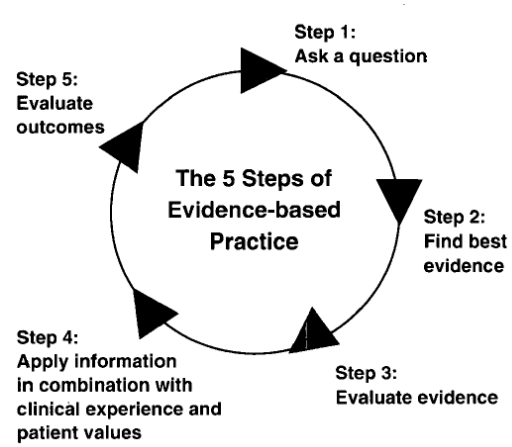


Alternatively, Rosenberg and Donald (1995) offer an explanation of evidence based practice based on linear process with four distinct phases;

1. Formulate a clear clinical question from a patient's problem
2. Search the literature for relevant clinical articles
3. Evaluate (critically appraise) the evidence for its validity and usefulness
4. Implement useful findings in clinical practice

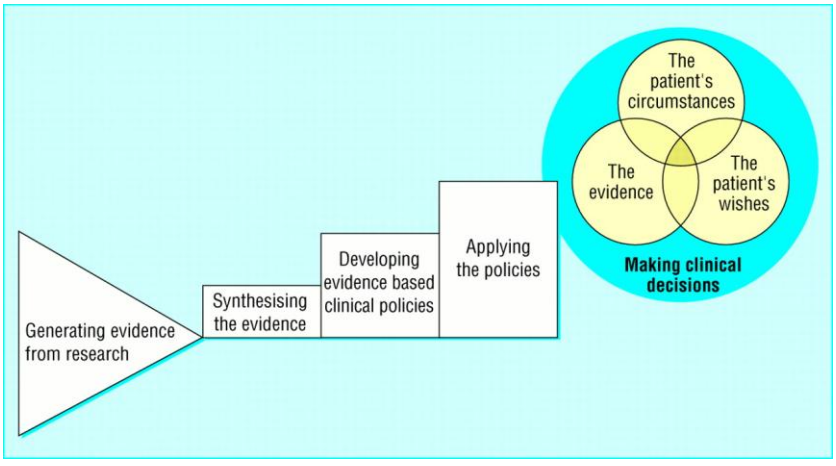
Later, Johnson (2008) developed a five step cycle for evidence based practice that has been widely disseminated as a model for understanding the process (Figure 2.2).

Figure 2.2: Johnson's 5-Step EBP Cycle



Haynes and Haines (1998) offered a more complex overview, attempting to demonstrate how an underlying set of processes are necessary to enable the integration of evidence, circumstance and choice in decision making, as detailed in Figure 2.3.

Figure 2.3: Haynes and Haines EBP Process Model



Arguably these models are over-simplistic, detailing both individual actions and vastly complex activities in an artificial set of stages. Similarly, these models often seem to fail to consider the possibility for evidence based practice to occur in non-linear ways, with elements of the process happening concurrently. For instance, Johnson's (2008) cycle leaves no room to consider what happens in the process if after asking a question, no evidence can be found, whilst Muir-Gray (2001) assumes that research evidence will be produced external to the healthcare environment and therefore must be made available before it can be used.

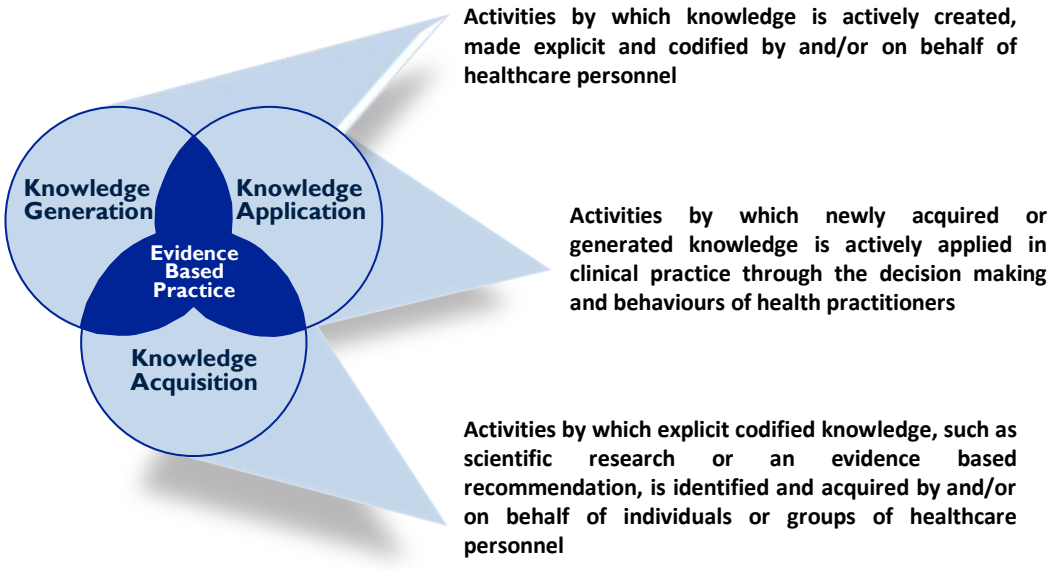
It is clear that despite variations amongst these models, common elements are identifiable. Rather than attempting to synthesise different evidence based practice process models into a meta-model with enough complexity to show a myriad of different potential combinations in which evidence based practice may occur, it might be worthwhile to simply identify a broad set of processes that underpin evidence based practice whilst recognising that the reality of the healthcare context does not allow for these to always occur in a defined linear way.

At some point in most of these models it is possible to identify the following elements; the production or generation of evidence; a process in which this is accessed by health professionals, either as a result of their own actions or as a result of it being made available to them and; a stage in which this evidence is used and applied in practice, usually as an element of decision making in which other factors including patient preference are also considered.

While the mechanisms by which these are achieved may alter depending on context and circumstance, the basic processes do not. For instance, a clinician may acquire knowledge by independently exploring existing bodies of knowledge and engaging with resources therein, or it may be delivered as a 'ready to use' product such as a clinical guideline. The two mechanisms are quite different yet the end result is the successful completion of a process in which the clinician has been able to acquire new knowledge. Similarly this same clinician may be able to make instant use of this knowledge, altering their behaviours and practices with little effort. Alternatively, they may find that their circumstances, shaped by the nature of the knowledge and any number of factors specific to their practice, means that successful knowledge application is a more complex and dynamic affair, requiring additional resource, support and acquiescence from other people.

It is arguably possible to identify three core processes in evidence based practice; knowledge acquisition, knowledge generation and knowledge application. Examination of current definitions also point towards various sub-processes which may occur within each of these stages and it is also worth noting that they can be carried out by a variety of actors. For instance, all three of these processes may start with someone asking a question about a clinical situation. This question may lead to a process of knowledge acquisition in which existing bibliographic databases are interrogated to provide potentially useful information or alternatively, it may lead to a process of knowledge generation in which active efforts are made to produce the evidence required. An illustration of the integration of these three processes with further explanation as to each of their definitions is detailed in Figure 2.4.

Figure 2.4: Integrated Knowledge Processes for EBP



Evidence based practice then may plausibly by defined as; a process in which knowledge is acquired and/or generated by or for healthcare personnel, and brought to bear on decisions related to clinically relevant problems, moderated by context and circumstance.

2.3 The Landscape of Evidence Based Practice in Healthcare

2.3.1 Evidence based practice and UK health policy

The role of evidence based practice as a principle underlying the design and delivery of healthcare services in the UK and indeed globally, has continued to grow steadily in the past three decades. In the UK, the importance of ensuring efficient and effective healthcare

has been high on the political agenda for some time, largely due to the efforts of the previous government which began early in its administration to stress the importance of introducing protocols and procedures to assure the provision of effective and efficient health services for the population (DHSS 1999).

Consequently clinical governance and the requirement to be evidence based in clinical practice have risen steadily on the political agenda as a method for controlling the provision of healthcare (Hewison 2004). Arguably this also stemmed from the political requirement to ensure the cost-effectiveness of service provision, demonstrating that basing treatment on knowledge about what works best is increasingly becoming synonymous with reducing waste, the implication being that non-evidence based practices are not only of unknown clinical value, but also unjustifiable in terms of cost (Grol 2000). The upshot of this increased political requirement for evidence based practice to be routinely implemented and constantly scrutinised is the increasing extension of the concept into non-clinical facets of healthcare. Healthcare planners and managers are increasingly becoming involved in ensuring practices are evidence based, bringing these functions of healthcare organisations into greater contact with those providing clinical services (Hewison 2004).

2.3.2 The Current Condition of Evidence Based Practice

Despite the prominence on political agendas and its centrality to the objectives of many healthcare organisations, the routine delivery of evidence based services remains an elusive goal. Walshe and Rundall (2001) allude to extensive literature illustrating the general underuse, slow adoption and variable application of health research in practice. Several authors indicate that there are myriad explanations for this predicament (Haynes 1998; Grol and Wensing 2004; McKenna et al. 2004). Primary research, observation and theoretical reflections into this subject indicate the existence of challenges to evidence based practice originating broadly from four areas;

1. The attitudes and behaviours of individual professionals
2. Specific mediators of practice resulting from contextual factors
3. A range of organisational features
4. Aspects of accessibility, intelligibility and presentation of research evidence itself

(Newman et al. 1998; Haynes and Haines 1998; Grol and Grimshaw 2003; Grol and Wensing 2004; McKenna et al. 2004; Ziploi and Kennedy 2005; Hannes et al. 2007; Green 2008;

Adeodu et al. 2009; Brown et al. 2009; Knops et al. 2009; O'Connor and Pettigrew 2009; Schoonover 2009; Spencer 2009; Strickland and O'Leary-Kelly 2009; Harris et al. 2010; McCluskey and Middleton 2010).

The existing profusion of research and commentary into this subject with individual professions, clinical services and wider organisations indicates the potential for barriers to arise from any of these broad categories, dependent upon idiosyncrasies peculiar to each. Faced with such considerable commentary into the impediments to evidence based practice, there is growing recognition that the ability to deliver services in this manner depends on successfully identifying, managing and surmounting a multitude of potential barriers.

These remain prominent challenges in contemporary mental health services. Despite sound evidence for the effectiveness of specific mental health treatments and therapies, research continues to demonstrate variations in their routine application (Drake et al. 2001). Whilst many of these variations may be explained and justified by the influences of clinical expertise, patient preference, or an absence of good quality evidence, it has been argued that even when furnished with increasingly robust evidence bases, the trend among mental health clinicians is to make decisions based on intuition and clinical experience that continue to be susceptible to the influences of fashion, ideology and professional interest (Geddes et al. 1997). The need to improve the ability to deliver evidence based practices is recognised in recent policy directions which aim to accelerate improvements in the provision of health services (Nutley et al. 2002).

Investigations into the barriers to evidence based practice constitute a significant proportion of academic study and discourse in this field (Rycroft-Malone et al. 2004). Many studies rightly conclude that identifying barriers is an important step in learning how to realise sustained and effective evidence based practice (Solomons and Spross 2011). However, it is legitimate to argue that wide variations in the findings of such studies, and especially the repeated conclusion that such obstacles, created by the interplay of numerous factors, are unique within different practice settings catalyses the need for a more coherent conceptual understanding of how to enable evidence based practice to be considered. It would arguably be more worthwhile to investigate what approaches would allow the complex sources of impediments to the process to be actively identified, considered and mitigated by those working in healthcare regardless of specific context,

whilst also facilitating the creation and exploitation of optimal circumstances that can sustain evidence based practice.

2.4 Literature Review: Methods of Supporting Evidence Based Practice

It would be inaccurate to suggest that others have failed to come to similar conclusions about the need to develop more coherent methods for supporting evidence based practice. Indeed repeated recognition of the challenges involved in systematically achieving evidence based practice has over a number of years lead to several movements in the design of techniques to manage and overcome typical barriers (Best et al. 2008a). Exploratory investigations into literature relating to differently conceptualised methods for enabling evidence based practice appears to indicate a vastly divergent and disparate body of work, characterised by numerous definitions and varying language, as commented on by Graham et al. (2006) who attempted to clarify some of the different definitions available.

A structured literature review was undertaken to explore this area of discourse with the intention of extrapolating underlying common principles and processes evident in efforts to conceptualise solutions to evidence based practice, regardless of dissimilar language and definitions.

2.4.1 Literature Review Design

Diverse language and definitions in this field have resulted in a literature base comprising disparate studies and commentaries, recommending an integrative review design be developed, broad enough to simultaneously include primary sources utilising different methodologies, existing review information and theoretical commentary.

The design of this review was informed by recent guidance on integrative reviewing intended to maintain rigour whilst mitigating the risks of bias and inaccuracy that can be associated with interrogating literature of this nature (Whittemore & Knafl 2005).

2.4.1.1 Search Methods

Exploratory investigations into existing literature highlighted a number of different models and approaches that have been developed with the intention of supporting evidence based practice including; knowledge transfer, knowledge translation, knowledge exchange,

knowledge to action, research utilisation, research implementation and, turning research into practice, to name but the most recognisable in the healthcare field.

Reviewing such a diverse literature base was recognised as central to providing a comprehensive understanding of previous efforts to enable healthcare professionals to include research knowledge into their clinical decision making as well as identifying the phenomena that might facilitate effective evidence based practice in healthcare. However, it was necessary to narrow the scope somewhat to develop practicable search parameters.

Reflection and consideration undertaken during exploratory engagement with existing literature enabled the identification of a number of subjects which could be excluded. In this way focus remained on examining the literature most relevant for developing a solid understanding of existing theories and methods. For instance, literature relating to the communication of research knowledge to the public was omitted. Specific parameters to guide the inclusion of papers were developed, full details of which are presented in Appendix A.

2.4.1.2 Search strategies

Six computerised data-bases were searched for abstracts published between January 1990 and September 2009. Social science, business and management databases were included alongside healthcare databases to ensure that relevant literature from those fields was not omitted. Specific search strings were developed for each data-base using combinations of key words, subject headings, abstract and subject terms and a wide range of indexed and non-indexed synonyms (detailed in Appendix A).

This strategy ensured the comprehensive identification of papers, helping to mitigate potential limitations caused by inconsistencies in the indexing of the review topics (Whittemore & Knafl 2005). Additionally, the reference lists of those papers identified for inclusion in the review formed the basis for a hand search to identify further potentially relevant literature and ensure better coverage (Conn et al. 2003a; 2003b).

2.4.1.3 Search Outcome

The results of the computerised search process returned 1720 abstracts for review which was increased to 1770 with the addition of 50 papers identified during the hand search. Initial management of retrieved abstracts included screening them for relevance and assignment to appropriate categories including ‘not for review’, ‘for review’ and

'duplicates'. Inclusion and exclusion criteria were applied to the papers in the 'for review' category during secondary screening, and relevant papers were identified for full data extraction. 1641 irrelevant papers were disqualified leaving 160 for detailed abstract review of which thirty-three were included for full review: four systematic reviews, nine literature reviews, one environmental scan, nine empirical studies and ten case studies.

2.4.1.4 Consideration of Quality Appraisal

Recognising the challenges associated with gauging the quality of sources in any review is essential to informing the evaluative approach employed. However, it should also be noted that the purpose of the literature search was primarily to identify key conceptual trends and characteristics of existing efforts to support evidence based practice and as such, the particular quality of articles was felt to be of secondary importance. As the review sought to extract key principles from the reviewed papers disqualifications were not made on the grounds of methodological quality, and instead the contents of each paper were considered for the purposes of building a picture of the underlying assumptions and methods that currently characterise the field.

2.4.1.5 Data Abstraction and Synthesis

To ensure an acceptable degree of rigour during data abstraction and synthesis, a four stage systematic analytic method making use of qualitative approaches was developed.

First, a standard format for summarising descriptive and methodological information and outcomes of included studies was developed recording several dimensions including: descriptive information (authors, date of publication, methodology); description of study objectives (focus, target audience); any definitions offered (definitions of knowledge transfer, knowledge exchange, knowledge translation and so forth); and any findings and opinions related to activities intended to enable the use of knowledge in practice by health professionals.

The extracted information was compared and patterns recorded as they became apparent. The results of this process of comparative analysis were further scrutinised, from which it was possible to discern groupings of similar information and the identification of a number of key themes. Four key themes emerged at this stage including knowledge transfer, knowledge exchange, the influence of context and knowledge brokering. Further examination of the data within these themes resulted in the identification of several sub-

groups of information which comprise the synthesised findings noted below. Appendix B details the key findings of each review paper pertaining to methods for facilitating evidence based practice in healthcare.

2.4.2 Literature Review Findings

2.4.2.1 Facilitating Knowledge Acquisition: Knowledge Transfer

There are various definitions for knowledge transfer which, despite discrepancies in language share a common theme relating to communicating forms of knowledge to relevant stakeholders through a variety of methods. The majority of papers reviewed offer some commentary on communicating knowledge to health professionals with this theme well represented in systematic and literature reviews, and case studies. Information relating to the efficacy of methods for sharing or transferring research knowledge to healthcare personnel was identified as three sub-groups representing typical components of knowledge transfer strategies; relevance, accessibility and format or method.

Relevance

Ensuring the relevance of research information or findings when sharing them with knowledge users is indicated by several studies to directly influence whether research evidence will be used in making decisions (Pyra 2003; Mitton et al. 2007; Harrington et al. 2008). Several papers discuss the importance of ensuring relevance by commenting on the value of actively and accurately targeting individuals or user groups when sharing knowledge, indicating that exploiting or building upon pre-existing communication channels can facilitate this (Titler et al. 1999; CPHI 2001; Philip et al. 2003; McConnell et al. 2007).

Accessibility

Making research evidence accessible to potential users was also noted to be an important feature of knowledge transfer strategies in qualitative studies, case studies, a literature review and a systematic review. Where research evidence was to be used in clinical decision making, on-demand evidence-based information tools and computerised decision support methods were both noted to be potentially effective strategies for improving accessibility and therefore implementation (Majumdar et al. 2004; Best et al. 2008a). Several case studies note the benefits of allowing knowledge users such as health

professionals swift and easy access to relevant research evidence (Titler et al. 1999; CPHI 2001; Rosser 2008).

Similarly, timeliness, as an aspect of accessibility and relevance, also receives attention. Mitton et al. (2007) note the importance of ensuring research evidence is provided when needed and still of direct relevance to the decisions at hand. Similarly, a qualitative study into public health decision makers' preference for knowledge sharing methods notes the importance of ensuring relevance to context and need through the timely delivery of knowledge (Dobbins et al. 2004).

The review conducted by Mitton et al. (2007) focussed on sharing research findings with policy makers in the healthcare field and identified the provision of clearly summarised research findings which include actionable messages or policy recommendations as the most effective method. In addition, tailoring the findings of research for specific audiences and ensuring its relevance are noted as key characteristics of successful knowledge sharing (Mitton et al. 2007).

Format and Method

The format in which knowledge is presented and the methods used to share it with health professionals can have direct impact on its perceived value and subsequently the likelihood of it being used in practice. In addition to the importance of making knowledge physically accessible, ensuring its clear and concise presentation has been identified as a vital characteristic in improving its probability of use (Pyra 2003; Mitton et al. 2007; Harrington et al. 2008). Dobbins et al. (2004) further illustrate the importance of this characteristic by arguing that knowledge sharing methods should be flexible enough to provide users with access to research evidence in various formats and levels of detail to meet individual preferences and need.

Additionally, an overview of systematic reviews identifies evidence for the effectiveness of a number of different knowledge sharing strategies (Bero et al. 1998). Face-to-face methods including educational outreach visits, reminders of research findings and multifaceted interventions including combinations of audit and feedback, marketing and local consensus processes are indicated to be consistently effective methods of promoting the implementation of research findings by healthcare practitioners. This overview noted that limiting knowledge sharing methods to the provision of educational materials or

didactic education has minimal effects. This finding is corroborated by a meta-synthesis of systematic reviews into interventions to change health practitioners' behaviours in response to new knowledge which also notes the effectiveness of multifaceted and active educational approaches such as outreach and reminders (Grimshaw et al. 2001).

Several other studies report on the benefits of using active and interpersonal knowledge transfer techniques and the benefits of tailoring these to specific audiences (Pyra 2003; Majumdar et al. 2004; Fixsen et al. 2005; NCDDR 2006; McConnell et al. 2007; Best et al. 2008a; Forrester et al. 2008; Harrington et al. 2008). Although less well addressed in the empirical studies, basing knowledge transfer activities on strategies that include tailoring the format and delivery method to the circumstances and needs of specific audiences was a key conclusion of the study by Conklin and Stolee (2008). Another qualitative study reported similar results, concluding that customising transfer methods to meet individuals' needs at particular points in time, and developing audience specific messages increases the value attached to a knowledge resource (Dobbins et al. 2004).

The influence of networks on successful knowledge transfer is noted in two papers. Informal electronic networks offering targeted e-mails highlighting new research information or evidence was perceived to be a highly valuable and legitimate knowledge sharing strategy (Russell et al. 2004). This study also noted that knowledge sharing networks allow for peers to act as rich sources of research evidence often inaccessible through formal literature searching methods. A study exploring a community of practice also indicated that networks make communication infrastructures more readily available, allowing for both research evidence and expertise about its clinical application to be effectively shared (Conklin & Stolee 2008).

2.4.2.2 Generating New Knowledge: Knowledge Exchange

Existing literature also offers a variety of definitions, terminology and models relating to knowledge exchange. In general, explanations of knowledge exchange initiatives propose an interactive and continuing process of collaboration, which provides research users with information they perceive as relevant in easily usable formats, whilst research producers receive information about the needs of users. The information about knowledge exchange

identified in this review focussed largely on collaboration and communication during the formulation, conduct and dissemination of new research knowledge.

Collaborative Research Formulation

Collaborations between researchers and health professionals during the design of research studies were identified throughout the literature as an important element of producing relevant and practicable new knowledge. Systematic reviews (Bero et al. 1998; Fixsen et al. 2005; Mitton et al. 2007), several literature reviews (Hemsley-Brown 2004; NCDDR 2006; Glasgow & Emmons 2007; Harrington et al. 2008) and case studies (Titler et al. 1999; Baumbusch et al. 2007) note that collaboration during research formulation is an effective way of identifying the knowledge needs of health professionals. These papers also suggest that research studies based on a sound understanding of health professionals' needs tend to be perceived as more relevant and are therefore more likely to be applied in practice.

Collaborative Research Production

There is a strong theme represented in systematic reviews and many of the literature reviews indicating the value of collaborations between those using research evidence and its producers in influencing clinical, planning and policy decisions (CPHI 2001; Pyra 2003; Hemsley-Brown 2004, Fixsen et al. 2005; NCDDR 2006; Glasgow & Emmons 2007; Mitton et al. 2007; Best et al. 2008a; Harrington et al. 2008). Most of the literature reviews and several empirical and case studies include information about establishing and maintaining collaborations between the producers and users of research knowledge. The value of this lies largely in the opportunities provided for knowledge users to ensure that the direction of a research programme remains focussed on relevant issues, causing the resulting knowledge to be of increased relevance, utility and acceptability to the user (Crosswaite & Curtice 1994; Bero et al. 1998; Hemsley-Brown 2004; Fixsen et al. 2005; Jacobsen et al. 2005; Eke et al. 2006; NCDDR 2006; Baumbusch et al. 2007; Glasgow & Emmons 2007; McConnell et al. 2007; Harrington et al. 2008)

Additionally, allowing research to be informed by stakeholders may help a study's outcomes to be more practicable, as specific constraints and opportunities present in the practice context can be considered during its design (Farkas & Anthony 2007; Eke et al. 2006).

Many of the reviewed studies discuss the need to establish and maintain quality relationships during collaborative research in knowledge exchange initiatives. Quality interactions during collaborative research are seen as key to building effective and reciprocal partnerships, maintaining the application of knowledge in practice and fostering an understanding of the specific interests, priorities and expertise that may shape the project and the use of any findings (Pyra 2003; Bowen & Martens 2005; Garland et al. 2006; Harrington et al. 2008).

Collaborative Dissemination

Other qualitative and case studies note the benefits of collaboration suggesting that it improves researchers' understandings and appreciation of clinical environments, leading to the speedier identification of more relevant training needs and methods, as well as a greater appreciation among knowledge users of quality, merit and potential application of research evidence (Crosswaite & Curtice 1994; Vingilis et al. 2003; Kothari et al. 2005; Forrester et al. 2008). Similarly, it is suggested that collaboration during research makes action from knowledge more likely as stakeholders are allowed opportunities to inform implementation strategies by bringing local and context specific knowledge to the process (Eke et al. 2006; Baumbusch et al. 2007; Farkas & Anthony 2007).

The method by which research evidence is shared with clinicians or other knowledge users may have a significant impact on whether or not it is used. Educational outreach is effective at facilitating action from knowledge, as noted in systematic reviews (Bero et al. 1998; Grimshaw et al. 2001; Fixsen et al. 2005), and several of the literature reviews (Majumdar et al. 2004; Best et al. 2008a). Multifaceted educational techniques focussed on using active or interactive methods are similarly noted to be effective (Bero et al. 1998; Grimshaw et al. 2001; Fixsen et al. 2005; Best et al. 2008a; Harrington et al. 2008). Fixsen et al.'s (2005) extensive synopsis of research implementation literature notes there is empirical evidence to support the assertion that on-site, face-to-face methods of facilitating action from knowledge are effective. Corrigan et al.'s (2001) literature review cites various educational methods including modelling, role-play, feedback and in-service education sessions, concluding that knowledge users involved in such activities learn more skills and are more likely to apply and maintain them in practice. Likewise, Molfenter et al.'s (2009) investigation into facilitating evidence-based practice with speech and language pathologists identified interactive and practical training as more effective than lecturing,

attributing the difference to the opportunity to tailor the educational intervention to the individual knowledge user's preferences.

Additionally, Glasgow and Emmons (2007) and Eke et al. (2006) suggest that knowledge producers should make efforts to share information which has the potential to inform the application of research evidence. They suggest including specified training methods and levels, reports about their experiences during the research process of implementing a treatment or intervention, and any understanding about how to address commonly encountered challenges to implementation and maintenance. Glasgow and Emmons (2007) also suggest that it would be useful for knowledge producers to create comparison conditions that are more reflective of real life situations, thereby increasing the generalisability of research findings.

2.4.2.3 Knowledge Application: Managing the Influence of Context

The influence of contextual factors on the ability of knowledge users to make evidence-based decisions is identified throughout the reviewed literature. Identifying and managing potential barriers, or identifying and exploiting potential facilitators already present in the knowledge users' context increases the likelihood that efforts to acquire or generate knowledge will successfully support the application of research evidence in practice (Grimshaw et al. 2001; Glasgow & Emmons 2007; McConnell et al. 2007; Forrester et al. 2008; Molfenter et al. 2009).

Details about how best to manage barriers and exploit facilitators are not fully identified but several studies note the potential benefits of engaging local opinion leaders in guiding the changes necessary to apply knowledge in practice. Systematic and literature review evidence concludes that opinion leaders are variably effective at achieving this end (Bero et al. 1998; Pyra 2003; Mitton et al. 2007). Likewise, case studies by McConnell et al. (2007) and Crosswaite and Curtice (1994) reported favourably on opinion leaders' ability to facilitate the process, indicating their value in gauging and managing areas of tension, stimulating interest from stakeholders and helping to maintain commitment to making evidence-based changes to practice.

Likewise, engaging managerial and organisational stakeholders is reported as a useful method for creating the conditions most amenable to the application of knowledge. Titler et al. (1999) suggest that securing organisational support for change required during the

process of knowledge application is essential for success, but often difficult to achieve. Corrigan et al. (2001) argue that equipping key stakeholders with transformational and transactional leadership skills can help to progress evidence-based changes by encouraging modifications in staff approaches to using knowledge. Furthermore, developing knowledge users' capacity to understand and critique research evidence is a potentially effective method for increasing the likelihood of action (Corrigan et al. 2001; Pyra 2003; Mitton et al. 2007; Harrington et al. 2008).

A number of specific organisational capacities are suggested as necessary prerequisites for creating action from knowledge. The need to ensure sufficient time, financial, technological and human resources is often cited (NCDDR 2006; Fixsen et al. 2005; Mitton et al. 2007; Best et al. 2008a; Harrington et al. 2008; McWilliam et al. 2008).

Best et al. (2008a) explain how organisational capacities can have effects on efforts to access, produce and use new knowledge, noting that the processes involved are influenced by an organisation's; "unique rhythms and dynamics, worldviews, priorities and processes, language, time scales, means of communication, and expectations" (Best et al. 2008a, p.322). Realigning these factors to create an organisational environment supportive of Knowledge Transfer and Knowledge Exchange appears a potentially important aspect of successfully facilitating evidence based practice in healthcare.

Similarly, the research paper by Bowens and Martens (2005) reports that further organisational capacity is needed to overcome the barriers that cannot be surmounted through the development of individuals' skills. Forrester et al.'s (2008) description of a clinical-academic partnership attributes the scheme's success to the leadership associated with a supportive administration and a shared governance structure that actively promoted the involvement and participation of nurses in collaborative research activities. Farkas and Anthony (2007) conclude that organisations which are enabled to both generate and disseminate research have more successful outcomes as they can deliver the most favourable conditions in which KT and KE may occur. Amongst these is supporting continual dialogue between researchers and stakeholders, routinely developing new evidence based messages and actively attempting to overcome shifting barriers to implementation.

2.4.2.4 Facilitating the Processes: Knowledge Brokering

Knowledge brokers, whose role is to facilitate links between researchers, research users and policy or decision makers, were identified as having a beneficial impact on activities designed to increase health professionals' effectiveness at progressing the acquisition, generation and application of research knowledge. Harrington et al. (2008) note that although their effectiveness is being still being examined, accounts of knowledge brokers suggest they can be an integral resource, assisting researchers to develop the skills, experience and confidence to interact with varied audiences as well as enabling knowledge users to understand the research process. Harvey et al.'s (2002) literature review concludes that studies with variable effect sizes indicate that an individual who provides face-to-face communication using multifaceted strategies can have some impact on changing clinical and organisational practice. Several papers note the potential benefits of including a knowledge broker, including the promotion of collaborative relationships, knowledge sharing activities and network building within and between research producers, users and managers, and organisations (Crosswaite & Curtice 1994; Philip et al. 2003; Vingilis et al. 2003; Best et al. 2008a)

Farkas and Anthony (2007) demonstrate that the perceived value of research evidence is directly affected by the credibility of the person who shares it with knowledge users. They suggest that knowledge brokers are integral to earning credibility as they assist in creating action from knowledge, build reciprocal and regular interactive relationships and can identify key stakeholders. It is worth noting that health care policy makers were shown to be more likely to use research evidence if they found it credible and that future research produced by an organisation would be more readily used once credibility had been established (Dobbins et al. 2002).

2.4.3 Limitations of Current Methods

Despite a number of common shared characteristics emerging from this review of literature, robust, high-level evidence for the overall effectiveness of knowledge transfer and knowledge exchange methods is lacking, despite the identification and inclusion of systematic reviews, synopses, primary research studies and case studies in this review.

These focus largely on individual methods or limited aspects of the KT or KE process, such as interventions to help create action from knowledge or enable the efficient sharing of knowledge. This shortage of empirical evaluative research into knowledge transfer and

exchange initiatives, and their suitability for application in different healthcare contexts and with different disciplines, has been noted in the wider literature (Armstrong et al. 2006), as well as by authors reviewed for this study (Corrigan et al. 2001; Mitton et al. 2007).

Despite context being repeatedly identified as a moderating factor in how successfully knowledge is applied in practice, regardless of the knowledge transfer or exchange processes in place, few articles attempt to propose how this should be effectively managed, other than noting that such 'management' is likely to be key to the success of efforts to support evidence based practice.

Considerable variations in terminology and lack of clear definitions in these fields are amongst several potential explanations for the scarcity of evidence relating to knowledge transfer and exchange. Jacobson et al. (2005) note that many of the principles informing these initiatives are well established in healthcare and other sectors but exist under a variety of different terms. These variations, and the inter-changeability with which they are used, have greatly complicated and confused study and discussion in this field (Graham et al. 2006).

Further to these multiple definitions, there are a considerable number of proposed models and frameworks to guide knowledge transfer and exchange. One synopsis of literature included in this paper yields reference to thirteen different models and processes and numerous additional toolkits and guides (Harrington et al. 2008). A particular challenge of conducting research in this area emanates from the absence of consensus and consistency in either language or theory. Greenhalgh et al. (2004) make several recommendations for developing this field, asserting that research should be driven by theory, concentrate on process and use common definitions and measures. The absence of these factors may partially explain the absence of coherent and developed evidence bases for knowledge transfer and exchange strategies.

2.4.4 Limitations of Current Models

It is perhaps worth noting that efforts at enabling evidence based practice which fit with the predominating knowledge transfer and exchange theories predate these terms being coined. For instance, it can be argued that the majority of efforts undertaken to support healthcare professionals to assimilate current best evidence into their clinical practice is based on the knowledge transfer model.

Knowledge transfer can be defined as;

> A process by which relevant research information is made available and accessible for practice, planning, and policy-making through interactive engagement with audiences. Knowledge transfer is supported by user-friendly materials and a communication strategy that enhances the credibility of the organization (Program in Policy Decision Making 2010).

The most prevalent techniques for facilitating evidence based practice remain based on efforts to communicate or transfer research knowledge to health professionals.

Knowledge transfer methods are often unidirectional processes in which researchers produce knowledge which is communicated to end users who may then use it to inform their behaviour and decision making. In healthcare, as in other fields, efforts to speed up the process of adopting new knowledge has tended to focus on the improving communication channels or vehicles to speed up the rate of adoption. Based on the theory that the use of research evidence in practice is a function of how well it is packaged and communicated to the user (Best et al. 2008a), knowledge transfer strategies are alternatively described in the literature as push-pull strategies, suggesting that the transmission of knowledge is either pushed to the practice sphere by academics or actively pulled by health practitioners (Lavis 2006; Scott et al. 2009).

Knowledge transfer approaches have endured as the most frequently and widely used methods by researchers, professional bodies and organisations for communicating research evidence to health professionals (Bero et al. 1998). At the basic level knowledge transfer strategies reflect efforts to simplify one of the core processes in evidence based practice, knowledge acquisition, or how health professionals access and assimilate existing research evidence.

However, high quality investigations and reviews have shown these approaches to be generally ineffective in changing the behaviours of health professionals (Bero et al. 1998; Grimshaw et al. 2001). In recent years knowledge transfer theories have begun to fall from favour in the conceptual debates about enabling health professionals to make suitable use of research knowledge. It appears that expediting knowledge acquisition through knowledge transfer methods can be ineffective due largely to the unrealistic and unsuccessful unidirectional communication methods it recommends and its growing

popularity in other sectors in which the nature of the challenge is different (Harrington et al. 2008).

Knowledge exchange has been explained as an;

> Interactive and iterative process of imparting meaningful knowledge between research users and producers, such that research users receive information that they perceive as relevant to them and in easily usable formats, and producers receive information about the research needs of users (Best et al. 2008a p.321).

Recent efforts to facilitate evidence based practice in healthcare have moved away from dominant unidirectional knowledge transfer methods and reflect an increased focus on the way in which research knowledge is generated. Responsive to the premise that barriers to communicating knowledge often result from social interactions, (Best et al. 2008a; 2008b) knowledge exchange methods focus on the importance of collaborative involvement between research producers and practitioners during the generation of new research. Typically, knowledge exchange methods are centred upon the active sharing of information between clinicians and researchers to improve the value and relevance of study outcomes.

The generation of more worthwhile and relevant knowledge which is easier for practitioners to apply is often cited as a benefit of collaborative research supported by knowledge exchange concepts. This has been attributed to various factors including allowing local knowledge to be considered and accommodated during the research process, a preservation of focus on relevant clinical questions and increasing awareness and confidence in assimilating research findings by practitioners.

Knowledge exchange methods are less well investigated than those of knowledge transfer. Several studies note the increased effectiveness of basing multi-faceted knowledge transfer activities on interpersonal interactions between researchers and practitioners (Grimshaw et al. 2001; Majumdar et al. 2004; Fixsen et al. 2005; McConnell et al. 2007; Harrington et al. 2008).

Despite a lack of rigorous high-level studies, there is some evidence to indicate that collaborative research generation has some effect in facilitating the use of knowledge by health professionals in existing literature reviews (Pyra 2003; Harrington et al. 2008), case studies (Crosswaite and Curtice 1994; Titler et al. 1999; CPHI 2001; Vingilis et al. 2003; Forrester et al. 2008), and a qualitative investigation (Kothari et al. 2002). However, like knowledge transfer, typical knowledge exchange activities share a limited underlying

theory; that the application of evidence in practice (or lack thereof) results from the nature of the message. Providing health professionals with knowledge that is relevant, accessible and understandable, whether through different methods of communication, or collaborative generation, is key to its eventual application in practice.

Like many of the concepts discussed, the contextual factors that may ultimately moderate how effective knowledge transfer and exchange activities are at facilitating evidence based practice are not well defined or investigated. Whilst knowledge transfer and knowledge exchange appear conceptually well reasoned and logical their evidence bases are inconclusive and point to questionable effectiveness. This is potentially because they fail to address fully the multitude of complex factors that affect the eventual application of knowledge in healthcare organisations.

The increasing incidence of knowledge exchange strategies belies a gradual movement towards realising the significance that context-specific factors may have on a health service's ability to provide evidence based services. In reality, knowledge is transferred, created and applied by people in organisations in a complex and messy manner (Van de Ven 1999; Van de Ven and Johnson 2006). The interactions and relationships that control knowledge acquisition, generation and application activities are influenced by intricate systems resulting from organisational structures, processes and pressures, and physical, political and socio-cultural environments (Best et al. 2008a, Best et al. 2009).

Indeed, there has been a growing body of literature examining the most effective methods for investigating organisational context and the effect this may have on facilitating evidence based changes and developments in healthcare (Hamilton et al. 2007; Weiner et al. 2008; Stetler et al. 2009; Burnett et al. 2010). However, this field is also characterised by a lack of definition in language and conceptual basis and as such there is no conclusive evidence favouring particular approaches or methods. Additionally, current efforts in developing methods for investigating organisational factors are arguably of limited use as, while they may identify the presence or absence of generic factors identified as key to implementing knowledge transfer, exchange and application activities successfully, they fail to generate any learning about how to create suitable contextual conditions to surmount any identified barriers. Similarly, these approaches can be criticised for overlooking many subtler issues that occur at the implementation level, such as local power dynamics or specific barriers. Similarly they fail to account for the potential implications that may result from pursuing

such activities and do not recognise the importance of the worldviews, perceptions and values of actors within the situation.

2.4.5 Identifying Core Processes

While the literature relating to efforts to facilitate evidence based practice in healthcare is clearly characterised by different language, models and methods, it is plausible to argue that, at a very fundamental level, existing approaches have emerged as attempts to facilitate specific core elements of the evidence based practice process. Earlier in this chapter it was argued that despite various available definitions, it was possible to identify three core processes underpinning evidence based practice; knowledge acquisition, generation and application. Arguably, the different approaches identified in the literature review point to distinct efforts to ameliorate health professionals' engagement with these specific areas.

Knowledge Transfer is arguably an approach which aims to support and enhance the knowledge acquisition activities of health professionals. Despite a variety of methods which may span from the development of evidence based clinical guidelines (Titler et al. 1999), to real time clinical decision support technologies (Kaushal et al. 2003) the underlying objective of this approach is to facilitate the acquisition of knowledge by health professionals. In Knowledge Transfer this is typically achieved by making access to relevant research knowledge an easier activity.

Likewise, Knowledge Exchange approaches can reasonably be seen as attempts to improve evidence base practice through knowledge generation activities. Again multiple methods have been reported. Knowledge exchange initiatives based on co-locating academics and practitioners been reported (McConnell et al. 2007), as have larger networks and multi-partner collaborations (Conklin and Stolee 2008). Again despite these variations in design, Knowledge Exchange initiatives are usually initiated with the intention of either generating new knowledge for use by health professionals, or performing a similar function to Knowledge Transfer depending on how the authors have classified their efforts. This is often in response to topics which they have identified as of clinical importance, relevance or priority.

Another prominent concept identified during the literature review was the need to actively consider and manage elements of circumstance and context when attempting to use

research knowledge in practice. Earlier in this chapter it was posited that an active process of knowledge application can be detected within existing definitions of evidence based practice. The moderating effects of local factors which can include both tangible constraints such as resource availability and more abstruse elements such as patient preference and opinion are included in several definitions (McKibbon et al. 1995; Haynes and Haines 1998; Johnson 2008). It could legitimately be argued that recurring references to the need to manage local factors during attempts to use research knowledge in practice is analogous to the process of knowledge application indicated earlier. Indeed, the emergence of the knowledge broker role in recent years may also lend credence to the assertion that careful management of circumstances unique to different situations points towards a distinct process of knowledge application, which can be deliberately considered and progressed.

In summary, while different methods and approaches have evolved to support evidence based practice in recent years it is possible to locate their core objectives with axiomatic elements of current conceptualisations of evidence based practice. Consequently, designing an investigation into the circumstances which may facilitate evidence based practice in a manner which includes detailed exploration of how these distinct sub-processes are achieved appears reasonable.

2.5 Moving Past Knowledge Transfer and Exchange, the Argument for Systemic Approaches

Despite it being possible to identify core characteristics in knowledge transfer and knowledge exchange, and being acutely aware of the need to ensure that elements of context are carefully managed, it is difficult to understand why the methods based on these conceptualisations appear to only have variable effectiveness in healthcare.

Arguably, these approaches are limited at a fundamental level because they fail to encompass a sufficiently comprehensive view of the circumstances required to enable health care professionals to apply evidence in practice. Knowledge transfer may well reduce the burden of identifying, acquiring and in some cases critically appraising research evidence, but fails to account for the complexities and challenges surrounding the process by which it is applied in practice. Similarly, the relationships and collaborations underpinning knowledge exchange may go some way to ensuring relevance at the local

level, these efforts are potentially limited in that they do not enable clinicians to concurrently consider the vast amounts of existing research that may have a bearing on their decision making.

Recently, a limited amount of commentary has begun to discuss the need to move on from approaches focussed on distinct components and moderators of evidence based practice. Rather, consideration is being given to enabling health professionals to actively engage in the component processes of evidence based practice which include the successful acquisition and/or generation of relevant research knowledge, as well as deciding how to apply it in practice responsively to account for the unique and continually fluctuating contexts that exist in the contemporary healthcare environment.

For instance, Best et al. (2008a; 2008b; 2009) have suggested that as the knowledge processes underpinning evidence based practice are tightly intertwined with organisational features, cultures and specific contexts, they are necessarily mediated by multiple relationships and factors. The complexity of these situations recommends a systemic perspective be taken to understanding how to create facilitative circumstances, noting that the degree to which these processes are integrated with one another and within the wider system will dictate how effectively knowledge will be applied in practice.

Similarly, Kitson (2009) has argued for the need to approach the application of knowledge and indeed the sponsoring of innovation from a systems perspective, noting that the majority of discourse on existing methods has neglected systems based approaches in favour of distinct theories describing discrete interventions. Her emerging hypothesis for the; “translation of knowledge into (healthcare) practice” (p.224), mirrors concepts proposed by Best et al. (2008a; 2008b) suggesting that relationships between individuals, teams, elements of context and the organisation all intertwine to influence the use of knowledge in practice.

Gauthier et al. (2005) also recognised the requirement to move beyond linear models of knowledge transfer and proposed a dynamic model of knowledge integration. Although not specifically employing the language of systems thinking, the case study reported in this paper described how interdependent and integrated the relationships among researchers, clinicians, and managerial personnel were in a situation in which evidence based practice was more coherently supported. More recently Olson et al. (2010) have used systems

thinking, again retrospectively, to describe the 'soft knowledge systems' that contributed to successful knowledge based changes in a number of healthcare teams. Interestingly, as well as noting the need to take a more comprehensive systemic view of the factors mediating evidence based practice, this paper also described three core process similar to those identified earlier, namely how clinical teams produced, obtained, and used knowledge.

In short, the value of knowledge transfer and exchange techniques, and burgeoning efforts to enhance knowledge application based on the management of contextual factors within organisations is currently limited due to restricted focus. Arguably, successful evidence based practice is predicated upon the successful performance of knowledge acquisition, generation and application activities in complex circumstances. Realising these processes in contemporary healthcare organisations will be based on enabling health professionals and organisational personnel to understand relevant issues and act purposefully in a manner responsive to the multiple continually fluctuating aspects of the specific systems within which they operate. Health services which are able to access, review and understand existing knowledge, become actively involved in the generation of new knowledge, and develop the capacity to apply the outcomes of both of these efforts into practice will be better positioned to provide continually improving knowledge based services.

This re-conceptualisation of the factors which influence the behaviours and practices of health professionals and the role of healthcare organisations in providing the most optimal conditions for this to take place has been little addressed in current literature. Whilst health professionals are expected to retain responsibility for making judgements about treatments or care, recognising that the impediments which prevent this from happening routinely when evidence is available are not always surmountable by the individual is yet to be widely advocated.

Systemic approaches sensitive to the effect of relationships and factors throughout all levels of an organisation, from the individual up, directly influence the degree to which health professionals are able to judiciously apply evidence in practice. Successfully progressing to a situation in which individual health professionals are not left to pursue knowledge acquisition, generation and application activities in relative isolation, but rather are actively facilitated to assemble the optimal conditions in which these three core processes can routinely take place is dependent upon their ability to inquire about and explore the systems in which they operate.

To date, the discourse related to systems thinking in efforts to improve evidence based practice have either been theoretical in nature, or based on using systems theory to describe existing situations or previous efforts. No attempts have yet been undertaken to apply a systemic approach to identifying prospectively the features and circumstances required to enable the successful integration of the knowledge processes underpinning evidence based practice.

2.6 Thesis

Successful evidence based practice is the result of a set of inter-related processes including knowledge acquisition, knowledge generation, and active knowledge application which are directly influenced by a multitude of factors originating from numerous levels in the healthcare system.

There is a need to identify how these processes might operate in mental health, and what systemic circumstances need to be in place to facilitate these to occur.

As yet no efforts have been made to actively apply systems thinking in efforts to improve evidence based practice in mental health. This study aims to identify the systemic circumstances which need to be in place to allow mental health professionals to successfully engage in the processes which underpin evidence based practice.

2.7 Research Questions

RQ1) What systemic circumstances are required for mental health professionals to be able to engage in evidence based practice?

a) What circumstances are required to support successful knowledge acquisition processes in mental health at the individual, team and organisational levels of the healthcare system?
b) What circumstances are required to support successful knowledge generation processes in mental health at the individual, team and organisational levels of the healthcare system?
c) What circumstances are required to support successful knowledge application processes in mental health at the individual, team and organisational levels of the healthcare system?

RQ2) Are there common factors identified as central to driving the processes underpinning successful EBP common across the three identified processes?

Chapter 3. Methods

3.1 Developing a Research Methodology

The research objectives of any study necessarily shape the methodology used (Denzin and Lincoln 2003). This study intended to consider the systemic factors that could potentially enable mental health professionals to engage with a set of processes that can lead to successful evidence based practice. An early, but essential step in the design of this study was to consider precisely how this systemic perspective could be achieved.

Despite the recognition that there are differing and often discordant definitions, qualitative methodologies are largely concerned with providing in-depth understandings of the world by learning about the experiences and perspectives of individuals, and the social and material contexts in which they live (Snape and Spencer 2003). Different approaches to qualitative research achieve this in different ways.

This study needed a methodology that would specifically achieve two ends. Firstly it had to provide a suitable structure in which a set of methods could be applied enabling a valid exploration of the intricate interrelated elements which can facilitate the achievement of the three core knowledge processes underpinning evidence based practice. Secondly, it needed to achieve this prospectively, identifying through engagement with those involved in attempting to deliver evidence based mental health services, the circumstances which could be created to support them in this.

This study was not primarily concerned with attempting to describe existing factors which have been seen to contribute to evidence based practice. It is not difficult to identify existing literature containing opinion and narratives expounding on specific isolated initiatives or techniques that have been successful in enabling health professionals make limited changes to their practice. Rather, employing systems thinking with health professionals was felt to be an approach that would support them to offer information about the key circumstances that could facilitate their routine engagement in the activities underpinning evidence based practice.

The previous use of systems thinking methodologies in healthcare will be discussed shortly but is worth noting what potential value this approach offered for use in this study. System thinking allows sense to be made of complex situations in a way that allows the structures

or patterns underlying these complexities to be comprehensively considered with a view to designing improvements. In relation to evidence based practice, systems thinking may provide a mechanism for understanding the intricate individual, social and organisational factors that can inhibit or promote the component processes of knowledge acquisition, generation and application;

> Vision without systems thinking ends up painting lovely pictures of the future with no deep understanding of the forces that must be mastered to move from here to there… If nonsystemic thinking predominates the first condition for nurturing vision is not met: a genuine belief that we can make our vision real in the future (Senge 2006, p.12).

A specialist methodology was required that would allow engagement to be guided by, and interpreted from, a systemic perspective, generating knowledge about the features that need to be in place to allow knowledge acquisition, generation and application processes to occur. However, before identifying how this was achieved in this study, it is prudent to consider some of the challenges encountered during this process.

3.1.1 Positivism in Systems Thinking: The Hard Approach

It is important to define and distinguish between different approaches to systems thinking which are put simply, approaches to conceptualising phenomena. These phenomena, be they physical, social, psychological and so forth can be thought of as systems based on a process of understanding the functions of interactions and/or interdependencies between different component parts.

Systems thinking has evolved in many directions in the post war period and despite efforts by Von Bertalanffy (1968) to develop a general systems theory which could be used to understand and describe activity in the worlds of both natural and social sciences, there has been a definite split. These predominating approaches have been couched in the language of ‘hard’ and ‘soft’ systems.

Kirk (1995) offers a neat summation of hard systems thinking noting that it;

> represents a deterministic model which has precise objectives which can be expressed in quantitative terms allowing the development of mathematical models. These models can be used to predict the response of the system to changes in the

environment. The model produces a convergent solution to any change (Kirk 1995, p.14).

Positivist logic abounds in hard systems thinking and has continued to characterise much of this field; systems are tangible and exist in the world which can be observed and quantified.

3.1.2 Interpretevism in Systems Thinking: The Soft Approach

Just as General Systems Theory was overtaken by an increasing number of topic specific systems theories in the natural sciences in the latter half of the twentieth century, a contemporaneous tangent developed in the applications of systems thinking in social situations. Born out of unfruitful efforts to apply the positivist logic of systems thinking to management situations, an alternative approach was developed through the work of academics at the University of Lancaster (Checkland 2000).

This soft systems approach as it came to be known, understood that positivist logic could not be legitimately transferred to social situations. Rather the premise fundamental to the systems thinking at the time, that the world is comprised of a set of tangible interacting systems which can be examined and engineered to increase effectiveness, was rejected in favour of a view of the world as inherently complex, dynamic and in constant flux (Checkland 1981). As will be seen shortly, the philosophical change was significant in that positivism was rejected in favour of interpretevism, and importantly for this study, a specific methodology, Soft Systems Methodology (SSM) (Checkland and Poulter 2006), for understanding complex social situations from a systems perspective was developed.

The fundamental difference between the classic hard systems thinking and this soft approach is that that systems concepts are employed as methods for achieving meaningful understanding amongst a group of people about the social and physical phenomena which shape their relationships, behaviours and actions occurring in their given situation or towards a given objective. In this approach, systems models are developed which represent how different people understand a situation, providing an intellectual device which can be used to ask questions about the real situation. Different perspectives about the multiple factors influencing this situation are explored as a mechanism for identifying possible ways of changing the situation. Again Kirk (1995) neatly summarises;

> It is important to realize that any specific aspect of life is not constructed as either hard systems or soft systems and that concepts such as systems boundaries are

> artificial. In fact, it is important to recognize that "systems" represent a useful way of studying human activities but that these systems are not real but represent a model of the activity. They represent approaches to help our understanding of how an operation is performing and how this performance will respond to changes in the environment (p.15)

3.1.3 How Soft Systems Thinking Can Answer the Research Question

The decision to conduct this research using an approach informed by SSM was based on key pragmatic factors. Firstly, it was recognised this theoretical framework provided lenses through which the activities and opinions of participants could be understood systemically, allowing for information to be elicited and analysed that would directly contribute to answering the research questions. Secondly this framework was recognised as commensurate with the assumptions made about the nature of knowledge and reality in this study. Thirdly, its development as an action-orientated methodology, born of efforts to improve situations means that it can legitimately be used as a way of fulfilling the objective of prospectively identifying factors which may facilitate mental health professionals to engage in knowledge acquisition, generation or application. Finally, its use as a research method in healthcare is not unprecedented, and therefore its utilisation for the purpose of adopting a systems approach to understanding the provision of evidence based practice may directly contribute to how this emerging conceptualisation is used in future practical efforts.

3.1.4 Soft Systems Methodology in Healthcare and Healthcare Research

Practical applications of soft system thinking have taken place during nearly forty years of development and use in approaching complex management problems. Its application in these situations has seen a more formal soft systems methodology develop from its increasing use as a vehicle for action research, in which systemic approaches to understanding and creating solutions to problems is employed. Specifically, this entails using systems constructs as a method for conceptualising and understanding a situation, allowing often complex, intricate and unbounded phenomena to be considered in a more organised manner.

Despite its growing use in management situations, SSM had an admittedly finite yet wide ranging history of use in healthcare, having been employed for a variety of purposes. Most commonly it has been used as an approach for retrospectively evaluating or describing

different elements of healthcare provision. Hernanado (1997) employed soft systems methodology to analyse a survey of nursing staff's use of library services. Cook et al. (2001) used the approach to retrospectively model decision making in different health team configurations, as did Lauri (1992) specifically in child health. Similarly, Wells (2006) used SSM to analyse hospital-based industrial therapy units, and Bond and Kirkham (1999) retrospectively evaluated the impact of information technology on reflective learning. Bowen (2007) used this approach to describe how a therapeutic community functioned and Allam et al. (2004) structured an evaluation of cancer care operations on soft systems thinking.

Tako et al. (2010) have recently discussed the appropriateness of using soft systems approaches to guide conceptual modelling in simulation-based healthcare studies, and several studies report on the methodology's application prospectively modelling specific activities. These include modelling; work and information flows in a chronic care setting (Unertl et al. 2009), different purchasing and resource provisioning activities (Dixon and Garside 1995; Lehaney and Hlupic 1995), solutions in public health (Fahey et al. 2004), and performance improvement in the NHS in England (Jacobs 2004, 2009). A more clinically focussed application was achieved by O'Meara (2003a, 2003b) who used SSM to develop and critically appraise a pre-hospital practitioner model as an alternative to existing models of care in rural Australia, while Kalim et al. (2004; 2006) discussed the use of soft systems thinking in the development of health policy.

Several papers have been published reporting the use of SSM to structure substantive changes in health service delivery. These include for instance; planning outpatient consultations (Lehaney and Paul 1994, 1996; Lehaney et al. 1999), improving the discharge planning process in a surgical setting (Mukotekwa and Carson 2007), developing performance monitoring systems (Hindle 1995; Connell et al. 1998), and as an approach to structuring general service improvement efforts (Braithwaite et al. 2002). Similarly, SSM has been used in designing information services (Connell 2001) and in the development of intermediate-care service provision in a deprived urban area (Atkinson et al. 1989).

Notably there have been several instances over the past ten years in which SSM has been used to structure the process of inquiry in health services research. It has been used as a discrete tool to analyse the information-seeking behaviours of nurse-teachers (Stokes and Lewin 2004). It has been applied as a research strategy by Clarke and Wilcockson (2001) in a

study of professional and organisation learning, and by Reed et al. (2007) who investigated the impact of specialist nurses for older people. Gibb et al. (2002) declared the use of SSM for an action research project designed to integrate health and social care delivery, whilst Gillies and Patel (2009) based an investigation into differing perceptions of information technology by health professionals on SSM. Most recently a participatory action research protocol published during the conduct of the current study identified SSM as a mechanism for investigating the implementation of an evidence-based nursing model (Abad-Corpa et al. 2010).

Although SSM has some history of application in healthcare research, it is necessary to identify and consider whether this approach is congruent with the philosophical foundations of the current qualitative inquiry.

3.1.5 Using Soft Systems Methodology for Qualitative Inquiry

Although used in several studies, a robust defence of the compatibility of SSM with qualitative inquiry is yet to be comprehensibly articulated. Despite clear articulations that SSM provides a theoretical framework for exploring specified situations from the perspectives of identified individuals, few authors have considered whether or not this approach is suited to the type of inquiry being conducted. Those articles cited above have tended to gloss over the applicability of SSM as a research technique, without methodically considering the ontological and epistemological assumptions inherent in its use for this purpose. For instance, Abad-Corpa et al. (2010) briefly allude to these assumptions by suggesting in their abstract that SSM may be commensurate with a constructionist paradigm but fail to revisit this claim in their protocol. Several other papers cite SSM as a method used to theoretically inform their qualitative studies, but fail to clarify its congruence with the particular methods employed, preferring instead to cite previous examples of its use in similar studies (Gibb et al. 2002; Reed et al. 2007; Gillies and Galloway 2008; Gillies and Patel 2009).

However, the failure to consider the philosophical compatibility of SSM with qualitative inquiry does not preclude its existence. Its application external to healthcare has established SSM as accepted approach to action research routinely used in efforts to elicit change within organisations (Mayon-White 1993). Despite its early inception as a practical problem solving tool designed to overcome the failure to transfer positivist natural science approaches to the sphere of human activity (Checkland and Poulter 2006), this practical

focus does not prevent SSM from being used as a tool to support theory generation and testing, and therefore being applied in inquiries other than action research designs (Rose 1997).

Careful consideration of how SSM may fit into the wider field of social research is required to justify this assertion. Declaring the philosophical perspectives underlying any qualitative inquiry is recognised as a key element in informing design and is central to establishing value and validity, as these assumptions about the nature of reality and knowledge shape the researcher's efforts (Denzin and Lincoln 2003; Schwandt 2003).

In short, these ontological, epistemological and methodological assumptions provide a framework against which the social researcher builds the process of inquiry and guides their actions (Guba 1990). It is the congruence between these perspectives, the overall aims and specific research questions of a study, and the practical activities of its conduct that determine the overall quality and validity of its findings.

3.2 Epistemology: Constructionism, Interpretevism and Social Constructionism

Epistemologically, it can be challenging to locate SSM. Epistemology has been described as the theory of knowledge and is concerned with hypothesising what constitutes knowledge and how it can be justified (Schwandt 2003; Carter and Little 2007). Academic contributions aimed at clarifying the epistemic foundations of SSM are varied and difficult to decipher. Houghton and Ledington (2002) suggest that this philosophical obfuscation may have resulted from the evolution of soft systems thinking over the last forty years and point to competing explanations. For instance those who have concentrated on the use of SSM to model complex situations have suggested that this locates the approach in a functionalist paradigm suggestive of an objectivist epistemology (Hirscheim et al. 1995), whist others align it with subjectivism due to its concentration on investigating situations from the perspectives of identified individuals (Jackson 1991). This continuing difficulty in establishing the paradigmatic location of SSM, regardless of differing explanations, is profoundly unhelpful when considering its suitability for use in a study such as this.

Fortuitously Rose (1997) offers a more comprehensive examination of the philosophical foundations of SSM, specifically relating to its application as a method of social inquiry. He notes that epistemologically SSM employs systems concepts as devices for achieving the development of knowledge about the world. The use of these systems concepts to

understand the world are not efforts to generate descriptive or normative accounts as assumed in the application of hard systems thinking, but rather are used to structure efforts to generate plausible expressions about the incredible complexities in a social situation in a manner that allows the derivation of meaning. In this sense, arguing that SSM employs an interpretevist stance in the way it is used to generate knowledge is fair.

SSM is concerned with understanding complex social situations but assumes that because these situations are comprised of human activity governed by individual perspectives and beliefs, they cannot be understood by investigating data mathematically. The methodology is arguably aligned with interpretevism as it eschews the method of detached observation in favour of active attempts to uncover culturally derived and historically situated interpretations of the world (Denzin and Lincoln 1994), albeit it using an approach in which those offering opinions are guided to consider systemic factors and these contributions are considered using systems concepts. However, whilst this explains the epistemological device present when employing SSM, further consideration is required to identify the epistemological and ontological foundations this device is built on.

Arguably, soft systems thinking can be identified as making epistemic assumptions that align well with constructionism, and in particular concepts of social constructionism. This epistemology asserts that knowledge generated from an individual's experience is not the result of a simple apprehension of the external world, but is produced from an active and continuing process of interpretation, established from negotiations and relationships that occur within a social group or community (Lincoln 1995; Schwandt 2003). This social constructionist theory allows social phenomena to be understood as the result of both subjective and inter-subjective meaning-making activities of individuals and social groups (Guba and Lincoln 2005).

The grounding of SSM in social constructionism is easily identifiable as it is predicated upon eliciting the perceptions of an individual or groups as they pertain to a given situation, with a key focus being given to their often unarticulated assumptions and worldviews (Checkland and Poulter 2006). Although given scant attention by SSM's original authors, who recognise that these individually held perceptions affect how a particular situation is understood, without considering how these perceptions are developed, it can still convincingly be argued that this position is strongly reflective of a constructivist epistemology.

In Crotty's (1998) explanation of constructionism; "Truth, or meaning comes into existence in and out of our engagement with the realities in our world" (p.8). Similarly, Checkland (1999) notes that perceptions change over time and can be altered rapidly in the light of dramatic events. Although it is never explicitly articulated, it would be fair to suggest that if the occurrence of such 'dramatic events' can alter how individuals make sense of the world, the authors of SSM are indeed working from an epistemological foundation in constructionism in which the changing realities of a situation shape how meaning is constructed. Further to this, Checkland and Poulter's (2006) assertion that everyday situations contain people with; "multiple interacting perceptions of reality" (p.XV), also alludes to social constructionism and the meaning making processes for the phenomena they encounter through interactions with others. Indeed, Checkland and Poulter's (2006) own description alludes to this;

> As members of the human tribe we experience everyday life as being quite exceptionally complex. We feel ourselves to be carried along in an onrushing turbulent stream, a flux of happening, ideas, emotions, actions all mediated through the slippery agency of language, all continually changing. Our response to our immersion in this stream is not simply to experience it. Beyond that we have an innate desire to try to see it, if we can, as meaningful. We attribute meaning to it… Nothing is intrinsically a situation; it is our perceptions which create them as such, and in doing that we know that they are not static; their boundaries and content will change over time (p.5).

Consideration of this passage makes it hard to conceive of the underlying epistemology of SSM as anything but social constructionism. Checkland and Poutler (2006) describe a theory of knowledge and reality (the ontological assumptions of which will be discussed shortly) which rejects individualism and subjectivism. Rather the theory of socially based knowledge construction is favoured, in which meaning is not inherent and waiting to be discovered, but results from active and on-going interpretation, established from negotiations and relationships that occur within social groups (Lincoln 1995; Schwandt 2003).

Several elements identifiable in the passage quoted above inform this conclusion. Reference to both the human tribe and the agency of language are strongly reminiscent of anthropological contributions to theories of social constructionism as offered by Geertz (1973). These include the argument that cultures are based on systems of significant

symbols, including language, without which humans would be unable to function. This role of human culture, Geertz asserted, governs behaviour as the source rather than the product of human thought. In this understanding, it is clear that individuals do not encounter, make sense of and attribute meaning to phenomena in isolation, but rather do so under the direct influence of the existing culture in which they are immersed (Crotty 1998). The parallel in Checkland and Poulter's (2006) composition although never explicated, is strongly implied.

Similarly, the assertion that nothing is intrinsically a situation can also be easily located within a social constructionist epistemology, if Checkland and Poulter's (2006) definition of a situation is considered to refer to social phenomena. Again some work is required here as no explicit definition is provided by the authors. Rather, and arguably attributable to the initial focus of SSM as a practical problem solving tool (Rose 1997), the authors refer to real world problematical situations. The description of these as occurring within an everyday life of events, ideas and emotions is arguably suggestive of the social phenomena conceived by commentators considering constructionism such as Greenwood and Levin (1998) and Crotty (1998). In these commentaries meaning and knowledge is socially constructed regardless of the source of phenomena. As Crotty puts it; "Accordingly, whether we would describe the object of the interaction as natural or social, the basic generation of meaning is always social, for the meanings with which we are endowed arise in and out of interactive human community" (1998, p.55).

At this point it becomes necessary to consider some of the ontological assumptions present within soft system methodology, as any consideration of the theory of knowledge must necessarily also consider theoretical perspectives about the nature of reality. Before this consideration is given, it is worth reiterating that SSM is based on a fundamentally constructionist epistemology, albeit one in which systems concepts can be used to structure investigations into understanding social constructed phenomena.

3.3 Ontology: Realist and Relativist? Subtle Realism and the 'Real-World' in Soft Systems Methodology

Ontological philosophies relate to the nature of existence and reality (Ray 1994) and are necessarily strongly intertwined with epistemological theories (Crotty 1998). Traditionally, the ontological assumptions of realism and relativism which underlie the fields of quantitative and qualitative research respectively have been viewed as incompatible

(Lincoln 1990). However, the nature of soft systems thinking requires the qualitative inquirer to consider an ontological position in which there is some intersection between these two theoretical positions, and the nature of this approach which arguably straddles both may be the source of some of the philosophical obfuscation detectable in existing commentary.

It is prudent to expound the ontologies which can be identified in SSM before considering the impact this will have on the current inquiry into knowledge processes for evidence based practice in mental health. Firstly, it would be fair to suggest that there is a degree of realism present in the literature which has accompanied the development of SSM.

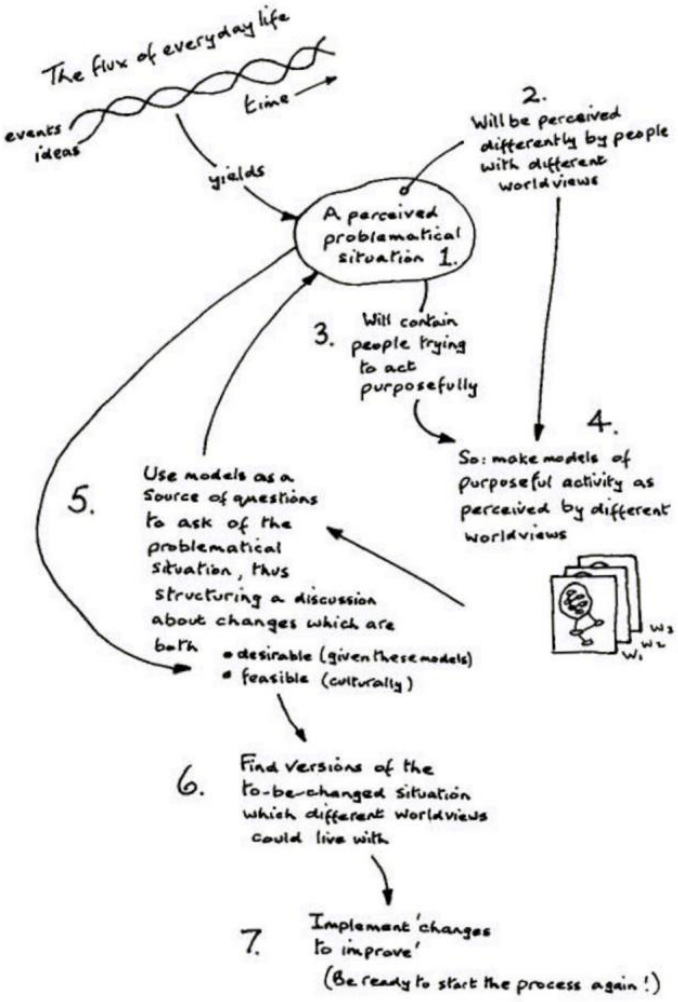
Realism is an ontological notion which posits that realities exist external to observers and the processes of meaning making that they may assume, or as Miller (2010) summates, inherent in realism;

> …there is a claim about existence. Tables, rocks, the moon, and so on, all exist, as do the following facts: the table's being square, the rock's being made of granite, and the moon's being spherical and yellow. The second aspect of realism about the everyday world of macroscopic objects and their properties concerns independence. The fact that the moon exists and is spherical is independent of anything anyone happens to say or think about the matter (Miller 2010).

Several author claim that SSM is founded on realist principles, and have gone as far as to argue that it assumes the objectivist standpoint suggested above, in which meaning exists in objects independently of any consciousness (Guba and Lincoln 1998). For instance, those who have interpreted soft systems thinking as a way of designing, engineering and altering systems to better achieve objectives (rather than as a way of organising the exploration of social phenomena) have argued that the functionalism inherent in this concept locates the understanding of reality in SSM in the schools of realism and objectivism (Hirscheim et al. 1995; Ledington and Ledington 1999). This is perhaps understandable when considering the diagrammatic representations offered for SSM and Rose (1997) has noted that the; “postulation of a below-the-line ‘real world’ - apparently unitary and the same for all observers - seems to assume an objectivist ontology” (p.6). Figure 3.1 (Checkland and Poulter 2006, p.xix) illustrates how this real world is conceived as detached from

perception in SSM and the conclusion that this implies an objectivist ontology is not hard to see.

Figure 3.1: Checkland's Soft System Methodology Overview



However, despite the diagrammatic separation, it is easy to detect throughout the work on SSM published by Checkland and various co-authors (1981, 1990, 1997, 2000, 2006), a clear differentiation from these positivist ontological assumptions. As Rose (1997) also notes; "Checkland always distinguishes his stance from that of the natural sciences" (p.6). Indeed it is asserted throughout the primary literature on soft systems methodology that different individuals will interpret phenomena in different ways, therefore rejecting the objectivist stance of inhered meaning. Other systems thinkers working contemporaneously made similar assertions with Wilson (1984) rejecting the realist concept that systems exist in the world in favour of the idea that these systems are constructed in the perceptions of individuals. In other words, humans use the language of systems to help analogise their experiences; perceived reality is conceptualised in terms of interrelated activity.

Rationally, this could lead to the conclusion that SSM shares more with the relativist ontology that is often associated with constructionism. From this perspective; "realities are apprehendable in the form of multiple, intangible mental constructions, socially and experientially based, local and specific in nature… and dependent for their form and

content on the individual persons or groups holding the constructions" (Guba and Lincoln 1998 p.206). Superficially, this seems to hold with SSM, however previous considerations of the relativist ontology have perhaps gone too far. For instance, Jackson (1990) has argued that the defining ontological assumption in SSM is one of subjectivism, often considered to be a diametrical contradiction of objectivism in that a subjectivist ontology presupposes reality entirely as a product of human cognitive processes (Johnson and Duberley 2000). Others have termed this extreme relativism arguing each individual's perception of reality is held to be unique and therefore equally valid (Pope and Mays 2000; Swoyer 2010), and those commentating directly on the philosophical underpinnings of SSM suggest that the deference paid to individuals' perceptions and worldviews confirms this (Davies and Ledington 1991).

However, it is also possible to reject this suggested subjectivism or extreme relativism as the result of continuing arguments about the incommensurability of different research paradigms (Houghton and Ledington 2002). Previous commentary has worked from the established position that if SSM assumes that reality is a construct of human intellect and cognitive processing it must be subjectivist, whereas if it declares the existence of an observable reality external to the human cognitive process it must be objectivist, with the mutual exclusivity of these two theories preventing both from being considered.

It is legitimate to argue that elements of both of these ontological theories are identifiable in SSM, and as such it adheres to a theory of reality which is both realist and relativist. This roots SSM back in the theories of reality that emerge with the social constructionist epistemology as understood by Fish (1990) and Crotty (1998) who embrace the views espoused by Heidegger and Merleau-Ponty of a world that is 'always already there' (Crotty 1998, p.44), but one in which objects and phenomena are essentially meaningless until human beings interact with them to create meaning. In other words; "to say that meaningful reality is socially constructed is not to say that it is not real… constructionism in epistemology is perfectly compatible with a realism in ontology" (Crotty 1998, p.63).

So what then is the ontology of soft system thinking, if it subscribes to a degree of realism that acknowledges the existence of a reality external to individual intellects, but equally acknowledges the role of human cognitive processes in constructing this reality? Hammersley (1992) has articulated a position of subtle realism in recognition of the assertion that whilst social realities are the product of human intellect, this does not

preclude the existence of phenomena independent of those processes or indeed, the claims made about them following research. The subtlety of this subtle realism arguably stems from the compatibility it recognises between an ontological position that both truth and reality are established and understood through the sophisticated processes of social actors, without conceding ground to the inoperable arguments of more extreme relativism, in which each research perspective is held to be unique and therefore equally valid (Pope and Mays 2000; Swoyer 2010). Importantly subtle realism does not immediately reject the realism of the positivist and post-positivist paradigms but rather suggests that the subjective perceptions, observations and constructions of reality do not preclude the independent existence of phenomena (Hammersley 1992).

3.4 A Flexible Soft Systems Methodology

As discussed in the previous chapter, contemporary conceptualisations of evidence based practice are increasingly discussing the potential contribution of systems thinking in efforts to understand and manage the complex interdependencies that govern how mental health professionals acquire, generate and apply research knowledge. Those few authors who have commented on this topic have mentioned a variety of different systems thinking approaches used in conceptualising and exploring both barriers to, and potential solutions for enabling the routine delivery of evidence based practice. For instance complexity science (Norman et al. 2010) and complex adaptive systems theory (Best et al. 2008a, 2008b, 2009) have both been used to describe initiatives aimed at improving evidence based practice. Soft systems thinking has also made an appearance both in efforts to investigate and determine the information needed to support evidence based decision making amongst cancer care professionals (Allam et al. 2004), and as the conceptual framework for an investigation into how healthcare teams produced, obtained, and used knowledge and information to bring about successful change (Olson et al. 2010).

What is common to these papers is the recognition that any attempt to facilitate health professionals to act in more evidence based ways will happen in situations of extreme complexity characterised and governed by diverse perspectives and numerous unpredictable yet interrelated factors. Systems thinking may well be an effective way of conceptualising these complex situations in a way that will allow the development of practicable solutions that enable evidence based practice.

Soft systems methodology offers an approach to both investigating these complex situations, and conceptualising the factors that may contribute to effective solutions in a way that is commensurate with qualitative inquiry. Its epistemological and ontological foundations in constructionism and subtle realism, along with a clear naissance in interpretive practice ideally position it as an approach for this study. Using SSM to inform the current inquiry will allow information to be elicited from participants and considered in a manner that remains sensitive to the inherent complexities of their situations.

3.5 Research Design and Methods

The following sections of this chapter detail the methods employed in this study articulating how they fit with a soft systems informed research methodology. It should be noted that soft system methodology is just that, a methodology, and was applied flexibly in this study during the selection and utilisation of different data collection and analysis methods.

3.5.1 Data Collection

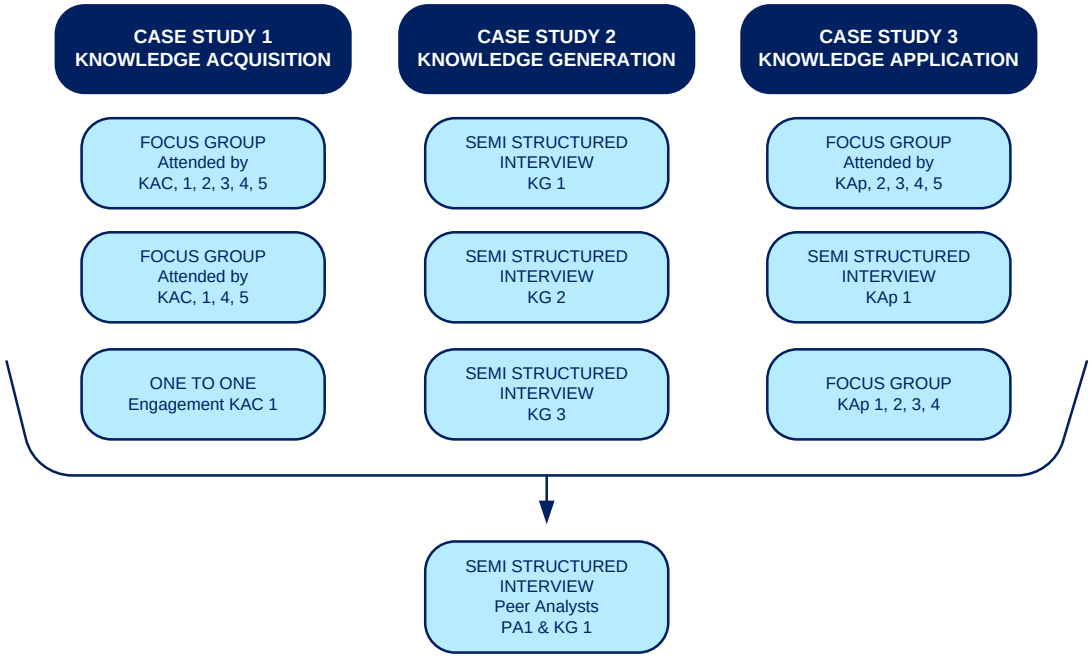
There is no set format for collecting information during the use of SSM. Based on their experiences of conducting action research in organisational settings, the methodology's developers recommend that data be captured during engagement with individuals by collaboratively developing pictorial representations both of real world situations and abstract conceptualisations of more effective processes (Checkland 1990; Checkland and Poulter 2006). Stiles (2004) has reported that the use of pictures to generate data can lead to revelations not always identified in purely verbal encounters. However, it was decided that method would not capture information in sufficient detail to allow a rigorous enough analysis to be undertaken, a limitation also considered by Rose (1997); "As theoretical models… they are highly abstracted, and constructed to embody systems principles…[but] unlikely to represent enough of the complexity of a situation to be adequately descriptive" (p.10).

Rather those research case studies in healthcare that have employed SSM have used various data collection methods including surveys (Stokes and Lewin 2004; Gillies and Galloway 2008) and semi-structured interviews (Clark and Wilcockson 2002; Reed et al. 2007; Gillies and Patel 2009). Other studies have proposed and used combinations of methods primarily employing focus groups and interviews (Clarke and Wilcockson 2001; Gibb et al. 2002; Abad-Copra et al. 2010). Checkland and Poulter (2006) are not overly prescriptive in their recommendations for how to structure data collection noting that

using SSM; “as if it were a recipe to be followed slavishly, throws away much of its value” (p.196). Rather, a methodology involving soft systems thinking should be crafted to fit the circumstances in which it is used, meaning there should be no impediment to collecting data using methods that can contribute to a more detailed analysis.

Consequently the primary methods of collecting suitably detailed information upon which to base a rigorous analysis were semi-structured interviews and focus groups. Data collection episodes proceeded iteratively and reflexively, with the decision to conduct focus groups and semi-structured interviews negotiated with participants and informed by the degree to which initial efforts generated appropriate data. An overview of the data collection process for each case is provided in Figure 3.2.

Figure 3.2: Data Collection Procedures



3.5.1.1 Focus groups

Focus groups are a legitimate method for data collection in qualitative inquiries and offer many characteristics well aligned with the stated objectives and methodology employed in this study. Data was collected to generate information about the phenomena of interest; the three knowledge processes underpinning evidence based practice. Additionally participants were facilitated to offer their opinions about what action could be taken to help achieve these knowledge processes.

Focus groups were initially indicated as a data collection method for a number of reasons including their commensurability with studies designed to investigate defined phenomena or situations (Morgan 1997, 2006; Barbour and Kitzinger 1999; Duggleby 2005; Stewart et al. 2007). Similarly, as focus groups often require active moderation (Krueger and Casey 2000) they suit situations in which data collection must be facilitated to generate specific information of interest. Many authors have commented on the ability of focus groups to produce extremely rich data, noting the contribution of group dynamics to this (Buston et al. 1998; Krueger and Casey 2000; Lysack et al. 2006)

Furthermore, the use of focus groups is in line with the Checkland and Poulters' (2006) observation that SSM is more productive when conducted in group settings as this allows multiple perspective to be included both in understanding the current situation, and in enriching ideas about the features that need to be established for a process or activity to be improved. This concept has been reinforced by authors considering shared or social learning group situations (Merton et al. 1990; Wibeck et al. 2007).

Focus groups have some potential drawbacks including the possibility that the public nature of this method may prevent deep explorations of individual perceptions (Chilban 1996; Johnson 2002; Rubin and Rubin 2005). Similarly, whilst it is conceivable that a successful focus group will generate rich and relevant information due to group dynamics, it is also possible that this approach can neglect or marginalise minority views or those of participants not comfortable expressing opinions in the group environment (Buston et al. 1998). However, it remains a widely accepted data collection technique in qualitative studies.

3.5.1.2 Semi-Structured Interviews

Whilst the initial intention was for data collection to be achieved through focus groups, it was recognised early in the study that flexibility would be required. Due to the prioritisation of clinical responsibilities and the requirement to respond to unpredictable circumstances, it was not always possible for participants to attend scheduled focus groups. Similarly, and in particular reference to the participants who provided information about knowledge generation, it was realised that it would not be possible to collect data within the bounds of a particular team due to the nature of this activity within the organisation.

The impact of unpredicted events and circumstances on planned data collection, whilst not ideal, is not atypical of the challenges faced during qualitative inquiries relying on prolonged engagement with participants. The need to approach systems thinking based inquiries with a degree of reflexivity and flexibility is recognised due to the unique constantly fluctuating nature of real world situations (Checkland and Poulter 2006). In such circumstances, other methods of engaging with participants needs to be found that are congruent with the methodology, and it was felt that semi-structured interviews provided an acceptable alternative.

Semi-structured interviewing with individuals is not significantly different to conducting focus groups, other than the potential differences in depth the two approaches offer (Di Cicco-Bloom and Crabtree 2006). Semi-structured interviews also recommend themselves for a use within a methodology aiming to explore perceptions and circumstances relating to social phenomena, and have been recommended for inquires within the complex organisational settings of the NHS (King 2004).

3.5.2 Data Sources: A Collective Case Study Design

The use of case studies in research can vary. Some authors classify them as distinct strategies of qualitative inquiry, whilst others understand them as sampling strategies (Creswell 2009). In the present study, the case study is not presupposed as a research strategy in its own right. Rather, as argued by Goode and Hatt (1952), and latterly Runyan (1982) in the field of psychology and Mitchell's (1983) sociological stance, the case study has been used to organise data collection and analysis in a unitary manner, allowing the parameters of interest to be delimited to social processes or phenomena.

This decision was also influenced by literature about SSM in which the methodology is always applied within a specified setting and towards identified phenomena, the human activities and real world problematical situations of Checkland and Poutler's (2006) most recent overview of the methodology. Equating the language used to describe applications of SSM with the efforts of groups of mental health professionals to engage in the constituent knowledge processes of evidence based practice is straightforward enough, and these margins are arguably well aligned with the concept of employing a case study based design. Delimiting unitary characters for investigation can easily be reconciled with both the language of problematical situations, and the three component knowledge processes under investigation. In fact, case study designs have previously dominated the limited amount of

healthcare research informed by soft system thinking, although these have largely seen the approach retrospectively applied in evaluating specified situations (Brown 1997; Hindle 1995; Bond and Kirkham 1999; Connell 2001; Reed et al. 2007; Gillies and Galloway 2008; Gillies and Patel 2009).

Within the particular context of evidence based practice, SSM has rarely been used and again has been done so retrospectively, investigating the impact of knowledge created in practice on wider groups in a healthcare organisation (Clark and Wilcockson 2001). Despite its primary function developing conceptualised models of how a set of objectives (such as the realisation of knowledge acquisition, generation or application activities by healthcare professionals) might be achieved in the light of an inquiry into the complex interrelated factors surrounding this, soft systems thinking does not appear to have been used prospectively to theorise about this subject.

This said adopting a case study approach to a SSM informed inquiry is not unprecedented in healthcare research. Considering Keen's (2000) assertion that; "case studies are most valuable where a planned change is occurring in a messy real world setting" (p.113), it is an approach that would appear to sit well with the use of SSM, with its focus on understanding and improving problematical situations in which human activities are the core. Stoecker (1991) further expounds the characteristics of the case study to include both the multi-method approach suggested by the research strategy school of case study design, and the theoretical emphasis of authors such as Goode and Hatt (1952) and Mitchell (1983) by attributing the term case study to; "those research projects which attempt to explain wholistically the dynamics of a certain historical period of a particular social unit" (pp.99-100). As Stoecker (1991) suggests the case study is not a method but rather a design feature or a frame that helps to guide the boundaries of data collection.

It is this understanding of the case study that informed the current study's methods, influencing the choice of research sites and participants. However, before detailing these, it is worth clarifying that several cases were included hence the collective case study design noted above.

Stake (1995; 2005) offers an explanation of the collective case study that is commensurate with the soft systems thinking approach in this study. He identified three types of case study; the intrinsic study, in which particular cases of interests are examined due to a

fundamental interest in that particular case rather than the objective of examining a case typical of a wider population or to build theory about specific phenomena; the instrumental case study in which a case is actively selected for examination because it is anticipated to provide insight into a particular issue; and the collective case study in which a number of cases are studied to investigate a phenomenon.

Stake (2005) notes the collective case study is the instrumental study extended to several cases in which; "individual cases in the collection may or may not be known in advance to manifest some common characteristic. They may be similar or dissimilar, with redundancy and variety each important" (Stake 2005, p.446). This distinction is important as other leading authors in case study methods such as Yin (2009) note that inquiries using multiple cases should attempt to replicate across cases, using matching cases, participants and methods. This approach is inappropriate for the current study for various reasons, but the resolute commitment to replication envisaged by Yin (2009) arguably smacks of an attempt to introduce the positivistic logic of comparability and natural scientific method to the case study which would be philosophically out of kilter with the purpose of this study. Similarly, Stake (2005) offers a plausible criticism of this approach noting that the epistemological strategy of comparison necessarily fixes attention on a finite number of attributes or variables, necessitating that any knowledge or information that fails to facilitate comparison must be disregarded, consequently lessening the learning that might result from paying attention to unique elements and complexities in each case.

A collective case study design was employed to meet the objectives of the study by allowing a number separate yet closely linked socially operated processes to be investigated in a detailed and in depth manner. It was recognised that it would be difficult to apply elements of soft systems methodology to the data collection and analysis stages if the entirety of evidence based practice process was considered, and thus by delimiting the study to a set of constituent processes in evidence based practice, each with a more finite and definable objective, it was possible to progress a more effective and penetrating exploration of these 'problematical situations' than would be the case if asking questions of a much larger process.

Despite the greater flexibility offered by this explanation of the collective case study it is recognised that the accuracy of claims by numerous authors that achieving the optimal

understanding of the phenomena of interest depend on the careful selection of cases (Patton 1990; Yin 1989).

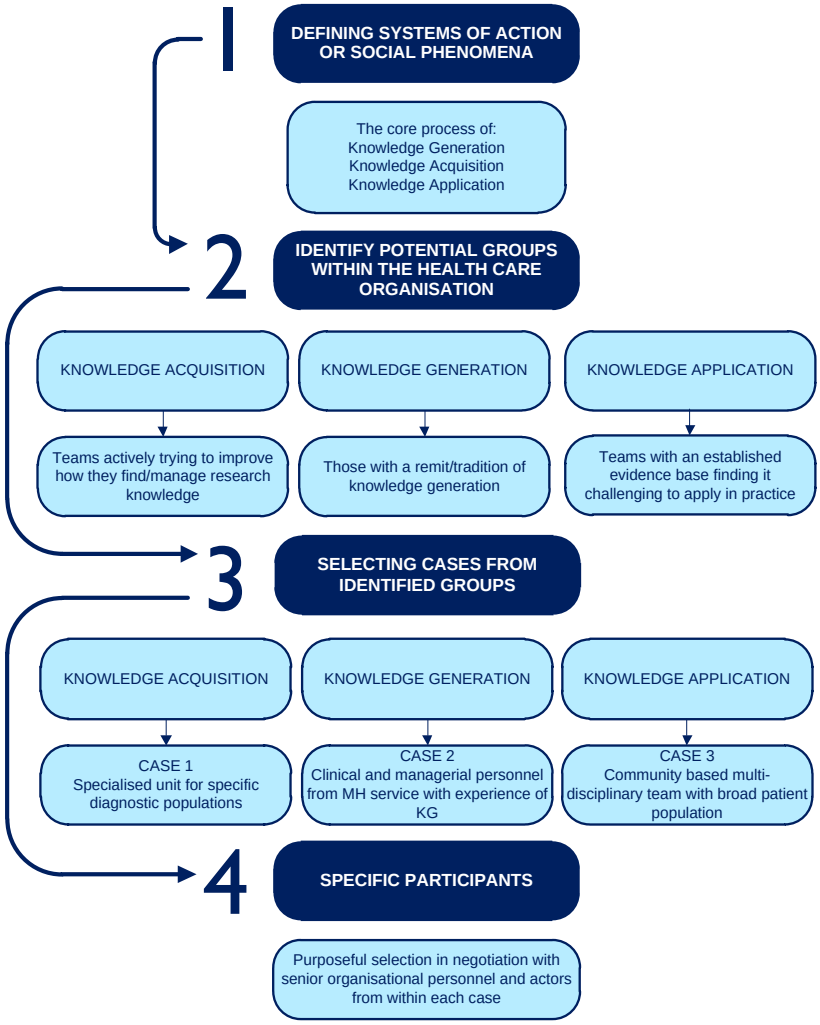
3.5.2.1 Selecting the Cases: Units of Analysis, Case Attributes and Participant Selection

Defining the cases in a research study is an important and subtle process. Using case study methods as a way of delimiting the units of analysis requires carefully informed choices about whom to include. Traditionally in the fields of sociology and psychology, this unit of analysis has been an individual person (Platt 1992). However, as the essential characteristic of the case study is that it attempts to elicit views and information about a phenomena in a cultural system of action (Sjoberg et al. 1991), there is every possibility that groups of people will be need to be involved.

As the central premise of this thesis is that improving engagement in the core processes of evidence based practice can best be achieved by systemically understanding the complex interrelationships between numerous individuals and elements of their social and physical context, it is necessary to involve multiple participants, allowing their perspectives about the impact of multiple factors be considered. As the particular perceptions or attitudes of individual mental health professionals is seen to be key to how they engage with the knowledge processes under investigation, it is necessary to model existing problems and potential solutions on an incisive understanding of these different perspectives, and how they are formed.

Identifying the limits of these social situations can at first appear complicated. Yin (2009) notes; “the desired case should be some real life phenomenon, not an abstraction such as a topic, an argument, or even a hypothesis… you need to define a specific, real life “case” to represent the abstraction” (p.32). Choosing the cases to be included in the present study was guided by specific phenomena that were to be the primary units of analysis. This study, in line with typical uses of case studies (Tellis 1997), focuses this selection on specific cultural systems of action rather than individuals of groups of individuals. As such the cases were chosen in a four step process, firstly defining the systems of action or social phenomena of interest, secondly identifying broad groups within the healthcare organisation with desirable attributes demonstrating the characteristics of these phenomena, thirdly selecting cases from the available number of possible cases to generate appropriate data, and finally identifying the individuals to be directly involved in the generation of data. This process is detailed in Figure 3.3.

Figure 3.3: Overview of Case and Participant Selection Process



3.5.2.2 Establishing the Units of Analysis

This study sought to understand, from a systems perspective, what circumstances and features need to exist in a healthcare organisation to enable mental health professionals to more effectively engage in sustainable evidence based practice. It was established in the preceding chapter that recent and contemporary processed-based conceptualisations of evidence based practice can be categorised as three core processes, namely knowledge acquisition, knowledge generation and knowledge application.

This categorisation is to some extent an intellectual exercise to allow for more precise debate and communication about the topic, and it should be noted that there is no suggestion that these elements happen in isolation. Indeed the very thrust of this study is based on the supposition that supporting mental health professionals to successfully

integrate these three processes will enable evidence based practices to occur routinely in mental health.

The current study takes the cultural systems of action to use the phraseology of Sjoberg et al. (1991), or the real world problematical situation to use Checkland and Poulter's (2006) soft systems language, to be mental health professionals' activities connected with these core processes of EBP. To this end, the cases initially envisaged for inclusion in the study were required to be actively involved in considering how to engage more effectively in either knowledge acquisition, generation or application activities to improve their evidence based practices.

3.5.2.3 Identifying Case Attributes

Having identified the primary units of analysis in the cases as relating to the three core processes of interest, case selection became dependent on a careful consideration of the attributes of each of the potential cases identified as likely to generate information about the three core processes.

The concept of selection through anything other than purposive sampling is arguably not achievable in qualitatively orientated case studies as the cases are always chosen with the intention of providing data about phenomena of interest (Keen 2000). While it can be asserted that case study designs allow the researcher opportunities to develop theory out of the examination of bounded cases, they must position themselves to make this achievable by ensuring they can investigate the critical phenomena (in this case the three knowledge processes), thus requiring a careful selection of cases based on an examination of their particular attributes (Patton 1999; Vaughan 1992).

As such, the cases selected for inclusion in the present study were done so using a balance between pragmatic factors such as resource availability, the phenomena of interest, the particular attributes of each potential case, and the opportunity presented by each potential case to learn about the phenomena, including their hospitability to the research study (Stake 1995; 2005). Creating this opportunity to learn and construct theory requires some consideration be given to the representativeness of potential cases. For instance, engagement with groups who could provide information about the phenomena of interest (knowledge acquisition, knowledge application and knowledge generation activities), had to be balanced with a variety of possible attributes from each potential case including; service

type (namely community or institutionally based; specialising in the treatments of specific diagnostic groups or general disorders); type of treatment delivered (such as psychological therapies, psychotherapies, psychiatric treatment); and geographic location (for instance rural or urban focussed or participants providing services across the organisation's catchment area).

It was decided to purposely include groups who had identified themselves as actively interested or engaged in attempting to optimise either their knowledge acquisition, application or generation processes as this would allow the investigation to; "lead to better understanding, and perhaps better theorizing, about a still larger collection of cases" (Stake 2005, p.446). In this case, the larger collection of cases can be construed as both other mental health operations within the healthcare organisation within which the study was set and wider mental health services throughout the UK.

However, it should be noted that, although the cases were chosen so that each of the three processes were sure to be strongly represented in enough detail for thorough investigation, the interdependent nature of these knowledge processes gave some assurance that data collection at the sites would also generate information relating to the other two processes. For instance, when reporting their experiences and opinions about the processes of applying research knowledge in practice, it was speculated that the participants would also be likely to comment on the processes involved in acquiring that knowledge, or opinion about the generation of further related research, even though these processes were not the primary phenomena of focus.

Similarly, there is an element of data source triangulation in the decision to include cases with dissimilar attributes, which can go some way to adding to the quality of the study by contributing to the indicators of commitment suggested by Yardley (2000). "Data source triangulation is an effort to see if what we are observing and reporting carries the same meaning when found under different circumstances" (Stake 1995, p.113). Similarly, Knafl and Breitmayer (1989) and latterly Baxter and Jack (2008) note that collecting and comparing data in this way can enhance the quality and validity of findings due to the principle of convergence, in which similar conclusions originating from sources with different attributes confirm and legitimise the knowledge claims or theory generated. In developing the case study features of this research design to include groups across the organisation it was hoped that any data generated about the core evidence based practice

processes could be triangulated to give clearer and more plausible insight into the systemic factors at play.

3.5.2.4 Choosing the Specific Cases

Potential cases for inclusion were initially identified through discussion with senior strategic personnel in the organisation. This process was adopted to ensure that the access obtained to any participating groups was sanctioned by those with appropriate authority and because this is recognised as a useful method of creating the buy-in required to successfully complete organisationally embedded research (Brewerton and Millward 2001; Hartley 2004). Similarly, engaging with senior personnel has previously been used as a method of supporting the purposive sampling of potential cases in organisationally focussed research (Miller 1994), and indeed precedents for the use of purposive sampling in organisationally focussed case studies in mental health have been set (Gask et al. 2008).

Figure 3.4: Overview of Case Attributes

CASE 1	**The Knowledge Acquisition Case** Inpatient and community based service providing a mixture of therapies (psychiatric and psychotherapeutic) to specific diagnostic groups covering the total geographic area of the health organisation. Actively engaged in efforts to improve how they identified, acquired and managed research knowledge relating to their services.
CASE 2	**The Knowledge Generation Case** Medical personnel involved in providing treatment to a wide range of patients (acutely unwell and rehabilitative patients from child, adolescent and adult populations) in both inpatient and community settings. A non-clinical manager engaged in supporting the application of best practice with mental health services. All participants had previously been involved in unsupported knowledge generation efforts and were currently engaged in differently structured knowledge generation activities.
CASE 3	**The Knowledge Application Case** Community based team providing psychological therapies only to a wide range of diagnostic groups in a rural setting. Actively engage in attempts to improve how some elements of a nationally ratified evidence base was applied in practice.

Service and participant profiles will be provided in more detail in Chapter 4 but it is prudent to mention briefly at this point the attributes of the selected cases to illustrate how the balance between identifying the phenomena of interest and a variety of characteristics of

each case representative of the organisation was achieved. These are provided in Figure 3.4.

3.5.3 Selecting Participants

Guidance on the inclusion of individuals in a SSM based study is conspicuously absent from descriptive accounts of the methodology's use which tend to commence with narratives of the process, or focus on detailing the gathering and analysis of data to produce conceptual models of potential activity without first identifying how participants were involved. To overcome this problem a participant selection strategy based on previous methods used in participatory action research (Balcazar et al. 1998) and organisational research (Heller 2004) was used in which participants were identified collaboratively with other individuals from the case. Thus, few restrictions were applied in relation to the recruitment of participants at each case site. In line with a wealth of published research into successful action research and change management, the involvement and support of a senior clinician or operational manager was engaged to ensure contributions from someone who had a wider understanding of organisational factors, possibly unattainable by 'junior' personnel, and because they would have some of the requisite authority to enable others to participate. Other than this, each of the included sites nominated those stakeholders they felt should be included in the research process.

A different approach was made for those participants who were not located within a team (those in the Knowledge Generation Case and the Peer Analysts). These participants were purposively selected using the required case attributes as an eligibility guide that ensured the inclusion of participants who could offer information about the phenomena of interest (Mays and Pope 1995).

3.5.4 Data Collection Procedures

Focus group data was collected for the knowledge acquisition and application cases at two sessions. The first concentrated on eliciting information about the current situation relating to these processes. The second sessions included a period considering and validating the pictorial representations generated from the information provided at the first focus group, following which the majority of time was spent considering purposeful activities and contextual circumstances required to improve the current situation.

Both of these processes were subsumed within one sitting for the one-to-one semi-structured interviews. In line with published recommendations on the conduct of focus groups (Krueger and Casey 2000) prompting materials were provided to stimulate discussion about the range of topics identified for consideration. Examples of these can be seen in Appendices C and D. Lists of discussion topics similar to those in these prompt materials were produced to help guide the qualitative interviews with those participants in the knowledge generation case, as recommended by Mason (1996).

The focus groups and interviews were led by the researcher who introduced the session, explained the background and focus of the study and used the question areas specific to the objectives of each case to facilitate discussion. As far as was possible without interrupting the flow of the discussion questions were proposed in the sequences indicated as it was felt that this reflects a logical approach to facilitating the generation of appropriate information to inform the stages of the SSM process, allowing maximum insights to be generated as the participants become familiar with the topic (Krueger 1994). The proceedings were digitally audio-recorded and these transcribed verbatim into text. During the interview and focus groups, the researcher took notes whilst observing behaviours and body language to provide contextual information for later data analysis (Morgan 1997). The groups and interviews were held in dedicated rooms at the participants' working locations to minimise the impact of the research work on clinical services. Efforts were made minimise distraction, disruption and to provide favourable conditions for audio-recording, however the nature of the participants' clinical responsibilities meant that some disturbances were inevitable. For instance, some personnel had to be available to receive phone calls in case of emergencies.

3.5.5 Data Analysis

The literature available offering recommendations for analytic procedures in qualitative inquiries is extensive, disparate and challenging to navigate, with most information associated with specific traditions or detailing prescribed procedures recommended in various methodologies such those by Strauss and Corbin (1990) for grounded theory, Smith et al.'s (2009) interpretative phenomenological analysis, or Leiblich's (1998) narrative analysis.

This presented a challenge for the current study in that, whilst SSM has been shown to share ontological and epistemological underpinnings commensurate with qualitative

research, it does not readily fit into an established set of analytic procedures. The participative practical analytic procedures recommended within the published methodology, in which data is analysed in real time collaboratively with participants, while being suitable for action research is perhaps too hasty for the current study. Rather a degree of creativity was required to approaching the design of analytic procedures for this study.

The lack of a tradition or prescribed procedures does not preclude the conduct of a sound and systemic analysis based on SSM and several key authors have offered recommendations for qualitative analytic procedures that are not tied to specific research traditions (Silverman 1993; Rice et al. 2000; Pope and Mays 2000; Thomas 2006), and others have argued that analytic methods should be picked freely and pragmatically to help best answer the research questions (Blaikie 2000). The data analysis procedures reported below make reference to a variety of methods and consequently it is prudent to note some underlying assumptions. Firstly, in line with the ethos of soft systems thinking in which a detailed exploration is made of a given situation, including both individual perspectives, behaviours and elements of context, it was key for the analysis to be largely inductive, so that findings and conclusions emerged from significant themes within the original data (Bryman 1988; Boyatzis 1998; Thomas 2006). For this study these were related to the processes underpinning evidence based practice, with a unique element being the consideration given to systems thinking during analysis.

3.5.5.1 Data Preparation

Verbatim transcriptions of audio recordings of the focus groups and interviews were produced by a professional typing service. Each of these transcripts was checked against the original recordings with the researcher correcting any errors. These text files was then uploaded onto Nvivo 8 (QSR 2008) software which was used as a platform for managing analysis. An initial round of coding was undertaken in which data was attributed to case, demographic indicators such as gender, age, profession, level of experience, working location and educational level.

3.5.5.2 Close Reading

Thomas (2006) describes a close reading process in which raw data is considered in detail; “so the researcher is familiar with the content and gains an understanding of “themes” and details in the text” (p.241). This step is common in qualitative analysis with Ritchie et al.

(2003) terming it familiarisation and noting its importance in the early stages of analysis describing the process to be; “akin to building the foundation of the [conceptual] structure. If that foundation is ill conceived or incomplete, then at best it could jeopardise the integrity of the structure” (p.221). Whilst these descriptions hint at a process by which the qualitative inquirer can begin to become familiar with data, Miller and Crabtree (1994) refer to this as immersion and suggest that it is in fact part of a wider process in which analytic processes are employed in the early identification of coherent patterns and themes within the data. Miller and Crabtree’s (1994) explanation more accurately reflects the initial analytic procedures in which transcripts were used to produce pictorial representations for validation by the participants before the more formal procedures detailed below. Transcripts were examined repeatedly during the development of these diagrams an example of which can be seen in Appendix E.

3.5.5.3 Initial Open Coding - Describing the Data

Following the initial development of pictorial representations from the focus groups and interviews all transcripts went through a process of open coding as recommended by authors such as Glaser (1978) and latterly Straus and Corbin (1990). The objective of this stage was to begin describing and summarising the raw data. Codes were developed to allow for the reconfiguration of raw data into groups which dealt with demographic details and participants’ attributes, as well as groups which described the data generated during the focus groups and interviews. For instance codes were developed which paraphrased elements of the raw data, allowing this to be reconfigured and summarised more concisely into emerging categories. This process of summarising the raw data, was as Fereday and Muir-Cochrane (2006) suggest, an opportunity to reflect “the initial processing of the information by the researcher and provided the opportunity to sense and take note of potential themes in the raw data” (p.6)

Whilst more structured coding processes were used later in the process, an open coding approach was chosen at this stage to prevent the application of a predetermined framework limiting initial data interpretation (Kendall 1999). Rather, during this early stage data was treated without reference to wider concepts whilst it was effectively broken down, examined and attributed to descriptive sub-categories for further analysis. At this stage coding saturation was attempted to ensure that all relevant data was captured and described in the emergent categories, covering the central thrust of information provided

by the participants and ensuring that later analysis of these sub-categories would remain based on data (Jones and McEwen 2000).

3.5.5.4 Forming Major Categories - Analytic Coding

Once the process of open coding had been completed, the next stage in data analysis was undertaken with the objective of discovering patterns and themes in the data. This was achieved through further immersion with the raw data and engagement with the emergent categories developed during open coding. In line with Crabtree and Miller's (1999) advice to look for connections, patterns and clusters in the data, major categories were inductively created which typified the underlying information, common elements and similarities identifiable in these groups of emergent categories. The development of these clusters of emergent categories helped the establishment and exploration of links and relationships in the data.

The development of these major categories can be seen along with the wider analytic procedures for each case in figures 3.5, 3.6 and 3.7

3.5.5.5 Comparative Analysis - The Systems Prism

Following the process of major category formation, a tertiary level of coding was undertaken in which these categories were systematically clustered around predetermined topics. Similar to a process of axial coding described by Straus and Corbin (1990) in their grounded theory approach to qualitative inquiry, this involves using a set organising scheme in which predetermined categories were used to structure consideration of the established sub-categories. The concept of axial coding was borrowed and adapted to fit the purposes of this study. The questions asked of the data at this stage reflected questions derived from soft systems thinking, focussing on how factors such as interpersonal relationships, organisational dynamics and elements embedded in local context contribute to the particular processes under investigation.

The organising scheme used during this stage of analysis was designed to complement the systems thinking approach flowing through this study. Meyer et al. (1993) have suggested that control of systems can be exercised at three levels; the individual level; the group, team or microsystem level; the organisational level; and can be influenced by the wider elements of an external 'system', a concept that has also been used by Ferlie and Shortell (2001) to consider frameworks for improving healthcare quality in the UK and US. Data

captured in the sub-categories was explored in relation to how it related to these different systems levels. Thus for each knowledge process under investigation categories were created in which information about the role of factors linked to each of these different level could be allocated.

This particular process was deliberately developed to be enable the framework of systems thinking, in which both substantive elements of context and the impact of subjective perceptions are considered, to be more effectively applied to the data. It is the results of this stage of analysis which are reported in this study inasmuch as that for each knowledge process considered, conclusions about the individual, team/microsystem and organisational levels have been detailed.

Figure 3.5: Knowledge Acquisition Case - Data Analysis Process

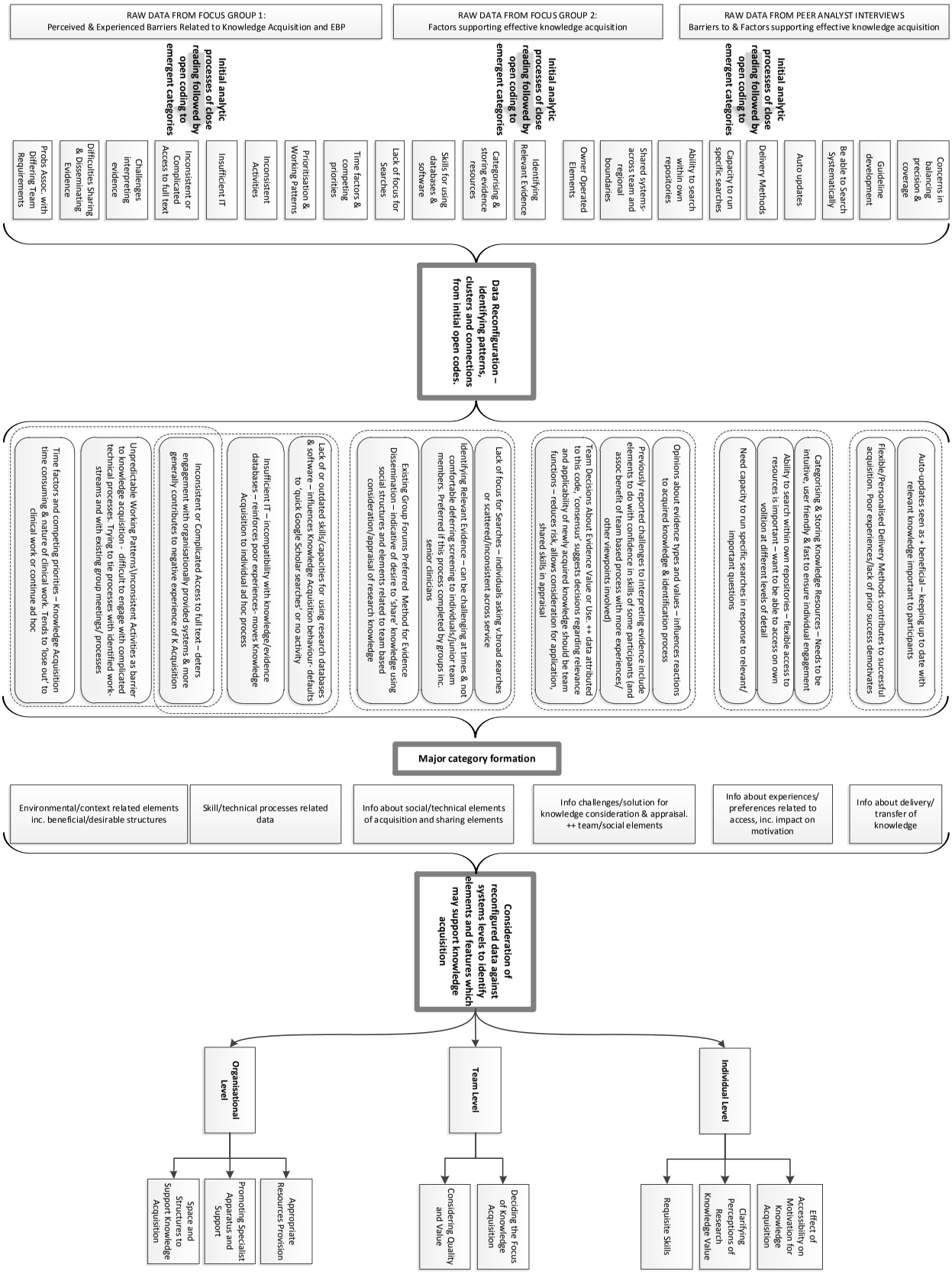


Figure 3.6: Knowledge Generation Case - Data Analysis Process

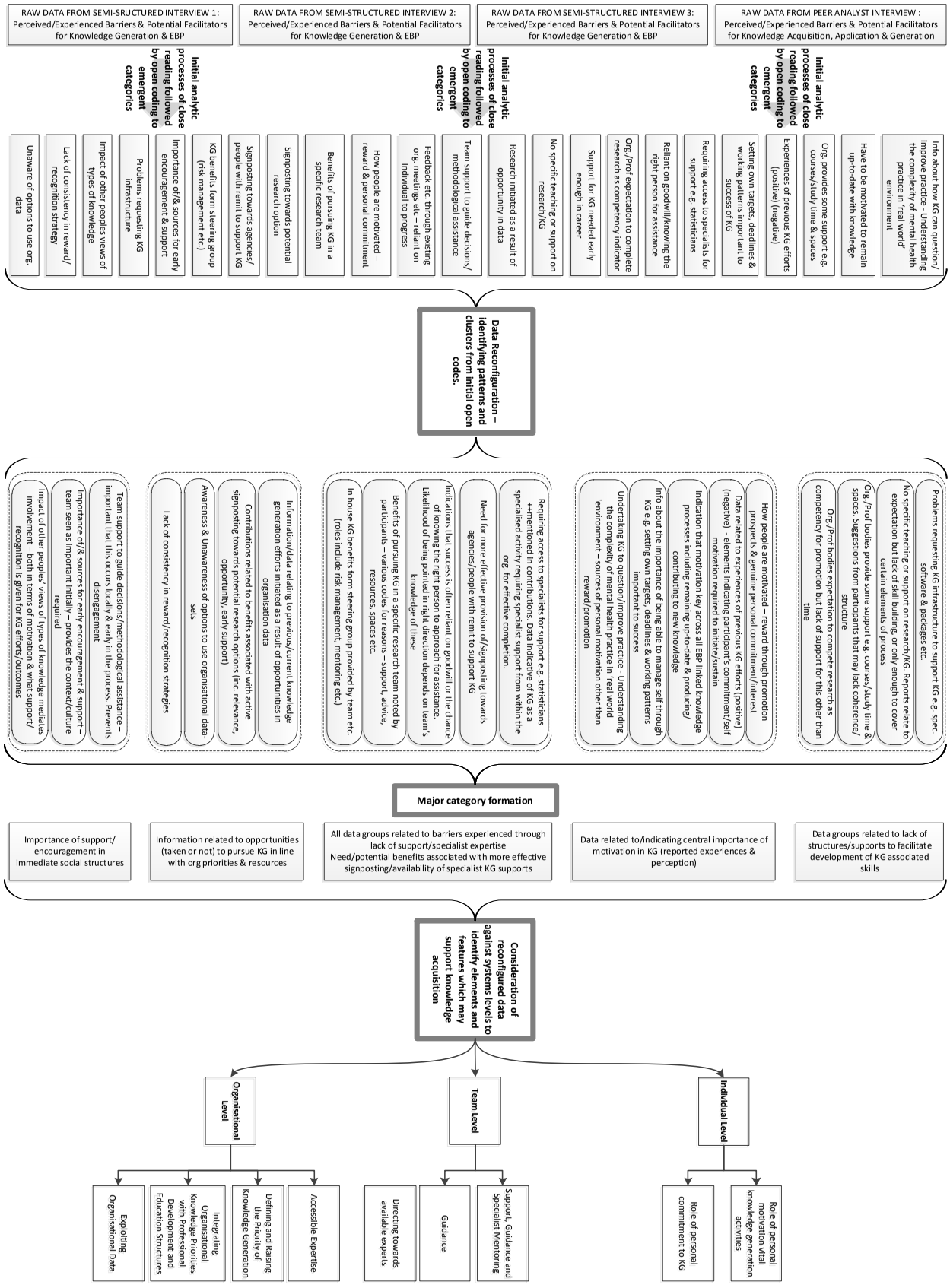
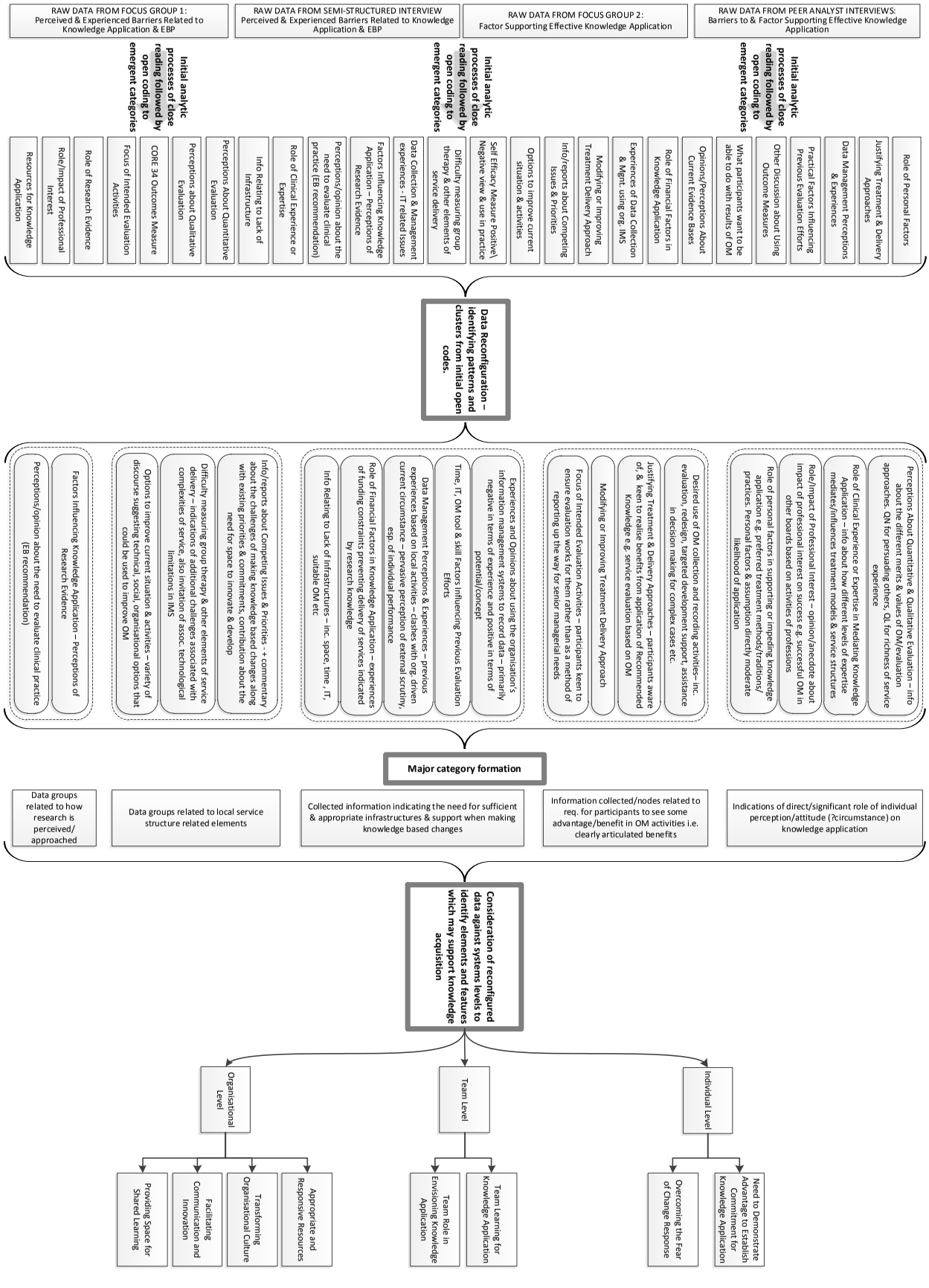


Figure 3.7: Knowledge Application Case - Data Analysis Process



3.6 Crafting Qualitative Research to Ensure Quality

The challenges facing qualitative researchers attempting to ensure that claims resulting from their efforts are deigned to be acceptable by a wider audience are often derived from the increasing proliferation and continuing evolution of qualitative methodologies in different fields (Denzin and Lincoln 2003). This can make establishing the acceptability and value of research demanding (Yardley 2000; Mays and Pope 2000). The evolution of qualitative inquiry in both health research and other disciplines has been matched by spirited debate as to how to best ensure rigour and quality, and although arriving relatively late in healthcare, qualitative research methods have grown in use and have been the subject of increasing scrutiny (Mays and Pope 2000).

Efforts to specify criteria for establishing quality in both the conduct and consideration of qualitative research has led to a number of different recommendations being made, as illustrated by the increasing number of guidelines and checklists that have been developed since the early 1990s (Krefting 1990; Inui 1991; Ward 1993; Kuzel et al. 1994; Leininger 1994; Elder and Miller 1995; Secker et al. 1995; Boulton et al. 1996; Greenhalgh and Taylor 1997; Rowan et al. 1997; Patton 1999; Mays & Pope 1995, 2000; Giacomini et al. 2000; Malterud 2001).

The crux of this debate has largely rested on whether or not it is possible to apply the quality criteria that are recognised in quantitative research to ensure the validity of findings to achieve the same ends in qualitative inquiries. Advocates of the anti-realist/extreme relativist approach argue that as qualitative research represents a distinct paradigm, with separate and different ways of understanding knowledge and understanding reality, attempting to apply criteria from a discordant paradigm would be futile and would not allow for validity to be judged in any meaningful way (Mays and Pope 2006). However, commentators in the healthcare field such as Murphy et al. (1998) have argued on pragmatic grounds for the rejection of this suggestion. Requiring the development of separate criteria amenable to this position which may preclude explicit insights from the research process would command very little attention among the consumers of health research. Similarly, those authors who have attempted to synthesise the different quality criteria proposed by anti-realists have failed to do so in a way that does not lead to obvious challenges (Hammersley 1992; Mays and Pope 2006).

More judicious and flexible approaches have been recommended by contributors to these discussions, including suggestions that there are ways to consider the different perspectives offered by different research processes which include criteria applicable to both qualitative and quantitative research (Hammersley 1992; Kvale 1996; Whittemore et al. 2001). In an effort to guide how the value of qualitative research is established Yardley (2000) has recommended four key dimensions which can be flexibly used to address issues of quality.

Undertaking efforts to create a research design that observes these dimensions is one route that can be taken to ensure the production of coherent and valid knowledge. Table 3.1 shows the explicit endeavours that were made during this study to assure the quality of this research by referencing key elements of design and procedure against these dimensions offered by Yardley (2000).

Table 3.1: Demonstrating Research Quality

Sensitivity to Context	Multiple facets of context require consideration in qualitative inquiry including theoretical and empirical context established by previous commentary and investigation, awareness of the socio-cultural setting, participants' perspectives and ethical issues.	
	Specific Methods	**Example in Study**
	Investigation of relevant literature to ensure consideration of relevant theory and empirical research	Systematic literature review including theoretical papers, opinions and empirical evidence related to key elements of the study including conceptualisation and strategies in evidence based practice and methodological precedents
	Vertical generalisation: linking findings to the work of others to contribute to wider theory building (Johnson 1997)	Addressed in the discussion of findings chapter in which reference is made to both previous empirical work and wider theoretical bases such as concepts of organisational knowledge management, diffusions on innovation theory etc.
	Philosophical grounding in research approach	Establishment and critical discussion of the philosophical underpinnings of soft system methodology and consideration of how different data collection and analytical procedures fit with underlying assumptions
	Prolonged engagement with participants to help understand socio-cultural factors (Glesne and Peshkin 1992; Lincoln and Guba 1985) and persistent observation (Onwuegbuzie and Leech 2006)	Multiple data collection, involvement with the participants past the point of data collection in capacity of knowledge broker
Commitment and Rigour	Relating largely to the data collections and analysis processes, demonstrating commitment and rigour correspond with typically articulated indicators of procedural quality, helping readers judge the credibility with which the research has been conducted	
	Specific Methods	**Example in Study**
	In-depth engagement with the topic	Close reading and immersion/crystallisation during analysis
	Appropriateness of sample in terms of ability to provide required information	Purposive case selection involving multiple participants from different clinical situations known to have engaged in and remain active in considering in the particular topics of interest
	Triangulation (Glesne and Peshkin 1992; Lincoln and Guba 1985; Merriam 1998; Miles and Huberman, 1984, 1994; Patton 1990)	Peer analysts employed to provide alternative perspectives for triangulation
	Prolonged engagement with participants to help understand socio-cultural factors Glesne and Peshkin, 1992; Lincoln and Guba, 1985) and persistent observation (Lincoln and Guba1985; Onwuegbuzie and Leech 2006)	Multiple data collection, involvement with the participants past the point of data collection in capacity of knowledge broker
Transparency and Coherence	Related to the presentation of research, efforts should be made to ensure clarity and cogency. A convincing transparency can be achieved through accurate description of the data collection and analysis procedures and through disclosure of all relevant aspects of the research process	
	Specific Methods	**Example in Study**
	Respondent validation	Focus group participants invited to validate diagrammatic representations of their contributions
	Detailed exposition of method (Miles and Huberman 1994; Peraklya 1997)	Full disclosure of research process detailed
	Reflexivity should be demonstrated to guard against distortion or conjecture and can be achieved by exploring alternative hypotheses and explanations, explore negative instances, and examining biases Marshall 1990; Maxwell 1996).	Coding saturation to demonstrate full exploration of data including negative cases and alternate explanations. Full descriptions in the research report to give the 'many voiced account' (Koch and Harrington 1998). An absence of threat established through prolonged engagement (Lofland & Lofland, 1995), Self-disclosure and explicit recognition of the participant as expert (Primeau 2003) Respondent validation completed using rich pictures
Impact & Importance	A decisive criterion by which research can be judged. The impact and utility of research should be considered both in terms of theoretical and practical contributions it has or may potentially have.	
	Specific Methods	**Example in Study**
	Detailed consideration of potential impact and clear recommendations	Addressed in the discussion chapter in which the potential impact of the study's findings are considered in terms of their contribution to existing knowledge and the potential impact of both policy and practice in healthcare

3.7 Research Ethics

To ensure that this research study met required ethical principles and standards the following considerations and actions were taken. To ensure veracity potential participants were provided with information sheets (Appendix G) in advance of data collection sessions. These outlined the title and aims of the study (partially edited in Appendix G to protect anonymity), the potential benefits of the research results, what their involvement would constitute, who would be conducting the research and contact details for their primary supervisor. This enabled potential participants to contact the supervisor should they wish to find out in more depth about elements of the research process.

These information sheets also detailed for the potential participants the steps taken to protect their confidentiality and anonymity. To protect the participants, no information has been released allowing them to be identified in any way to individuals other than those conducting the research or in the supervisory team. All personal or potentially identifiable information has been secured in locked filing cabinets or on password protected computers for the duration of the study and will be destroyed upon completion. During the writing of this thesis, potentially identifiable information has been omitted or altered to protect the participants' anonymity.

Informed written consent was sought from each included participant following provision of these information sheets and a subsequent verbal reiteration at the start of each session during which data was collected which included the opportunity to ask questions of the researcher. This consent was recorded in writing on a form (Appendix I) which indicated the participants' understanding of their right to withdraw at any time without giving a reason, and without penalty or risk. These forms also indicated the participants' consent to be audio-taped and that they confirmed their understanding of the information outlined in the information sheet. It also indicated their agreement that the recorded material could be used for educational purposes with postgraduate students participating in the research (i.e. the thesis author).

In line with ethical considerations about autonomy, no material benefits were be offered as a means of preventing coercion. Similarly, to ensure non-maleficence participants were only be asked to contribute to the data collection for roughly two to three hours to limit any impact their involvement may have on service provision.

Specific ethical approval was sought from Queen Margaret University (edited application detailed in Appendix K). Similarly, as this research study involved NHS personnel, ethical approval was also sought from relevant governance bodies. The Scientific Officer for the relevant research ethics service provided a letter (Appendix L) of ethical advice indicating that further formal ethical approval was not necessary but recommending the relevant quality improvement team be contacted prior to the study commencing. This action was completed and the proposed study accepted by the quality improvement team.

Chapter 4. Organisational, Service, Participant Profiles, and Context

This study was located in a large public health board in the UK. To help provide some contextual information to illuminate the findings of this study this chapter details the organisation's structure, publicised vision and population demography. Following this information is provided for each of the cases involved in the study, and participant profiles are reported for each of the individuals who took part.

4.1 The Organisational Profile

4.1.1 The Organisation's Vision

Prior to this study commencing the host organisation had been working towards a five year strategic plan. The plan included a vision statement declaring the organisation's commitment to becoming a world leader in healthcare provision. Within this strategy the organisation had prioritised five areas of action:

- To deliver and sustain high quality care and treatment
- To improve health and reduce health inequalities
- To embrace advances in medicine, technology and information
- To be at the forefront of research and leadership
- To be an exemplar employer

More specifically, the priorities for mental health operations of this NHS organisation were detailed in a strategic plan launched during the conduct of this study. These strategic priorities are summarised in table 4.1

Table 4.1: Strategic Priorities for NHS Organisation's Mental Health Operations

Priority Area	Commitment to Action Outlined in Strategy
Improve productivity in mental health services	Use integrated care pathways to: • Improve assessment processes for all patients referred • Reconfigure community services for greater focus on older people's mental health & services for people with dementia • Reducing unnecessary inpatient bed use across age groups & settings • Improve discharge & step-down arrangements
	Repatriate out of area patients & respond effectively to substance misuse
	Build peer support
	Maximise workforce productivity
	Increase direct care time in hospital & community settings
	Identify inefficiencies in working practices
	Improve the health of the workforce
	Deploy specialist skills more effectively
Strengthen the interface between physical & mental care	Focus on people with long term conditions & mental health problems & people experiencing mental health problems due to long term conditions
	Address medically unexplained symptoms
	Improve services for older people
Wider economic benefits beyond the NHS for improved mental health care	Effective employment support - using the individual placement support model
	Supporting mental health in the criminal justice system - e.g. youth justice liaison & diversion
Longer term aspiration of promotion & prevention	Improving mental health of children & young people
	Preventing or reducing the prevalence of dementia
	Ensuring a system that promotes independence, self-management & embedding recovery

4.1.2 The Organisation's Structure

The large NHS board in which this study was located encompasses a number of separate local authority areas covering approximately 1800 km^2. It employs approximately 29,000 personnel providing services through three organisational structures; the health board, the university hospitals division and community healthcare partnerships. These structures include twenty-one hospitals, including four large teaching hospitals, 126 general practices, 180 community pharmacies, 173 dental practices and 112 ophthalmic practices. Financially the organisation controls a large budget. The most recently available financial information details a net operating cost of £1,214,612,000

4.1.3 The Organisational Setting

Two of the cases in this study provided services for patients from across these geographic areas covered by the health board, whilst one provided services specifically within the

boundaries of one local authority area. The attributes for these cases are detailed more precisely later in this chapter.

The information provided below in Table 4.2 is concatenated from a variety of sources to give an indication of the general demographic, socio-economic and health status of the overall health board and the local authority aligned service. Comparisons to national figures are given where possible.

Table 4.2: Concatenated Demographic Information

Indicator (year)	Local Authority Aligned Service	Health board	National
Total population (2010)	97,500	836,711	5,222,100
Total population- Children (%) (2010)	19.24%	16.90%	17.46%
Total Population - Working Age (%): (2010)	59.57%	65.47%	62.58%
Total Population - Pensionable Age (%): (2010)	21.19%	17.63%	19.96%
Total Population economically deprived (%) (2008/9)	12%	12%	16%
Total Population estimated to be prescribed drugs for anxiety, depression or psychosis (%) (2004)		8%	8%
Admission to psychiatric hospital (2006)	392	3,116 28% national total	11,097

In addition to the data in table 4.2 it is worth noting the geographic composition of the overall health board and the service delimited by local authority boundaries. Fifty-eight per cent of the health board's population was located in a single conurbation covering 264km^2. The urbanisation of the local authority aligned service was estimated by the Scottish Government (2010) as over half of the population residing in five conurbations within a total geographic coverage of 679km^2, indicating a significantly more rural demographic composition.

4.2 Service Level Profiles

4.2.1 Case 1: The Knowledge Acquisition Process

The service from which the participants involved in data gathering about knowledge acquisition processes was comprised of two teams making up a specialist service focussed on providing specific types of treatment for a specific set of diagnostic groups. More detailed information about the teams is given below and it is worth noting that during the

period of engagement in the research study, clinicians from both the teams were in the process of establishing a specialist inpatient unit.

4.2.1.1 Intensive Treatment Team

This specialist intensive treatment team was comprised of a small number of clinicians from the multiple mental health disciplines including psychiatry, clinical psychology, psychotherapy as well as a dedicated team administrator.

The team provided services for patients from a specific diagnostic group with complex needs who were unable to be supported by standard outpatient care and who were in or approaching crisis. In addition to specialist outpatient treatment, this element of the service also provided specialist support during transition from inpatient to outpatient care.

4.2.1.2 General Service

This wing of the service provided out-patient mental health services, primarily for patients from a broader set of diagnostic groups. The clinical composition of the service included nurses, psychologists, psychiatrists, and a range of other psychotherapists.

This general service concentrated on providing cognitive behavioural psychotherapy, but where more comprehensive approaches were required also provided pharmacological interventions, family therapies and other psychotherapeutic techniques such as cognitive analytic therapy, interpersonal psychotherapy, dialectical behaviour therapy, and art therapy and emotional freedom technique.

4.2.1.3 Previous and On-going Knowledge Acquisition Efforts

At the commencement of engagement in the research study, the participants who discussed knowledge acquisition activities had recently begun to consider how to implement a more systemised and routine set of methods for identifying and acquiring relevant research knowledge.

The enduring pattern of knowledge acquisition had been one in which individual clinicians ran unstructured searches for particular topics of interest as they arose, or attempted to identify new or recently published research papers at different points. There were no structures in place for sharing research knowledge comprehensively although both teams participated in a monthly meeting designed to discuss topics of interest as they arose. This was however reliant on the identification of research for consideration by individuals. There

were some team processes in place to consider how to apply research knowledge in practice though these we not formalised could not be easily articulated by the participants.

Profile information for the participants is detailed in table 4.3.

Table 4.3: Participants' Demographic Information

	Identifier	Clinical Experience	Educational Level	Employment Status
Case 1: Knowledge Acquisition	KAC1	>10 years	Doctorate	Full time
	KAC2	>10 years	Doctorate	Full time
	KAC3	5-10 years	Doctorate	Full time
	KAC4	1-4 years	MSc	Full time
	KAC5	1-4 years	BSc	Full time
Case 2: Knowledge Generation	KG1	>10 years	MSc	Full time
	KG2	5-10years	Doctorate	Full time
	KG3	5-10 years	Doctorate	Full time
Case 3: Knowledge Application	KAP1	>10 years	Doctorate	Full time
	KAP2	5-10 years	MSc	Full time
	KAP3	>10 years	PG Cert	Full time
	KAP4	>10 years	PG Cert	Part time
Peer Analysts	KG1	>10 years	MSc	Full time
	PA1	>10 years	MSc	Full time

4.2.2 Case 2: The Knowledge Generation Process

The participants engaged in the data gathering for the knowledge generation processes were not specifically aligned to a single service, primarily because it was difficult to identify a service or team which were actively trying to develop knowledge generation activities as an integrated part of their service. Similarly the practice of rotating medical staff through

specialities, and the pan-speciality management structures in place prevented any single team from being recommended for use as a case. Rather it was decided to engage with individuals who displayed appropriate attributes. The clinical participants in this group were involved in the provision of psychiatric inpatient services for the health board both in planning and clinical roles.

4.2.2.1 Inpatient Services

The acute mental health services for which the participants worked covered treatment for learning disabilities, dementia, child and adult mental health and a number of specialist services including treatment for eating disorders, alcohol problems, young people's mental health and a medium secure unit. As the largest provider of inpatient services this site provided the majority of both acute and rehabilitation beds. The last set of full year information available (2009) indicates that the health board provided an average daily number of beds which were staffed and are available for the reception of inpatients (including borrowed and temporary beds) at 833 across all mental health disciplines.

During the engagement in the research study, the main site for the provision of mental health services was undergoing a reconfiguration of inpatient beds.

4.2.2.2 Participant profiles including Previous and On-going Knowledge Generation Activities

Demographic information for these participants is included in table 4.3 but because some additional information is provided for each individual as it is not possible to offer a collective overview of previous experiences and current efforts. Participant KG1 had a non-clinical managerial role primarily concerned with the design and implementation of a number of care pathways and protocols for the organisation's mental health and wellbeing operations. KG1 had been in the role full time for between five and ten years and was educated to Masters level, KG1 also had a background as a mental health professional, having qualified and worked as a psychiatric nurse.

Participant KG2 worked as psychiatrist at one of the health board's main sites for mental health services. As such KG2 attended to patients with major mental illnesses in both inpatient and community settings and had over five years of experience as a mental health clinician. Educationally KG2 had attained a Bachelor of Medicine, Bachelor of Surgery/Chirurgery and was a member of the Royal College of Psychiatrists.

KG2 had previous experience of undertaking self-directed research located in the organisation's inpatient rehabilitation services. At the time of interview KG2 had been involved with a research grant at a higher education institution.

Participant KG3 also worked as a psychiatrist and had experience in both children and adults mental health. KG3 had attained a Bachelor of Medicine, Bachelor of Surgery/Chirurgery and was a member of the Royal College of Psychiatrists.

KG3's previous experience of engaging in knowledge generation was different from that of KG2 having actively tried on several occasions with less success, to become involved in the process. KG3 had spent a longer period working for the host organisation than KG2.

4.2.3 Case 3: The Knowledge Application Process

The service from which the participants involved in data gathering about knowledge application processes was comprised of single team, based at two-different sites providing purely outpatient and community mental health services. This team was the only one without a health-board wide remit, covering an area delineated by the local authority boundary noted above.

4.2.3.1 The Team

The team was comprised of a number of different professionals including clinical and trainee psychologists, psychotherapists and psychiatric nurses. This team operated from within a larger mental health team which included a number of medical staff and community psychiatric nurses, and an occupational therapy service.

The team provided a number of therapies including primarily; Cognitive Behavioural Therapy, Interpersonal Psychotherapy, Cognitive Behavioural Analysis System of Psychotherapy, Cognitive Analytic Therapy and Psycho-Educational Groups. In addition to this core work, the team's remit also included conducting neuropsychological testing and providing specialist reports for instance, during court proceedings.

During the duration of their engagement producing data for this research study their caseload included referrals for adults aged eighteen to sixty-five years old but this was due to expand to remove any upper age limit. Clinically their caseload included referrals for a number of mental health issues. The majority of patient referrals were for the most common mental health problems primarily affective disorders such as depression, anxiety

disorders and psychological trauma. These patients ranged from those suffering mild to moderate mental health conditions through to those with severe and enduring illnesses.

4.2.3.2 Previous and On-going Knowledge Application Activities

This team had significant previous experience of applying evidence in practice having adopted and implemented treatment recommendations made in Mental Health in Scotland: A Guide to Delivering Evidence Based Psychological Therapies in Scotland "The Matrix" (Scottish Government 2009). This document includes summarised information from the relevant research knowledge about psychological treatments. Indeed the team had been developed to deliver the effective evidence-based therapies recommended for treating common mental health problems and had a history of applying the research knowledge synthesised in these guidelines.

When they became engaged in the current research study the team in which these participants operated had been struggling to apply one element of this matrix in their routine practice. The guidelines specify that to operate matched care systems effectively and ensure the sustainability of evidence based service delivery, it is essential to have routine collection of valid and reliable outcome measures. This helps to determine the appropriate pathway for individual service users and to monitor the effectiveness of the services (Scottish Government 2007 p.15).

The team had been unable to apply this recommendation in practice but had, in conjunction with the organisation's wider psychological therapies services had been able to identify a single outcome measure for use but it was inconsistently administered and recorded and was still being approached with reluctance by many personnel. Data produced from its use with patients was rarely used for any evaluative or service improvement efforts. Profiles for each participant are again shown in Table 4.3

4.2.4 Peer Analyst Profiles

In addition to participants representing the three processes under investigation, two individuals were interviewed as peer analysts, to give additional insights from a non-clinical perspective. As the focus of the study was to identify, from a systemic point of view, the circumstances and features required to enable the core knowledge processes underpinning evidence based practice to occur, it was felt that including relevant personnel from the organisation's management and planning structures would appropriately complement the

information provided by the clinically based participants, adding to a more comprehensive dimension of understanding.

Consequently the two additional participants were selected from the organisation's strategic planning directorate and clinical effectiveness services.

Participant PA1 was a senior manager within the strategic planning structures of the organisation mental health services. PA1 had been employed in the administrative and management structures of the organisation for over ten years and their role encompassed strategic planning for all of the services included in the research study. As such PA1 was aware of the continuing engagement with the participants to improve their knowledge acquisition, application and generation processes and could offer insights into these activities from a strategic perspective. PA1 did not have a clinical background and was educated to masters levels.

The second participant actively engaged to provide a perspective on the three knowledge processes, KG1, served a dual purpose in the research study, as their role had also indicated their value for the study as a participant in the knowledge generation group. KG1's role here included participating in a steering group for a research project. Consequently KG1 was able to contribute opinion and perceptions both about the individual knowledge generation process, and give an overview of the component knowledge processes in evidence based practice due to their role facilitating clinical effectiveness.

4.3 Personal Context in the Study

4.3.1 The Context of the Study from a Personal Perspective

As an occupational therapist I experienced first-hand throughout my professional education and time in clinical practice the continual impetus to make sure I was being an evidence-based practitioner. Initially I felt fairly comfortable with the concept and was confident in my understanding of what it meant to judiciously incorporate the best available evidence into my decision making with patients. However, this confidence began to ebb as I entered and moved through the 'real world' of clinical practice.

During my first year of clinical practice working as part of large teams in busy environments I began to increasingly reflect on the gap between expectations and feasibility in regards to evidence based practice. In particular I found my self-confidence increasingly challenged by

the concept that individual health professionals should be able to actively update their knowledge and skills in an environment that was characterised for me by extreme busyness, dynamism and constant change. Initially my concerns had been about the challenges associated with attempting to identify, assimilate and apply research knowledge in practice, such as finding time and space to scope research literature and how to make changes in practice governed by procedure and protocol.

However, challenges associated with wider elements of evidence based practice were thrown into sharper relief when I was prompted by senior colleagues to complete a piece of audit or evaluation work that was to be presented to other clinicians within the organisation. I was struck first by the challenges associated with generating such knowledge alongside clinical practice (I had intended to compare the utility and value of existing service-specific screening tools with a more occupationally focussed measure grounded within a recognised conceptual model of practice). Similarly, when considering my efforts alongside the presentations of work, I was surprised by how basic these other attempts had been, and how they lacked any connection with what I felt to be questions of greater priority, importance and relevance.

Subsequently I became increasingly intent on attempting to understand why completing these activities appeared to remain a significant challenge whilst practicing in healthcare. When I began to consider the opportunity to progress my scholarly skills and competencies, this remained of central interest and I was keen to undertake study such as this with a focus on better understanding how to identify barriers to evidence based practice, and how to develop feasible solutions to these.

4.3.2 Engaging with the Idea of Systems Thinking for Practical Improvement

I initially became attracted to the idea of using a systems thinking based approach to study this topic during my early academic engagement with the subject. I was quickly aware of how appropriate this approach was for structuring such an investigation into evidence based practice, largely because I had spent a good chunk of my professional education and clinical practice engaging with a conceptual model of practice, the Model of Human Occupation (MOHO), which used principles of systems thinking. This model facilitates therapists to gain a more comprehensive and focussed understanding of a person and their occupational needs by conceptualising them and their thoughts, feeling and occupations as

emerging from an adaptive system comprised of dynamic and interrelated components such a volition, habituation performance capacity and environments (Kielhofner 2008).

I initially considered that if systems thinking could be brought to bear to effectively solve some of the intensely complex problems faced by the patients I worked with, it would also be applicable to understanding and developing solutions in what appeared to me to be an increasingly complex problem; how to enable health professionals to routinely and effectively engage in the activities of evidence based practice.

4.3.3 Discovering Soft Systems Methodology

I initially began considering SSM as an approach to structuring this research following the recommendation of an academic from a management science department, himself a former health professional, working to solve problems and design improvement in healthcare services. He had some experience of using SSM and suggested it might be worth considering as an option.

Since reading around the use of systems thinking in MOHO and its initial basis in General Systems Theory (von Bertalanffy 1968) I was looking for a more flexible approach. I wanted to be able to structure the inquiry using a methodology that could be used to understand both the obvious and tangible impediments to evidence based practice and related knowledge processes (such as the role of technological infrastructures and mandated development time), but would also allow me to make decisions and ask questions during the research process that would position me to understand typically less accessible elements such as individual experiences, perceptions and assumptions, and importantly how these interacted with each other.

4.3.4 Locating the Study in Mental Health

The decision to situate this study in mental health was based on various factors. First, my experiences of working in mental health, and asking questions about how research knowledge was applied and generated had regularly exposed me to arguments based on the supposition that, by its very nature mental health was a more challenging setting in which to try and be an evidence-based practitioner. The comparatively greater use of set procedures and protocols in physical health was said to demonstrate the greater achievability of evidence based practice in this area due to less complex issues and needs associated with patient populations, and more finite and measureable interventions. To a

certain extent and to paraphrase the famous song, there was an element of 'if you can make there, you'll make it anywhere' in my decision making; if systems thinking could effectively be used to identify the circumstances that would facilitate evidence based practice in the complex and dynamic world of mental health, it would likely be able to achieve the same in the more 'concrete' word of physical health. To me it was logical to base a study into the systemic circumstances required to facilitate evidence based practice in a field which key actors and stakeholders themselves classified as more complicated than most.

Additionally, personal reflections on my experiences as a student in mental health settings suggested to me that the existing mechanisms and products for facilitating evidence based practices were less provisioned for mental health. Indeed a quick scan of SIGN guidelines suggests that in comparison to the eight guidelines and reports for mental health, there are approximately sixty for physical disorders. I was then, and remain now interested in working in an area less addressed by such mechanisms. I also felt that this lack of comprehensive coverage by bodies such as SIGN could potentially mean there was both a more receptive environment in which to conduct a study, and that there might be more opportunity to flexibly develop different types of solution.

4.3.5 The Author's Role in the Research Process

Identifying and commenting of the researcher's role in a study can be a challenging activity, though the expansion of new forms of inquiry have resulted in increasing attention and commentary, so much so that it has been argued that reflexivity, despite what form this may take, is a defining feature of qualitative research (Banister et al.1994). The challenge associated with this element of qualitative research is inherent, as Maykut and Morehouse (1994) eloquently explain;

> The qualitative researcher's perspective is perhaps a paradoxical one: it is to be acutely tuned-in to the experiences and meaning systems of others—to indwell—and at the same time to be aware of how one's own biases and preconceptions may be influencing what one is trying to understand (p.123).

Consideration of the researcher's role in the process can be focussed on two areas; their relationship as members of the study population (Dwyer and Buckle 2009), and the inter-subjective elements that affect decision making during the process (Finlay 2002). Reflexive

reporting of these factors can enhance the trustworthiness, transparency and accountability of the work (Finlay 2002).

4.3.5.1 A Peripheral Member Researcher

Understanding the relationship created between the researchers and their study populations (or in this study populations) can aid in creating this transparency by allowing readers to consider the influence this may have had on interactions during data collection, and the analysis processes.

> As qualitative researchers we are not separate from the study, with limited contact with our participants. Instead, we are firmly in all aspects of the research process and essential to it. The stories of participants are immediate and real to us; individual voices are not lost in a pool of numbers. We carry these individuals with us as we work with the transcripts. The words, representing experiences, are clear and lasting. We cannot retreat to a distant "researcher" role. Just as our personhood affects the analysis, so, too, the analysis affects our personhood (Dwyer and Buckle 2009, p.61).

Adler and Adler's (1987) typology of membership roles in field research includes three levels; complete, active and peripheral membership. These categories are used to describe the nature of the researcher's relationship with their study population, and can shed light on the nature of interactions during research and how this may have affected decisions made. The membership role least embedded within the study population is that of the peripheral member researcher. This most accurately represents the role played by the author during this study. Adler and Adler (1987) characterise the peripheral member researcher thus;

> They seek an insider's perspective on the people, activities and structures of the social world… They interact closely, significantly and frequently enough to acquire recognition by members as insiders. They do not, however interact in the role of central members, refraining from participating in activities at the core of group membership and identification. As a result, they generally do not assume functional roles within the group (p.38).

This description is a fair representation of the author's relationship with participants during the study and reflects an intentional restriction of membership activities, as Adler and Adler (1987) term it. Influenced by both practical and ethical considerations the relationship that was developed with participants did not include opportunities to participate in activities

other than those related to the generation and validation of data. Arguably, due to the specialisms and professional composition of the participants it would have been unwise and potentially unethical or illegal to attempt to engage in such activities in clinical environments.

However, the nature of the methodology with its underpinning in soft systems methodology did require a degree of relationship building with the participants. This was felt to be necessary to establish the degree of trust and credibility required to enable the participants to engage in the data generation sessions truthfully, reporting their experiences and perceptions about the current situations, and making suggestions about how these could be improved.

In addition to this engagement several other actions were taken to establish the author's role as a peripheral member researcher. This included gaining trust through the acceptance and approval of gatekeepers (Adler and Adler 1987). This has been indicated earlier in Chapter Three during which initial discussions with senior personnel both within the strategic planning elements of the organisation, and for each of the cases included were mentioned. The decision to ensure that clinical or managerial leaders from each of the groups were consulted and where possible included in the data generation processes, was taken to ensure a degree of credibility for the researcher, as well as ensuring someone with sufficient power and comprehension of wider circumstances was included.

Similarly, it was decided to actively declare the author's previous background as a therapist working in the NHS. Similarly, context about the author's personal interest in the subject matter based on experiences of finding evidence based practice a more complex and challenging activity to complete in practice was used as another method for establishing a positive researcher-participant relationship, characterised by shared understanding and empathy. Having taken these actions there was less need to become directly involved in functional activities.

The use of Soft Systems Methodology to inform the research design also helped to establish this role of peripheral member due to its focus on providing structures and tools to learn about situations as they are experienced and understood by participants. This arguably helps to structure an approach to inquiry in which the dynamic moves from the researcher interpreting their discussion and commentary, to the participants themselves learning

about a situation through discussion. Thus the primary role the author took during data generation was as a facilitator, or SSM practitioner as Checkland and Poulter (2006) describe the role, in which the methodology is adapted to ensure that it enables the participants to uses systems concepts to consider their situation and potential improvements. Indeed, in relation to data collection, SSM also helped to ensure that the author's subjective interpretations did not dominate, as discussed in the following section.

4.3.5.2 Reflexivity in the co-creation of knowledge

> As qualitative researchers engaged in contemporary practice, we accept that the researcher is a central figure who influences, if not actively constructs, the collection, selection and interpretation of data (Finlay 2002, p.212).

The quote above neatly encapsulates the challenge for qualitative researchers; the need to provide enough detail, context and indications of reflexive practice and decision making to allow readers to be confident that the reported findings are not simply the author's opinions (Schwandt 2003). However, reflexivity in research practice is a spectrum. At one end it can be indicated by the minimal reporting of methodological decisions, while at the other it requires a commitment to extreme or radical relativism in which claims to objectivity are understood to be impossible, and all findings or conclusion are presented as the subjective accounts of the researcher (Finlay 2002). Arguably the first option is insufficient for developing trustworthiness while the latter, with its requirement for an incredibly high level of critical self-awareness is often unfeasible or outside the skill and ability of most. Likewise, some commentators have argued that reflexivity at this end of the spectrum is unhelpful, potentially moving the focus away from the participants resulting in 'navel gazing' and 'infinite self-regress' (Mantzoukas and Watkinson 2008, Finlay 2002).

When the ontological stance of subtle realism assumed in the current study is taken into account, a form of reflexivity founded on practical self-awareness, sound methodological reporting, clear articulation of philosophical underpinnings, and articulation of personal perspectives and relationships to participants has been used in this study. Many of these have been detailed elsewhere in the text of this thesis but it is perhaps worth adding some additional comments about the measures taken during the research process to realise this pragmatic reflexivity.

As noted above, elements of the methodology used in this study arguably allowed steps to be taken that helped to mediate the influence of the researcher's subjective interpretation.

For instance, the use of rich pictures as a method of capturing information from the initial data generation sessions, during which participants were facilitated to comment on their current situation, provided the opportunity for initial interpretations to be reviewed, validated and amended by participants. The rich pictures were used in exactly this way with the group-based knowledge acquisition and application cases, ensuring that initial conclusion were co-created by the author and the participants.

Similarly, a degree of critical awareness of the potential to influence analysis following the conclusion of the data collection sessions was also required. As far as possible, data was analysed inductively, so that categories and conclusions were identified within the data. Various steps were taken to aid the author in ensuring the richness of this data was not diminished as the process progressed. For instance portions of text which represented discussion characterised by high levels of emotion or enthusiasm were annotated as such. Similarly, the academic supervisory team participated in the process by calling on the author to explain and defend decisions made and conclusions drawn. Using such methods throughout the course of the study should go some way to demonstrating an acknowledgment of the social processes that may have contributed to the outcomes of this study and the steps taken to identify and account for the impact these may have.

4.4 Summary

This study sought to identify the systemic circumstances required for mental health professionals to be able to engage in the core processes underpinning evidence based practice. A methodology was designed to include soft systems thinking approaches to eliciting and analysing data generated from engagement with three case studies, each chosen due to their ability to contribute information about one of the core processes under investigation; knowledge acquisition, generation and application.

A range of mental health professionals and personnel were involved in iterations of focus groups and semi-structured interviews, and the results of analysis of their opinions, perceptions and reports about previous experiences are presented in the following chapter. To ensure a systems perspective was maintained, the main categories identified during analysis were considered against different systems levels, namely the individual, team and organisational levels, and this structure has been used throughout the reporting of findings.

Chapter 5. Findings

5.1 Introduction

Contemporary conceptualisations of how to achieve evidence based practice in healthcare are beginning to suggest a role for systems thinking, and in particular, consideration of circumstances that need to be created at different systems level to enable this. It has been noted in Chapter 3 that the findings of this study have been considered against three levels in the healthcare system at which change can be controlled; the individual level, the team or micro-system level and the organisational level. For the purposes of realistic data collection each sub-process in EBP was approached in relative isolation. As such the findings related to each of these core knowledge processes are explored in turn against the framework of the system levels noted above, allowing sufficient consideration to be given to the different influences that may originate from these. Table 5.1 gives an overview of the main findings which will be reported in this chapter. Intersecting themes within the findings are addressed in detail in Chapter 6 in relation to their place in the existing literature and their potential impact on practice and policy.

Table 5.1: Summary of Key Findings by Systems Level and Knowledge Process

Systems Level	Core Knowledge Process: Knowledge Acquisition	Core Knowledge Process: Knowledge Generation	Core Knowledge Process: Knowledge Application
Individual Level	Specialist Skill Role of Perception Motivation	Motivation Commitment	Motivation to change Creating/recognising relative advantage
Team Level	Decisions about focus Team learning Decisions about value	Peer-support Guidance Directing towards experts	Shared vision Team learning
Organisational Level	Infrastructure Resources Specialist support	Organisational data Definitions of knowledge Expert support	Culture Power to change Support Resources

5.2 Identifying the Conditions for Knowledge Acquisition, Generation and Application at the Individual Level

5.2.1 Foundations for Knowledge Acquisition at the Individual Level

Analysis of information provided by participants from the knowledge acquisition case that were categorised as relating to circumstances at the individual level were primarily concerned with three issues; the requirement to hold certain skills, the need for individuals to have clearly formed concepts of the value of different types of research knowledge, and how elements of accessibility affected clinicians' motivation to engage in the knowledge acquisition process.

5.2.1.1 Requisite Skills for Knowledge Acquisition

Much discourse focussed on considering how to embed routine knowledge acquisition activities into typical operations of the service. The role of specialist skills in this processes were clearly signalled, with discussion about the skills needed to design and conduct literature searches, form relevant questions and appraise research knowledge all contributing to a finding in which the requirement for individuals to be sufficiently skilled seemed key.

Participants identified numerous features that would improve their knowledge acquisition process, accomplishable if members of their service developed sufficient skill in using specific resources. A lack of aptitude for using different, primarily web-based research database services was routinely identified as an impediment to knowledge acquisition.

Although differences were noted between the senior clinicians who felt their skills had become outdated, and junior team members who had not developed skills to a sufficient level to comfortably design comprehensive searches for specific information, in general participants felt they did not have sufficiently advanced skills that would allow for effective knowledge acquisition. Prolonged engagement highlighted that two more senior participants were aware of many principles underpinning methods for identifying and acquiring research knowledge, but had seen their skills outpaced by developments in the information technology used in managing the large bodies of relevant scientific literature. For instance, one noted;

> I'd like to refresh my memory of how to do a really good search (murmurs of agreement) because I use to do it years ago but more recently I've been a bit lazy and used Google Scholar mainly and I think forgotten many of the old search skills [KAC2].

Less experienced clinicians from different disciplines had not received guidance or had opportunities to develop these skills and were uncertain about both the principle and practice of identifying research knowledge, as the following comment about using bibliographic databases suggests;

> I think to be honest it's probably that I'm not confident enough in using it to know exactly what we're looking for [KAC4].

The requirement for individuals to maintain highly specialised skills was also noted by one of the peer analysts;

> So I think there are issues about the breadth of searches and the search terms and all the rest of it… [it requires]quite a level of skill I think actually. I don't think people realise that. Yeah, it's not just a matter of plonking yourself down, tapping a few keys, it's very difficult to actually do a good search and be sure that you have got pretty much the area cover that you're looking at in terms of good quality papers and breadth of papers [KG1].

Whilst specialist literature searching skills were discussed, it was also identified by the participants that skills in framing questions prior to conducting searches for relevant knowledge were required. One participant noted the difficulties experienced when completing searches on behalf of colleagues, because questions had not been posed with sufficient specificity to enable feasible exploration of available databases. Conversely this participant reported more success when asked to locate research knowledge for a very narrow topic;

> I think it would be better if it was more specific or some sort of guidance because at the moment I feel like I maybe search for stuff and it's not that relevant or that helpful. So you know if it's not relevant or helpful people aren't going to look at them and it's going to be a waste of time really. If people were a bit more specific about looking for information about things it would be ... easier. Most of its been pretty general, but occasionally like [name removed] the [role removed] has come and said "we've got a student coming, I'm looking for a recent article about [term removed] or a syndrome or something" and that's been a bit easier actually if it's been a bit more focused [KAC4].

Prolonged engagement with these participants demonstrated that being able to translate clinical queries into well framed literature search questions was a specific skill that could be developed with individuals.

5.2.1.2 Clarifying Perceptions of Research Knowledge Value

Engagement with these participants about processes used for appraising the quality and potential utility of research papers led to a finding about the role individual perception had to play in mediating knowledge acquisition efforts. There was a suggestion that there was often a need for individuals to alter how they regarded the value of different research knowledge to improve their engagement in the knowledge acquisition process.

All participants save least clinically experienced, reported using different methods to judge the quality and potential utility of research. Judgements were primarily based on research design with 'high level' research knowledge such as systematic reviews and randomised controlled trials seen as the most accessible way of judging value. Closer examination suggested that narrow factors were used by clinicians to appraise quality, namely consideration of sample sizes, a process referred to as 'looking at the numbers'. Studies with larger sample sizes were seen as more robust and one senior clinician reported that this often guided appraisal;

> If it's an RCT I find it a lot easier because I feel like I have a system for doing that so it's easier for me to look at the numbers and decide…but for other papers it's quite hard. Well I don't have a system [KAC1].

Other methods of assessing quality were also reported with indications that clinicians also used more informal processes, in which they did not articulate the factors influencing their decisions about quality;

> It would be when reading it that you were judging it [KAC3].
>
> You get some idea from the journal it's in. You know if it's in a *lower quality*[1] journal... [KAC2].

It was discovered that participants' perceptions of quality were firmly rooted in a limited number of aspects common to experimental or quantitative research. However, later in the same discussion one clinician from the intensive treatment team indicated that effectively identifying knowledge would require consideration of research studies which were not

[1] Italics indicate the author's paraphrasing of an expletive

typically considered because they employed research designs that could not easily be used to make judgements about quality. The nature of the evidence base for the team's population group necessitated a change towards using types of research knowledge that would typically have been disregarded for being 'low quality', and the participants identified a need to develop processes to help them acquire and evaluate different types of evidence that could not simply be appraised by checking limited elements of methodology and design alone;

> I think we would need to [have guidance on appraising all types of research literature] because there's literally one RCT in [diagnostic group removed] and I doubt it would hold up as an RCT because there were so many drop outs. If you're excluding everything for our population that isn't an RCT... I mean if there are methods for evaluating more qualitative, clinical experiences I think that would be useful [KAC1].

An experienced participant from the other team also noted a requirement to alter their typical expectations to consider studies produced for different populations in response to a lack of high quality research knowledge;

> Given that there's not much in [diagnostic group removed] I think it's quite useful to look at the psychotherapy papers in general to look at general principles about factors influencing successful therapy; 'how much'; 'how long' etc… More like general evidence for what works in psychotherapy which you can then apply [KAC2].

These statements illustrate the indication that at an individual level, clinicians may need to alter the way they approach research knowledge during the acquisition phase. Embedded perceptions about the value of different designs appeared to directly influence whether or not studies were actively sought. The participants in this case readily noted that if knowledge acquisition for evidence based practice was to enable them to access best available evidence, this would require perceptions about the relative merits of differently generated research knowledge to be altered.

5.2.1.3 The Effect of Accessibility of on Motivation for Knowledge Acquisition

Whilst skills and perceptions were central to how the participants approached identifying research knowledge, it emerged that how easy it was for them to access research knowledge affected their motivation to do so. Findings related to individual preferences for how information about research was made available contributed to this category, with participants offering opinions about apposite mechanisms for transferring the results of knowledge acquisition activities to clinicians.

Various methods for transferring research knowledge were identified with some participants indicating that e-mails containing information about relevant research would suffice, whilst others indicated preferences for printed information to be actively delivered, noting that it became easy to ignore or miss information if it was delivered by electronic mail. Participants noted they would appreciate multiple methods so that research information was made available through a number of means, and the potential value of interpersonal methods of highlighting potentially useful research knowledge was noted;

> But on the other hand it would almost be better if I was spoon fed it at a time when I couldn't ignore an e-mail. Yeah I think it would be for me not to be too regular that I got an update and a person gave me the update in an ideal world to my face. [laughter] But that's just because I know if I start to find that I'm churning through an e-mail that has some irrelevant papers in it, I might just be more likely to get into the habit of ignoring it. Whereas if, I dunno, if KAC4's bringing it to our meeting or whatever and saying these are the papers from this month… [KAC1]

The regularity with which search results would be updated and transferred was also subject to different personal preferences. Most of the participants felt that if information about research knowledge was presented to them too regularly it would become unhelpful. Concatenating information and transferring it at set intervals using a tailored delivery method was felt to be a more useful approach;

> Yeah. You don't want it as too regular updates because you're not going to get very much that frequently, but I guess for various different questions there might be enough to say like once a month it all comes in one e-mail [KAC2].

> Originally that's what we'd planned was that we'd e-mail the list of journals that had been found that month so that the individual person would be going to check them on the shared drive [KAC4].

Consideration was also given to the format and level of detail that should be made available to members of the service. Several potentially beneficial features were noted, with the need for flexibility to allow individuals to access information in ways that suited their personal preferences stressed. It was noted that developing brief synopses of research papers had previously been considered as a method for directing clinicians towards different articles;

> I think we'd talked about you [KAC4] doing a little bit of summarising of the key points so that people could look at that and then access the abstract of the full paper if they wanted [KAC1].

Participants noted that in addition to accessing abbreviated information they also wanted easy access to full-texts of research papers. Discussions about how to enable all members of the service to access research knowledge focussed on how to store information in an accessible location. The need to access research information at different times and for different reasons, including retrospectively if actively shared information had not been directly relevant at that time, was identified. The clinicians wanted to be able to access information in different ways sensitive to varying requirements, for instance retrieving information by diagnostic population at one point, and by study design at another. One wanted to be able to run sophisticated searches of their own repository of research knowledge using Boolean operators, but did not think this was possible with software currently available to them;

> It would be nice to be able to search the key word AND, but you can only do one can't you like a disorder but being able to do disorder AND treatment. That's the bit I don't think you can do [KAC2].

The variation in preferences for format, content, timing and method of transfer amongst a limited number of participants suggests that meeting personal preference plays a crucial role in determining how effective this will be. Participants' contributions pointed towards benefits to having information actively sent to them, but also wanted a centralised point in which relevant research knowledge was stored for them. Meeting these individual preferences for how to access research knowledge appeared to be key to facilitating clinicians to engage in knowledge acquisition.

5.2.2 Foundations for Knowledge Generation at the Individual Level

Discussion with participants in the knowledge generation case resulted in the identification one clear finding relating to this process at the individual level; that personal motivation is vital to the successful initiation and completion of knowledge generation activities.

The central feature noted in discussion about successful knowledge generation efforts was the presence of a single highly motivated individual. For instance, whilst relating the experience of having conducted a research project in their clinical setting, participant KG2 reported that it was personal commitment to completing the project prevented it from stalling at several points;

> I mean there was no kind of idea of deadlines, apart from my own personal deadlines. Yeah, I think it was mainly all coming down to me [KG2].

This was corroborated by another participant who commented in relation their experience of overcoming barriers to knowledge generation;

> So number one is you have to be able to motivate yourself in the face of a vacuum of knowledge and available time [KG3].

KG1 reported the opinion that knowledge generation activities tended to be successful when they had been carried out by one motivated person who had been able to control and conduct a local investigation;

> Often it's just very, very small things, somebody working in an outpatient department or something that just has an idea about how it could be done better. They do a bit of baseline measurement, they make the change and then they show that it's had a profound effect, or it's had a really good effect on either patient care or patient experience or saving time or whatever. I guess sometimes it's almost that people look at that and the evidence for changing is just so overwhelming or so clear or so obvious then people are happy to take that on board [KG1].

This participant also illustrated the central role of committed and motivated individuals in driving knowledge generation activities when reporting on experiences in trying to convince clinical staff to keep data for knowledge generation activities;

> Well, I think you just have to be strong or bloody minded or just ignore all the criticism and just go for it basically [KG1].

Participants indicated that motivation for knowledge generation could be established in a number of ways. An intrinsic personal desire to improve practice through the generation of new knowledge was reported by participants and for the clinical personnel interviewed, a clear link was made between their need to have completed knowledge generation activities as a prerequisite to career development;

> Well you are expected to be involved in research and it's part of your competencies for your training that you are, but people do finish training and haven't really had much involvement in research or certainly haven't had anything published. I think increasingly people feel that they have to [KG2].

5.2.3 Foundations for Knowledge Application at the Individual Level

Analysis of the information provided by participants in the knowledge application case also pointed towards the importance of motivation and commitment in relation to making changes in practice at the level of individual health professionals. The main concepts identified related to establishing commitment to apply knowledge by individuals, primarily

by overcoming instinctive negative responses to change, and the merits of demonstrating the value applying new knowledge could have for the individual and their practice.

5.2.3.1 Overcoming the Fear of Change Response

The most obvious impediment to this team's efforts to apply new knowledge stemmed not from specific obstacles such as lack of time or resource (although these undoubtedly had some impact), but from insufficient commitment to making the change. This was underpinned by perceptions and reactions of individuals who ostensibly attempted to legitimise their reluctance to make changes in applying this knowledge in practice by focussing on a number of contentions. Closer inspection identified particular reluctance to use the organisation's information management systems to record data, criticisms of an outcome measure that could be used for performance measurement, and fears about the misinterpretation of data by managers who might use it to judge performance.

The reluctance to store data on a centralised information management system, and the fear that it could be used to judge the service was demonstrated by a senior team member. KAP2 noted how this had impacted on the ability to implement practices in-line with knowledge about the need to routinely evaluate service provision;

> Well people are quite reluctant to use the patient information management system it's kind of not… It's owned by the Trust and management. It's a management information tool. So if our information is out there on the patient information management system anybody can look at that and say 'Well how well is [the service] doing? How well is KAP3 doing specifically?' I think people were pretty jumpy about that and therefore stepped back and didn't actually give… didn't hand in any results and things to start with…I suppose there's a kind of paranoia about it. Because certainly, we used the CORE scores. I'm not going to bore everybody with that story again. But we presented at our yearly performance review and our exit CORE scores were very low and our management then said 'Why are you discharging people [when they're] so well. You should be discharging people sooner.' And we were quite stunned by that. [KAP2].

Most other participants also reported fears that changing their practice to keep outcome measures more routinely might lead to unchecked scrutiny of their performance rather than opportunities to improve or demonstrate clinical effectiveness like that indicated above. However, a senior clinician involved in this case offered an alternative explanation for this which began to illuminate an underlying category related to explaining the disinclination to attempt to apply knowledge in practice;

> But any system that's new is... I think people are... will be threatened by it and it's understanding that fear response, and of course I understand that from a psychological point of view. So people want to run away from it and they want to... they don't want to have anything to do with it. But it's about understanding why people are scared. And like you say, reassuring them as to what the real intentions of it are. And they still don't buy it necessarily. Judging people against each other or... But I think I understand it as a normal human fear response [KAP1].

This fear response appeared as a noteworthy impediment to whether individuals committed to making changes to their practice, and it was clear that mitigating these responses would be key to creating suitable conditions for knowledge application to occur. Initially, participants were unable to identify how to overcome this barrier, but as the next set of findings suggests facilitating clinicians to distinguish potential benefits associated with knowledge application emerged as a potential solution.

5.2.3.2 Demonstrating Advantage to Establish Commitment for Knowledge Application

An associated category emerged in which, linked with discourse about negative reactions to knowledge-based recommendations for practice changes, the participants noted that they did not perceive that making such changes would have any value for them or their clinical practice. Conversely, it quickly became clear that participants' negative perceptions began to lessen as they considered how to position themselves to benefit from the process of applying new knowledge. When the participants were facilitated to consider aspects that could enable them to change their practice, the discourse was re-orientated towards altering existing mechanisms for outcomes data collection and management to serve more useful purposes for the team and individual clinicians. Despite expressing concerns about scrutiny of performance by managers, participants who had initially been vociferous in their criticism of the need to apply this knowledge, articulated potential benefits it could have for improving their service delivery;

> Yes. If you feel you're getting something, you're going to have more buy in aren't you. If you know you're going to get something back…So what is it in… What is there in it for me? So I'm going to put all this effort into something it has to actually be for some good reason. [KAP2].

> …wouldn't it be good if we could do things like using PIMS to quantify or demonstrate that our core therapies are working or it would be great if we could find some way of... if we were going to trial new, either treatment deliveries for entirely new treatments that it would be a good way of very quickly determining efficacy and things like that and in an ideal world that's the sort of stuff we would be able to get from... from PIMS [KAP3].

Further analysis of this particular category indicated that clinicians who had been resisting this change were in fact not reacting to the principal suggested by existing knowledge, that collecting data about their service delivery was essential to inform improvements. Instead they appeared to object to the impetus for this change to have originated from organisational management structures, rather than a body of knowledge that had been identified and appraised as important by themselves and their peers. The reluctance to use organisational information management systems was initially attributed to a lack of utility, being seen as complicated, time consuming to use and inconsequential to their own practice, as they could not easily access data for use in meaningful ways. Closer inspection of these opinions suggested that information management systems were indeed set up to provide information to performance managers and those concerned with measuring compliance with governmentally imposed targets rather than the clinicians themselves.

However, once the impetus of discussion became about how to enable the application of knowledge-based recommendations in a manner that would benefit their specific practice, engagement was more positive and many of the previously insurmountable barriers were downgraded as the participants concentrated more on leveraging advantage from the changes. Parallels were seen in information provided by a peer analyst who noted that clinicians will work with the best intentions, confident that they are fulfilling their responsibilities as far as is possible until facilitated to observe areas in which these activities could be optimised. In these cases, where the opportunity to improve is demonstrated, or the substantive benefit for the individual made clear, behavioural change to realise knowledge application becomes more attainable. In the example this participant offered, comments were made about how this method was used to improve compliance with certain aspects of an evidence based clinical pathway;

> I think individuals feel that they are doing what they should be doing and with all good intentions that's their belief…. Having fed that back to clinicians and shown them what their performance is, it's now up to about 94%... at the individual level, I think that some people look for how they could improve patient care. So in terms of how it could do that for them. So they then get on board and try and influence the pathway, what they think it should be like and I think there's also something people saw as an opportunity to actually think about, "This is a very busy ward, we're fire fighting, maybe we can actually use the pathway approach to actually rationalise some of this and actually improve the way things are." So I think people did see that it would help organised care and improve patient care [KG1].

5.2.4 Summary Findings at the Individual Level

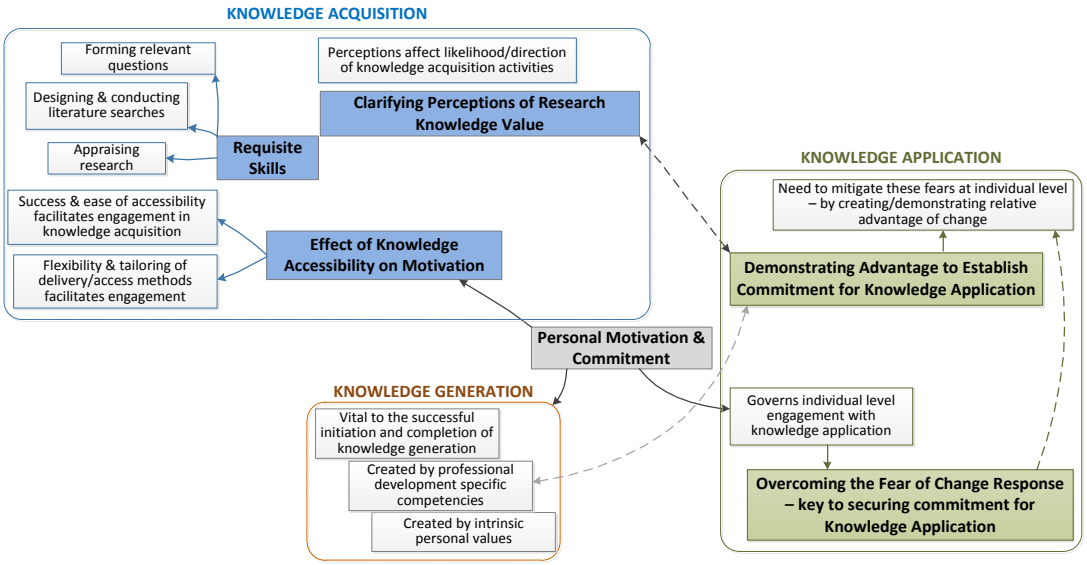
Findings at the individual level across the three core knowledge processes under investigation suggested a degree of commonality, despite the different sub-processes under focus with each case and their different contexts. For instance, the requirement for individuals to be sufficiently motivated and committed to engaging in these different activities recurred as a central theme. In addition to this, the findings also point towards the different circumstances that could potentially ensure the development of such motivation and commitment.

For the knowledge acquisition and application cases there was some connection related to the need to develop individual health professional's perceptions around elements of the processes. In the knowledge acquisition case this was related to altering how professionals thought about the value and potential utility of studies which were completed using designs different from their areas of comfort. Similarly, in the knowledge application group, participants appeared more receptive to the idea of making knowledge-based changes to their practices once their perceptions about potential benefits were modified.

In the findings from the knowledge generation case these motivations, and the role of perception in forming them were more personalised with participants noting the need to engage in knowledge generation for either personal career related benefits or due to personal altruistic beliefs. It could be also be plausibly argued that both of these potentially demonstrate elements from this case related to the role that recognising the potential advantage and benefit of engaging in the knowledge generation process may have.

Figure 5.1 illustrates the findings related to the individual level and includes indication of connections and commonalities across the different knowledge processes under investigation.

Figure 5.1: Summary Findings - Individual Level



5.3 Team Level Circumstances Supporting Knowledge Acquisition, Generation and Application

5.3.1 Team Functions in Knowledge Acquisition

Findings related to team activities in knowledge acquisition were primarily associated with the beneficial role team decision making could play firstly in identifying the focus for these activities, and secondly during consideration of the value and potential application of research knowledge in clinical practice.

5.3.1.1 Deciding the Focus of Knowledge Acquisition

Many participants argued that decisions about the focus of knowledge acquisition should be a function of team discussions, citing a variety of perceived benefits. For instance, a team level approach was seen as effective in preventing duplications of effort by ensuring all team members were aware of the focus of knowledge acquisition activities. One participant from this case related how this approach had been beneficial in relation to their previous experiences of disjointed knowledge acquisition activities;

> I've had individual conversations with people about the potential for small research projects for the assistants…and I suppose in my mind I had you individually doing those bits of literature research and being able to feed into that specific research project, and I suppose it could tie into the more generic searches that KAC4's doing in

> terms of having those questions go through that system, rather than being done separately, which doesn't make sense [KAC3].

Similarly, the challenges associated with relying on individual clinicians to engage in knowledge acquisition activities without the support and assent of the wider team was noted during interactions with the clinical participants and clearly confirmed by both peer analysts who identified isolated knowledge acquisition as particularly challenging;

> I think there's a great difficulty with an individual working in an area… going off and hunting out literature, to come back and try and argue that we should be changing practice on the basis of this evidence that they've just read is well, not quite stupid, but it's not going to happen really. I think doing it on a team basis and, if you're looking at it as a team and being able to access the latest information or literature or evidence base, actually then discussing that and thinking about how it affects practice and whether we should make changes, I think is much more useful and effective in terms of using evidence and knowledge [KG1].

5.3.1.2 Considering Quality and Value

Team-based activities were also seen as important in making better decisions about how to judge and apply knowledge. The most experienced clinicians in this case noted that team processes were essential to ensuring that research knowledge was correctly interpreted before being assimilated into practice. A senior participant from the general team noted that interpreting evidence for use in practice can be taxing and suggested that a shared approach was needed to reduce potential variations in the delivery of treatment;

> There's challenges to interpreting it and also interpreting it as a team really and finding what's valuable and what's not… I'm sure within the team we all use evidence in our own idiosyncratic ways. We don't really think together about it…I think we all interpret it in our own way [KAC3].

The clinician from the other team reported a different situation, where more established team processes meant that they experienced fewer challenges when interpreting research knowledge. This participant described some elements of his team's dynamics which allowed shared decision-making, including leadership structures, past experiences of making decisions about research knowledge, and habituated processes that support these team functions;

> I think that's more comfortable in [Intensive Treatment Team] that we're, I don't know, I think we're probably more able to work towards trying to change what we're doing and have done that from the discussion of things. But I think it's something about the [General Team] centre that has evolved over several years and for several reasons there's a very flat hierarchy where I think the decision making processes got lost sometimes and as a whole team making a decision about something which I

> think...I suppose the whole ethos of [Intensive Treatment team] was as an experimental service. So that idea of having to check what we're doing either internally or objectively has always been there from the start, whereas the [General Team] evolved in a different era where it was really CBT service originally and it sort of became more of an [diagnostic group removed] service almost not completely by design. So I suppose the evolution in the services has led to slightly different cultures… there is some process we're going through as a team to decide what we're doing but that's lead and fed into by different members of the team [KAC1].

In addition to facilitating better decision making about the focus of knowledge acquisition activities and the potential use of newly acquired knowledge, it was also noted that team processes can mitigate the potential for individuals to dominate the flow of research knowledge. As a high level of skill is required to comprehensively access research knowledge, those individuals holding these skills are positioned to control the research knowledge made available to wider team members by directing acquisition activities. It was noted that much of the research knowledge considered by the teams was identified by a single individual who had come to lead the knowledge acquisition process. The peer analyst who held a senior strategic role directly identified this sort of isolated activity as a potential risk that prevented clinical teams from acquiring knowledge in a more comprehensive and effective way;

> It's very located within the individual. I think then in a way you then are quite reliant on individuals, you know so reliant on that individual's perception and particular subjectivity if you like, when it comes to looking at evidence. And before you know it that has become almost like a truth. So if an individual is geared more towards traditional scientific methods of research or evidence then that's the way that that will direct the wider community in which that person works. Because there's no-one that's really challenging it. Because no-one's actually given that responsibility almost and if people don't take it then the person who has got that knowledge and is enquiring, that becomes the way of doing things [PA1].

5.3.2 Team Functions in Knowledge Generation

Whilst motivation was key at the individual level, team level functions in the knowledge generation was limited to roles in providing guidance, mentoring and specialist support, either directly or by acting as guides to those who could provide assistance or apparatus and resources.

5.3.2.1 Support, Guidance and Specialist Mentoring

All participants in this case noted the important role teams had in providing speciality support for knowledge generation. One participant reported on how their immediate

clinical team had been involved in the formation of a knowledge generation effort, and offered opinions as to the role of the team in guiding this;

> …the agenda is that we've got this data, let's do something with it and I think, yeah, I think I identified that there was a gap and thought we could do it that way. I think we decided as a group. We had meetings - myself and the two rehab consultants and [name removed] - about how to design the study. So I suppose the method of it kind of came together at those group meetings [KG2].

> …each project needs some kind of steering group, so, you know, I suppose for the case control, they were a slightly more informal kind of steering group, but still we met, that's a big part, so, you know, at least that. So you'd have to identify people who would be involved including ideally somebody … one of the academic Profs or honorary consultants. I mean if you've never done research before you need people who have done research before to know that you're doing something sensible [KG2].

Other participants noted that activities that had been initiated and conducted from within a team tended to be more successful and were received more positively;

> Yeah, and I don't know whether it's something about just small projects done by the nurse working in the outpatient department that people think, "Sounds a great idea, really worked, let's do it here," [KG1].

Conversely, another participant offered recollections of how a lack of team interest, confidence or capacity in pursuing knowledge generation had hindered their previous attempts;

> A number of things are difficult in the [name removed] service, number one, there's fewer of us so I guess it's less likely that you're gonna have somebody who's very good at that in the group… many of the clinicians don't have a research interest particularly, and they've been employed on that basis, and so they needn't have a research bent and that's fine, so it would be an impossible ask [KG3].

This participant also suggested that support from team members, even if all they could do was to direct her towards other sources of assistance was still important;

> So I think it has to come from somewhere else, but just to be supported by clinical supervisors, so ideally they would say 'I don't know but I know a man who does', and then make time, and support that time for you [KG3].

This role in guiding towards provider of specialist support for knowledge generation is closely tied with organisational level factors, but it is worth noting that it appeared that the immediate clinical team was the first point at which participants considered knowledge

generation, and the response and support provided at this level could either encourage or prevent individuals from pursuing this further.

5.3.3 Team Functions in Knowledge Application

In addition to the finding that barriers to commitment to knowledge application located at individual level could be overcome when clinicians considered how integrating new knowledge could benefit their practice, a number of team-based processes were also identified as playing a role in this. Specifically, participants indicated that teams which supported individuals to commit to making changes were seen as more likely to be successful in applying knowledge.

5.3.3.1 The Role of the Team Decision-Making in Knowledge Application

An underlying perception was identified indicating that the successful application of knowledge in practice was predicated upon a majority of team members demonstrating commitment to making the required changes. It was suggested that the wider team had a role to play in supporting this by discussing, appraising and agreeing the different options available for achieving this. A senior participant from the team included in this case noted the importance of establishing team agreement about the relative merits of applying different research knowledge in practice, because failure to do this resulted in a position in which the stronger personalities or those more inclined to argue their opinion would win out, as the following extract indicates;

> …well particularly at the beginning people were asking me "What are you going to focus on? What kind of therapies?" And there was big competition about what that would be. People were saying "Well, if I'm going to be a nurse therapist then it will be okay if I'm trained in blah". Or, you know, trained in this particular type of therapy and at the beginning, I looked at the evidence base, discussed it, the psychologists said "Right, what we need to do is focus on CBT. That is the thing that's over the board at the moment. And whether you believe in that or not, 50 to 60% of people are getting better for most conditions so let's focus on that". And then I've looked at the evidence base… If I didn't have that, I don't know how I would have decided because then it would have come down to personalities and who was going to have the strongest voice to kind of sway me or what my own interest was … but that kind of evidence base made that quite certain [KAP3].

This finding was substantiated by contributions from both peer analysts who noted that teams had a role in supporting optimal decision making and facilitating individuals to assimilate new research knowledge into their beliefs about how to deliver treatments or act in their clinical roles. When discussing characteristics conducive to successful knowledge

application, PA1 noted how important teams and other microsystem configurations were in allowing clinicians to develop opinions about new knowledge and how it should be applied;

> I guess there's something about peer support that I think's really important. And everybody's learning so it's not that I have all the answers or my colleagues have all the answers, we are still figuring things out and I think it's okay to say that and it's safe to say that. I feel safe saying that to people. But even saying it, even people hearing that is quite a big thing I think [PA1].

The other peer analyst offered a detailed elucidation, specifying the beneficial role the team performed in questioning current practice and considering how to improve service delivery through knowledge application processes;

> I think I suppose the role of the team should be to question what they're doing. Not just question an individual but to question themselves about what they're doing and how can they do things better in terms of patient experience, in terms of outcomes [KG1].

5.3.3.2 The Role of the Team in Sharing Vision for Knowledge Application

Participants also commented on the requirement for shared understandings at team level when enacting changes in practice. They noted from past experiences that enabling initial changes to practice and continued monitoring of any results could not be achieved through the energies of individuals or small numbers of peers, but rather needed to be a product of group efforts or 'group vision' as it was termed;

> And certainly looking at things like the group vision that we had before, we believed that we delivered very well but we couldn't evidence that, so getting in amongst that and kind of deciding whether that was working or not [KAP3].

An unrelated exchange during an interview with a senior clinician included their identification of the central importance of a shared vision in establishing team commitment and energy for knowledge application noting that;

> I actually personally think that it's a small enough and a close enough team that actually functions very well together as a team...that as long as, yes we've probably got enough oomph as long as we do it together. [KAP1].

Linking with the concept that successful knowledge application is partly a function of an individual's acceptance of and willingness to employ new knowledge, there were some indications that the process would be influenced by the degree to which the wider team

perceived potential benefits, and that commitment to applying knowledge in practice can occur when a team identifies beneficial outcomes. Data analysis also suggested that participation in knowledge application is a function of a team which effectively accommodates, uses and develops the skills and preferences of its individual members, and that for this to occur effectively, the team has a function in adapting to required changes in practice and behaviour. Exemplified by much of the discourse about unsuitable information systems, the reluctance to apply organisationally mandated recommendations goes some way to confirming the essential role of the team in owning and applying knowledge in their context. Indeed PA1 also recognised the need to allow teams to take ownership of knowledge application activities, assimilating it into their own shared vision about how their practice should look;

> I think if it's seen to be an absolute top down approach where we're saying "Everyone will be an evidence based practitioner", everyone would be like "What on earth does that mean?". What I think the [Case 3] experience demonstrates that people have now become that by virtue of learning together. So there's something, they've gone through a process together and coming through it they will be evidence based practitioners and they will be working in an informed way, they'll be working in a learning way if you like, in a reflective way. Whereas if we were to say everyone's a reflective practitioner everyone's gonna do this, what does that mean, 'cos that'll mean different things for different people [PA1].

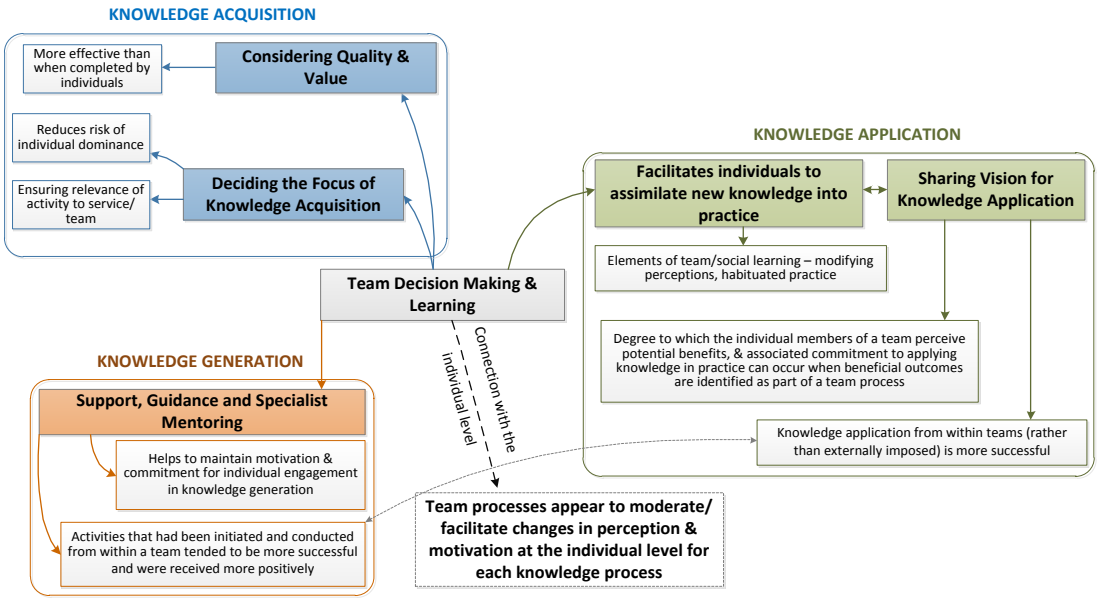
5.3.4 Summary Findings at the Team Level

Findings at the team level were strongly indicative of the central role teams can play in facilitating knowledge acquisition, generation and application. As well as some practical benefits specific to each case, a common thread was identifiable related to how team level decision making could facilitate the knowledge processes.

Within each case, teams were seen to add value to decision making around the different activities associated with knowledge acquisition, generation and application. In the knowledge acquisition case this related to greater effectiveness in identifying relevant topics, and the subsequent appraisal and consideration of new acquired knowledge. In the knowledge generation case team decision making was less associated with specific procedures, but identifiable in the impact that supportive team activities such as guiding the knowledge generation process, providing mentoring and directing towards specialist support could have on an individual's engagement in the process.

Similarly, team level decision making and learning were strongly represented in the knowledge application case where they were seen to facilitate the process in a number of ways. These included the ability of the team to provide the circumstances in which individual clinicians modified their perceptions about potential knowledge-based changes. Interpretation of the participants' contributions indicated that teams which share, or are able to actively create positive perceptions about potential changes are better positioned to enable their individual clinicians to alter their behaviours and practices. Connected to this was the idea that a change initiated within a team, or significantly owned by a team, were more likely to be successful.

Figure 5.2: Summary Findings - Team Level



It is also worth noting that a similar finding emerged from analysis of the knowledge generation case in which it appeared that knowledge generation efforts originating and occurring with a team are more likely to be successfully completed and received.

Figure 5.2 gives an overview of these findings and how these potentially interact, or share similarities across the three knowledge processes. Figure 5.2 also illustrates how the key elements at the team level; shared decision making and learning, is connected with elements at the individual level, namely how team activities can have a direct bearing on the motivation and commitment of individual health professionals to engage in each of the different processes that can contribute to evidence based practice.

5.4 Organisational Level Circumstances Supporting Knowledge Acquisition, Generation and Application

5.4.1 Facilitating Knowledge Acquisition through Organisational Measures

At the organisational level three distinct categories were identified illustrating conditions that can facilitate more effective knowledge acquisition. These were related to specific resource provision, promotion of available support and apparatus, and providing opportunities for team level functions to occur more routinely.

5.4.1.1 Appropriate Resource Provision

Adequate organisational information technology (IT) capacity was felt to be fundamental in knowledge acquisition efforts, due to the prevalence of web-based bibliographic databases. Both the computer hardware and web-based software provided by the organisation needed to be sufficiently up-to-date to allow efficient and effective use of databases. A number of shortcomings in IT provision had prevented these activities in the past, largely resulting from the organisation's reliance on a rapidly obsolescing web browser that prevented bibliographic databases from running. It became clear that this added significant time to the process of identifying research and demotivated clinicians from attempting to engage with these databases.

It was also commonly reported that accessing research articles was prevented due to IT related reasons. Often this was attributable to incompatibility between older organisational software and the more current platforms used by the web based bibliographic databases. However, at times this was also due to the organisation's security arrangements as indicated by reports that opening e-mails and downloading files containing research articles was often blocked by IT security, requiring several steps to have them released. It was clear through discourse at the focus groups that providing adequate IT was a basic tool required and fundamental prerequisite for successful knowledge acquisition.

5.4.1.2 Promoting Specialist Apparatus and Support

It was found that the organisation needed to promote existing apparatus designed to support process knowledge acquisition more effectively to mental health personnel. Further investigation indicated that many resources were available that could complement or support the participants' knowledge acquisition activities, but they were unaware of

their availability despite high levels of experience in the organisation. Good examples of this related to specific bibliographic management software and specialist library services.

Participants noted difficulties in managing information about relevant research knowledge and discussed how creating navigable repositories of relevant research knowledge would be of great value. Experiments using shared computer drives as a platform had proved that managing information was challenging, particularly when it came to looking within large lists for research articles that met specific criteria. Suggestions that bibliographic management packages could provide a solution to this were initially dismissed, with all participants unaware that they had access to this within the organisation and it was assumed that the team would be expected to fund the purchase of any new software as the following exchanges below suggest;

> Do you use or have you used bibliographic software like Reference Manager? [Moderator]
>
> I've tried but I can never use them you know I gave up. [KAC2]
>
> I gave up too [laughter] [KAC1]
>
> Which packages? [Moderator]
>
> EndNote. [KAC2]
>
> And do you have access to it through the NHS [name removed] network? [Moderator]
>
> No, I don't think so. [KAC2]…
>
> I'd be interesting to know if it's possible to get that but I suspect that we'd have to pay for the license [KAC1]

The participants also showed limited awareness of the specialist support the organisation's library services could play in supporting knowledge acquisition. In general the participants seemed unaware of this service's role, with one senior clinician unaware that the organisation still employed librarians capable of providing specialist support;

> I kind of wondered if that post still exists- it does… I haven't spoken to a librarian in ages [KAC1]

Other participants were aware that the organisation maintained library services but were not clear about what help could be provided. KAC4 reported using the library services to provide research articles that were unobtainable through web based services, but felt, inaccurately, that this was a service probably not routinely provided;

> I've certainly e-mailed the librarian and she's just sent me articles and inter-library loans but I imagine she'd probably get really annoyed if we [did it regularly] [KAC4].

A peer analyst noted that this lack of awareness of organisational apparatus was common amongst clinicians, despite noting that specialist support and facilitation were often cited as key to developing skills in knowledge acquisition;

> Yeah, it's interesting the disconnect, I think, almost between the library services and the clinical services because I, individually, know a few of them [librarians] just through ... well, actually through having shared an office with one of them and I keep bumping into her and she keeps telling me what's happening and all the rest of it but, other than that, I have very little connection with them. I know that most staff are quite surprised when they realise the kind of service that they can provide [KG1]

Subsequent discussion about attempts to access research knowledge reinforced this concept of insufficient awareness of organisational support. Despite being aware of the existence of the Knowledge Network (a centrally administered resource providing a variety of services to NHS staff), they did not routinely use this as a method for obtaining research articles, despite this being the primary process used to enable access to subscribed journal content.

The conclusion that can be drawn from findings in these categories at organisational level is not necessarily that clinicians tend to be unaware of resources that could support knowledge acquisition activities, but that more effort may be required to promote these across the organisation. The prevalence of this trend of unawareness across the participants who had been actively engaged in progressive efforts to acquire research knowledge more effectively suggests that existing methods for raising awareness of available resources were insufficient. Further engagement with these participants confirmed this as they continued to experience difficulties locating these resources once aware of their availability. It appeared that for knowledge acquisition to be achievable, the organisation needed to be much more proactive in the way it advertised tools and resources, providing facilitation to access these when required.

5.4.1.3 Creating Space and Structures to Support Knowledge Acquisition

It was also noted that the organisation had the potential to create opportunities for clinicians to become more engaged in knowledge acquisition efforts, both at the individual and team levels, with one of the non-clinical senior managers who participated as a peer analyst making several recommendations. These included providing facilitated efforts to

replicate those team-based processes in which research knowledge was more comprehensively considered; supporting clinicians to develop the skills to consider elements of research knowledge other than design; and helping individuals prioritise knowledge acquisition to be a more embedded part of their typical activities.

> …the organisation itself I don't think gives enough credibility and enough importance to allowing people that space to go and find things out. So it almost becomes, if you as an individual practitioner or as an individual manager, if you've got an enquiring mind you can go off and enquire, but I could equally simply not enquire and it wouldn't really be an issue.
>
> What I don't know, genuinely don't know, is what discussion actually happens at a team level around what we're doing for treatment, what are we doing for evidence, are we refreshing what we do. The way to achieve that is like the training group, education training group that's regional for [diagnostic group removed] and I know that they look at evidence regularly and they update each other and they send things round a lot and there's a lot of very positive stuff, so I think that's a really good example.
>
> …So there's something about if we're gonna change, we need to be quite bold about it and we need to be quite structured about it to begin with so that people actually know that that's their space to bring what they're thinking [PA1].

5.4.2 Facilitating Knowledge Generation through Organisational Measures

In comparison to contributions from participants about team level functions supportive of knowledge generation which were limited to mentoring and guiding towards sources of specialist support, numerous organisational elements were identified that they felt would facilitate this process. Participants argued for more structured organisational support for knowledge generation, including providing accessible expertise, defining and raising the priority of knowledge generation, and integrating professional education requirements and programmes with more practical knowledge generation activities.

5.4.2.1 Accessible Expertise and Resource

The prevalence of discussion suggesting the organisation could foster knowledge generation activities by making specialist support more easily accessible was a readily identifiable finding. In addition to the potential value in ensuring individuals committed to generating new knowledge are adequately supported by more senior colleagues, there was also a need for more specialised support to be available both in the form of expert advice and as IT support.

In particular, the participant who had successfully completed research related to their service reported the efforts involved in securing support to complete statistical analysis. This included independently locating and approaching statisticians from a research facility for mentoring. As the extract below shows, KG2 was unable to locate support for this from within the organisation, noting that nobody was identified as responsible for providing this;

> It would have been helpful to have that [specialist advice about statistics] sooner and to have that … just to be able to more easily access that, but it was very good advice I got in the end, but I don't think there was anybody that had a duty to give me that advice and it was really just, you know, this individual's goodwill. Well it did feel quite sort of unsupportive in that respect and it was kind of just, oh, just bash on and do some Chi-square tests. No I mean it's not really atypical in medicine, I just cracked on [KG2].

This was reflected by opinions of another participant who reported less successful experiences of trying to generate new knowledge. KG3 suggested there needed to be more proactive promotion of support and resources to encourage health professionals to stay motivated and engaged in the process;

> Oh, it's one of those Donald Rumsfeld unknown unknowns [laughter]. I'm not sure what all the barriers are, but it doesn't feel like anybody anywhere has proactively reached out to us and said "I'm sure you'd like to do research, what would you like to do? Great, we'll help you do it"… knowing the very basics about what research is. How, who do you approach? What do you need to do? Where do you sit down and learn things that you might need to learn?... If there was an academic post that would be great, as a point of reference. If, maybe there was also some kind of resource pack that again we didn't have to seek out because none of us know what we need to know… So more proactive in-reach into our consciousness in that way would be useful with a resource file of contacts, useful websites, useful books to read, anything! [KG3].

This participant also suggested that the physical accessibility of support for knowledge generation also had an impact on her previous knowledge generation efforts;

> I think it's because they're in the [location removed] and it's got a lock and you don't know, the code unless you go in. I think that's all it is. It's incredible! It's just that they sit in a different building because when I went in and spoke to [name of research specialist removed] a couple of months ago and it became very clear that he was kind of sitting there expecting other people might have approached him, saying things like; 'we… yes we're more than happy to support X, Y and Z' and… I'm kind of surprised he hasn't been approached more [KG3].

Tied closely to the need to access expert support, accessing adequate technological infrastructure required for knowledge generation was also noted to be important. One

participant recalled how they had completed elements of a project using a trial version of software, forcing them to complete analysis in limited period;

> Well it would be good to have easier access to a statistician and for that to be part of their role. I mean I didn't have access to any statistical packages and I had to download Minitab and just use it when it was a trial [KG2].
>
> Did that just give you a certain amount of days to get it done in then? [Interviewer]
>
> Yeah, thirteen. I think Minitab was acceptable, but it may have been easier to actually own a computer that you could use. There were some issues around that [KG2]
>
> So you don't have SPSS or things as standard? [Interviewer]
>
> No. I didn't have access to that. [KG2].

This participant also reported difficulty, at times, securing sufficient hardware to complete these processes although they did suggest that this may have been atypical;

> I mean there was a slight difficulty with office space, because at one point there was three of us in an office half the size of this room which is a small room and only two computers, one of which was very slow and you couldn't run Minitab on it, so that was a problem, but generally not a problem, generally you get the time and the equipment that you need and space [KG2].

A further finding related to the importance of securing specialist support for knowledge generation related to the potential impact this has on how the new knowledge might be received by other clinicians. As the extract below indicates, knowledge generation activities need to be completed with an acceptable degree of methodological rigour for them to be of value, often necessitating the contribution of specialist expertise;

> I think you need specialists. It's so complex with the variables involved in terms of ... I'm no data person but I think the worst thing we could do is just come up with a few spurious pivot tables and claim that is the case when clearly it's so much more complex than that. I think if you spoke to some of the psychiatrists or senior medics and said, "Well, we're going to analyse all this data and we're going to come up with some conclusions," they'd be very sceptical about it unless you are presenting it in a very detailed way, coming from a very knowledgeable background to actually get the data analysis and being able to explain what you've done and how it all hangs together [KG1].

5.4.2.2 Defining and Raising the Priority of Knowledge Generation

Related to the finding above, that providing specialist support is key to ensuring the production of knowledge that is credible and of use to other clinicians, was the need for the organisation to actively promote more integrated approaches to facilitating knowledge generation activities. The participants offered a number of opinions about how this approach might look which can be broken down further to include practical measures, such as how data and information is made available for use, and how to support and encourage personnel to engage in knowledge generation. More abstrusely, how the organisation facilitates personnel to consider types of differently generated knowledge, and the impact this has on the motivations and ability of personnel to engage in the process were also identified.

Indeed, the impact different perceptions about the type of knowledge generated could have on the process was identified by all participants in this case. They noted that individuals who had remits for supporting knowledge generation activities typically viewed the outcomes of efforts by members of the organisation as of less value than research efforts led by academics or generated through formally funded grant structures. A telling example of this was given by participant KG2 who intimated how their work had been received by one of the organisation's senior academic consultants;

> [Name removed] thinks that our case control study is an audit and I don't personally, but he thinks … well it's not seen as research… I would like to ask [Name removed] why he considers it to be audit because I don't understand that… I think they would call it service evaluation…I suppose my sense is that saying it's an audit is actually a bit dismissive. I don't think it is an audit, but I suppose I need to ask [Name removed] what he means when he says that.
>
> I think audit just … it just doesn't sound like something you've probably put as much work into… I mean compared to the study that I've done it shouldn't take anything like that length of time and it just seems to me there's a different model and saying, "Well we've got the standards, how do we compare those standards and what can we change and then do it again?" so it doesn't look like that to me. I suppose … I mean perhaps that's not fair and I don't think he means to be dismissive, but I think they are separate – audit and research – but the boundary is quite ill defined. [KG2].

Other participants confirmed these views and it was easy to discern from their contributions that as knowledge produced in practice by health professionals was often seen as less value than formalised research evidence, there was less impetus or value in attempting its generation. Conversely participants noted that knowledge generated by

practicing health professionals within the organisation meant that is was likely to be of more clinical relevance;

> So you have the randomised control tests and trials and so on, but it's very difficult to equate that to something like delivering CBT in practice. So a lot of the studies will see people get trained up in specific modes of CBT, that there's a recruitment process of patients that fit the criteria and it's then a very ... I suppose not secluded, but there's a very unreal way of structuring in terms of that. And to take that and then apply it to a clinical situation is, it's questionable how well it translates. So in terms of being able to almost do research trials within the clinical situation, an everyday clinical situation, is very valuable because I think it's a lot more credible for a lot of clinicians in terms of what they take on in terms of evidence and how they may apply it to their practice [KG1].

However, it was also noted that even though some health professionals questioned the applicability of experimentally designed research for clinical practice, they equally failed to consider clinically grounded, or practice-based research knowledge as valuable;

> …even some of the academic psychiatrists, it's almost a circularity, because they will say, "Well, the highest level of evidence is random control blind trial," but then they'll admit, "But that's very difficult to apply to clinical practice." So it's completely different to a clinical practice. So it's almost as if this paradox or no joined-upness between it in terms of you've said, "This is the best evidence," but actually you don't accept it's particularly useful for actually taking on and using in clinical practice. It's then the problem that well, we can produce this evidence from clinical practice, but that may not be seen as credible to later change people's practice [KG1].

Although no strong indications were given as to how to alter this, it was suggested that knowledge generation could be supported by defining an organisational position in respect to the knowledge generated by its clinicians outside of formal research structures. Differentiating between a position in which any efforts not within formal grant structures were automatically classified as audit or service evaluation efforts, and raising the priority of these efforts was implicated as one way of raising the profile and credibility of knowledge generation activities.

5.4.2.3 Integrating Organisational Knowledge Priorities with Professional Development and Education Structures

Participants in this case indicated that knowledge generation efforts could be more effectively supported if a basic separation between these efforts and embedded approaches to professional development and education was closed. Participating clinical personnel noted that there was little integration between these, suggesting a missed opportunity in terms of both skill development and the production of relevant knowledge;

> There's the service part of our job and the training part of our job, so NHS [organisation name removed] shapes the service level but in terms of the training level bit of that, it's the Royal College of Psychiatrists and the GMC, the General Medical Council that regulate training overall and things…, so the requirements on us to do journal club or whatever as part of our training as we go from ST4 to 6, and all the different components are dictated and assessed by the Royal College of Psychiatrists... there's an inherent tension between service provision and training… [KG3].

This participant's contributions later indicated the feeling that continuing education regulated by professional bodies needed to be more integrated with practical knowledge generation efforts;

> I think first of all for it to be a little bit more spoon fed to us I think in the sense of dedicated time in let's say the Royal College of Psychiatry Teaching Programme that you get every Wednesday for two years in order to sit your Royal College exams. Part of that is teaching on critical appraisal. It's all about what is research and what is good research and what's bad research and how to be able to look at things. It's the bit of the exam that everybody dreads because most of us are rubbish at it. So, it would be good if that was then taken a step further, the existing teaching to say, 'Okay, we're now going to teach you about what research is and how to do it'. We've never had that. [KG3]

Participant KG2 suggested a more integrated approach to organisationally supported knowledge generation could include actively supporting staff earlier in their training to prepare for engagement in knowledge generation activities as part of their professional development, and that this could be tied to organisational priorities.

Based on personal experiences of identifying gaps in knowledge that could be filled through analysis of existing data, KG2 suggested the organisation could identify and communicate its knowledge requirements more explicitly to the clinicians whose professional development requirements included involvement in research activities. This would allow them to identify potential avenues for knowledge generation aligned to their special interests, skills and career development plans, removing some of the impediments to initiating knowledge generation efforts once their role allowed dedicated space to pursue this;

> Well I mean probably the main people to target would be people starting at ST4 level, so that's the first year of registrar. I suppose you could target people in core training, but they don't have the same time allowance for research and I mean you could have a kind of pool of research options for people that are starting ST4 with an idea about time commitments and that could be brought up at induction or quite early in the ST4 teaching, so that people who maybe don't have an idea of what to do

> can get into it, or even before that. If there was something on the Division of Psychiatry website about, you know, specific options for getting involved in research, because there's nothing like that, and people could see. Because I planned my research to start when I started ST4, so I knew what I was going to do before I even got there and I think that's better, because then you don't waste any time [KG2].

This idea of 'wasting time' trying to identify possible knowledge generation activities was also indicated by KG3 who noted that despite being allowed research time, it was challenging in the early stages to identify something worthwhile to focus on. This often meant that pressing or outstanding clinical activities were often allowed to encroach upon this protected time;

> We're given space, plenty of space, er, I mean not plenty in the sense that it's not structured that well because my one day a week turns into more like three days a month when you take into account holidays and- it's a lot of potential time. When I started my ST4 job I remember thinking Friday can be my research day because there's no other clinics, it's a better day to do it and then you know nine o'clock first Friday I thought "What do I do now?". I sat there in a chair and I stared into the sky and I thought "Right what's interesting to research? What's research? I don't know, who am I?" You know it was really very unsatisfying and of course you've got the rest of your week Monday to Thursday when there's millions of things going on and you're thinking, er, I've got this thing which I don't know what to do with and yet other things are massively important for me get done. I've got phone calls to make, I've got letters to dictate and then I would think, oh sod it I'll just do that. So you end up not, I ended up kind of wasting, well not wasting but using totally in non-research ways my time for months to be honest [KG3].

5.4.2.4 Exploiting Organisational Data

Tied to this idea of supporting personnel to use professional development time and requirements more effectively for practical knowledge generation efforts was a finding that the organisation could facilitate this by establishing more structured processes to optimise the collection and use of routinely collected data.

One participant noted that the impetus to engage in knowledge generation had been directly influenced by the availability of relevant data from their area of clinical operations;

> So it was a gap in the literature about what affects length of stay in [service detail removed] and also I mean the fact that it was going to be really useful to look at the data that they have been collecting over the years, the initial admission data, and do something with that, so this was two prongs… I think the agenda is that we've got this data, let's do something with it and I think, yeah, I think I identified that there was a gap and thought we could do it that way [KG2].

Another participant noted that they had been unaware of the opportunity to make use of organisational data when initially trying to pursue knowledge generation;

> I didn't know about, and it's going to sound unbelievable, I didn't know about data, data sets. I didn't know that there were particular things existing in the world which were waiting to be plumbed for research… and I think again that's another problem, that people don't realise how little we know [KG3].

This participant also argued that promoting access to data amongst health professionals would directly support their knowledge generation efforts, reporting on personal experience of discovering the availability of organisationally held data through a chance encounter with a more senior professional in the organisation;

> I went in, you know, and in a fancy way said something like "What the heck can I possibly study?" and I don't think she realised I didn't know what a data set was and she sort of said "Well we've got data sets on this, this and this… we've been gathering data on all this and its now on the system, you can do anything with it you like if you want". And I though oh really? What a bonus! [KG3].

The non-clinical participant in this case also suggested more active efforts to collect and use information would benefit knowledge generation purposes;

> Yeah, I think well, one part of it being smarter about the information that we have. I think outcome measures is a big one and I think at the moment, with the use of the CGI, whether we can move on to be a bit more detailed in the sort of outcome measures that we use, a range of outcome measures, more specific outcome measures, would be helpful I think [KG1].

5.4.3 Facilitating Knowledge Application through Organisational Measures

5.4.3.1 Appropriate and Responsive Resources

Discussion about the central importance of suitable information technology resources recurred throughout data generated with these participants. Criticisms of existing infrastructures appeared symptomatic of more entrenched reactions to externally imposed change, but the prevalence of this topic in conversations about how to position the team to apply the new knowledge suggests that organisationally provided resources have a direct influence on the process.

Ostensibly most of the participants felt that much of the information management infrastructure had insufficient functionality to meet their particular needs as the following contribution suggests;

> Well, to me, it does nothing for me at all…I mean it might provide some… my data might be useful to somebody else but it… but it doesn't… it doesn't provide me with

> anything useful…at all because everything that I put into the information management system is also replicated on paper notes anyway and I would go back to the paper notes rather than, rather than using the information management system as a tool to try and find anything [KAP4].

Another senior team member offered some elucidation on this suggesting that the design of the system did not fit the particular needs and circumstances of their service, appreciably reducing the perceived value in using it to manage service information and outcome data;

> But the information management system just doesn't work for you though, does it? It's sort of... there's a system that other people were using somewhere and we've made you now start to use it and just do it and it doesn't... It doesn't work in any way that you would actually want it to [KAP3].

Essentially, this category related to the need to provide tools with which to enact knowledge driven changes in practice, or where, to enable local teams to create or acquire the resources they require. As will be seen this is linked with another category that emerged in the findings related to the organisational culture associated with enabling such changes.

5.4.3.2 Transforming Organisational Culture

In addition to reports about real barriers experienced when using organisational IT infrastructures to evaluate outcomes data, there were also suggestions of repeated negative experiences when trying to secure improvements to the functionality of these resources. These experiences had left members of the team with a generally pessimistic view of the organisation's capacity to meet their needs. One discussion about the disconnection between their needs and existing resources highlighted this;

> Because it [the information management system] seemed it was designed for someone else… Yes [KAP4].
>
> And then the data's wrong [i.e. inconsistent with their needs]. But that's… I suppose that's something about being forced into using a system that somebody else has decided what that's going to look like [sounds of agreement] and then it doesn't quite meet your needs but [sound of agreement] it's all you've got so you have to kind of go with it. [KAP2].
>
> Yes. [KAP3].
>
> So is that one way of improving the utility of it, is to allow you to shape your system in a way that's a bit more responsive as it were, sensitive to this sort of information that would be useful to you on the ground and the realities of the information you get here. [Moderator].

> But they won't allow us to change anything! [KAP4].

Later, this cynicism and frustration about organisational IT structures and services was encapsulated by one participant's consternation at a recent experience;

> If anybody can cock it up, they can [IT services]. Yes. [laughter]. Two of them were round here this morning... Two of them to put a CD drive in! [KAP4].

In addition to perceptions about insufficient IT resources and inability to adapt infrastructures, it emerged that participants placed significant value on using IT to complement their work, but expected that organisational IT provision would fail to keep apace of current technology. Also policies and established conventions restricted them from altering the configuration or application of resources that would allow them to apply knowledge-based recommendations more effectively. The following exchange about establishing streamlined data recording processed hints at this;

> Just get the patient to put their own data in. Log on to this system; put your own data in. Someone said to me a while back that you could, instead of sending people photocopies, that you could have a sort of secure log in. You know, log in to get your... choose your appointment time. While you're there complete this questionnaire. [KAP2].
>
> Oh that's... that's just superb. [KAP1].
>
> So they don't, you know, you won't be sending folk appointments and things but... [KAP2].
>
> Ah that's... Actually that's really easy to do. It's the security thing that they'll scream at. [KAP4].
>
> It's just all this... It's frustrating to know that all that technology is just there and we can't touch any of it. It's silly. Because emailing people would be so much... is so much easier than sending them things through the post. [KAP3].

This expectation was corroborated later in the discussion when members of the team decried the lack of resource availability in the NHS organisation;

> You know, if we worked for a large private organisation...[KAP4].
>
> Be done like that [KAP3].
>
> ... it would be done by next week…There was a crazy thing that I saw recently about accounts and how if you gave every employee an iPad and stopped them using paper, stopped them printing stuff out then you would save a huge amount. [KAP4].

> We should work more technologically… And if we really are going to format the services within the [service details removed]…it should be as technologically advanced as we can possibly make it. [KAP1].

These perceptions built on previous experiences impacted on the team's ability to apply knowledge in practice as they withdrew from efforts to adapt resources to meet their needs. Later engagement illustrated that seemingly unfit resources could be reconfigured or used differently to meet local requirements. However, it appears that repeatedly fruitless efforts to achieve such changes, along with a pervading opinion that the organisation failed to invest sufficiently in providing basic tools, resulted in a lack of motivation for efforts to alter practice in line with knowledge recommendations. It was interpreted that the participants felt that were expected to apply knowledge in practice but were not provided with the resources or power to enable this.

5.4.3.3 Facilitating Communication and Innovation

In response to this, two potential organisational activities were identified, including collaborative facilitation to enable the team to create the required commitment, capacity and infrastructure for implementing a knowledge-based change to practice. Secondly, and directly connected to collaborative facilitation was related to allowing team space to innovate and develop practicable methods to support knowledge application in their local situation.

Collaborative facilitation by nominated individuals from within the team or elsewhere in the organisation, sanctioned to take responsibility for leading the creation of solutions and advantages for clinicians, was identified as a valuable support that could be provided by the organisation. Participants noted that any efforts to help the team conform to recommendations and policies based on sound knowledge had to be accompanied by active efforts to assist progression;

> It has to be done in the right way I think. You have to feel that it's supportive… [KAP2].

Participants also demonstrated the value of active facilitation by quickly exploring the different options this could open for supporting their knowledge application efforts. One clinician enquired as to the possibility of using specialist skills available through a university based facilitator to overcome some of the issues they felt stemmed from the lack of an appropriate outcome measure;

> Given the kind of the nature of this, that it's a kind of collaboration between academics and clinicians, could we try and devise a questionnaire that is sort of custom built, fit for purpose? [KAP2]

The most clinically experienced participant also felt that active facilitation could be key to knowledge application, reporting previously considering this option within the boundaries of the team. In that case KAP1 felt the initiative had not produced the desired results because the individual nominated for this role had not approached it within sufficient commitment or enthusiasm, and potentially was not skilled enough in facilitation;

> I think if we could have somebody who knew what they were doing and was quite dynamic about it, enthusiastic about it. And was not just prepared to say; 'Oh nobody does it. Let's not bother'. And a little bit of oomph about them…Yes. I think it would be very different. I need that person. [laughter] Where is that person? No, seriously. But it was 'Right, you...could you take on the responsibility of making sure that we all do CORE; That everybody's enthusiastic about recording it; That you bring it back to the team meetings; You talk about it; You go off for this training; You learn about it'… It's almost like a sort of like... To have a leader, but it was like the CORE champion almost. Like that kind of role [KAP1]

5.4.3.4 Providing Space for Shared Learning

Concurrent with the concept of facilitation, was the need to allow space for practical problem solving and innovation to occur. This was seen to be a responsibility of the organisation, and all of the participants at some point commented on workload pressures with a senior clinician noting;

> That they are genuinely... and I know that with absolutely certainty, the team could not actually work any harder. [KAP1].

Against this background of intensive clinical caseloads, there were intimations that a mechanism was needed to allow these busy practitioners room to create the conditions for applying research knowledge in their clinical practices, and that facilitation was one method that allowed this to happen.

> There has been a bit as well I have to say... I think again I'm making this up a bit but I think that because we've been part of this, the [name of action research project removed]… there's been a bit of a sort of 'Oh don't worry about it. We'll do it when that all happens'… There has been a bit of a sort of a 'Phew, you'll have to think about it' [KAP1].

Another participant also commented on the need to leave space to consider how best to approach and design changes to enable the application of knowledge. They noted that the organisation should be aware of the need to allow teams sufficient time to interpret and

consider both the new knowledge and the opportunity to develop and trial different procedures for applying it in practice. When asked about this in relation to previous episodes in which changes to the service had been made they noted that central to the process had been;

> Discussing it. And then the … it's allowing space for that innovation part as well… and we've kind of come firmly over to that 'Let's leave that. Let's focus only on what we know works.' I suppose as time… As a service beds down you start to pay a bit more heed to that and develop and 'Well if we tried that' you know 'how sound would that be?', and kind of testing that out a bit more. [KAP3].

At a strategic level, similar responses corroborated these findings. One peer analyst from made similar comments about the need for the organisation to create space in which capacity for knowledge application could be developed. PA1 felt the organisation should support replication of some of the processes that happened at the team level in successful knowledge application efforts across groups within the organisation. As the excerpt below indicates, PA1 felt replicating the process in which commitment to enacting a change is developed by demonstrating achievability and beneficial outcomes from the application of new knowledge, as articulated by KG1 earlier, would enable this to occur more routinely;

> It's like 'Okay, How are we now?; Where are we?; and are we now in a position to share the learning?; and how are we gonna do that?; and what is the best way to do it?; And who are the best people to share that?'.The people who've been through the experience I would imagine. And just creating that bit of space… people being able to stand up and say 'Look this is what I was doing and now I'm doing this and it's been so much better and I feel better about it. I feel more on top of things 'cos actually I feel I'm informed, I know that I am making a difference, I can demonstrate stuff'. Just having that space to bring folk together I think is key [PA1].

Ideas similar to the concept of facilitating learning through the peer-support available in teams was also seen to be important;

> And people learn in different ways obviously. But if we haven't created and supported a space for people to come together then we can't be overly critical. And I think actually bringing together the different cultures if you like within the organisation [PA1]

Expounding on recent effort to create space for groups of clinicians to engage with newly generated knowledge, this participant clearly indicated the value of replicating a team approach across the organisation. They indicated that this could enable individuals to make more informed judgements about the utility of knowledge. It is perhaps worth noting that the research knowledge at the centre of this initiative was of a type that would

conventionally be regarded as 'low quality' by virtue of its design, being qualitatively based and produced by service-user led organisations. There were indications to confirm earlier findings that team processes can assist individuals in seeing the potential value in knowledge derived from out-with their habituated understandings of quality, relevance and utility, and that this has a direct impact on how knowledge may be considered for application in practice;

> And the response has been amazing. It's just been really ... something in it has touched with people and they've connected with it and its maybe because they do feel "I don't know what I'm doing with this client group, here's something that's gonna help". So it seemed to be helpful but it's also bringing people in to have that bit of conversation and to challenge some of their assumptions about people with that diagnosis for a start, and actually what has helped, what's hindered. So there's a big learning thing there and there's a practical thing that people are getting at the same time, but they're also getting a chance to actually have some of their assumptions challenged and to learn something [PA1].

5.4.4 Summary Findings at the Organisational Level

Organisationally there appeared much that could be done to facilitate the processes of knowledge acquisition, generation and application. Major categories that were identified across all three cases included the provision or promotion of specialist resources (be these information technologies or organisationally provided specialists with roles in supporting the activities), and the need to provide, or allow health professionals to make better use of, space and time to engage with the activities.

Within the different cases a variety of different facilitative circumstances were identified as can be seen in Figure 5.3. This figure illustrates some of the interrelations and connections between different circumstances and how they combine to influence knowledge processes under investigation.

Each of the cases also appeared to link to the theme of motivation and commitment identified at the individual level, suggesting that actions taken at the organisational level often have a direct influence whether or not health professionals will attempt to engage in knowledge acquisition, generation and application. Each case identified different circumstances which need to be in place to create or maintain this individual motivation. The provision of appropriate IT resources was important for those participants in the knowledge acquisition case due to the central importance of being able to engage with

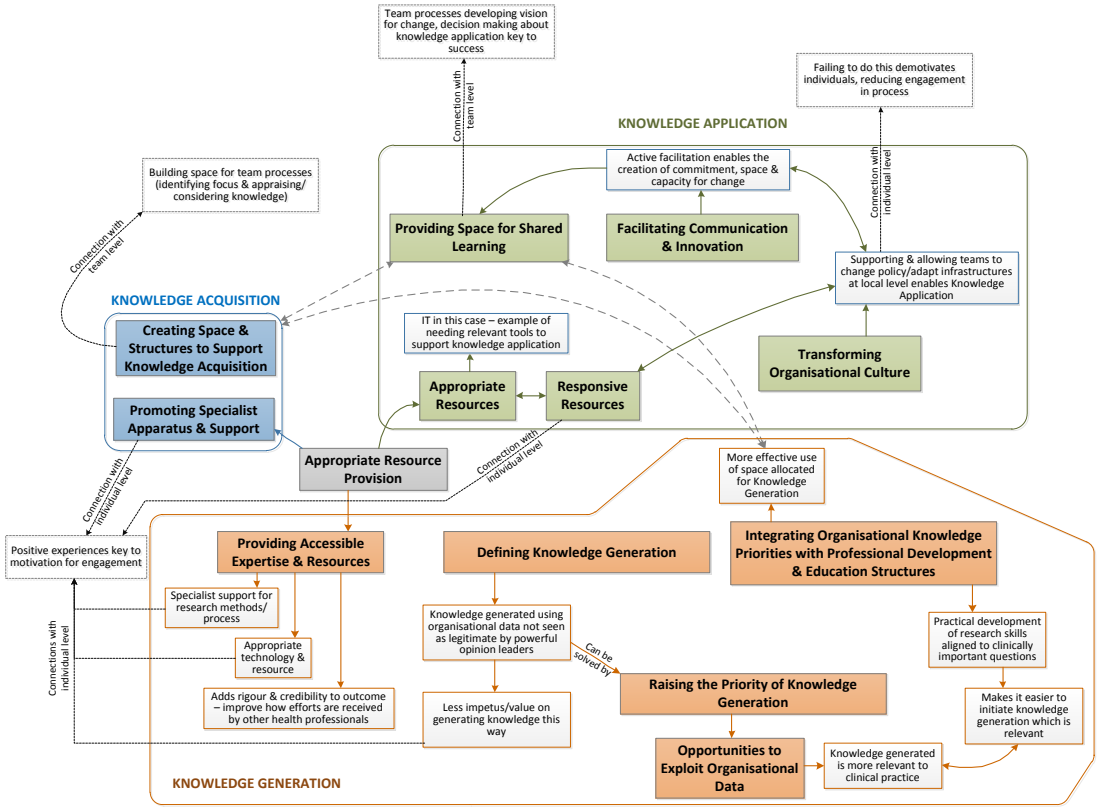
web-based resources efficiently, without associated impacts on clinical responsibilities. Successful engagement with resources for knowledge acquisition was important in ensuring individuals remained motivated.

IT was similarly a focus in the knowledge application case but with a slightly different focus. This group noted the need for the organisation to allow them, at a team or more local level to take control of how resources were used in efforts to apply knowledge. During focus groups, emphasis has been placed on how repeated negative responses from the organisation had prevented their efforts to create the changes needed to support knowledge application. Interpretation of the participants' contributions suggested there is a need for resources to be flexible and responsive enough so that they can be altered and used creatively to fit the needs of a specific location. In this case, the participants wanted to be able to create capacity within the information management tools the organisation required them to use, so that their data collection activities could have more value and meaning for them. The negative responses experienced to requests like this served not only to remove the potential advantage of benefits associated with knowledge application but also appeared to demotivate individuals, impeding their engagement in the process.

In the knowledge generation case, in which the role of individual motivation was stressed by the participants, it was noted that better defining and raising the profile of knowledge generation efforts that take place within the organisation would be worthwhile. The pre-existing tendency for this type of knowledge generation activity to be dismissed as illegitimate or of little value by some key opinion holders, including those with a remit for supporting such activities, was discovered to be a factor that could lead to disengagement, as individual health professionals saw little value in pursuing the activity.

Figure 5.3 also indicates the growing complexity of links that can be detected when considering these activities from a systems perspective.

Figure 5.3: Summary Findings - Team Level



Chapter 6. Discussion of Findings

6.1 Introduction

This study intended to identify the systemic circumstances that are required for mental health professionals to be able to engage in evidence based practice. To achieve this evidence based practice was conceptualised as an integrated set of processes focussing on the acquisition, generation and application of knowledge, and a methodology informed by soft systems thinking was used to elicit and analyse data from a range of health professionals from three case studies, each relating to one of the processes.

Analysis of data led to the emergence of twenty-four key categories which are illustrated in Figure 6.1 as they relate to each of the different cases examined. During analysis these were considered against the systems level at which they could be facilitated or controlled (the individual, team and organisational levels) and this chapter will deliberate these findings in relation to existing commentary and knowledge, indicating and discussing where possible the new insight and knowledge that has been produced.

Additionally, the potential implications of these findings for both national and local policy, the development of evidence based healthcare practice and future research will be examined.

Figure 6.1: Key Categories by Knowledge Process

6.2 Knowledge Acquisition, Generation and Application at the Individual Level

6.2.1 Skills, Motivation and Mental Models in Knowledge Acquisition

6.2.1.1 Skills for Knowledge Acquisition

This study found that at the individual level, mental health professionals needed specific skills to effectively engage in knowledge acquisition activities. These were related primarily to designing literature searches and using specific technologies to locate research knowledge within web-based research databases. This finding verifies a limited number of studies that have investigated the knowledge acquisition practices of healthcare professionals.

McKibbon et al. (1995) have recognised that the landscape of knowledge acquisition in healthcare has been undergoing significant change resulting from the rapidity with which information technology is advancing, and that this may provide potentially faster access to research knowledge but not necessarily better control. Successful knowledge acquisition for evidence based practice, typified by clinicians searching for, identifying and acquiring research knowledge relevant to their clinical activities, is increasingly becoming dependent on levels of information literacy (Bartels 2009; Shorten et al. 2001; Jacobs et al. 2003).

Heavily implicated in information literacy is the ability to locate relevant information (Tanner et al. 2004), with the growing technological management of research knowledge increasingly causing knowledge acquisition to be synonymous with computer literacy (McNeil et al. 2003; Tanner et al. 2004; McNeil et al. 2006; Schuut and Hightower 2009). In particular, health professionals need to be able to effectively utilise web-based bibliographic databases when attempting to identify and acquire relevant research knowledge.

This study also discovered that participating mental health professionals lacked the requisite skills necessary to effectively engage with these technologies, reflecting existing studies and commentaries which suggest that clinicians either do not attain appropriate levels of skill during training or are unable to maintain sufficient aptitudes in applying these skills alongside constant developments in the technologies. It was identified that senior clinicians in the current study retained an understanding of many of the principles of effective knowledge acquisition, but had been unable to keep pace with changes in the technologies that support this activity.

A limited number of studies conducted in non-mental health disciplines such as general nursing (Pravikoff et al. 2003; Ross 2010), speech and language pathology (Nail-Chiwetalu and Ratner 2006), dietetics (Thomas et al. 2003) and general medicine (McAlister et al. 1999; Coomarasamy et al. 2001; Slawson and Shaughnessy 2005) go some way to corroborating this by suggesting that health professionals are generally unable to maintain effective knowledge acquisition skills. A recent study by Cullen et al. (2011) has demonstrated that knowledge acquisition abilities amongst doctors quickly atrophy upon the completion of training, with the majority of high level skills lost during first placement, a finding substantiated by (Kingsley and Kingsley 2009).

6.2.1.2 Motivation to Access Research Knowledge

The findings of this study clearly indicated that the degree to which individual clinicians were motivated to engage with a knowledge base relates to how feasible and successful this process is. Clinicians were more inclined to access and consider research knowledge if it was actively delivered to them in a format aligned with their personal preferences, or if they were able to access repositories of relevant knowledge with enough sensitivity to return precise results for their queries.

Previous research into knowledge transfer mechanisms has highlighted the importance of making knowledge as accessible as possible to clinicians and healthcare managers. Exploration of these studies shows similar findings in terms of ensuring the clinicians could access relevant information in a timely, efficient and straightforward manner, though conclusions as to the underlying impact this has on motivation to engage with research knowledge is not explicitly noted.

For instance, Pyra (2003) and Mitton et al. (2007) in review papers, and Titler et al. 1999, Philip et al. (2003) and McConnell et al. (2007) in case studies all note the central importance of making sure that information provided for, or accessed by, clinicians is relevant to their needs. Different approaches are noted for achieving this, by virtue of the fact that the studies were based on active knowledge transfer methods. As such, it is primarily factors based on the active targeting of clinical knowledge users and exploitation of communication channels that are mentioned by the authors.

The current study allows it to be plausibly suggested that the same holds true for clinicians actively attempting to acquire research knowledge, rather than receiving active transfers of

knowledge. This study suggested successful identification of relevant information is more likely to motivate clinicians to actively seek knowledge than continually putting effort into accessing irrelevant information. Some authors also note the importance of ensuring research knowledge is accessible and can be retrieved when still of relevance to a clinical query or decision (Titler et al. 1999, CPHI 2001; Rosser 2008; Mitton et al. 2007). Again these relate to active transfer rather than the importance of ensuring clinicians are sufficiently skilled enough to successfully acquire knowledge independently.

6.2.1.3 Mental Models in Knowledge Acquisition

Findings related to skill requirements and how ease of access affects mental health professionals' willingness to engage in knowledge acquisition had some precedent in studies in healthcare, albeit not mental health specifically. Additionally this study also found that clinicians may at times need to alter how they regard the value of different types of research knowledge when undertaking acquisition efforts.

Currently much of the literature relating to how health professionals consider and appraise research evidence is focussed towards developing different guidelines to be used during the process (Sandifer et al. 1996; Vlayen et al. 2005; Krainovich-Miller et al. 2009). Some papers investigate how clinicians approach critical appraisal in practice, indicating that clinical pressures can impede this process (Doran et al. 2007) or that clinicians quickly lose the ability to conduct critical appraisals in practice following training (Oliveri et al. 2004).

However, while these studies go some way to determining what sort of activity might support clinicians to appraise research evidence, they shed little light on how this process affects the decisions clinicians make about how or whether to use research knowledge in practice. Comparatively little has been published with this consideration as a focus. The elements of the current study, which suggest that implicit judgements and unstructured appraisals of research knowledge by individual clinicians about the relative value of different types of research knowledge have a direct bearing on its consideration for use in practice, appears a novel finding. One study aimed at developing a different approach to assessing the critical appraisal skills of clinicians alluded to this concept (Schwarz and Hupert 2005). It notes that decisions about the quality of research papers were often made in conditions of uncertainty, and health professionals who make decisions based on newly acquired research knowledge may implicitly assign value to it although often unable to explicitly articulate complete confidence in the decision.

Likewise, little has been written about the need to actively alter perceptions about what research knowledge should be considered for use in making evidence based decisions if the sort of papers typically regarded as high quality do not exist for certain populations. Of the few commenting authors Glasziou et al. (2004) have articulated the need for clinicians to be less dependent on hierarchies of evidence that feature widely in texts related to evidence based practice. The argument by Sackett and Wennberg (1997) that whilst research into the effectiveness of interventions is central to clinical decision making, evidence based practice relies on the ability to answer a wide variety of clinical questions, necessitating knowledge from different types of research design be used, is also noted.

Numerical and statistical reasoning, and the associated spread of evidence hierarchies dominate healthcare decision making (Vandenbroucke and de Craen 2001). However, it was recognised by participants in this study that basing decisions on research knowledge derived from either systematic reviews or well-designed quantitative studies is not always possible when considering certain populations and treatment approaches. Consequently they recognised the importance of being able to critically consider other types of research evidence more effectively, a practical example of what Glasziou et al. (2004) theorise as a 'balanced assessment' in which various types of research are considered.

Although under-addressed in healthcare literature, it is possible to draw on the role of mental models from organisationally based learning theory to understand why this aspect of individual action was identified as a feature influencing the knowledge acquisition process. Senge (2006) offers a theory of mental models in relation to improving quality of practice in organisations which fits well with the findings in the current study.

Senge (2006), along with other authors who have written about the cognitive processes of mental representation (Argyris 1982; Gardner 1985) describes mental models as deeply embedded assumptions and generalisations that determine how individuals make sense of the world and direct how they act. In discussing how mental models affect activities in relation to realising professional objectives, Senge (2006) notes that they can both impede and support effective action. Unexamined assumptions can prevent individuals from considering information that may be invaluable to improving how they practice whilst conversely, actively facilitating individuals to identify and challenge their inherent assumptions can lead to improved performances.

Whilst Senge's (2006) examples of mental models are largely discussed in relation to competitive business environments and tailored to managerial level actions, parallels can be seen in the way in which participants in this study discussed the impact of individual perceptions of how research knowledge was approached. It was indicated that health care professionals tend to approach different types of research knowledge with set assumptions about value. As has been noted above, the dominance of positivist science and expansion of evidence hierarchies typifies a mental model in which adherence to scientific method governs judgments about the value of research knowledge. This study has suggested that individual mental health professionals may need to challenge the impact these assumptions had on their ability to consider research knowledge for their clinical practice. It should perhaps be stressed that evidence based practice is defined as the judicious application of best available evidence, rather than the use of knowledge derived from quantitative studies when available.

6.2.2 The Role of Motivation in Knowledge Generation at the Individual Level

The most resounding finding related to knowledge generation at the individual level was that currently, clinicians have to possess a high degree of personal motivation and commitment to becoming involved the process. Despite growing realisations that involving clinicians in, or supporting them to lead knowledge generation activities may be of extreme importance in making evidence based practice a reality in healthcare, little has been written about how to successfully support this process.

The current study suggests that at an individual level there must be sufficient motivation for clinicians to become involved in research production, and that, when this does occur (although the testimony of participants would suggest that this is a comparatively rare occurrence in mental health) it is the result of either a desire to be better positioned for professional advancement, or because of an intrinsic commitment to improving clinical services.

It is difficult to locate this study's findings alongside existing discussion related to knowledge generation in healthcare which is less developed and tends to either espouse the need for practice-based knowledge generation or report the results of such activities, without noting how to achieve the process. It has been addressed by key authors writing about the topic in the field of organisational theory, and consequently remains primarily related to private industry and business organisations. For instance Nonaka's (1994)

dynamic theory of organisational knowledge creation has been used as a structure for understanding the process in a substantial amount of discourse about his topic in the past twenty years, and even features in some literature relating to healthcare and in particular the processes of sharing knowledge (Hara and New 2007; Lin and Chang 2008; Von Krogh et al. 2008), wider discussion about knowledge management processes (Pedersen and Larson 2001; Bali et al. 2005; Janhonen and Johanson 2011) and knowledge generation (Ahlstrom and Nair 2000; Nambisan and Nambisan 2009).

In his theory of organisational knowledge creation Nonaka (1994, 1995) draws attention to the central importance of the individual as the 'prime mover' in the production of new knowledge drawing on existing philosophy and theory to articulate the role of intentionality and self-motivation in committing to the process of knowledge generation.

Likewise, it would be fair to suggest that the role of individual motivation in the generation of knowledge in healthcare has not been overlooked, although it may be difficult to identify instances of explicit reference. Arguably, the most common method of fostering knowledge generation in healthcare results from an understanding of the role of motivation in the process. For instance Green (2008) recognises that the primary approach for improving the participation of health practitioners in knowledge generation has been through pull strategies. These are so called due to their underlying assumption that pressuring individuals by making involvement in these activities a requirement for re-certification, or by offering them incentives and reward, often in the form of professional advancement. Both of these pull strategies were directly referenced by participants in this study however, it was clear from their testimony that these methods alone were not enough to ensure the participation of health professionals in knowledge generation, potentially because the requirement to have demonstrated participation in this process before being eligible for promotion was not rigorously enforced.

6.2.3 Knowledge Application at the Individual Level

At the individual level the key findings generated by this study related to the need for clinicians to be sufficiently motivated to apply new knowledge in practice, and some of the mechanisms that may enable the creation of this motivation.

6.2.3.1 Motivations for Change: Demonstrating Relative Advantage

That the motivation of individual clinicians has a profound effect on whether or not they apply evidence in practice is perhaps not unexpected. Sonbonmatsu and Fazio (1990) demonstrated that attitude-based strategies to decision making often dominate, with correlations being demonstrated whereby this tendency increases as motivation and opportunity to use knowledge decreases. This often occurs despite awareness of knowledge that would allow alternative decisions. Attitude has a functional role in decision making and behaviour and it is therefore credible to suggest that the views of participants in this study towards applying knowledge in practice directly influenced this process.

The role of mental models in facilitating or impeding action and behaviour at the individual level has already been noted, and it would be fair to suggest that the discussion about motivations and attitude tie with this concept. However, it is easy to say that clinicians need to change how they approach and consider knowledge before it may be applied in action, whilst being more of a challenge to suggest how this might happen. However, analysis of the data provided by those participants involved in the knowledge application case allows a clear recommendation to be made for how this might be achieved.

The participants were unambiguous in articulating that, for knowledge to be applied in practice they needed to be confident that doing so would be advantageous to the way they provided treatment for patients, or to them personally. Opinion about how to achieve the application of knowledge-based recommendations to embed the process of routinely using clinical outcomes data to inform service provision had initially been characterised by explicit scepticism and disapproval. Later in the data collection process, when the participants were encouraged to think systemically about how to improve their situation, the tone of discourse switched to a more positive tenor when the focus became how to reconfigure their activities to be of direct benefit to their clinical practice.

This change in attitude has been explained theoretically by Rogers (1995) in his diffusion of innovation theory and can be identified in the process witnessed above. Dobbins et al. (2002) has considered how this theory can be used to explain the application of knowledge in healthcare policy and practice and notes that the second stage in the diffusion of innovations process is persuasion, during which attitudes are formed about the knowledge in relation to the potential outcomes associated with its application. Central to this process of persuasion is the concept of outcomes expectancy which relates to the confidence

clinicians have that a change in their practice would have benefits for themselves and their patients.

This study has confirmed that outcomes expectancy does play a role in changing the motivations of mental health clinicians, suggesting that primarily they must perceive proposed changes to practice based on newly acquired knowledge as beneficial, thus reflecting what Rogers (1995) termed relative advantage. This refers to the degree to which a change is viewed as likely to have better results than remaining with the status quo, and is suggested to be a key factor in persuading individuals to consider changing their behaviour and activities. In healthcare relative advantage tends to be defined by results such as improved clinical outcomes, satisfaction and operational savings such as reductions in time and effort (Davis and Taylor-Vaisey, 1997), all of which were explicitly identified by participants in this study as essential before they would commit to making changes.

The methods that can be employed to demonstrate relative advantage and help change attitudes towards making changes based on research knowledge appear to primarily occur at the team level and will be discussed in more detail shortly.

6.2.3.2 Overcoming the fear of Change: Self- Efficacy and Personal Mastery

In addition to findings related to motivation, Rogers (1995) theory also offers some explanation for the findings related to how negative reflexes to change, which can inhibit the application of knowledge, may be overcome. He suggests a concept termed complexity, which refers to the degree to which an innovation is perceived as difficult to understand and use (Rogers 1995), and separate studies in healthcare have demonstrated a strong association between the complexity of research evidence and its application in practice (Rodgers 1994; 2009). In essence, if changes to practice are perceived to be complicated and therefore more challenging to achieve by individuals, they are less likely to commit to making them due to natural responses related to self-efficacy such as fear of failure.

This again appears to fit well with the findings related to supporting knowledge application at the individual level, as it was recognised that processes needed to be in place to help health professionals either identify or create relative advantage from a change, and to improve their belief that the changes were achievable. Elsewhere, Senge (2006) has forwarded the concept of personal mastery, suggesting that individuals need to be committed to continually learning new skills and competencies in order to ensure that their

behaviours and activities are congruent with professional objectives. More than simply learning skills, Senge argues that personal mastery is an internalised vision in which individuals are committed to continually developing their abilities, and given the freedom to do so.

Again the methods that may allow individuals to develop the self-efficacy or personal mastery that enable the changes associated with new knowledge to be welcomed instead of automatically feared may well be a function of social processes within teams rather than the activities of individuals, and may well also be based on past experiences of organisational support for change, but it is worth noting that this was identified as a condition that must be present at the individual level if knowledge application is to be realised in healthcare contexts.

6.3 Knowledge Acquisition, Generation and Application at the Team Level

6.3.1 Team Roles in Knowledge Acquisition: Asking Questions, Considering Answers and Practical Processes

6.3.1.1 Asking Questions for Knowledge Acquisition

The two key team level findings that emerged in relation to knowledge acquisition were connected with the processes of focussing these activities and considering the potential utility of acquired knowledge. In both of these original findings it was possible to discern the value of group processes in improving decision making.

Firstly, the participants from the knowledge acquisition case noted the value in focussing knowledge acquisition processes to make sure they were geared towards finding research that was relevant to the team's needs. The process of determining the focus of knowledge acquisition activities in relation to evidence based healthcare practice has been considered by some authors. Ebell (1999) made an interesting point about the impact traditional medical training and models of continuing learning in healthcare may have on the way clinicians identify what knowledge should be sought. He suggests that these traditional models; "emphasizes knowing the right answer more than asking the right question. Too often, asking a question is punished by giving the busy intern or medical student the task of reporting the answer back to the group the next day!" (Ebell 2009, p.229). Perhaps an

approach like that suggested by the participants in the current study in which the decisions about what questions to ask becomes a shared function, reduces some of the impediments to determining topics of clinical relevance for knowledge acquisition.

It has been noted that decision making about what knowledge to acquire can be influenced by various factors causing a comparatively small number (thirty per cent) of identified questions to be carried through to the knowledge acquisition stage (Dawes and Sampson 2003). It has been suggested that those questions that are pursued are done so due to either the urgency of a particular patient's problem, or the belief that knowledge acquisition would be successful (Gorman 1995). This mirrors other research into the way in which clinical questions are identified which indicates that individual clinicians tend to ask questions in relation to individual patients and their needs (Casebeer et al. 2002; Bennett et al. 2006). The potential value of team-based direction of knowledge acquisition identified in this study has not been considered before as a more optimal way of acquiring knowledge for evidence based practice.

However, it has been argued that skill at framing clinical questions directly influences the success and effectiveness of knowledge acquisition, with the suggestion being that clinicians can find translating questions pertaining to individual patients into workable clinical queries challenging (Osheroff 1991; Smith 1996). Authors involved in the early promotion of evidence based practice have recommend that questions asked of research literature should be asked in a generalisable fashion, rather than in relation to the specifics of individual cases (Sackett et al. 1997). Similarly, a qualitative study conducted by Ely et al. (2002) indicates that clinicians experienced difficulty in modifying original clinical questions into a format that could be used for effective knowledge acquisition.

Most current considerations focus on how individual clinicians develop questions that guide knowledge acquisition. It appears that comparatively little has been written about how teams may inform this process though Rosenberg and Donald (1995) offered the opinion that team processes led by experienced senior clinicians could help to ensure that questions have; "direct clinical usefulness" (p.1123). Likewise, when considering the methodologies employed by the developers of systematic reviews, Muth et al. (2009) recognised the importance of developing a consensus about the focus of potential topics, alluding to the benefit this has for ensuring relevance and reducing the risk of errors.

6.3.1.2 Team Processes in Considering Acquired Knowledge

Many of these explanations also hold true for the other findings relating to team processes in the appraisal of newly acquired knowledge and consideration of its potential use in practice. Existing literature about this concept is diverse and encompasses a variety of investigations and explanations based on different theoretical explanations.

There have been some investigations indicating that health professionals may be heavily influenced by the opinions of their colleagues and more senior clinicians when making decisions about research knowledge and its potential application in practice (Tunis et al. 1994; Hayward et al. 1997; McAlister and McLeod 1997; McAlister et al. 1999). However, unlike the current research, these studies do not consider the potentially positive influence team processes may have on the interpretation of research knowledge, and do not suggest that intentional consideration of knowledge at this level can be more productive than relying on individuals.

General literature specifically related to team based knowledge acquisition is not easily identifiable, even from the field of management science in which the concept has more established tradition (Zellmer-Bruhn 2003). Of the limited papers discussing team roles in different knowledge processes, Zàrraga and Bonache (2005) presented survey findings suggesting that self-managed teams with certain facilitative atmospheres were more effective at a number of knowledge processes including how opinions were formed about the value of knowledge. Similarly, Wilkessmann et al. (2009), whilst studying the cultural characteristics of knowledge transfer, suggested that knowledge processes happen more effectively in cohesive groups as a result of what the authors term ‘in-group collectivism’, essentially a process of interpersonal interactions that occur as a function of a group that lead to improved communication of information and knowledge.

More generally, the role of social or team processes in decision making has been discussed by a number of authors including Brown and Palincsar (1986) who argue that related understanding and concept development is a result of social processes that enhance internal cognitive developments. They note Piaget and Inhelder’s (1967) seminal work in developing the theories of social cognition, in which human intelligence is said to develop in the individual as a function of social interactions, allowing more logical and mature conceptions to emerge. Indeed, different theories of social cognition have been considered in relation to team knowledge processes although again, it appears limited in relation

specifically to knowledge acquisition with few authors commenting on the role of social cognition in interpreting knowledge (Akgün et al. 2003; Gasson 2005), and largely absent from the discussion about knowledge acquisition for evidence based practice, featuring only in studies into informed decision making amongst patients (Bekker et al. 1999).

Similarities are also noted with transactive memory theory (Wegner and Vallacher 1987) which posits that memory is a social phenomenon in which groups make sense of and retain complex knowledge more effectively than individuals (Moreland 2000). Wegner and Vallacher (1986) and Mohammed and Dumville (2001) summarise the potential benefit of transactive memory by suggesting that individual memory and understanding become progressively more specialised as group processes progress, this in turn reduces the cognitive load on each individual whilst expanding the overall collective memory, a conclusion also posited by Liang et al. (1998) in relation to the psychology of group performance.

6.3.1.3 'Team Wisdom' in Knowledge Acquisition

Theories relating to team contributions in decision making are not hard to identify and similar theories have emerged from the disciplines of organisational behaviour and organisational learning explaining how team processes contribute to effective decision making. For instance, the information sharing theory introduced by Stasser and Titus (1987) suggests that groups are capable of producing better decision by pooling information. Likewise, this; "potential wisdom of teams" as Senge (2006, p.216) terms it, explains how the practice of thinking together in groups allows better decision to be made. Senge (2006) postulates that; "team learning is essential because teams, not individuals, are the fundamental learning unit in modern organisations" (p.10.).

It is reasonable to argue that the current study's findings may be attributable to the potential value of team decision making both when identifying the focus of knowledge acquisition activities, and when considering how research knowledge may relate to clinical practice. The absence of healthcare specific literature relating to this is perhaps a function of predominant conceptualisations and methods in the field in which evidence based practice is often seen as a function of the activities of individual clinicians.

However, as will be seen, whilst the potential role of team level processes specifically in relation to knowledge acquisition for evidence based practice is identified more explicitly in

the current study than elsewhere, team learning also emerged as a key process in the knowledge application case.

6.3.1.4 The Practicalities of Team-Based Knowledge Acquisition

The final finding related to team processes in knowledge acquisition was related to the practical benefit this could have in terms of reducing the time burden associated with the process. The actual mechanics of literature searching and distributing information about research knowledge lend themselves to group based activities in large part because of the time and resource implications involved. The lack of time for knowledge acquisition activities is commonly cited in literature as a barrier to this activity in clinical practice (Funk et al. 1991a, 1991b; Newman et al. 1998; Ely et al. 2002; McKenna et al. 2004; Tanner et al. 2004; Hutchison and Johnston 2006; Kajermo et al. 2010). Conducting effective searches of relevant biomedical and health science literature in a comprehensive manner can be a time consuming process which may deter many health professionals from attempting to carry it out (Guyatt et al. 2000).

Moving to a position in which research knowledge acquisition is the function of coordinated team activities can potentially result in significant time efficiencies. As the majority of participants from this case noted the challenge of completing knowledge acquisition processes alongside busy clinical responsibilities, it would seem logical that moving to a position in which research knowledge can be identified, acquired and then made available to members of the team using less resource than would be required to do this individually would be an attractive prospect.

However, the vast majority of literature and research into knowledge acquisition for evidence based practice in healthcare continues to assume that the actual activities that comprise the process are functions of individual activities. Few authors such as Rosenberg and Donald (1995) have alluded to the central role of team functions in successful knowledge acquisition for evidence based practice during early discourse about the subject noting;

> Evidence based medicine has several drawbacks. Firstly, it takes time both to learn and to practice. For example, it takes about two hours to properly set the question, find the evidence, appraise the evidence, and act on the evidence, and for teams to benefit all members should be present for the first and last steps. Senior staff must therefore be good at time management. They can help to make searches less

> onerous by setting achievable contracts with the team members doing the searches and by ensuring that the question has direct clinical usefulness (p.1123).

It would be fair to suggest that the recommendation to integrate knowledge acquisition into team activities made by participants in the current study adds noteworthy credence to the opinion expressed by Rosenberg and Donald (1995) that involving teams in the actual process of knowledge acquisition can be a more time efficient and productive approach.

6.3.2 Team Roles in Knowledge Generation

6.3.2.1 Guiding and Mentoring

At the microsystem level, clinical teams played, or more precisely in relation to the participants' previous experiences, were expected to play, a very tangible role in providing guidance and mentoring in support of knowledge generation activities.

Despite practice-based evidence being represented in mental health literature, it is still difficult to identify discussion about the role of teams in this type of knowledge generation. If knowledge generation is viewed as a continuation of knowledge acquisition which may occur when it has been identified that existing research knowledge is not sufficient to inform decisions about practice, it would be logical to argue that the identification of clinically relevant questions are similarly tempered by social processes and team learning. Indeed, participating health professionals noted the role their clinical teams had played in helping to formulate research questions, potentially reflecting a similar process of shared decision making identified by those participants involved in knowledge acquisition efforts.

Within the literature related to practice-based knowledge generation there are some similar notions. Lyons (2009), in dismissing linear knowledge transfer models, described a theoretical understanding of knowledge generation as a process based on collective intelligence in which groups of people produce and reproduce shared meanings, suggesting that this shared intelligence underpins successful knowledge generation in healthcare. Likewise, Horn and Gassaway (2007) have opined, based on their experiences, that the knowledge generation process should be led wherever possible by a trans-disciplinary team.

However, these considerations of team roles and activities in knowledge generation are limited, tending to be couched in theoretical terms and it remains difficult to identify literature in which team level factors may influence the process within healthcare

organisations. The findings of the current study offer new information which implicate fundamental team contributions to the knowledge generation process which have not been identified in previous healthcare related discourse. For instance, clinical teams were seen to have a role in steering knowledge generation activities and it was also possible to discern a feeling that knowledge generated in practice was perceived to be more relevant and actionable by the clinical teams when they had been involved in the process. This mirrors the underlying assumption of those authors who have discussed and examined knowledge generation activities in healthcare. However it is perhaps more neatly summed by authors from the field of education who note that practices are refined or adopted at individual team and organisational levels if they are closely connected to the situation in which the knowledge for improving was generated (Simons et al. 2003).

The current study also revealed that knowledge generation was directly influenced by the degree of specialist support and mentoring that could be provided by members of a team. Previous success in knowledge generation was attributed partially by one participant to the ability of their immediate clinical supervisory team to recommend how to progress the process, whilst another noted that their attempts to engage in knowledge acquisition were directly impeded by the inability of their team to do this. To a certain extent this may reflect why calls to link health professionals with academic researchers litter the literature related to improving evidence based practice, being the primary characteristics of the relationship based knowledge exchange models discussed earlier.

Perhaps the most notable element of these findings is that the participants tended to look first towards their own clinical teams to support knowledge generation, rather than attempting to locate other networks or communities that could support these activities. That is not to say that networks or communities orientated towards knowledge generation were not discussed by the participants. Likewise, the literature relating to knowledge exchange processes tends to concentrate on collaborations and relationships between clinicians and researchers, noting the benefits these have in the formulation of research questions, ensuring the direction of research remains in line with clinical priorities and the potential impact it has on dissemination and use (Bero et al. 1998; Titler et al. 1999; Pyra 2003; Hemsley-Brown 2004; Fixsen et al. 2005; Baumbusch et al. 2007; Mitton et al.2007; Glasgow & Emmons 2007; Harrington et al.2008).

In addition to research-practice collaborations literature related to practice-based research networks has also developed in recent years in which the key role of group processes are identified (Bleeker et al. 2010). Mold and Petersen (2005) note that knowledge generation carried out through network structures require less support to apply in practice due to clinicians' dialogue and involvement in focussing study aims, choosing methods, and evaluating findings. Similarly, in a UK based study Thomas et al. (2006) discovered that networks served to integrate academic research with development efforts located in clinical services, with a key factor for success identified as the shared leadership and commitment that this approach established. Wasserman et al.'s (1998) consideration of a paediatric practice-based research network noted the role social interactions played in creating a facilitative infrastructure, and the provision of research experience it provided to clinicians.

However, the results of this thesis suggests that the first port of call for mental health professionals attempting to engage in knowledge generation activities is their immediate clinical team rather than joining a research network. This would suggest that if not directly able to provide the specialist mentoring required, the team should be capable of directing those interested in knowledge generation towards appropriate research communities and organisational resources if they exist. There were also suggestions identified during analysis in this study that the organisation has an important role to play in fostering the establishment of these practice based research networks.

6.3.3 Knowledge Application at the Team/Microsystem Level

The importance of team activities in research knowledge application efforts has been recognised and commented on. Pettigrew et al. (1992) note that the majority of health services are delivered by teams which consequently can have powerful influences on the process. Likewise it has been observed that effective teams demonstrate higher quality of care (Faragson and Haddock 1992, Shortell et al. 1994; Mitchell et al. 1996; Aiken et al. 2002), with the opposite being true for dysfunctional teams (Sitzia 2002). However, the role of the team specifically relating to the process of applying knowledge in practice does not appear to have been directly addressed outside of the current study. The reported findings suggest that the team play a vital role in helping to establish commitment for changes amongst individual clinicians, as well as underpinning the process of deciding upon and designing how these will completed. The lack of direct commentary in healthcare literature

necessitates that comparisons and explanatory theories be considered from other fields. Perhaps because of the central importance of changing actions in evidence based practice the challenge is not identifying different concepts relating to change, but rather navigating a complex field of, at times similar, but often contradictory ideas.

6.3.3.1 Shared Vision and Team Decision Making

It became clear during analysis that many of the team level activities that could facilitate knowledge application were orientated towards supporting individual clinicians to commit to making changes in their practice behaviour. Whilst healthcare papers note that effective teams can adapt to the need to apply new knowledge more successfully it is difficult to identify commentary explaining what processes take place within a team which facilitates this. Indeed, even in the field of organisational change where the role of teams are even more widely recognised, explanation as to why they enable more effective changes are hard to come by, or as Altman and Iles (1998) note in their discussion on this subject; "As to "why teams", with few exceptions (e.g. Senge, 1990) an answer will not be found in the literature, but is born out of experience" (p.50).

Those authors which have attempted to deconstruct and report on the role of teams in making changes have largely been based on the work of Senge (2006) or have developed similar theories with different, subject specific language. For instance Strebel (1996) suggested that team dialogues in manufacturing companies help to alter what he calls 'personal compacts'. These are the understandings individuals develop about their roles and responsibilities and how a proposed change may affect them or their way of working. The parallel with Senge's (2006) theories of shared vision and team learning are clear.

In the absence of a coherent literature base explaining the team process it is perhaps worth considering how Senge's approach may explain the team level circumstances facilitative of knowledge acquisition noted by the participants in this study. To take the concept of shared vision again, Senge argues that it is key for achieving the two team functions noted in the current study; helping to establish commitment for change including overcoming fear responses, and making decisions about how to apply the change.

Shared vision about a change or specific objective helps to change the way individuals approach situations. When it comes to applying knowledge in practice, an individual who is part of a team believing the change is worthwhile is more likely to commit to it. Senge also

notes the role of fear responses in the process and identifies that; “Shared visions compel courage so naturally that people don’t even realise the extent of their courage” p.194). Arguably, it could be seen in the discourse offered by participants in this study that as the potentially positive impacts on team objectives associated with applying knowledge were recognised by individuals, other members of the team soon began to talk more positively about it. Whilst this is to a certain extent anecdotal, it does perhaps illustrate some of the intangible influences teams can have on how individual members approach applying knowledge in practice.

The other elements of Senge’s theory which resonates with the findings of this study is the idea that processes of team learning can help to innovate and create additional advantages out of the process of applying knowledge. Closely tied with shared vision which can foster risk taking and experimentation, team learning enables individuals to challenge their assumptions about a proposed change, as well as engineer its implementation more effectively. Mohammed and Dumville (2001) note that team learning provides the optimal circumstances for an organised understanding of the key socio-environmental factors to be consider when changes associated with new knowledge are being developed. Similarly, Denton (1998) has noted the role of team working in designing changes to improve effectiveness within organisations.

6.4 Knowledge Acquisition, Generation and Application at the Organisational Level

6.4.1 Resources and Expertise for Knowledge Acquisition

When considering organisational level factors facilitative of more effective knowledge acquisition, two prevailing elements were identified, the requirement to provide sufficient infrastructure, and the need to provide specialist support and apparatus. Some authors have considered these in relation to knowledge acquisition for evidence based practice, however this study also suggests an explanation based on systems thinking which ties closely with theoretical understandings and examples from the field of organisational learning.

6.4.1.1 Providing Appropriate Resources

There was much discussion about the need for appropriate infrastructures to allow successful knowledge acquisition to take place. These were largely related to information technology capacity to enable access to web-based bibliographic databases.

As the platforms for indexing information about research studies are increasingly becoming internet based, the importance of providing clinicians with the tools to effectively use these sources of knowledge is steadily growing. Several authors, primarily in the fields of general nursing and medicine, have discussed the requirement to enable clinicians to access the sources of research information, noting its centrality to effective evidence based practice (Ash 1999; Rodrigues 2000; Thompson et al. 2001; Tanner et al. 2004; Pravikoff et al. 2003; Martis et al. 2008). Also, the Institute of Medicine in the USA noted that a lack of information management technology was inhibiting the ability of clinicians to make decisions; “from the bedside all the way to the formulation of national healthcare policy” (p.45).

Several authors have demonstrated that inadequate IT and internet connectivity are an identifiable cause of barriers to knowledge acquisition for evidence based practice in primary care in the UK (Thompson et al. 2001; McKenna et al. 2004; Bertulis 2008). Moody and Shanks (1999) described a knowledge management for evidence based practice initiative that was felt to be highly successful, and in retrospectively modelling the process, noted that IT allowing clinicians quick access to relevant and emerging research knowledge was a key factor.

Interestingly this is one case study which identified the importance of creating knowledge repositories for clinicians. The participants in the current study were also keen to establish and maintain a specialist collection of research knowledge of direct relevance to their service. This was seen as a way of preventing duplications of effort and was felt to be faster and more efficient than regularly searching the wider scientific literature available in large bibliographic databases. This finding reflects limited existing discourse about the use of knowledge repositories to enhance evidence based practice in nursing and physical medicine as identified by Moody and Shanks (1999) and others (Rivera et al. 1998; Bose 2003), suggesting it may be an effective, if not widely used method of improving knowledge acquisition.

However, it should be noted that the findings related to knowledge repositories in the current study reinforce the argument that healthcare organisations must ensure suitable information technology resources are available when required to undertake this sort of initiative. Indeed, this example also points to the need for healthcare organisations to make more effort to ensure these resources are signposted or conspicuous when available, as the clinicians in this study were unaware that they could access appropriate bibliographic management software through existing subscriptions, however, this finding will be discussed in the following section.

6.4.1.2 Providing and Promoting Specialist Support and Expertise

This study indicated that mental health professionals may require specialist support to develop and maintain high level skills to enable effective knowledge acquisition, and that access to specialist personnel with the skills to successfully support and complement this is essential. This study also demonstrated that the participating mental health professionals in this case were generally unaware of the role and availability of organisationally sponsored support embodied in its library services.

The organisation's provision of dedicated specialist support for knowledge acquisition reflects the majority of literature about the role of librarians in evidence based practice which has emerged since the 1990s (Eldredge 2000) and has been focussed largely on the knowledge acquisition process. Numerous studies demonstrate that the primary role for librarians in healthcare is as 'expert searchers' responsible for identifying and acquiring research knowledge on behalf of clinicians (Gorman et al. 1994; Haynes et al. 1994; McKibbon et al. 1995; Palmer 1995; Michaud et al. 1996; Booth 1997; Haynes and Haines 1998; Eldredge 2000).

Similarly, there has been some indication in existing literature that the role of healthcare librarians has been expanding alongside evidence based practice to include educating health professionals in knowledge acquisition methods (Paterson and Ruggles 1997; Schwarz et al. 1997; Cumbers and Donald 1998), and calls for librarians to be involved in the delivery of knowledge acquisition focused content in the educational curricula of health professionals (Klem and Weiss 2011).

However, unlike the findings of the current study which suggests that while the participating mental health professionals were able to identify their own shortfall in

knowledge acquisition skills they lacked an awareness of the availability of specialist library support, this disconnect is rarely explicitly identified in existing literature. Much existing research employs survey methods to identify barriers to knowledge acquisition and evidence based practice in which general challenges to identifying literature are identified without any detailed elucidation as to their root causes. Comparatively few studies explicitly identify a lack of specialist librarians as a barrier to knowledge acquisition (Pravikoff et al. 2003).

Recent studies aimed at investigating the role of librarians in improving knowledge acquisition for evidence based practice suggest that their specialist contributions to the process, when conducted in collaboration with clinicians, do indeed improve the identification and acquisition of research knowledge of direct clinical relevance, and may improve the likelihood that such knowledge is applied in practice (Krom et al. 2010; Määttä and Wallmyr 2010). Similarly, Scherrer and Dorsch (1999) have argued that this may result from the extended role librarians can play in helping clinicians to develop quality filtering and critical appraisal skills.

Findings from the current study recommend that healthcare organisations endeavour to ensure their mental health professionals are aware of, and able to access specialist support for knowledge acquisition. This study has clearly indicated that mental health clinicians continue to have needs for specialist support in knowledge acquisition, and when this is considered alongside existing evidence which suggests that collaborations with healthcare librarians improve the effectiveness of knowledge acquisition, the case for ensuring that these two elements of the organisation are able to work in partnership is easy to make.

6.4.1.3 The Influence of Organisational Structures

Whilst the findings discussed ostensibly indicate practical steps which can be taken to improve knowledge acquisition from an organisation level, they also point towards an additional finding related to potential benefit of systems thinking.

Systems thinking can be used to identify those structures, both visible and hidden that can prevent a desirable activity from taking place. Logically therefore, systems thinking can also be used to identify those structures and elements within an organisation that can be leveraged to support the completion of a desired activity, as was noted in relation to the case examined in this study. The organisation had secured access to various software and

databases that could be used as a platform for managing team-based knowledge acquisition, and provided specialist knowledge services which had a defined remit for supporting knowledge acquisition activities.

However, mental health professionals were unaware of these facilities and services and whilst there is a practical argument to be made for more actively promoting those resources, there is also a sound argument to be made for considering systemically why these resources are not accessed. The disconnection between available organisational supports and resources and the need of those participants in the knowledge acquisition case suggests systemic problems, and while there is an element of speculation in trying to identify these for this case, a useful analogy from the organisational learning literature pioneered by Senge (2006) potentially explains this as the consequence of the ever-present tension between amplifying and balancing processes.

This concept, established in organisational systems thinking, suggests that as a reinforcing process is set in place to produce a desired result, inadvertent secondary effects can act to eventually curb the initial growth and development. Perhaps the problems related to a lack of awareness of resources and support is an example of these inadvertent results. There is no doubt the investment in knowledge services has increased as the central importance of evidence based practice has become embedded in contemporary healthcare. It would be plausible to speculate that the increasing proliferation of both organisationally provided resources and the advances in non-organisational elements such as the web technologies upon which knowledge acquisition is largely based, has led to the inadvertent effects in which clinicians struggle to keep apace of increasing developments and modernisations in infrastructures, or have greater difficulty navigating the potential sources of support.

6.4.2 Organisation Supports for Knowledge Generation: Practicalities, Prioritisation and Integration

It is perhaps worth noting that the majority of findings relating to knowledge generation were identifiable as elements controllable at the organisational level, with contributions appearing to point towards a lack of integration of various organisational elements. In particular this systems thinking based investigation highlighted a number of features which could be created to amplify the practice of generating new knowledge and in particular; linking individuals or teams keen on generating new knowledge with available expertise, taking steps to define and realise the priority of organisationally based knowledge

generation, improving the potential exploitation of organisational data, and considering how to integrate professional education and development activities with practical knowledge generation activities.

6.4.2.1 Practical Support for Knowledge Generation

The importance of ensuring those involved in generating knowledge can access specialist support has already been noted in relation to the growing role of practice-based research networks. A non-network based example of this is provided by Redfearn et al. (2004). While reporting on the development of knowledge generation support structures in a paediatric hospital, these authors made similar conclusions about the essential role of linking health professionals active in knowledge generation with specialist support and mentoring in elements of the research process. In the structure described by Redfearn et al. (2004), access to specialist support, such as statisticians or those with expertise in grant writing, and external partners was controlled by specific individuals within a specially created department designed to support the development of new research knowledge.

Similar requirements were noted by the participants in this study, and a similar less formal structure appeared to be in place in which key individuals controlled access to support. However, the key finding was that the organisation needs to promote these resources more actively, so that those motivated to engage in knowledge generation are able to quickly access the support to do so.

6.4.2.2 Exploiting Organisational Data

Another key factor was the need for data and information pertinent to possible knowledge generation efforts to be actively publicised and made more widely available to health professionals. It was noted by several participants that the health board in which this study took place could improve efforts to both capture relevant data, and make better use of it. Again this reflects to some degree existing discussions about how to enable knowledge generation within organisations, although there are varying definitions and theories about this process.

For instance, Fayyad et al. (1996), and Chung and Gray (1999) refer to a process of data mining in which organisational databases are explored using approaches designed to identify patterns that might underpin the generation of new knowledge from routinely stored information. This practice seems to be gradually receiving growing attention in

healthcare (Berger and Berger 2004). Likewise Nonaka (1995) referred to a process of redundancy, in which information from different organisational functions is consciously overlapped so that opportunities to create knowledge from seemingly redundant information are not missed elsewhere. The practical implication is that members of an organisation attempting to create new knowledge must be able to access necessary information in as few steps as possible (Numangami et al. 1989) Essentially, these ideas corroborate the suggestions made by participants that using data and information more efficiently and effectively is key to knowledge generation, although there may also be practical barriers to the process.

This is even more likely in healthcare where ethical considerations may prevent useful data from being easily shared amongst teams. Similarly, as demonstrated by participants from the knowledge application case, healthcare professionals can treat local data protectively and be unwilling to share it outside the bounds of their teams due to insecurities about scrutiny. Interestingly, one peer analyst took a much more organisational view of this, suggesting that there is no such thing as team data and that it should never be owned by individual groups, perhaps indicating the beginnings of a move to better exploitation of organisational data.

Whilst the requirement for specialist support is perhaps not a particularly unanticipated finding, a strongly prevalent category emerged related to the need for knowledge generation activities to be more actively encouraged at the organisational level. It was possible to identify from the participants' contributions that greater clarity was needed about the nature and value of practice-based knowledge, that the organisation could help clinicians identify possible avenues of knowledge generation by prioritising areas for study and that there would be benefits from creating more of a vision and greater commitment around this activity.

6.4.2.3 Defining Knowledge Generation

One interesting finding related to how knowledge generated in practice by clinicians was received by others in the organisation. There were indications that the prevailing attitude relating to the knowledge generation activities of mental health clinicians was that, unless the activities were conducted as part of a formal research project, these efforts fell under the definition of audit or service evaluation activities. As such the results of these efforts were potentially regarded as being less valuable.

The relative merits of practice-based research are increasingly receiving attention in healthcare commentary with authors beginning to note that this process may be effective for generating evidence that is more practicable and relevant to the provision of effective clinical practice. This concept is neatly summarised by Westfall et al. (2007) who state that;

> What is efficacious in randomized clinical trials is not always effective in the real world of day-to-day practice… Practice-based research provides the laboratory that will help generate new knowledge and bridge the chasm between recommended care and improved care" (pp.404-406).

Other authors have begun to consider the merits of this approach in contrast to the rigorously controlled experimental research that dominates the evidence hierarchy at present (Rolfe 1998; Nyiendo et al. 2001; Lucock et al. 2003; Horn and Gassaway 2007).

From a systems thinking perspective the inadvertent consequences of regarding practice-based evidence as less valuable than 'laboratory research' are potentially three fold. Firstly, as suggested by some participants, a requirement for organisationally based knowledge generation to be conducted along the lines of existing research models limits the intrinsic ability of the organisation to achieve this. Knowledge generation becomes contracted and is conducted by a comparatively small number of personnel sufficiently experienced, motivated and connected to funding and academic institutions to initiate and complete such research. A further consequence of this is that the knowledge generation activities of the organisation become focussed on the areas of interest and priority which these individual are keen to pursue. Thirdly, it would be fair to suggest that considering the substantial personal motivation and commitment required of clinicians to complete knowledge generation activities, if the fruits of their endeavours are met with less enthusiasm or regard by peers and colleagues, there is little to recommend their involvement.

From an organisational perspective it arguably becomes imperative that the knowledge generation activities of its personnel that take place alongside clinical practice and outside of formal research structures are given greater recognition and credence. Likewise, it could also be suggested that encouraging personnel to challenge their assumptions about the value of differently generated knowledge is a key activity that should take place. The parallels with Senge's (2006) discussion about the potential role of mental models in facilitating or impeding an organisation's ability to continually learn and develop, as previous noted in relation to knowledge acquisition activities, may also be applicable here.

Unfortunately, this will be challenging in healthcare, and there is little that can be drawn from other disciplines that might assist this reframing of perspective. For instance whilst some elements of Nonaka's (1994) theory of organisational knowledge creation are useful in explaining and understanding elements of the current study's findings, a particular challenge that those in healthcare face when attempting to raise the profile of organisationally based knowledge creation is how that knowledge is justified and made valid. Nonaka's explanation of how this is achieved belies his focus on the organisation as a competitive business entity, as validating knowledge is seen to be a function of top or middle management who judge its quality based on considerations such as alignment with organisational aspirations. One of the fundamental aims for evidence based practice is to reduce the role that subjective consideration plays in how patients are treated, in favour of interventions based on the best available evidence. As such, strict criteria are usually in place for judging the value of knowledge, with forms of tacit knowledge such as expert opinion routinely placed at the lower end of the scale, and there will be challenges inherent in finding ways to generate knowledge from practice with enough rigour to be accepted by other health professionals.

6.4.2.4 Prioritising Knowledge Generation

Whilst it was clear that the way in which organisationally generated knowledge is regarded by clinicians may have direct effects on it acceptability and inadvertent effects on the feasibility of the process in general, the participants' contributions also suggested solutions which may go some way to helping reframe this. It became clear during analysis that they felt the organisation needed to commit more to prioritising and profiling its clinicians' knowledge generation activities.

In terms of prioritisation, the participants noted it would be useful if mechanisms were in place enabling them to identify relevant and beneficial knowledge generation activities with which to engage. The challenges associated with identifying *'what to research*' were noted and it was clear that difficulty initiating the process of generating knowledge for some useful end could impede early commitment. Recommendations to prioritise knowledge generation objectives were closely linked with suggestions that the profile of these activities should be actively raised and similarities can be seen in other areas.

A large study by Beckett et al. (2011) identify a number of organisational level elements which can be used to actively facilitate this process including active outreach to clinicians to

raise the profile of knowledge generation and developing transparent means of rewarding and recognising engagement. Likewise the importance of ensuring a coherent set of knowledge generation objectives have been identified by other authors both in healthcare and other disciplines. Jamerson (2007) notes that clearly prioritising knowledge requirements is a key step in a set of measures that should be undertaken to help ensure the creation of appropriate supportive infrastructures; "What is important is to proactively decide the institutional objectives related to research, plan for infrastructure development using designated resources, and evaluate the infrastructure for ongoing adequacy and consistency with the hospital's mission and objectives" (p.299).

6.4.2.5 Shared Vision

Another finding related to knowledge generation was the idea that there needed to be some degree of collective commitment to the activity. This was neatly demonstrated by KG3 who felt knowledge generation in the particular clinical speciality where they worked was hampered by a lack of interest and enthusiasm.

> … it's a cultural thing. The culture of [service details removed] is not really a research culture, unfortunately. I think, I guess, it's because politically incorrect to say is, it attracts lots and lots of kind of nice people that just sort of aren't into doing things with numbers and reading and like just being nice and looking after nice people and that's great because that's what's needed but quite often that doesn't overlap with a person that has an analytical brain and wants to be particularly into research as well. Sometimes it does, but as a result there's not that much encouragement… It's not very researchy [KG3].

This participant also noted that a lack of commitment from senior colleagues who had a designated role in supporting professional development, including the requirement to engage in research activities could directly impede knowledge generation;

> That person for me and for all my colleagues isn't a researcher and has never done research. She's been involved I think in collating data for somebody she said, and the feeling that I had from her at our last meeting was that I needn't be worrying so much about research because it wasn't really that big a deal and that she got a consultant job without having to have any research done [KG3].

The idea that successful knowledge generation is founded on a shared appreciation of its potential value has been alluded to by other commentators in healthcare who have observed that the process is likely to be successful when there is commitment from a broad range of personnel (Fink et al. 2005; Jamerson 2007; Jeffs et al. 2009). Literature from the discipline of organisational learning also expounds the need for shared vision, positing that

it fundamentally underpins the commitment personnel display; “when there is a genuine vision (as opposed to the all-too-familiar “vision statement”), people excel and learn, not because they are told to, but because they want to” (Senge 2006, p.9). Indeed, Nonaka (1994, 1995) goes further arguing that organisational level vision and actions govern entirely how knowledge is generated. Certainly, the indications from the participants in this study suggest that they felt the organisation needed to be more proactive and committed to fostering inured knowledge generation activities. It is also possible to draw comparisons between the organisational level actions they recommended for engendering this shared commitment and suggestions made by several other authors.

For instance, suggestions made by participants in this study about providing support to develop research skills, along with their recognition that protected time and access to resources were important, mirror those observations made by other commentators examining how to engender research cultures in healthcare organisations (Le May et al. 1998; Redfearn et al. 2004; Fink et al. 2005; Newhouse 2007). This organisational commitment is central to establishing buy-in and shared vision amongst clinicians as Jamerson (2007) summates;

> Successful implementation of a research programme includes developing a culture that values research. Such a culture can be engendered by demonstrating appreciation for research and providing research education, technical support in the design and analysis of research studies, assistance with or time to conduct the research (p.297).

6.4.3 Knowledge Application at the Organisational Level

The primary function of the organisation in knowledge application was again seen to be ensuring the provision of appropriate resources and infrastructures with which to enact changes, a finding already reflected in literature related to this topic (Stetler et al. 2009). However, findings that were perhaps harder to anticipate included the need to provide a context in which knowledge application could happen, both being responsive to the creative efforts of teams to change they ways in which they practiced, and to provide space and mechanisms to facilitate communication and innovation.

6.4.3.1 Organisational Culture: Responsiveness and Support

The participants from the knowledge application case identified three key organisational characteristics which they felt could position them to apply knowledge more routinely

including the need to be more responsive to requests for support or permission to alter infrastructures, the need to provide collaborative facilitation for knowledge application, and the need to allow space for problem solving processes to occur. When considered against wider literature, these factors are not often explicitly recognised and tend to be characterised as elements of often undefined 'organisational culture'.

Disconcertingly, organisational culture, which can be defined as basic assumptions and shared values (Reichers and Schneider 1990; Closs and Cheater 1994), is widely cited as an important aspect of knowledge application both in healthcare and other fields (Hamilton et al. 2007; Newhouse 2007). However there is very little consensus about how a facilitative organisational culture might be characterised, and even less about how to achieve this (Royle and Blythe 1998). The findings of the current study tie with other elements of organisational culture noted by authors such as Gerrish and Clayton (2004) who note that in addition to resource provision, the perception teams had of their ability to change practise within the organisation directly influenced knowledge application amongst nurses. Likewise Cummings et al. (2007) noted nurses working in contexts in which innovation for change was encouraged by the organisation increased knowledge application.

Whilst the literature for this in healthcare again seems disparate and lacking coherence or depth of explanation as to how to create organisational cultures facilitative of knowledge application, it is possible to explain this as the result of early yet predominating conceptualisation of knowledge application primarily being a function of individual behaviour. Consequently the majority of literature focuses on this area rather than discussing organisational level factors. Indeed, many investigations into the barriers to knowledge application focus largely on individual practitioner behaviour as evident in Kajermo et al's (2010) recent rigorous review of studies. Many of these indicated that an individual's unwillingness to change, their failure to identify any, or only minimal benefits for themselves or for their practice, and a lack support from other staff were the main obstacles. Similarly, previous research has also identified similar individual level obstacles both amongst clinicians and administrative personnel in healthcare (Funk et al. 1991a; 1991b; 1995; Hutchison and Johnston 2006).

Subsequently, many of the efforts aimed at improving knowledge application, including those prevailing tactics noted in knowledge transfer and exchange which are inherently geared toward this final output of applying knowledge in practice, are aimed at individual

professionals rather than the team or organisational levels (Haynes et al. 2004). Of the seventeen most commonly used intervention strategies identified by Grol and Grimshaw (2003), fifteen were targeted at the individual level, with the majority displaying mixed effects, or convincing results in particularly specialised contexts.

This current study however, has indicated in line with the original hypothesis that taking a systemic approach to considering how to enable the process of knowledge application, factors at the organisational level of control are prevalent. Whilst cultural uniqueness in different situations may prevent any definitive recommendation from being made about the type of organisational culture that needs to be present for optimal knowledge application, it could be suggested that this study indicates a culture in which health professionals routinely feel unable to meld knowledge for application in their local context due to lack of resource or inflexibility elsewhere in the organisation is unlikely to suffice. Conversely, their recommendations that the organisation facilitates active communication and recognises and responds to efforts to creatively alter contexts for the use of knowledge appears in this case to be key.

6.5 Meta-Themes and the Systems Perspective

Consideration of the findings from this study clearly demonstrate that, when investigated from a systemic perspective, the knowledge acquisition, generation and application processes upon which evidence based practice in metal health care are based result from complex and dynamic interactions between a range of factors, control of which is located at different systems levels.

Figure 6.2 illustrates an overview of the different findings organised at each level of control within a system, and displays those interrelated components and connections identified during this study. It demonstrates both the complexity within the different cases and how common elements across each of these suggest that interactions and interdependencies support the concept of evidence based practice as an integrated set of sub-processes. The connections within each case which are also demonstrated in Figures 5.1, 5.2 and 5.3 indicate the impact that multiple factors at the individual, team and organisational levels can have on each of the sub-processes of knowledge acquisition, generation and application.

Figure 6.2: Integrated Systems Model of Knowledge Processes

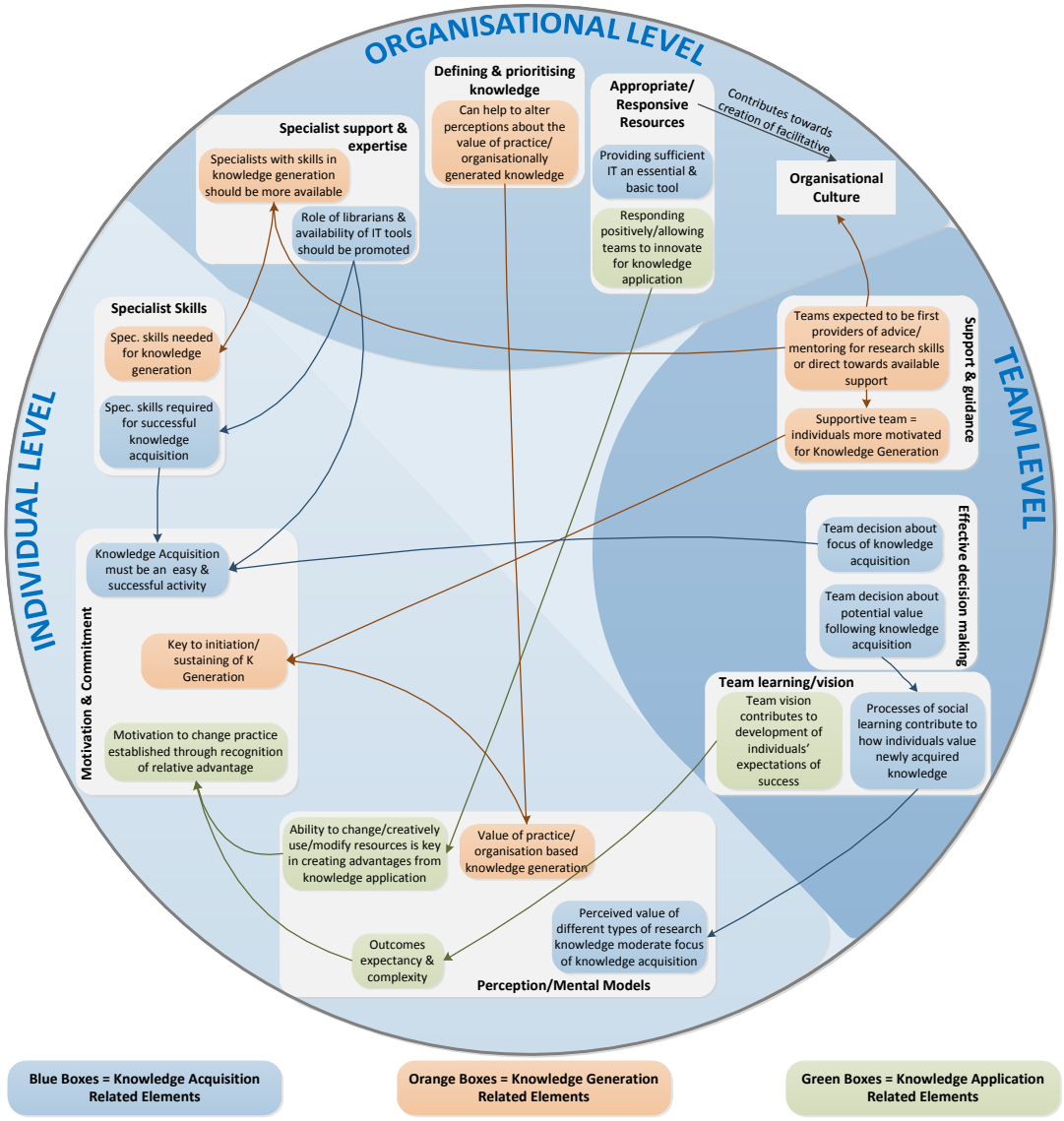


Figure 6.2 also highlights commonalities each of the included cases share at the different systems levels. For instance, the central role of motivation and commitment to each process at the individual level can be seen, as can the different circumstances at the team or organisational levels that may help to foster and maintain this.

6.5.1 The Circumstances which Support Knowledge Acquisition, Generation and Application

This study suggested a number of different circumstances that mental health professionals identified as supporting their engagement in the different processes that can contribute to effective evidence based practice. Further consideration suggests that a number of key

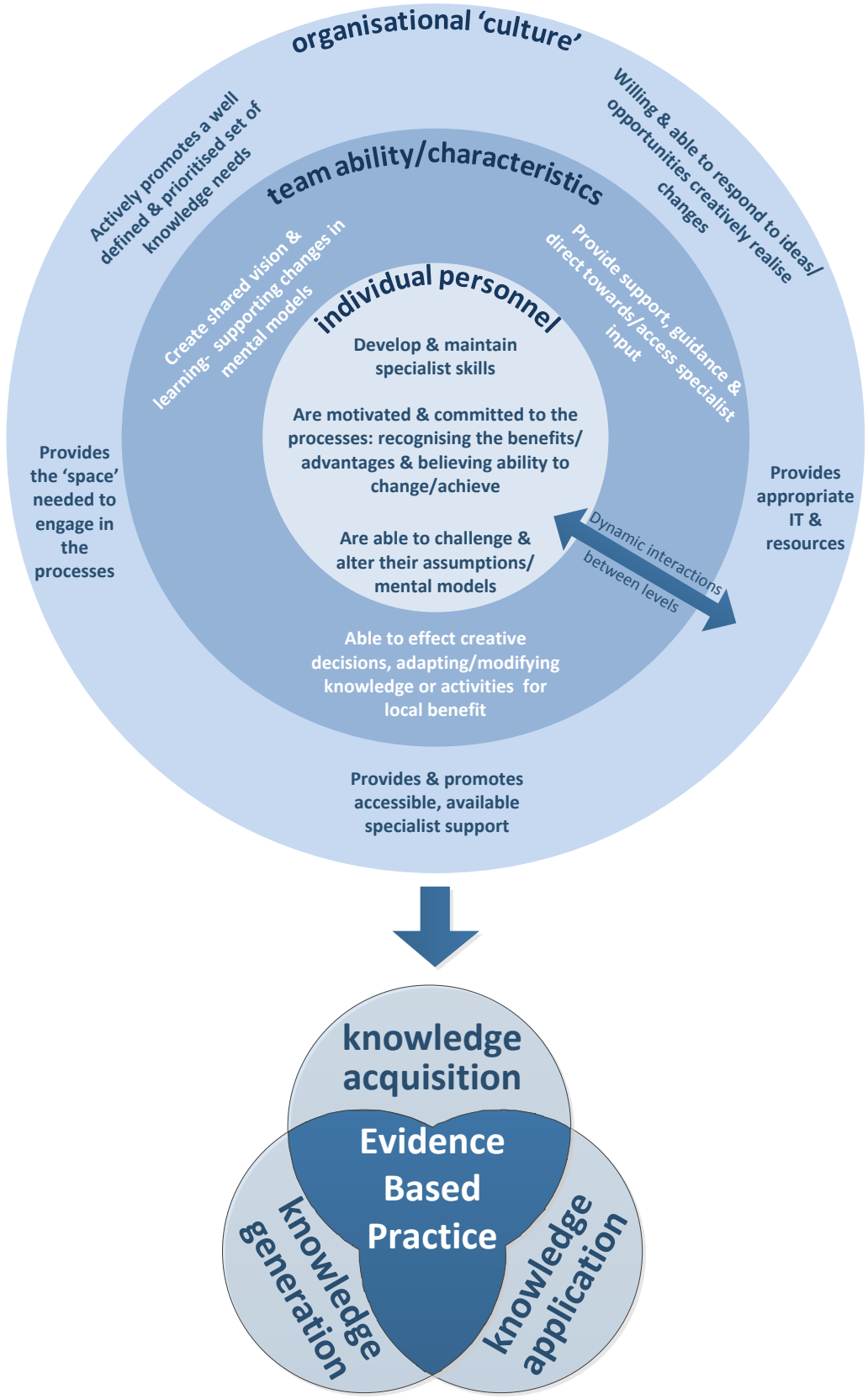
circumstances can be identified, as they feature across the different processes investigated. Below, Figure 6.3 provides an alternative overview from that depicted earlier in Figure 6.1, detailing the key circumstances by systems levels rather than process.

At the level of individual personnel, this study has indicated that high levels of motivation and commitment are needed for successful engagement in knowledge acquisition, generation and application, along with specific skills for the practical accomplishment of these in practice. The importance of having confidence in their ability to complete these activities (whether this related to the ability to use specific IT software and tools, confidence in being able to creatively make knowledge base changes that would benefit their practice, or engage in relevant and worthwhile research activities) appeared important, and could be influenced by a number of team and organisational level factors.

For instance, the role of teams in these processes appeared to be directly related to whether or not individuals would be able to establish and maintain their commitment to the processes. In attempting to generate new knowledge, teams were seen to be the first point at which to access support and guidance. Likewise, in knowledge acquisition, team processes in focussing the activity to areas of relevance, making the practical accomplishment more feasible and streamlined through better planning and work-sharing, and adding value to the process of considering acquired knowledge were all seen to be beneficial functions that teams could fulfil. In terms of knowledge application, the team appeared to have a role in supporting individuals to alter their assumptions about the value and feasibility of knowledge based changes, supporting them to identify or create features that would be advantageous.

It is perhaps not surprising that a number of circumstances were associated with the organisational level. This may be due to the fact that much of the power to alter such circumstances is held externally to individuals or their teams. The provision of resources and in particular information technology was repeatedly associated with the organisation, as was the need for specialist support to be well provided and promoted. Elements that could be termed aspects of ‘organisational culture’ were alluded to, including the need to make sure that teams of health professionals are afforded the space to take part in these activities, and are responded to positively when suggesting creative solutions that would allow them to accomplish them as part of their routine practice.

Figure 6.3: Circumstances Supporting Core Knowledge Processes



In summary, effective engagement in knowledge acquisition, generation and application can be achieved when individual health professionals remain motivated and committed to the process and are sufficiently skilled to engage with them confidently and creatively. Teams can facilitate the process by working together to make effective decisions, ensuring the activities remain relevant and of demonstrable benefit to clinicians. This may include making practical decisions about how to engage in the activities, but can also be related to facilitating individuals to challenge and change their assumptions about factors that may have been impeding progress. The organisation has a central role to play in establishing and maintaining these individual and team circumstances by providing the right resources and specialist support, and creating a culture in which knowledge acquisition, generation and application activities are actively supported and promoted. It is important that this support and promotion is not just rhetorical, but is accompanied with considered responses to suggestions or requests related to their practical achievement.

It is perhaps implausible to suggest that the circumstances indicated in this study will be required to facilitate health professionals' engagement in the knowledge processes underpinning evidence based practice in every healthcare organisation. Each organisation will have different cultures, resources, team compositions and so forth which interact in different ways to create both barriers and opportunities. This study provide a focus for potential areas in which consideration should be focussed, and highlights the impact that complex and interrelated activities, perceptions and conditions across the levels of a system can have in affecting the these processes.

6.6 Potential Transferability of Study Findings

Estimating transferability of results can be a challenging enterprise in qualitative research, not least because transferability is primarily the responsibility of the consumers of research (Yardley 2000). Efforts were undertaken to ensure this study's potential transferability through a number of design steps suggested by a various authors.

Transferability can largely be enabled by providing sufficient detail of the context in which the study was conducted to allow research consumers to make informed decisions about whether or not the environment and circumstances is similar enough to their own that the findings can justifiably be applied (Merriam 1995). Chapter 4 provides information about the organisation, services, teams and participants involved in each of the case studies. Efforts have also been made to provide thick descriptions and relate participants' voices

throughout the study in an effort to complement contextual description as recommended by Shenton (2004).

Efforts to include a diverse range of teams and participants were also made to enhance transferability. The positivist logic of generalisation to wider populations cannot be achieved in qualitative inquiries. However, the decision to draw on broadly representative cases and participants was pursued in line with recommendations by Denscombe (1998) and Stake (2005) who argue that although each case may be unique, they are also examples within a broader group allowing the prospect of transferability to be retained.

Likewise, detailed exposition of method has been included to provide the information recommended by Miles and Huberman (1994), Marchionini and Teague (1987) and Peraklya (1997). However, it is perhaps also worth noting that despite such measures being taken, it is never possible to truly enable the transferability of research findings such as these and as Shenton (2004) notes;

> It is easy for researchers to develop a preoccupation with transferability. Ultimately, the results of a qualitative study must be understood within the context of the particular characteristics of the organisation or organisations and, perhaps, geographical area in which the fieldwork was carried out. In order to assess the extent to which findings may be true of people in other settings, similar projects employing the same methods but conducted in different environments could well be of great value (p.70).

However, given the efforts undertaken to increase the transferability of the current study, it would be plausible to recommend it for potential transfer to other teams and organisations providing a range of mental health services within a context of socialised healthcare. Particularly receptive contexts may include those in which evidence based practice is an explicit priority, and those in which consideration is given to the acquisition, generation or application of research knowledge for decision making or practice by clinicians, managers, planners and policy makers. It could also be tentatively suggested that the theory generated from this study pertaining to the systemic conditions facilitative of the core knowledge processes may also be transferable to settings in which mental health is not the primary focus. None of the key categories identified are necessarily exclusively limited to a mental health setting and it may well be that similar challenges, or potential solutions would be relevant in other health related contexts.

6.7 Implications of Study Findings

6.7.1 Implications for National Healthcare Policy

A number of possible implications for national policy can be identified from this study, and a selection of these are noted below.

Firstly, it confirms the limitations of linear knowledge transfer methods targeting behaviour change at the level of individual practitioners, suggesting that these may not be the most effective method of realising evidence based practice. Strategies based on pushing evidence into healthcare professionals may not be as effective in realising the application of knowledge as supporting professionals to actively identify and consider it. Much funding and attention is still focussed on these linear strategies (Nutley et al 2002), but his study suggests that policy makers cannot rely on the use of simple models of EBP anymore. The reality is much more complex and will require efforts to support the use of research knowledge that are not governed by one-size-fits-all approaches typical of the current situation.

Rather, this study adds further weight to limited emerging policy recommendations like that made by the Department of Health (2007) which noted that;

> The analysis of initiatives seeking to improve clinical effectiveness reveals that there is no "magic bullet" and solutions are context specific, requiring local diagnosis of the cause and often systematic multi-layer interventions. This can only be achieved if the local providers of healthcare are appropriately empowered to respond to these challenges, a need that will be even greater with the decentralisation of NHS "control" and a multiplicity of providers emerging as part of the plurality agenda (p.13).

In addition the recommendations made in this document to promote local ownership of knowledge application, the use of systemic approaches to the diagnosis of barriers, and the design of solutions could plausibly be added. Likewise, recognising that it is possible to expand consideration of the limitation to evidence based practice beyond solely methods to improve application may be worthwhile.

There is no doubt that significant work has been done in agreeing and making available knowledge based recommendations for practice in mental health, a good example of this being the psychological therapies matrix (Scottish Government 2009). However, laudable as these efforts are, and they certainly are when consideration is given to the active

facilitation which is funded and directed at national level to support application, it would be fair to suggest that this study recommends additional measures.

Currently the core support recommended at national level to facilitate the implementation of evidence based healthcare practices need to be more expansive than those currently identified which tend to be heavily weighted towards setting performance standards and competency levels, and accompanying these with education programmes. It could be argued from the findings of this study that policy should recommend support for more organisationally and socially mediated approaches to the acquisition and application of knowledge.

6.7.2 Implications for Local Policy

Numerous recommendations can be made for local operational policy in relation to mental health. These are detailed in Table 6.1 and it should be with noted that these have been grouped into three meta-categories; resource provision, providing/promoting accessible expert support, and creating 'cultures' of space and support. Also detailed in Table 6.1 are explanations as to possible implications or recommendations that can be controlled at the organisational level in relation to the three core knowledge processes underpinning evidence based practice.

Table 6.1: Potential Implications for Local Operational Policy

Resource Provision	Knowledge Acquisition	There is a need for organisations to ensure information technology infrastructures are adequate to support engagement with evolving research knowledge management platforms. Failure to do so prevents clinicians from remaining motivated to acquire knowledge and causes their skill sets to diminish or become out-paced by advances in technology
	Knowledge Generation	Basic tools are required for knowledge generation such as access to statistical packages but the organisation also has a role to play in ensuring the raw material for research is available, as such optimising the collection and use of organisational data can be recommended
	Knowledge Application	Clinicians may require additional resources to support knowledge application and organisations need to be willing to allow this. Supporting changes to practitioner behaviour should be invested in as medical technologies are, with a realisation resources may be required to alter working practices
Providing/Promoting Accessible Expert Support	Knowledge Acquisition	Identifying and acquiring research knowledge is a highly specialised activity requiring high levels of information literacy. Organisations can facilitate effective knowledge acquisition by promoting engagement between clinicians and specialist library/knowledge management services
	Knowledge Generation	Similarly, clinicians need specialist guidance and support to engage in practice based knowledge generation and at the level of organisational policy ensuring these resources are accessible and have a clear remit to provide support for these activities appears important
	Knowledge Application	There are indications in this study that active facilitation can aid clinicians in identifying or creating additional advantages to knowledge application, and specialist facilitation can enable the development of innovative solutions enabling knowledge application
'Cultures' of Space and Support	Knowledge Acquisition	Allowing or supporting groups to come together to consider the most relevant focus of knowledge acquisition, and how best to assimilate any results into clinical decision making can lead to more effective and widespread engagement in the process
	Knowledge Generation	Efforts should be made to define and promote the value of practice-based knowledge generation efforts. This may encourage alterations of attitudes towards knowledge not produced in 'laboratory settings' , motivating clinicians to engage in the process, and stimulating greater support and recognition for academic leaders within the organisation
	Knowledge Application	Organisations which demonstrate responsiveness to creative attempts to enable knowledge application may more likely to succeed. This could partly be a function of maintaining motivation and vision amongst clinicians, creating a 'culture' in which actively changing the context in which knowledge will be applied is routinely achieved
		There are some indications that organisational policies supporting, or allowing space for shared communication and innovation across different teams or groups may also enable effective knowledge application

6.7.3 Implications for Practice

Numerous recommendations for health professionals can be identified from consideration of the findings of this discussion. Table 6.2 details these against each of the three core knowledge processes and the key categories identified within them.

Table 6.2: Recommendation for Healthcare Practice

Knowledge Acquisition	Skills	Individuals and teams of practitioners may need to consider methods to help establish and maintain specialist skill sets including how to engage effectively with web-based research databases and tools, but also how to craft questions which can be translated into more feasible literature search strategies
	Mental Models	Individuals and teams may need to be more aware of the assumptions they make about different types of knowledge and how this affects their decision making in terms of appraisal. Further learning in methods for judging differently produced research can be recommended
	Efficiency	Teams may want to consider integrating/centralising their knowledge acquisition activities as a method to improve efficiency and effectiveness of knowledge acquisition.
Knowledge Generation	Motivating Individuals	Teams/services need to understand the central impact their reaction to individual's motivation to engage in knowledge generation has. This study suggests that teams are key in the early stages of the process and can directly impede or support how successful the initiative may be
	Collecting Data	Health professionals should give consideration to the central importance their routine data collection activities have for the organisation's/their colleagues ability to produce research knowledge of direct benefit to their clinical practice. Efforts should be made at the clinical level to collect information for this purpose in addition to other reporting requirements
Knowledge Application	Look for the benefit	Teams and individual clinicians should be encouraged to look for direct, or additional benefits associated with making knowledge-based changes to practice, sharing these with colleagues and considering how to leverage additional advantage
	Building cultures	Clinicians have a role to play in creating the 'cultures' of innovation by asking for support, opinions and permission to innovate around the knowledge application process from elsewhere in the organisation
	Engage with/optimise team learning	The importance of team based processes such as shared learning and vision would recommend that those health professionals in leadership position should try to optimise team processes around knowledge application and encourage participation.

6.7.4 Implications for Research

This study recommends two clear areas for further research. First, it is possible to make methodological recommendations following the successful application of an SSM informed research design. If recent commentary related to evidence based practice in healthcare continues to call for systems thinking informed approaches to both investigating potential barriers and developing solutions, feasible approaches to this need to be developed. This study would suggest that soft systems methodology could provide an operable approach to investigating the systemic features of given phenomena, and facilitates identification and consideration of potential improvements. However, further work may be required to discover suitable adaptations to the approach that would makes its use in busy clinical environments more feasible.

Second, as this study has shown, whilst it is possible to use SSM to identify systemic circumstances with the potential to facilitate the processes underpinning evidence based practice, there is a good opportunity to conduct empirical investigations into whether or not identified changes lead to intended outcomes. This has not been attempted before in relation to any systemic approach to improving evidence based practice, and the weight of

published literature remains focussed on retrospectively evaluating the systemic factors associate with specific healthcare projects.

In addition to methodological implications, it should be noted that throughout the preceding discussion, many of the concepts and potential explanatory theories identified in this study have been neglected or under-addressed in healthcare literature and as such, Table 6.3 recommends future research directions.

Table 6.3: Implications for Future Research

Knowledge Acquisition	Examination of the potential value or impact of specialist knowledge repositories in facilitating mental health professionals to acquire information for decision making
	Further research into the role of teams/social processes at the local level in supporting better identification and consideration of research knowledge
	There is potential value in further investigating the role mental modelling has to play in affecting how knowledge is sought and considered for clinical decision making
Knowledge Generation	The burgeoning research into data mining should be considered for adaptation and progression in mental health. There are clear indications that optimising and exploiting organisational data . This may provide better opportunities for the generation of relevant and practicable knowledge
	Methods for validating the quality of practice-based knowledge in a way that is acceptable to health professionals should be investigated. There is a need to raise the priority of 'in house research' and it appears that validating such efforts explicitly may improve motivation and commitment for the process
	Current research into support for knowledge generation within organisations is not coherently defined and much literature simply calls for a 'culture of research'. Further research and efforts to define such culture and identify how to go about creating it would be of value
Knowledge Application	Further research into the role of teams in knowledge application can be recommended. This study has realised that they are a key mediator in the process though little is known about what elements of team learning or social interactions in healthcare contribute to better decisions about knowledge use
	At an individual level there is an opportunity to move research towards further consideration of the role of mental modelling and in particular perceptions about relative advantage can facilitate the process. It may also be worth considering how to approach communicating or disseminating research findings to demonstrate relative advantage more clearly
	Investigations into the approaches for facilitating health professionals to undertake creative problems solving in support of knowledge application can be recommended, as can investigation into the outcomes of this in terms of successful evidence based practice

Chapter 7. Conclusions

7.1 Study Overview

The intended outcome of this thesis was to identify the systemic circumstances that can facilitate mental health professionals to engage in the core process of knowledge acquisition, generation and application that underpin evidence based healthcare practice. The application of a specially designed qualitative research strategy incorporating soft systems methodology has been used to achieve this, the results of which are included in chapters five and six of this paper. These findings are original and contribute to a disparate yet wide-ranging body of knowledge concerned with improving evidence based healthcare practice. The study has shown that the conditions facilitative of evidence based practice are complex, dynamic and span the individual, group and organisational levels, and consideration of how to create these conditions needs to be from a perspective that is sensitive to multiple multi-level interactions across a conceptualised system.

This study makes a number of unique contributions to this body of knowledge. Firstly, at a methodological level, this study has combined a soft systems thinking approach with the targeted investigation of the sub-processes comprising evidence based practice in mental health for the first time.

In relation to knowledge acquisition it has illustrated the complex interactions that occur between the elements at the individual and team levels. Skill, motivation and embedded mental representations about types of knowledge, shared learning about decision making, and how processes at the team level can mediate individually held views during the appraisal of research evidence all appeared to play a part. The systemic investigation displayed how the wider organisation creates a context for successful knowledge acquisition that also interacts with individuals and team processes through the provision of infrastructures, and specialist support.

Similar levels of complexity were detected in relation to knowledge generation, with the role of team and organisationally created elements directly responsible for the ability of individual clinicians to initiate and remain motivated to complete knowledge generation activities. Uniquely, the probable role that pervading attitudes about the value of practice-based evidence has to play in affecting the likelihood that health professionals will try to

engage in knowledge generation, and the role the organisation has to play in mediating this was recognised.

With reference to knowledge application, the organisation was again heavily implicated in a complex set of interactions responsible for creating the conditions for this process to occur. The ill-defined 'cultures' noted by many authors have been given some shape in the findings which suggest that organisations need to empower their clinicians and teams to consider ways to creatively apply knowledge. This may include providing resources, facilitation or allowing them to alter existing infrastructures at local level. These were seen to be central to enabling teams to identify shared objectives and motivate individual clinicians to make changes proactively based on identifiable advantages from the application of new knowledge.

7.2 Moving the Research Forward - Practical Steps and Priorities

The prospective nature of this study has allowed a number of conditions to be identified which have the potential to support mental health professionals' engagement in the core processes of evidence based practice. Logically the next step in the process for progressing work in this area would be to actively create some of these circumstances and investigate if they have a beneficial impact.

As many of the practical recommendations arising from this study indicate required changes at the organisational level, it would first be advisable to begin a process of raising awareness with those who have the ability to form or contribute to organisational policy and strategy. In particular it would be worth illustrating some of the practical challenges experienced by personnel attempting to engage in these processes, and how prevailing methods used to support evidence based practice fail to realise intended outcomes due to the presence of complex local barriers. It could be plausibly argued that healthcare organisations can overlook the high skill requirements associated with effective knowledge acquisition and generation, and the high levels of effort and motivation required to make changes to practice in light of new knowledge. Actively engaging in efforts to demonstrate that these activities are complex and challenging in their own right, but often become increasingly unfeasible when they must be completed in the context of busy clinical conditions, is likely to be a useful first step in fostering support from those with the power to begin creating supportive conditions at the organisational level.

Second, it would be worth communicating some of the findings of this study and in particular those which suggest alterations to the current situation which could have beneficial effects both in terms of making the processes more achievable, but also because of the related benefits this has for health professionals' motivation and commitment. For instance, recognising that the provision of appropriate resources not only enables health professionals to work more effectively towards successful knowledge application, generation and application, but also contributes to the creation of more positive perceptions about their ability to succeed and the organisation's awareness and responsiveness to their local needs is important. The consequent impact this can have on health professionals' motivation and commitment to undertake evidence-based practice activities alongside challenging clinical responsibilities should not be underestimated. It would be equally worthwhile to raise awareness of the potential benefits of ensuring organisational resources (including those personnel with specialist skills relating to the three processes) are actively promoted and made more accessible, as well as defining and prioritising the importance of engagement in the processes.

In addition to fostering strategic support for some of the practical changes suggested in this study, it might also be worthwhile raising awareness of the potential value in using systems-thinking to investigate the complexity of different situations. This study has demonstrated that numerous interrelated factors can create impediments to evidence based practice, as well as potential solutions. Soft Systems Methodology (Checkland and Poulter 2006) was used to structure a qualitative inquiry in this current study, and there is value in pursuing further work to investigate the utility of this methodology for structuring other practice-oriented efforts to improve engagement in the processes underpinning evidence based practice.

Similarly, it would be valuable to begin legitimising and disseminating the research work undertaken during this study. To this end a publications plan has been devised and initiated in which work, including a discussion of the methodological approach as well as case studies for each of the different processes investigated, will be submitted for consideration. These articles will aim to illustrate some of the concepts used in this study, including the idea of evidence based practice as a set of component processes, and the value in recognising the need to adopt approaches appropriate for understanding the complex elements which moderate health professional's engagement with them. Additionally it is

intended that the findings of this study will be raised in profile with relevant professional groups through a number of mechanisms including submissions to professional periodicals and presentations at conference events.

This study has been a step towards realising the active use of systems thinking to realise evidence based practice in complex healthcare settings, helping to move the field on from largely theoretical and conceptual calls for this approach.

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Appendix A: Literature Review Inclusion/Exclusion Criteria and Search Strategy

Table 1: Inclusion and Exclusion Criteria

For inclusion in the review research papers had to meet the following criteria:

1) Peer reviewed journal articles
2) Reports commissioned by health service organisations
3) English language only
4) Published from January 1990 – September 2009

As this systematic literature review is designed to help identify the most effective methods of knowledge transfer and exchange in health services the following criteria were also used:

1) Included articles which displayed the following characteristics:
    a. Evaluations or descriptions of collaborations between health service knowledge users and knowledge providers to promote the sharing of research information or evidence.
    b. Evaluations or descriptions of collaborations between health service knowledge users and knowledge providers to create action from knowledge.
    c. Evaluations or descriptions of collaborations between health service knowledge users and knowledge providers to undertake the production of new research information or evidence.
    d. Literature reviews (including unpublished/grey literature) relating to the overall process of, or individual elements of KTE.

2) Articles were not included that:
    a. Dealt with the transfer of knowledge between the practitioners/researchers and the public.
    b. Dealt with the transfer and diffusion of program or organisational innovations that do not include new research evidence.
    c. Focused solely on the further education of health staff in research techniques, methods for accessing knowledge or building capacities to use research in practice.

Appendix A Continued

Computerised Search Strategies

Applied Social Sciences Index and Abstracts (ASSIA)

Limited to: journal articles, 1990-2010, English language only

1. DE= Knowledge management
2. DE= Research transfer
3. DE= Knowledge based development
4. DE= Research and development
5. DE= Research management
6. DE= Research partnerships
7. DE= Innovation+
8. (1 or 2 or ... or 7) – 1403

9. DE= Medicine+
10. DE= Health services+
11. (9 or 10) – 12426

12. (8 and 11) – **102**

13. DE= Medical research
14. DE= Medical effectiveness research
15. DE= Evidence based medicine
16. DE= Evidence based psychiatry
17. DE= Evidence based psychosomatic medicine
18. (13 or 14 ... or 17) – 2376

19. AB= knowledge *within 2* transfer
20. AB= knowledge *within 2* exchange
21. AB= knowledge *within 2* broker
22. AB= knowledge *within 2* development
23. AB= knowledge *within 2* dissemination
24. AB= knowledge *within 2* management
25. AB= knowledge *within 2* sharing
26. AB= knowledge *within 2* diffusion
27. AB= knowledge *within 2* distribution
28. AB= knowledge *within 2* utilization
29. AB= knowledge *within 2* mobilisation
30. AB= knowledge *within 2* generation
31. AB= research *within 2* transfer
32. AB= research *within 2* exchange
33. AB= research *within 2* broker
34. AB= research *within 2* dissemination
35. AB= research *within 2* management
36. AB= research *within 2* sharing
37. AB= research *within 2* diffusion
38. AB= research *within 2* distribution
39. AB= research *within 2* utilization
40. AB= research *within 2* mobilization

41. AB= research *within 2* generation
42. AB= research *within 2* translation
43. AB= Innovation *within 2* broker
44. AB= Innovation *within 2* development
45. AB= Innovation *within 2* distribution
46. AB= Innovation *within 2* diffusion
47. AB= Innovation *within 2* exchange
48. AB= Innovation *within 2* management
49. AB= Innovation *within 2* partnership
50. AB= Innovation *within 2* sharing
51. AB= Innovation *within 2* transfer
52. AB= Innovation *within 2* translation
53. AB= Innovation *within 2* utilization
54. (19 or 20 or 21… or 53) – 1398

55. (18 and 54) – 34

56. (12 or 54) – **132**

Business Source Premier

Limited to: Peer reviewed journal articles; Jan 1990 – present; English language only.

1. SU = Knowledge management
2. SU= Knowledge process outsourcing
3. SU= Knowledge workers
4. SU= Research institutes
5. SU= Research and development
6. SU= Diffusion of innovations
7. SU= Innovation management
8. SU= Innovation adoption
9. SU= Organizational learning
10. (1 or 2 or 3 … or 9) – 14682

11. SU= Health* - 22250

12. (10 and 11) – **132**

Cumulative Index to Nursing and Allied Health Literature (CINAHL)

1. MH= Knowledge management
2. MH= Information management
3. MH= Clinical research+
4. MH= Diffusion of innovation
5. (1 or 2 or 3 or 4) – 3671

6. MH= Health services+ - 118685

7. (5 and 6) – **554**

PsychInfo

1. SU= Knowledge management
2. SU= Knowledge transfer
3. SU= Evidence based practice
4. SU= Information dissemination
5. SU= Innovation
6. SU= Research and development
7. (1 or 2 or 3... or 6) – 7802

8. SU= Health care services+ - 9189

9. (7 and 8) – **266**

Medline

1. MH= Research+
2. MH= Diffusion of innovation+
3. MH= Evidence-based practice+
4. (1 or 2 or 3) – 87355

5. MH= Health services+ - 559461

6. AB= knowledge n2 broker
7. AB= knowledge n2 development
8. AB= knowledge n2 diffusion
9. AB= knowledge n2 dissemination
10. AB= knowledge n2 distribution
11. AB= knowledge n2 exchange
12. AB= knowledge n2 management
13. AB= knowledge n2 mobilization
14. AB= knowledge n2 network
15. AB= knowledge n2 partnership
16. AB= knowledge n2 sharing
17. AB= knowledge n2 transfer
18. AB= knowledge n2 translation
19. AB= knowledge n2 utilization
20. AB= research n2 broker
21. AB= research n2 diffusion
22. AB= research n2 dissemination
23. AB= research n2 distribution
24. AB= research n2 exchange
25. AB= research n2 management
26. AB= research n2 mobilization
27. AB= research n2 network
28. AB= research n2 partnership
29. AB= research n2 sharing
30. AB= research n2 transfer
31. AB= research n2 translation

32. AB= research n2 utilization
33. AB= innovation n2 diffusion
34. AB= innovation n2 development
35. AB= innovation n2 dissemination
36. AB= innovation n2 distribution
37. AB= innovation n2 exchange
38. AB= innovation n2 management
39. AB= innovation n2 mobilization
40. AB= innovation n2 network
41. AB= innovation n2 partnership
42. AB= innovation n2 sharing
43. AB= innovation n2 transfer
44. AB= innovation n2 translation
45. AB= innovation n2 utilization
46. (6 or 7 or 8... or 45) – 7127

47. (4 and 5 and 46) – **562**

Cochrane Database of Systematic Reviews

1. MeSH= Knowledge+
2. MeSH= Information dissemination+
3. MeSH= Research+
4. MeSH= Evidence-based practice+
5. MeSH= Diffusion of innovation+
6. (1 or 2 or 3 or 4 or 5) - **20**

Appendix B: Literature Review Data Summary Tables

Reference		Study Details
1	Mitton et al (2007)	**Type of Study**: Systematic review
		Aim: To find evidence-based KTE practices to inform the design of a specific KTE platform for a series of research projects
		Methodology: Systematic review of 81 papers, 63 non-implementation and 18 implementation studies relating to the application of KTE in healthcare policy
		Key Messages: The small number of implementation studies and lack of formal evaluation prevents the identification of clear recommendations for developing and implementing KTE strategies. Factors identified as key to facilitating successful KTE are identifiable at four levels: Individual level, organisational level, the communications level and related to time/timing. Within these the importance of several activities is noted including ongoing collaborations built on trust and clear roles and responsibilities fostered by ongoing face-to-face communications. Healthcare organisations should undertake capacity building to encourage readiness for change and foster collaborative research. The outcomes of research should be summarise with recommendations, tailored and relevant to specific audiences and timely. The value of knowledge brokers to facilitate these is indicated.
2	Grimshaw et al (2001)	**Type of Study:** Meta-synthesis of systematic reviews
		Aim: To identify, appraise, and synthesize systematic reviews of professional educational or quality assurance interventions designed to change healthcare provider behaviour in order to improve quality of care.
		Methodology: Meta-synthesis of 41 systematic reviews covering a wide range of targeted behaviours and interventions. The majority of reviews were from medical journals, 7 from the Cochrane Library, and two were in PhD theses.
		Key Messages: This review identifies several weaknesses of current primary studies. Many existing studies use weak designs, have methodological flaws, and do not include economic evaluations. Passive approaches to research dissemination are generally ineffective and unlikely to result in behaviour change. Most other interventions are effective under some circumstances but none are effective under all circumstances. Amongst the interventions with evidence for general if variable effectiveness are educational outreach (for prescribing) and reminders. Combining techniques to deliver multifaceted interventions targeting different barriers to change are more likely to be effective than single interventions.
3	Bero et al (1998)	**Type of Study:** Overview of systematic reviews
		Aim: To identify evidence of the effectiveness of different strategies for the dissemination and implementation of research findings.
		Methodology: Overview and synthesis of 18 systematic reviews. No search strategy detailed.

		Key Messages: The quality of studies varied and none explicitly reported on the cost effectiveness of different strategies. Interventions to promote behavioural change among health professionals shown to be consistently effective include: Educational outreach visits, reminders (manual or computerised) , multifaceted interventions (a combination that includes two or more of the following: audit and feedback, reminders, local consensus processes, or marketing), Interactive educational meetings (participation of healthcare providers in workshops that include discussion or practice) Interventions to promote behavioural change of variable effectiveness include: Audit and feedback (or any summary of clinical performance) , Use of local opinion leaders, Local consensus processes, Patient mediated interventions Interventions shown to have little or no effect: Educational materials (distribution of recommendations for clinical care, including clinical practice guidelines, audiovisual materials, and electronic publications) Didactic educational meetings (such as lectures).
4	Fixsen et al (2005)	**Type of Study:** Systematic review and meta-synthesis
		Aim: To describe the current state of the science of implementation, and identify what it will take to transmit innovative programs and practices to mental health, social services, juvenile justice, education, early childhood education, employment services, and substance abuse prevention and treatment.
		Methodology: Systematic review of literature pertaining to research implementation. Of 1,054 citations meeting the inclusion criteria, 743 remained after a full text review and the 377 deemed to be most relevant reviewed. This included 22 studies that employed an experimental analysis of implementation factors.
		Key Messages: Best evidence points to what does not work with respect to implementation. The few experimental studies available (n=20) confirm the results of the overall review of the implementation evaluation literature that: information dissemination alone (research literature, mailings, practice guidelines) is an ineffective implementation method and that training (no matter how well done) by itself is an ineffective implementation method. Good evidence exists for employing longer-term multilevel approaches to implementation and there is evidence for the inclusion of: practice-based practitioner selection, skill-based training, practice-based coaching, practitioner performance evaluation, program evaluation, facilitative administrative practices, and methods for systems interventions. Little evidence exists relating to organizational and system influences on implementation, their specific influences, or the mechanisms for their impact on implementation efforts. Yet, there seems to be little doubt about the importance of these organizational and influence factors among those who have attempted broad-scale implementation. A noticeable gap in the available literature concerns interaction effects among

		implementation factors and their relative influences over time. However, analyzing interaction effects is a difficult task given the sheer number of implementation variables identified as important. The current structures and processes of many human service organizations (especially behavioral and physical health organizations) and related systems may make it difficult to systematically implement programs and practices. Most health organisations operate on what is essentially a "credentialed practitioner model," resulting in an "eclectic" approach to treatment in any given organization, not one focused on a particular program or practice for particular populations or consumers.
5	Best et al (2008a)	**Type of Study:** Mixed method review of 'knowledge integration' methods
		Aim: To review the evidence supporting knowledge integration methods to help inform practice and policy in cancer control systems.
		Methodology: Series of expert panels with multidisciplinary an expert working group including basic, clinical, and population scientists, literature review (methodology not detailed), and collaborative concept mapping to validate the emergent framework and findings.
		Key Messages: A lack of common language and logic for research transfer is inhibiting movement of knowledge to action across the research spectrum. Offers a systems based summary of knowledge integration techniques focussing on 3 levels of science (basic, clinical and population) and 3 different domains of enquiry (individual, organisational and systems/policy) Key translational research and knowledge integration factors include improved communications, collaboration, support systems, funding and incentives, along with consideration of policy development and organizational change principles.
6	Harrington et al (2008)	**Type of Study:** Synopsis of literature produced for a health service organisation.
		Aim: To synthesize the key approaches, strategies, learning, and resources aimed at increasing the linkages between research and decision making/practice processes.
		Methodology: Not reported in detail but includes a list of definitions and terminology, an overview of knowledge translation models and processes, reviews detailing, barriers and enablers to knowledge translation, knowledge translation activities and methods for measuring knowledge translation (no methodology reported for these) ; a list of key knowledge translation literature, an overview of toolkits, guides and web-based resources
		Key Messages: Enablers of knowledge translation identified as: Early, ongoing and face-to face involvement engaging knowledge users at the start of and throughout the life of a research project has been identified as key to increasing research uptake; Incentivising knowledge exchange activities; Allowing adequate

		time for collaborations to become established; Capacity building both for researchers and practitioners/policy-makers; The use of effective and multifaceted dissemination strategies and the use of knowledge brokers to serve as an interface or link between researchers, research users and policy/decision makers. Currently the effectiveness of this role in facilitating research uptake is being examined.
7	Glasgow & Emmons (2007)	**Type of Study:** Review
		Aim: To summarise the key factors that have interfered with the translation of research to practice and how public health researchers can hasten the process
		Methodology: Detailed methods are not listed. Paper focuses on four categories a factors effecting the dissemination and use of research.
		Key Messages: Recommendations to improve the integration of research and practice include: anticipating and addressing likely barriers to research dissemination; Appreciate and integrate multiple types of evidence; Adopt practical clinical and behavioural trials and design studies to collect multiple baselines across settings; Conduct broader evaluations including multiple outcomes, account for contextual factors and issues of generalisability; Design multilevel programmes using systems and socio/ecological models to that attend to integration across programme components and levels; Plan for adaptation and refinement to fit local conditions and emerging issues
8	National Centre for the Dissemination of Disability Research (2006)	**Type of Study:** Overview of literature produced for healthcare organisation
		Aim: To provide additional insight on Knowledge Transfer from an international perspective by summarising the process as described by several international authors.
		Methodology: Not reported
		Key Messages: Transferring evidence to clinicians should be inclusive of various different levels of evidence; Programs or initiatives should be developed in a manner that is appropriate for a specific target audience (as such audience analysis recommended); Participatory and collaborative efforts may facilitate relationship building & trust in the KT process; Collaborative KT strategies often produce the formation of networks and partnerships; Measuring KT not possible at present; Capacity building needed for sustainability of KT in organisations.
9	Hemsley-Brown (2004)	**Type of Study:** Literature review
		Aim: To examine the issues emerging from a cross-sector (education, healthcare or the business sector) literature review focused on understanding the barriers to research utilisation, indentifying the recommendations made by researchers to indicate the ways these barriers could be addressed and discovering the most effective strategies for facilitating the use of research by managers, based on research evidence.
		Methodology: Structured search of electronic sources. Included published journal articles and conference papers. 150 papers (empirical, theoretical and opinion papers) included for review.

		Key Messages: Identified a number of key activities for improving the use of research evidence in decision making. Research in the healthcare sector particularly, had focused on the need for practitioners to gain support and encouragement from managers. Authors in the education field have frequently speculated that collaborative approaches, partnerships or links, and involving users in research are the keys to greater research utilisation in the public sector. Rogers's diffusion of innovations model has been widely acknowledged as making a significant contribution to understanding of the dissemination of new ideas and has attracted considerable interest recently in the context of research utilisation. A number of studies in the use of research in education and healthcare, concluded that networks to increase communication between researchers and users was an effective approach to facilitating research use. Leadership emerged as a key factor in facilitating research use by managers from three reviews of literature
10	Majumdar et al (2004)	**Type of Study:** Opinion piece with literature review
		Aim: To highlight two types of care gaps; describe the most common potential barriers to the application of evidence into clinical care; and outline which of the strategies for translating evidence into clinical care have been shown to be ineffective, which strategies have been shown to be effective and to describe some untested approaches that hold promise.
		Methodology: None reported
		Key Messages: Strategies identified as effective: Audit and feedback with comparison to local peers; Real-time clinical reminders, computerized or paper-based; Face-to-face educational outreach; Engagement of local opinion leaders; Critical pathways; Multifaceted interventions. Strategies identified as potentially valuable but requiring further study include: Use of lay media to influence patients and physicians; Patient decision aids and other forms of patient "activation"; Continuous quality improvement strategies; Computerized decision support and other "E-health" strategies; Incentives, financial or otherwise, to promote best practice; Disincentives, financial or otherwise, to restrict suboptimal practice; Expanded roles and responsibilities for non-physician providers (e.g.,nurse practitioners, community-based pharmacists)
11	Pyra, K (2003)	**Type of Study:** Literature review produced for healthcare organisation
		Aim: To help inform the development of the Nova Scotia Health Research Foundation's knowledge translation strategy the review of formal and grey literature aims to summarize the key themes emerging from the literature regarding the nature of the relationship between research and policy and the factors that enable the use of research knowledge to support policy decision-making; Potential roles for research funding agencies in supporting knowledge translation; and Approaches to evaluating the effectiveness of knowledge translation initiatives.
		Methodology: Not reported

		Key Messages: Most frequently cited enabler for KT is development of ongoing relationships between researchers & policy makers. Other enablers for knowledge translation include: Knowledge brokering; Active dissemination efforts by researchers; Improving research & evidence acquisition skills among decision-makers; Conceptualising knowledge translation as an ongoing process; Creation of state-funded health services research & applied policy analysis organization to promote development of state-level core staff with specific research skills; Producing evidence-based summaries on relevant topics for distribution to local policy-makers without resources to undertake comprehensive reviews to support decision-making.
12	Harvey et al(2002)	**Type of Study:** Critical literature review
		Aim: This paper presents the findings of a concept analysis of facilitation in relation to successful implementation of evidence into practice.
		Methodology: Concept analysis approach was used as a framework to review critically the research literature and seminal texts in order to establish the conceptual clarity and maturity of facilitation in relation to its role in the implementation of evidence-based practice. Reviews 95 papers, 7 of which examine the effectiveness of facilitation.
		Key Messages: Reviews the effectiveness of facilitation in enabling evidence-based practice indicate that the presence of a facilitator who provides face-to-face communication and uses a range of enabling techniques has some impact on changing clinical and organizational practice despite variable effect sizes and differing costs. It is difficult to isolate which aspects of the facilitation process or the facilitator role are more or less effective in influencing change.
13	Corrigan et al (2001)	**Type of Study:** Literature review
		Aim: To review the research on dissemination strategies that facilitate the transfer of research-based practices from academic setting to public-sector psychiatry.
		Methodology: Not reported
		Key Messages: Identifies three sets of strategies are useful for overcoming these barriers and fostering dissemination and details some particular factors: 1) packaging evidence-based practices so that specific interventions are more accessible and user-friendly to service providers including: ensuring the high face validity of manuals with built in fidelity systems. 2) educating providers about relevant knowledge and skills can be achieved by: interactive, clinically representative learning activities such as modelling, role play, feedback, & homework used to help staff learn and apply new skills; 3) addressing the organizational dynamics of the team to facilitate the implementation of innovations should be focussed on: Improving team leadership skills to include either transformation styles of transactional styles.
14	Canadian Population	**Type of Study:** Environmental scan produced for health organisation.
		Aim: To identify a range of strategies for transfer of research knowledge by

	Health Initiative (2001)	conducting an environmental scan of strategies used by government and non-government organizations. This report examines knowledge transfer strategies of 17 organizations involved in health or social research and/or policy.
		Methodology: Survey of cross-section of 17 research organisations with a common focus on health or social research and policy and an emphasis on knowledge transfer. Additional data collected from 15/17 organisation by telephone and e-mail interviews.
		Key Messages: Identifies key factors relating to Knowledge Transfer under three categories: who, when and how to engage with research users. 1) Who to engage: most effective KT is based on involving a wide variety of partners, targeting specific audiences with relevant research; for policy- a wide range of organisations should be targeted for dissemination; broader public should be included as partners for effecting indirect research transfer to decision makers 2) When to engage: stakeholder and decision makers should be engaged early on, and throughout, the research process; Environmental scanning is effective at for informing research agendas; Impact/outcomes should be evaluate 3) How to engage: Working groups rather than conferences to encourage dialogue; research evidence should be available in various formats including those designed to be clear and concise; every research programme should have KT strategy built into its design; research transfer specialists should be employed.
15	Conklin & Stolee (2008)	**Type of study:** Qualitative.
		Aim: To test a pilot model for evaluating knowledge exchange in a network context.
		Methodology: Pilot model for evaluation Knowledge Exchange developed form literature. Primary data about knowledge exchange in a network collected: one 63 minute telephone interview with a knowledge broker; an e-mail survey of people involved in the network (23 distributed – 6 returned); telephone interviews with 3 expert panellists.
		Key Messages: Suggests that large KT networks can enable communication of and better use of knowledge through making infrastructure available; The organisational context afforded by Communities of Practice can support the flow of knowledge among participants, enables research evidence and expert opinion to be delivered.- many felt webcast to be useful but some indicated that info was not specific enough or actionable; **:**Practitioners appreciated materials received but had different recollections of usefulness of webcast although at some of the 19 sites it did have a direct change on behaviours of caregivers.
16	McWilliam et al (2008)	**Type of Study:** Mixed method pilot study
		Aim: Pilot study into the effectiveness of a knowledge translation intervention promoting evidence-based home care though social interaction.
		Methodology: Quantitative pre-post outcome measurement (measure not reported) and qualitative descriptions. Sample of health professional s involved in study n=29 (9 nurses; 8 therapists; 1 Social Worker; 11 personal support

		workers).
		Key Messages: Corroborates many earlier findings relating to barriers to knowledge translation and identified facilitators at organisational, team and individual levels. Organisational level: geographic proximity; remuneration of efforts; recognition for outcomes achieved. Team level: Team working generally seen as highly facilitative of KT; Time to build trust important facilitator of KT and more attainable in smaller groups; Numerous team-level facilitators suggested that team effort was essential for KT. Individual level: adequate remuneration for time/effort.
17	Garland et al (2006)	**Type of Study:** Qualitative and case study
		Aim: To describe the development of one research-practice endeavour in mental health and qualitatively investigate the participants' perceptions of the process.
		Methodology: Case study. Qualitative investigation of participants perceptions based on thematic analysis of semi-structured interviews (n=12, 6 Mental Health Practitioners and 6 researchers).
		Key Messages: Practitioners initially sceptical of collaborative research-practice activities; Group dynamics, especially the effects of dominant voices play a large role in collaborations; Differences in the language used by researchers/practitioners can be challenging; Communication is key to developing and maintaining trust- reciprocal trust is central to making the collaborative process work; clarity about leadership roles is essential
18	Bowen & Martens (2005)	**Type of Study:** Multi-method qualitative study
		Aim: To explore the characteristics of effective knowledge translation initiatives from the perspective of community partners.
		Methodology: Open-ended, longitudinal key informant interviews n=101 with 62 participants; pre/post test questionnaires; anonymous workshop evaluations; observational methods.
		Key Messages: Suggests that Knowledge Translation approaches should include efforts to: Create an environment of interest and openness to research (providing a setting for KT to occur in. Trust and confidence building between partners essential); Provide opportunities for collaborative research (Consultation between researchers and users needed- partners have own priorities, interests and expertise); Develop and use a shared vocabulary and conceptual base (builds capacity, researchers must communicate in a more user friendly way); Facilitate an understanding of research findings (capacity building to aid interpretation of findings- lessens potential for suspicion of results and agenda behind research); Foster an understanding of implications for practice (findings need to be interpreted and applied in relation to the setting)' Quality of interaction is a significant factor in interactions; Organisational barriers are an ongoing impediment to KT and capacity building should focus at this as well as individual levels.
19	Dobbins et al (2002)	**Type of Study:** Qualitative study
		Aim: To investigate public health decision makers' preferences for content,

		format, and channels for receiving research knowledge, so as to begin development of a comprehensive national public health knowledge transfer strategy.
		Methodology: 9 focus groups of (n=5-7); purposive sampling (n= 46; medical officers of health (15%); program managers or coordinators (30%); program directors (24%); decision makers from provincial or federal ministries (30%)). Semi-structured, open-ended discussion guide was used to facilitate the groups; Independent thematic analysis by 2 team members.
		Key Messages: Decision makers wanted choices and control over the amount of detail they received and how information was delivered; KT strategy must be customized to meet individual needs at particular points in time; Important to build flexibility into the KT strategy so as to provide decision makers with sufficient choice and control over the content, format, and delivery of research evidence; Important to develop audience-specific messages from systematic reviews that are in line with the contexts to which they apply; Research evidence should appear user friendly and be concise where possible screening out irrelevant information; Automatically updating users with recently published reviews only in area(s) of interest; Capacity building in research use essential for ongoing KT.
20	Jacobsen, Butterill and Goering (2005)	**Study Type:** Qualitative
		Aim: To contribute to the literature more generalisable information about the conditions that facilitate interactive knowledge transfer, and to advocate for the wider application among academics of consulting as a knowledge transfer strategy.
		Methodology: Analysis of case studies and literature review. Reviewed and analyzed the literature pertaining to consulting theory and practice. In order to understand the processes in using consulting as a strategy for transferring research-based knowledge, detailed case studies of three consulting projects were analysed. Methodological approach derived from symbolic interactionism, grounded theory, and dimensional analysis.
		Key Messages: Factors identified as promoting KT through use of consultant include: Urgency & importance of need have an impact. Pressing needs see knowledge used, less urgency means knowledge is less likely to be used; Consultants need to be perceived as accessible, organised, expert & credible (clients begin this assessment from pre-entry on); Clients needs' to be communicative and committed; Facilitating strategies should be aimed at promoting clients' participation and collaboration: steering committees to integrate local expert views into design, conduct and interpretation of research; involving knowledge users in producing knowledge causes it to have *"greater richness, relevance, utility and the knowledge based recommendations will be more acceptable"*
21	Molfenter et	**Study Type:** Case study and qualitative investigation.

	al (2009)	**Aim:** To describe a knowledge to action (KTA) framework and intervention used with speech and language pathologists, identifying key elements of the KTA process and evaluate the outcomes of the process through qualitative investigation with the participating clinicians.
		Methodology: Structured interviews (30 min duration) with participation speech and language pathologists (n=6). Thematic analysis by 3 researchers.
		Key Messages: Hands on training more effective than lectures at enabling knowledge to action; Ongoing support from researchers was particularly valued by clinicians; Successful KTA requires collaboration at both the knowledge creation and knowledge action stages; The process allowed clinicians to feel more comfortable engaging in novel treatments in the future.
22	Kothari, Birch and Charles (2005)	**Study Type:** Qualitative multi-case study design
		Aim: To assess if interaction between users and producers of research is associated with a greater level of adoption of research findings in the design and delivery of health care programs.
		Methodology: Semi-structured group interviews with members of six public health units and a document review of public domain reports etc.
		Key Messages: Information processing of report findings increased with interaction between researchers and research users; As the interaction strategy employed involved the articulation of research questions for program planning, reading of draft versions of the report, and conversing about the report, interacting teams predictably more informed about report contents; Results also indicated that interacting teams were better educated about methodological and analytical issues associated with the research.
23	Russell et al (2004)	**Study Type:** Qualitative mixed-method
		Aim: To explore the process of knowledge exchange in an informal email network for evidence based health care, to illuminate the value of the service and its critical success factors, and to identify areas for improvement.
		Methodology: Illuminative evaluation (using a range of qualitative methods) to explore the knowledge exchange process in evidence-based practice support e-mail network. E-mail tracking n=22; message analysis n=102; Focus groups3x15 (n=45). Thematic analysis.
		Key Messages: Paper identified several aspects key to informal KTE networks and notes several benefits to the knowledge exchange process. Skilled staff are needed at the centre to establish, develop and maintain the networking process; Simple communication methods (e-mail) enables members to draw upon 'the strength of weak ties' (best source of new idea is a stranger or not directly related rather than one from the same social groupings); Informal networks enables the spontaneous emergence of communities of practice; The network allowed for 'lurking'- benefitting from the network even without directly contributing- allows spontaneous learning about research use.
24	Rosser	**Study Type:** Case study

	(2008)	**Aim:** To describe two strategies to transfer research evidence into clinical practice.
		Methodology: Describes the activities of two research transfer initiatives- a Guidelines Advisory Committee and an organisation for delivering best evidence summaries to clinicians and patients.
		Key Messages: Reports primarily on the best evidence summary initiative and notes: Physicians found the critical appraisal of literature with key references credible and helpful; Appreciated the automated literature search update function; Presenting patients with evidence and involving them in decision making improved the patient-physician relationship; 60-80,000 hits per week on website after public launch suggestive of a suitable delivery mechanism.
25	Forrester, O'Keefe and Torres (2008)	**Study Type:** Case study
		Aim: Describes a partnership between the University of Medicine and Dentistry of New Jersey (UMDNJ) School of Nursing (SN), the New Jersey Joanna Briggs Institute (JBI) Centre for Evidence Based Practice, and Morristown Memorial Hospital/Atlantic Health (MMH/AH) in which a faculty member, the resources of the JBI and the laboratories of the SN are shared to enable clinically led research.
		Methodology: Descriptive case-study
		Key Messages: Direct outcomes of the initiative were identified as: An increase in the use of new EBP resources; The initiation of new practice-problem focussed research activities. The authors suggest that these successful improvements in EBP are due to: Leadership provided by a supportive administration; A shared governance structure that drives full participation of nurses; The partnering of three institutions with a shared focus and commitment to scientific research and excellence in EBP.
26	Baumbusch et al (2007)	**Study Type:** Case study
		Aim: To communicate the potential for Knowledge Translation to successfully promote the uptake of nursing research findings into practice by presenting examples from the authors' experience of developing a model of KT that emerged from a programme of research focussed on understanding the experiences of patients being discharged from hospital to home.
		Methodology: KT model built on existing literature and recommended activities utilised.
		Key Messages: Direct results of the initiatives were reported as including: Altered strategies and new action plans for achieving these; Changed clinical practices; Improved patient satisfaction with the home discharge process; Further research projects initiated. Key elements of the knowledge translation initiative were identified as: The development of shared accountability, reciprocity and respect for each other; Collaboration between researchers and practitioners in designing strategies and

		action plans to change practice in response to research findings; Allowing the research to be informed by practitioners so as to ensure the study remained relevant to practice and context; Ensuring continuing dialogue allowed for a shift from the discussion of findings to the development and implementation of specific KT initiative; Dynamic KT processes lead to transformations in practice and the identification/solving of further practice needs; Researchers can become more credible messengers by communicating the emerging research findings directly to practitioners.
27	Farkas & Anthony (2007)	**Type of Study:** Descriptive paper
		Aim: To reviews five basic dissemination and utilization principles for overcoming the most common barriers to effective dissemination of evidence-based knowledge and provides descriptive examples of the activities related to each principle as experienced by the Rehabilitation Research and training Centre. Additionally describes a knowledge-transfer framework developed by the Centre to organize dissemination and utilization efforts.
		Methodology: Not reported for review.
		Key Messages: Identifies the five key elements of knowledge transfer as: the development of evidence-based messages (EBM) that are based on bodies of research rather than single data sets; the building credibility with decisions makers as legitimate developer of EBMs; the building of KT expertise and infrastructure within the research organisation; Conveying EBMs using an organised approach to achieve targeted outcomes; and the routine evaluation of EBM efforts. Suggests a self-developed KT process built on the 4 E's of Exposure, experience, expertise and embedding.
28	Eke et al (2006)	**Type of Study:** Descriptive and opinion
		Aim: Proposes a participatory, multidirectional process for HIV prevention technology transfer based on the experience of the Replication Effective Programmes (REP) technology transfer process. Recommends specific methods that can be used to prepare for possible transfer during research trials.
		Methodology: Not reported
		Key Messages: Learning from the REP related to preparing for successful transfer during the research progress include: documenting details of interventions beyond what is normally published in journals specifically including detailed information about the nature of the intervention, the preparatory processes involved, and information about the interventions delivery. Involving all relevant stakeholders throughout the research and technology transfer processes is essential for encouraging the collaborative exchange of ideas and increases the likely relevance, acceptability and potential implementation of the intervention.
29	McConnell et al (2007)	**Type of Study:** Case study
		Aim: To demonstrate the feasibility and value of an academic practice

		partnership to implement evidence-based approaches to solving resident care problems in Long Term Care.
		Methodology: Case study approach used to demonstrate a systematic clinical practice improvement process and it outcomes in terms of implementation strategies which increase the likelihood of sustained adoption. Report findings using the eight steps of the Clinical Practice Improvement Process (CPIP).
		Key Messages: Reports on an academic-practice partnership using an advanced practice nurse in a liaison role between a long term care practice setting and a research active school of nursing to facilitate more rapid adoption of evidence-based practices. Key elements of the process are identified as: Involving the supporters of innovation at local and supervisory level who can influence and persuading others to adopt innovation; exploit opportunities among local networks and internal and external organization contexts to build interest, foster commitment to innovation and develop communications around upcoming change; Allow staff to frame innovation implementation facilitators and barriers; Establish linkage functions to engage internal and external people with knowledge of the innovation in guiding identification, interpretation and application; Collaboration throughout is essential; Interpersonal approaches are more effective at fostering the adoption of evidence; Methods of sharing evidence that are time efficient, easy-to-use and not burdensome are more likely to succeed; Building on existing communication channels is a useful way of targeting and disseminating research knowledge.
30	Philip et al (2003)	**Type of Study:** Case study
		Aim: To explore the background to evidence-based practice and the dissemination of research findings, summarise the role of research in relation to children and health inequalities and examine the of the user fellowship and evaluate the effectiveness of this approach, drawing out which groups were included in the dissemination activities and highlighting implications for further work in this area.
		Methodology: Case study describing the activities undertaken by a experienced post-doctoral researcher seconded to work on a study into the socioeconomic and cultural context of children's lifestyle and the production of health variations. Dissemination activities included a key contact database, two newsletters, short articles, presentations, posters and a practitioner seminar.
		Key Messages: The evaluation of the initiative concludes that the user fellow was a key element in success of dissemination. Tapping into communication networks among practitioners was seen as beneficial (achieved through data-basing and selecting key people); Newsletters were useful at stimulating contacts between knowledge users; and practitioners need and appreciate tailor-made forms of dissemination.
31	Vingilis et al	**Type of Study:** Case study

	(2003)	**Aim:** To describe the integration of Knowledge Diffusion and Utilisation (KDU) theory with practice via a case study analysis of the Consortium for Applied Research and Evaluation in Mental Health (CAREMH).
		Methodology: Single-case design using various data sources including: proposals, meeting minutes, presentations, publications, reports and curricula vitae of CAREMH members. Participant details not noted by indicated to include individuals from the disciplines of business, correctional services, economics, education, epidemiology, family medicine, law, nursing, political science, police science, psychiatry, psychology, social work and sociology.
		Key Messages: Early, ongoing and active engagement with, mentoring of and provision of research assistants to non-research active knowledge users are key to knowledge generation and KDU; a key element is homophily or the degree to which interacting individuals share attributes knowledge and beliefs; Adequate time is required to build mutual respect & shared knowledge and create increased potential for successful KDU through greater homophily; Use of 'connectors' between researchers and knowledge users is central to effective KDU; A willingness to fund KDU is important but traditional pattern of funding single studies as a whole entity is at odds with KDU which is non-linear participatory and evolving.
32	Titler et al (1999)	**Type of Study:** Case study
		Aim: To provide an overview of evidence-based practice and research utilisation and to describe the Research Development and Dissemination Core (RDDC) of a Research Centre at the University of Iowa, illustrating the essential component of implementing evidence based practice through two examples.
		Methodology: Describes the activities of the RDDC in producing research based protocols and the lessons learned relating to their dissemination and use in two clinical instances: Split thickness skin raft donor site care and placement of nasogastric and nasointestinal tubes.
		Key Messages: From feedback provided by the users of 21 research-based protocols indicate the need to tailor protocols to the clinical setting; Assistance is often required in garnering organisational support for increased training and motivation to use research findings; Integrating research-based practices requires that leaders expect and support practices that are congruent with research; Data demonstrating the application of findings improves quality of care/practice is needed; Guidelines should be accessible (suggests laminated pocket/bed folder size); Early, regular and ongoing collaboration with multiple care providers when implementing practice changes (to understand concerns, clarify misinformation); Written and verbal feedback to staff who provide the leadership and operationalise the research based practice is important; Change champions are essential to the process.
33	Crosswaite & Curtice	**Type of Study:** Case study.
		Aim: To report on the activities of the Research Unit in Health and Behavioural

(1994)	Change's (RUHBC) research dissemination project which aimed to define dissemination and identifying barriers to effective dissemination; describe the audiences for health promotion research and defining their needs; and identify appropriate strategies to implement dissemination and promote research utilisation.
	Methodology: Description of activities including the completion of a literature review and annotated bibliography and a series of four day-long workshops.
	Key Messages: Effective transmitters of research information have a significant impact is to be made upon a research audience; Effective communication for the duration of a research project increases the likelihood that findings will be taken up; Problems of resourcing and planning effective dissemination, cultivating new contacts and audiences can be addressed in part by a specialist individual whose remit is to liaise between researchers, managers and other user groups in order to implement a dissemination strategy (termed Research Liaison Officer); Taking advantage of opinion leaders (ideally identified before dissemination) can potentially expand the audience for research findings; Adequate resources are fundamental to effective dissemination; Establishing linkages between managers, researchers and research users is central to the sustainable dissemination and use of research findings.

Appendix C: Focus Group Interview Prompt Material (Knowledge Acquisition Case)

Knowledge Acquisition Cluster

[redacted]

Agenda

Welcome

- Consent
- Documentation

Introduction

- What is the [redacted]
- How will it work with [redacted]

Today's Session

- Purpose
- Ground rules
- Discussion Topics
  - How you find and access research knowledge
  - How you manage and appraise research knowledge
  - How you share and communicate it amongst the teams

Feedback

- Today's session
- What happens now?
- Any questions?
- Date of next meeting
- Purpose

[redacted]

1

Primary Cluster Objectives:
To develop optimal capacity for routinely and systematically identifying and reviewing research literature by building on existing structures and skills.

Additional Objectives:

- Further developing and refreshing specialist skills in literature searching and systematic review methods
- Exploring how these skills can be fed into the wider teams
- Enable the more effective and efficient answering of specific research questions
- Ensure continuity in this area by developing methods to accommodate staff transitions/changes
- Develop methods to make the results of these reviews accessible to clinicians

Broader Project Objective:
To explore what factors allow clinicians to routinely stay up to date with research knowledge. To learn about the best ways to enable clinicians to make beneficial and feasible changes to the way they pursue evidence based practice.

Today's session:
Objectives:
To develop a rich and detailed understanding of the activities, processes and relationships (and any other factors) that contribute to or prevent the [redacted] from accessing, appraising and sharing research knowledge. To discuss methods for improving the situation

Rationale:
Any effort to improve a situation is based upon making changes.

In a situation like this [redacted] is trying to optimise its knowledge management capacity (the way an organisation stores, organises and accesses internal and external information so that personnel can locate the knowledge required to perform their assigned tasks).

Experience and research suggests that, like many initiatives, the main threats to success are cultural (namely, personal, group and organisational perceptions and factors), failure to involve or understand the perceptions of end-users and stakeholders, not considering the wider implications of changes, or setting off with unclear objectives.

Plans for what changes to make, skills to develop and processes to construct are more likely to succeed if we have explored these factors and had the opportunity to suggest and analyse possible solutions.

Activity:
A group discussion based on three sets of questions about the current situation and how it could be improved: how you access/find research knowledge; how you manage research knowledge; how you share it with colleagues in the team.

finding

relevant research knowledge

a How do you currently find and access research?

- How do you find research knowledge?
  - Who carries these activities out?
  - How long do they take?
  - How often are they carried out?
  - What resources does this process use?
- Where do you locate research knowledge?
  - Google scholar?
  - Profession/ discipline specific journals?
  - Library services?
  - Databases?
  - Clinical guidelines?

b What do you think about the current situation?

- What works well?
  - What aspects have particular value?
  - How efficient/ effective do you think it is?
- What challenges do you encounter?
  - Skills?
  - Resources?
  - Competing priorities?

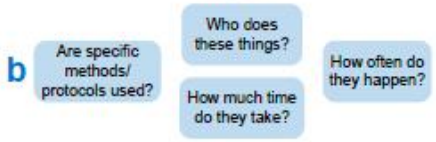
c How would you like this process to work?

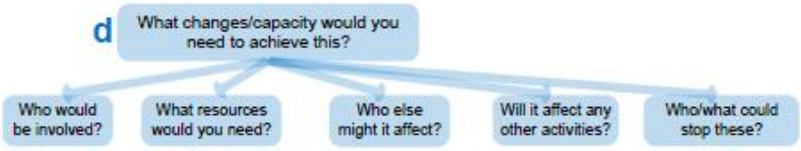
- What features would be useful?
  - Wider range of sources?
  - Different summary style?
  - Faster?
  - More/less often?
- What changes/capacity would you need to achieve this?
  - Who would be involved?
  - What resources would you need?
  - Who else might it affect?
  - Will it affect any other activities?
  - Who/what could stop these?

3

managing

appraising and synthesising research



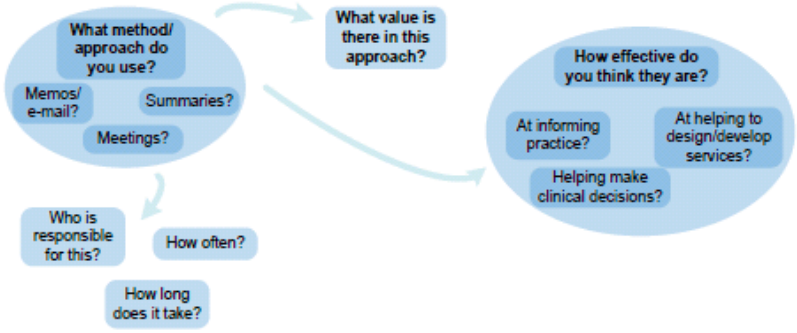


4

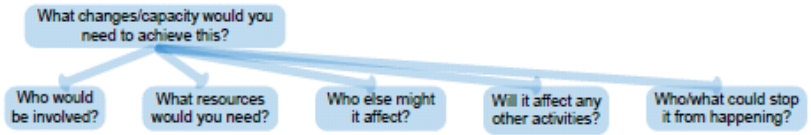
sharing

knowledge with team members

a How do you communicate and research findings and recommendations amongst the team?



b What could make the sharing of research knowledge more valuable or effective?



5

Appendix D: Focus Group/Interview Prompt Materials (Knowledge Application Case)

Knowledge Application Cluster

Session 1

Agenda

Welcome

- Consent
- Documentation

Introduction

- What is the Transformation Station?
- How will it work with the psychological therapies team?

Today's Session

- Purpose
- Ground rules
- Discussion Topics

Feedback

- Today's session
- What happens now?
- Any questions?
- Date of next meeting
- Purpose

2

Primary Cluster Objective
Enable the routine use of outcomes and service-evaluation based knowledge in practice

Additional Objectives:

- Optimise the collection of routine outcome measurements
- Improve capacity for data management
- Systemise the incorporation of psychological services data in practice/service improvement efforts

Broader NHS and Project Objective:

To investigate what conditions and features allow clinicians to make evidence and knowledge based changes to their practice or services.

Today's session:

Objectives:
To develop a rich and detailed understanding of the activities, processes and relationships (and any other factors) that contribute to, or prevent the psychological therapies team from developing practice and services.

Activity:
A focus group style discussion based three topic areas concerning the current situation:

1. The broad context of evidence and knowledge based practice
2. The specific objectives of this cluster- how to generate and use knowledge from practice
3. Some of the practicalities about outcome measurement and service evaluation

Rationale:

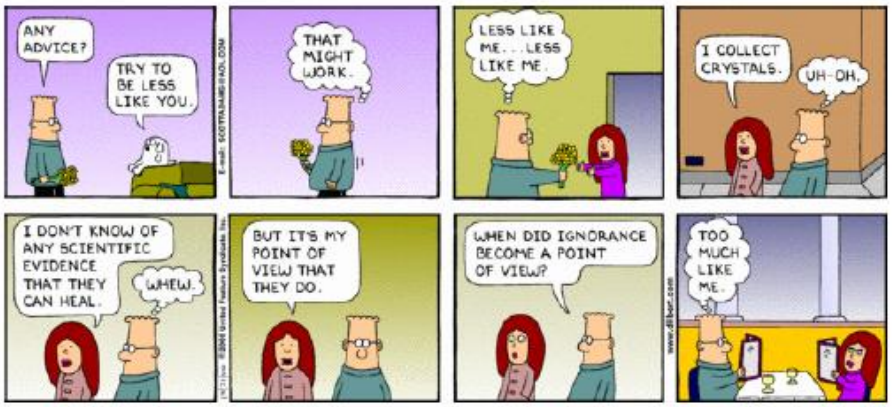
Any effort to improve a situation is based upon making changes.

In our situation the [redacted] team is trying to improve firstly how it collects and manages outcomes data and secondly how this knowledge is used to improve practice and services.

Experience and research suggests that, like many initiatives, the main threats to success are cultural (namely, personal, group and organisational perceptions and factors), failure to involve or understand the perceptions of end-users and stakeholders, not considering the wider implications of changes, or setting off with unclear objectives.

Plans for what changes to make, skills to develop and processes to construct are more likely to succeed if we have explored these factors and had the opportunity to suggest and analyse possible solutions.

1 The broad context
Evidence and Knowledge Based Practice



What is evidence-based practice? → Is it important? → If so, why?

Where to do you get evidence from? → Research Literature? / Guidelines? / Audit & evaluation? → What's valuable about these evidence sources?

What are the challenges of being evidence based?

What enables you to be evidence based?

7

2 Specific Cluster Objectives
Knowledge from Practice

What outcomes information do you collect? → What measures do you use? → What are their good points? / What are their bad points?

Why is this sort of knowledge important? → What do you use it for? → What do you think it could be used for?

What do you do with the outcomes data? → How is it… → recorded? / managed? / analysed? → What works well about this? / What doesn't?

8

3 Outcomes Measurement & Service Evaluation
Practicalities and Processes

The current process for measuring outcomes...

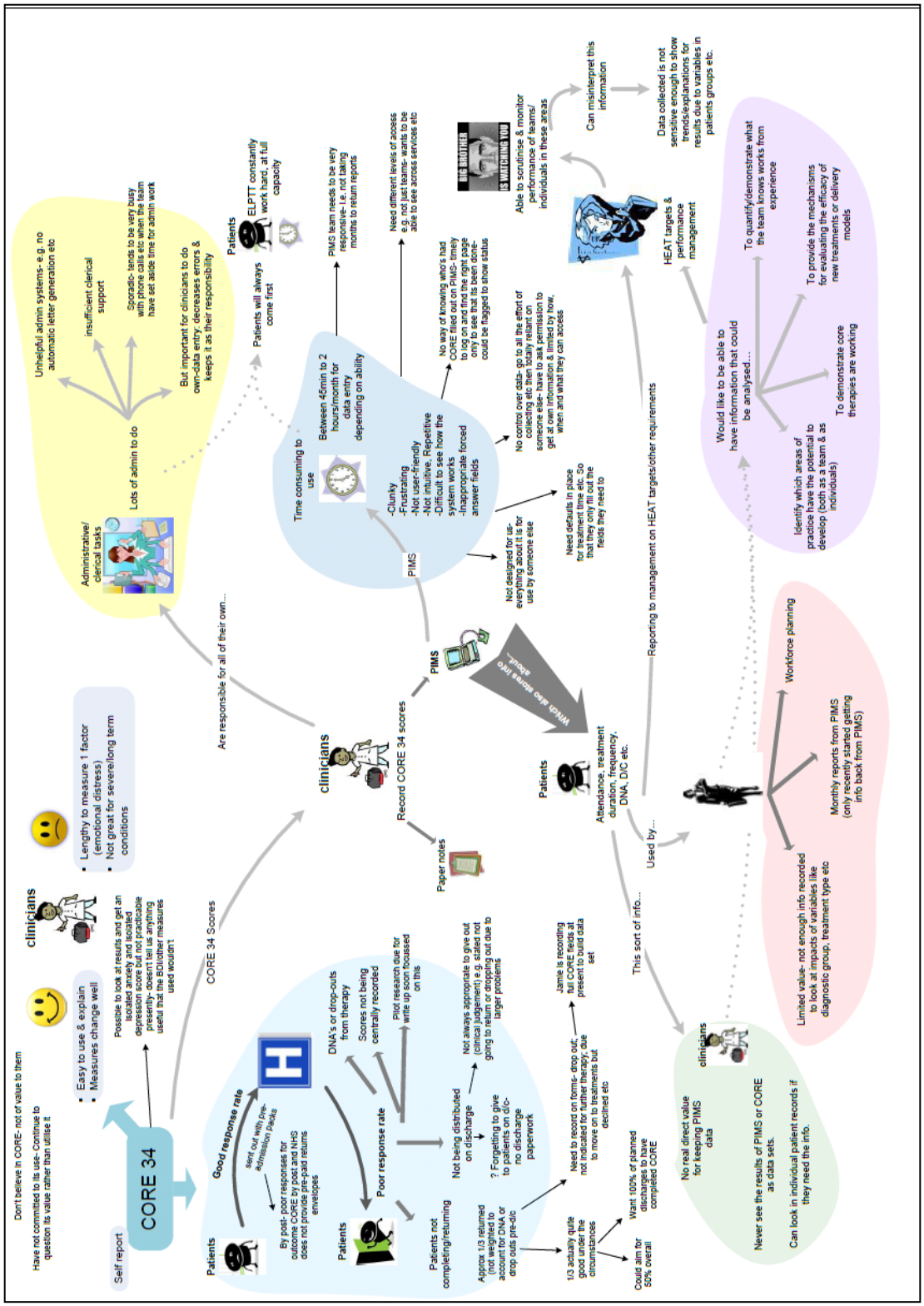
- What works well? → Could these work better?
- What doesn't work well or complicates the process? → Why do these happen?

Practicalities of the process...

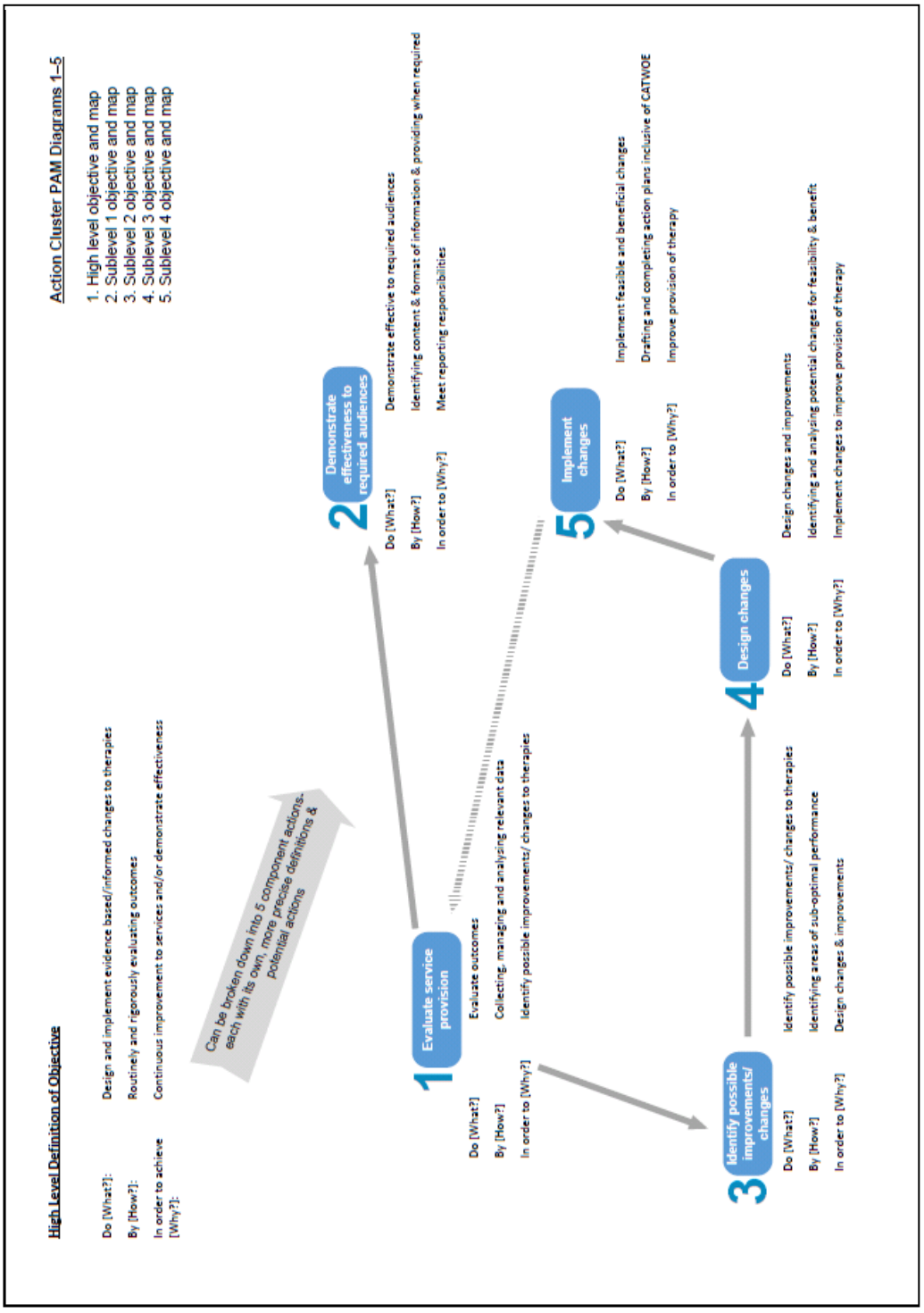
- Who is involved? → In what roles?
- How much time does it take?
- How often is it done?

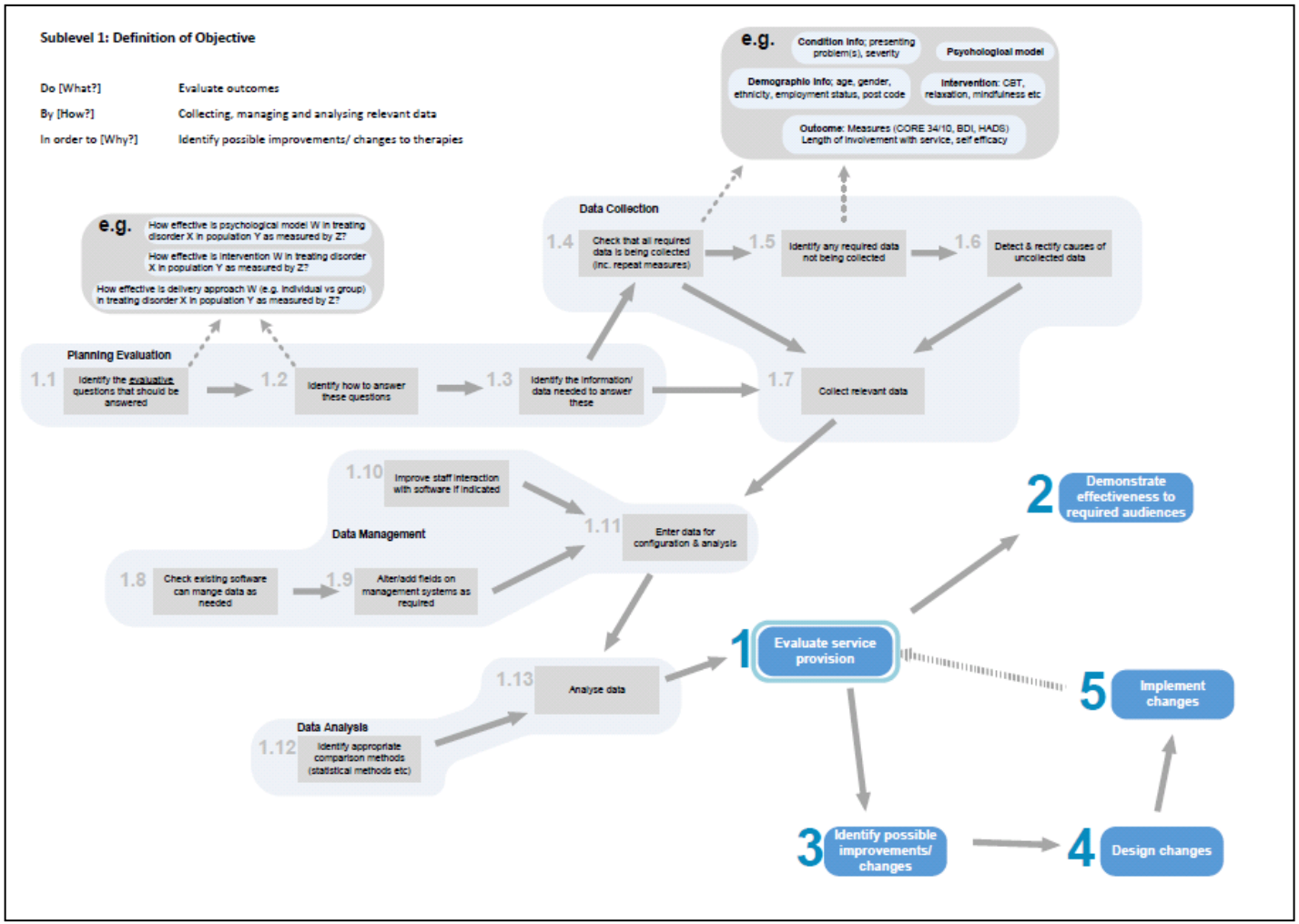
9

Appendix E: Example Rich Picture from the Knowledge Application Case



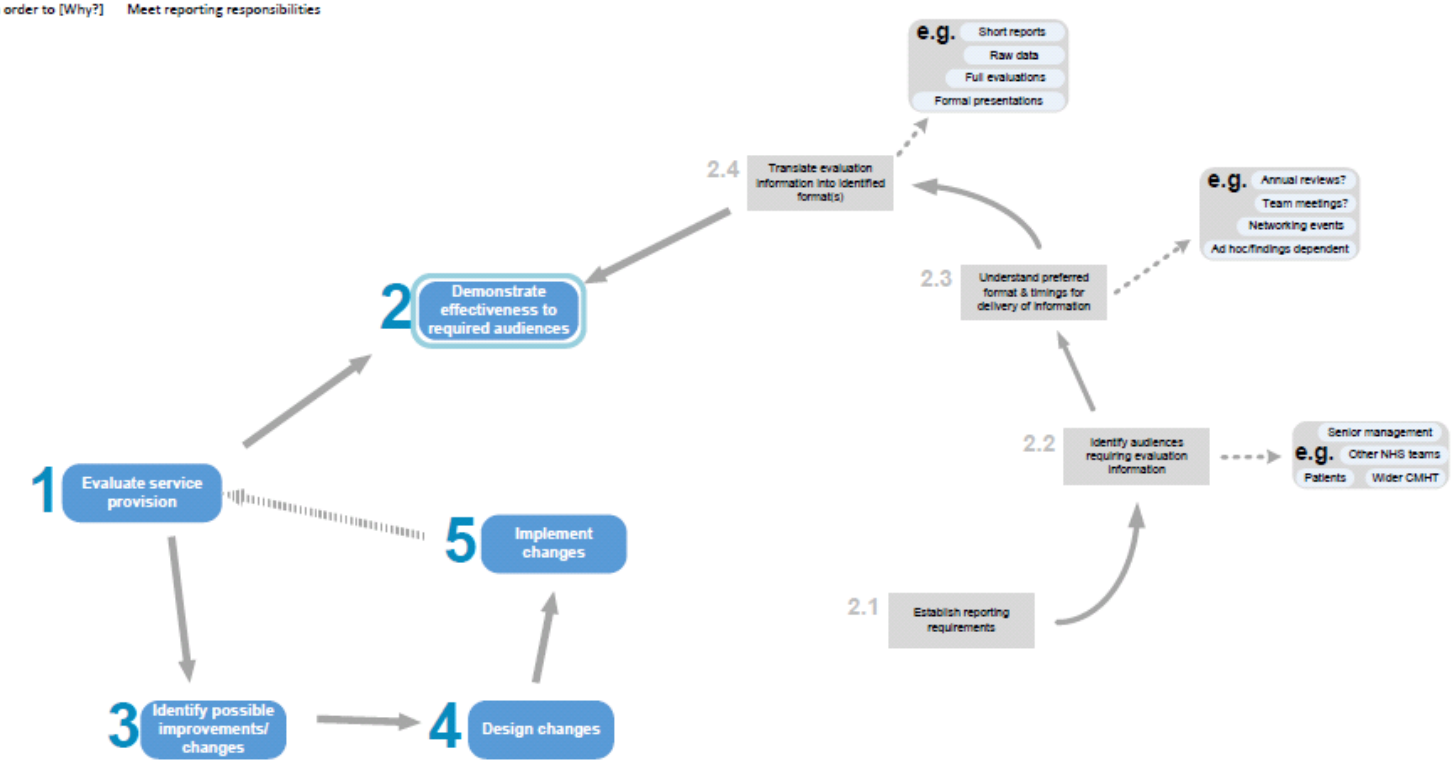
Appendix F: Example Systems Map from the Knowledge Acquisition Case




Sublevel 1: Definition of Objective
Do [What?] Evaluate outcomes
By [How?] Collecting, managing and analysing relevant data
In order to [Why?] Identify possible improvements/ changes to therapies
e.g.
Condition info; presenting problem(s), severity
Psychological model
Demographic info; age, gender, ethnicity, employment status, post code
Intervention: CBT, relaxation, mindfulness etc
Outcome: Measures (CORE 34/10, BDI, HADS) Length of involvement with service, self efficacy
Data Collection
1.4 Check that all required data is being collected (inc. repeat measures)
1.5 Identify any required data not being collected
1.6 Detect & rectify causes of uncollected data
e.g.
How effective is psychological model W in treating disorder X in population Y as measured by Z?
How effective is intervention W in treating disorder X in population Y as measured by Z?
How effective is delivery approach W (e.g. individual vs group) in treating disorder X in population Y as measured by Z?
Planning Evaluation
1.1 Identify the evaluative questions that should be answered
1.2 Identify how to answer these questions
1.3 Identify the information/ data needed to answer these
1.7 Collect relevant data
1.10 Improve staff interaction with software if indicated
Data Management
1.11 Enter data for configuration & analysis
1.8 Check existing software can mange data as needed
1.9 Alter/add fields on management systems as required
2 Demonstrate effectiveness to required audiences
1 Evaluate service provision
1.13 Analyse data
Data Analysis
1.12 Identify appropriate comparison methods (statistical methods etc)
5 Implement changes
3 Identify possible improvements/ changes
4 Design changes

Sublevel 2: Definition of Objective

Do [What?]	Demonstrate effective to required audiences
By [How?]	Identifying content & format of information and providing when required
In order to [Why?]	Meet reporting responsibilities

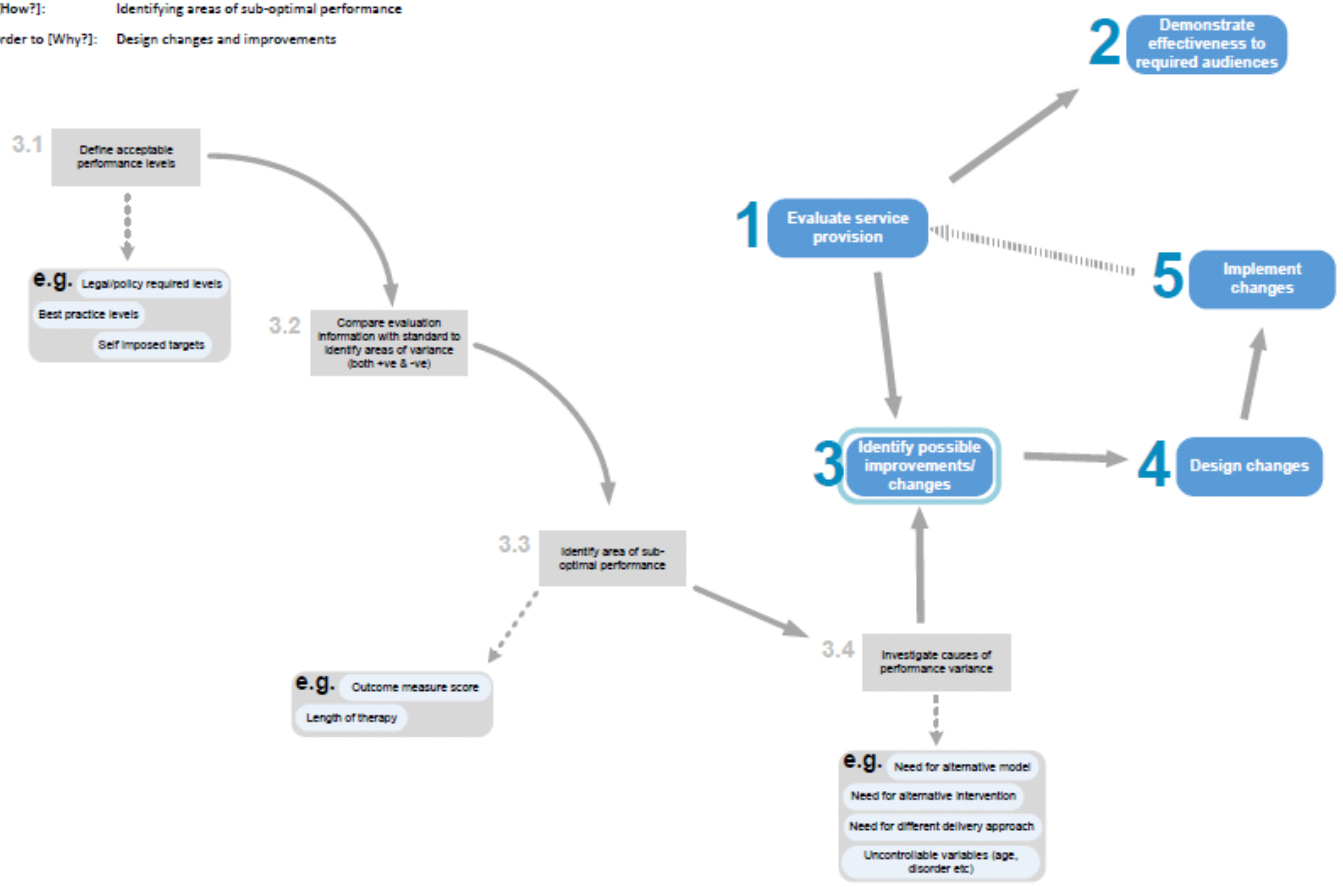


Sublevel 3: Definition of Objective

Do [What?]: Identify possible improvements/ changes to therapies

By [How?]: Identifying areas of sub-optimal performance

In order to [Why?]: Design changes and improvements

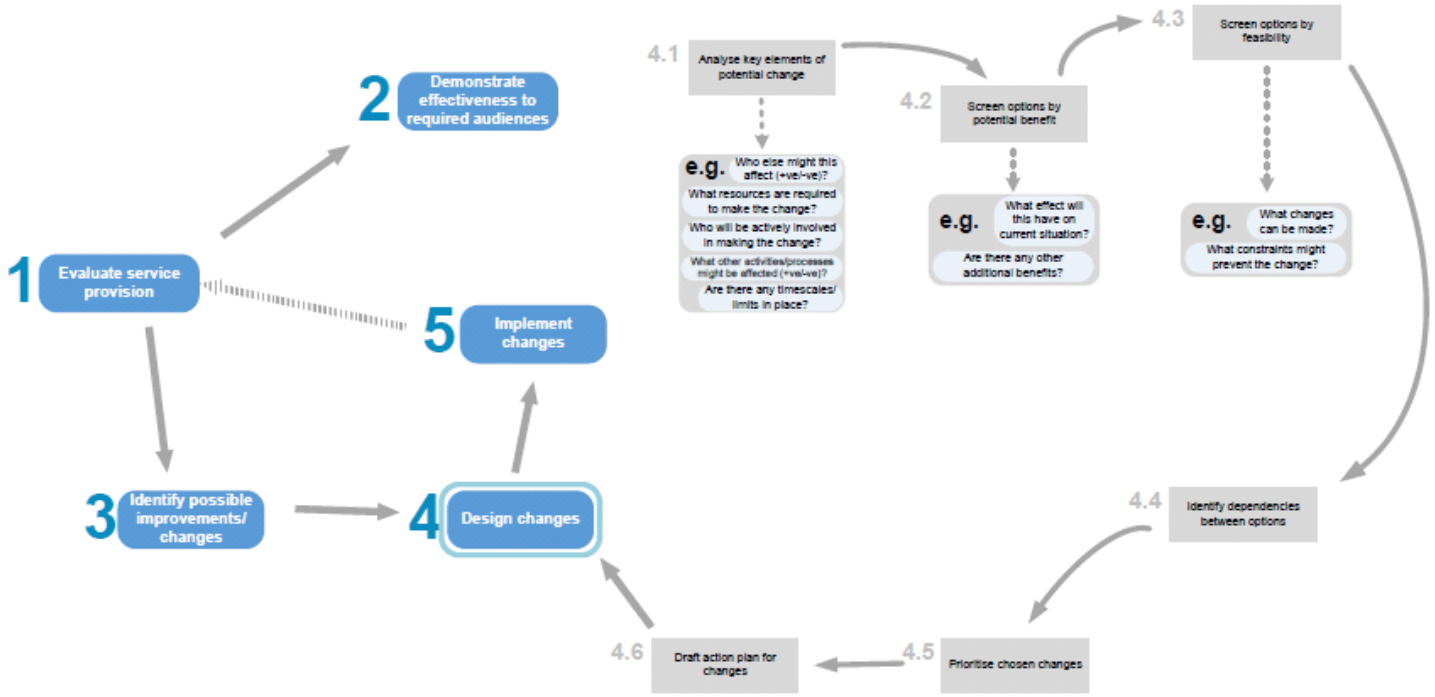


Sublevel 4: Definition of Objective

Do [What?]: Design changes & improvements

By [How?]: Identifying and analysing potential changes for feasibility & benefit

In order to [Why?]: Implement changes to improve provision of therapy



Appendix G: Information Sheets Provided for Participants

Q. What is the purpose of the project?

A. The has been funded with the intention of supporting the development of the knowledge exchange capabilities with mental health and wellbeing operations. Work is being carried out with a number of pilot sites across One aspect of the work is to understand clinicians' perceptions and experiences around accessing, making use of and producing research evidence. To this end, we have organised a focus group discussion with clinicians.

Q. Who else maybe taking part in this project?

A. Mental health clinicians and managers working for Academics or researchers currently or recently involved in work in

Q. Why have I been chosen to take part?

A. You have been chosen to take part because your service/team has applied to participate as a pilot site.

Q. Do I need to agree to this?

A. No. It is up to you to decide whether or not you will take part. If you do decide to take part you are always free to withdraw, at any time and without giving any reason.

Q. What will happen to me if I decide to take part?

A. You will be asked to take part in a focus group discussion. This will cover your views and experience of using research evidence. This focus group, with your permission, will be audio-taped.

Q. Are there any possible disadvantages and risks of taking part?

A. Taking part may lead to a loss of time in terms of taking part in the group.

Q. What are the possible benefits of taking part?

A. You will gain the opportunity to reflect on your practice with your peers and to influence the development of new resources mental health clinicians.

Q. Will my participation be confidential?

A. All information that is collected will be kept strictly confidential. All material will be stored in a locked filing cabinet or on a password protected desktop computer. All material will be stored under an anonymous name. Only team members will have access to this material. Names, addresses and any potentially identifying features will be removed from any presented results of the

project. You will not be identified in any report/publication. Confidential material will be physically destroyed when it is no longer required.

Q. How will any information be used?

A. Information from the focus group will be used primarily to inform decisions and plans made within the cluster group. Additionally it may be used in postgraduate research, for educational purposes or in reports submitted for publication. Strict confidentiality criteria will be applied at all times.

Q. Who is organising and funding the research?

A. The project is funded jointly by . The research is being carried out by a collaboration of researchers and clinicians from Queen Margaret University and the University of Stirling.

Appendix H: Demographic Data Form

Thank you for answering the following questions:

- Which diagnostic groups do you currently treat? _____

- Where do you work?

  Inpatient Unit 1
  Outpatient Clinic 2
  Community Setting 3

- How long have you been working as a mental health clinician?

  <1 year 1
  1-4 years 2
  5-10 years 3
  >10 years 4

- What is your current employment status?

  Employed full time 1
  Employed part time 2

- What is the highest grade or level of formal education you have completed? E.g

  Diploma (DPM etc) 1
  Bachelors (BM, BCh, BSc BPharm etc) 2
  Maters (MSc, MClinPscyhol, MPhil etc) 3
  PhD 4
  Prof Doc 5
  Other *(please note below)* 6

  _____

- What is your job title? Please use the space below.

Appendix I: Informed Written Consent Form

Written Agreement Form

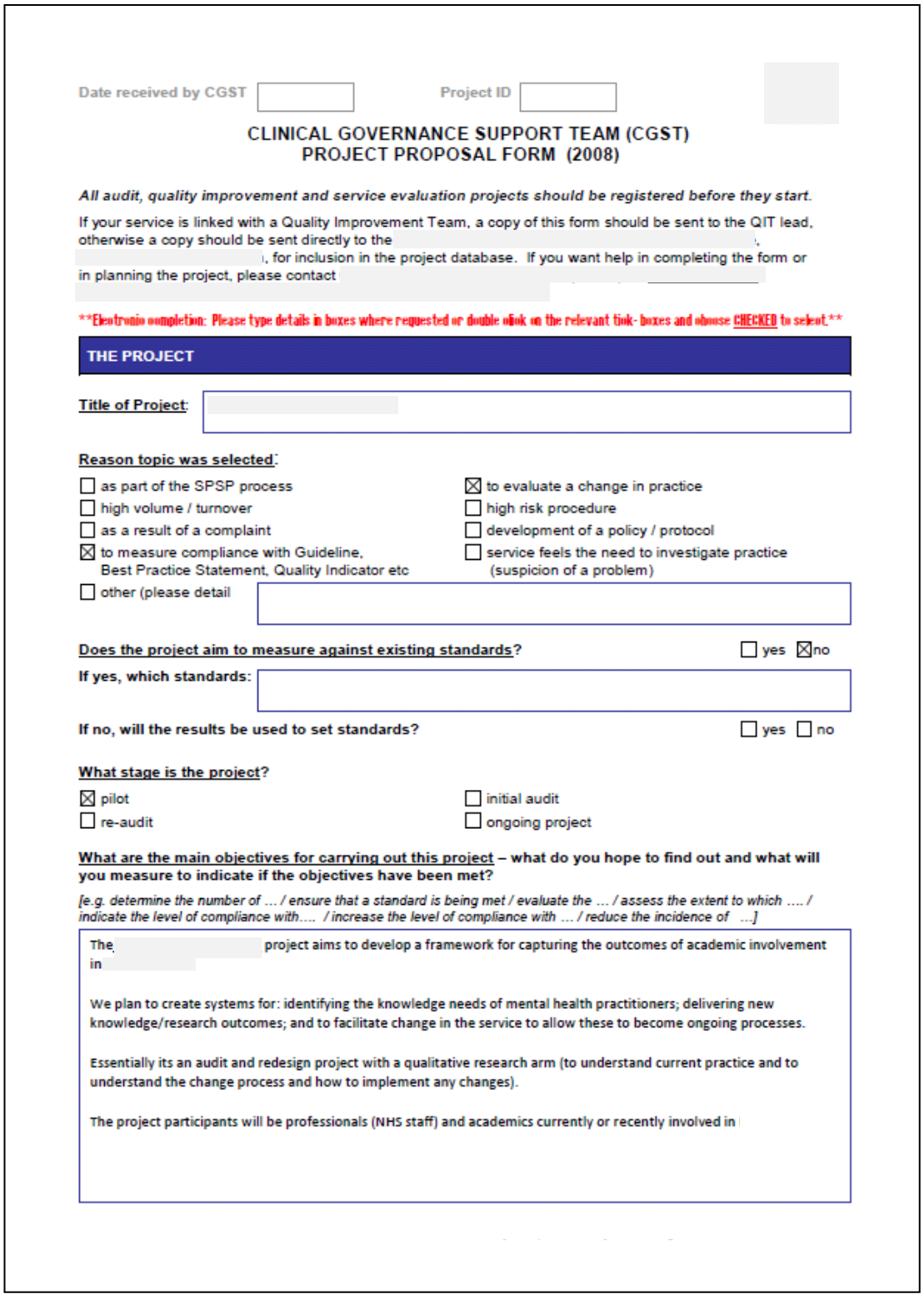
Contact:

Duncan Pentland
Queen Margaret University
Edinburgh
EH21 6UU
(0131) 474 0000
dpentland@qmu.ac.uk

1.	I confirm that I have read and understand the information letter and have had the opportunity to ask questions.	☐
2.	I understand that I am free to withdraw at any time, without giving any reason.	☐
3.	I agree to take part in this Cluster.	☐
4.	I agree to be audio-taped	☐
5.	I agree to the recorded material being used, if required, for educational purposes, further research, or for postgraduate study.	☐

Your name	Date	Signature
Witness	Date	Signature

Appendix J: Ethical Application to NHS Clinical Governance Support Team



Date received by CGST [ ] Project ID [ ]

CLINICAL GOVERNANCE SUPPORT TEAM (CGST)
PROJECT PROPOSAL FORM (2008)

All audit, quality improvement and service evaluation projects should be registered before they start.

If your service is linked with a Quality Improvement Team, a copy of this form should be sent to the QIT lead, otherwise a copy should be sent directly to the , for inclusion in the project database. If you want help in completing the form or in planning the project, please contact

Electronic completion: Please type details in boxes where requested or double click on the relevant tick-boxes and choose CHECKED to select.

THE PROJECT

Title of Project:

Reason topic was selected:

- ☐ as part of the SPSP process
- ☐ high volume / turnover
- ☐ as a result of a complaint
- ☒ to measure compliance with Guideline, Best Practice Statement, Quality Indicator etc
- ☐ other (please detail)
- ☒ to evaluate a change in practice
- ☐ high risk procedure
- ☐ development of a policy / protocol
- ☐ service feels the need to investigate practice (suspicion of a problem)

Does the project aim to measure against existing standards? ☐ yes ☒ no

If yes, which standards:

If no, will the results be used to set standards? ☐ yes ☐ no

What stage is the project?

- ☒ pilot
- ☐ re-audit
- ☐ initial audit
- ☐ ongoing project

What are the main objectives for carrying out this project – what do you hope to find out and what will you measure to indicate if the objectives have been met?

[e.g. determine the number of … / ensure that a standard is being met / evaluate the … / assess the extent to which …. / indicate the level of compliance with…. / increase the level of compliance with … / reduce the incidence of …]

The project aims to develop a framework for capturing the outcomes of academic involvement in

We plan to create systems for: identifying the knowledge needs of mental health practitioners; delivering new knowledge/research outcomes; and to facilitate change in the service to allow these to become ongoing processes.

Essentially its an audit and redesign project with a qualitative research arm (to understand current practice and to understand the change process and how to implement any changes).

The project participants will be professionals (NHS staff) and academics currently or recently involved in

Has there been a literature search to check if anything similar has been done before? ☐ yes ☐ no
If yes, please detail:

PEOPLE INVOLVED IN THE PROJECT

Main audit / project contact:

Prof Kirsty Forsyth	Lecturer Occupational Therapy	(0131) 474 0000 kforsyth@qmu.ac.uk

Other staff involved in the project (e.g. supervisor)

Duncan Pentland Dr Donald MacIver Linda Irvine Dr Mike Walsh	(0131) 474 0000 dpentland@qmu.ac.uk (0131) 474 0000 dmaciver@qmu.ac.uk	KTP Associate Senior Research Fellow

Who does the project relate to? *(please give details)*

☒ ☐ one service / department ☐ other

Mental Health Services

Is the service linked with a Quality Improvement Team? ☐ yes ☐ no

If yes, which QIT? | Date approved by QIT dd / mm / yyyy

Approval
- ☐ approved without modification
- ☐ approved with minor changes / clarification
- ☐ approved with major changes
- ☐ not approved *(please give reasons*

Estimated start date: dd / mm / yyyy 01-10-09

Estimated completion date: dd / mm / yyyy 01-10-12

METHODOLOGY / DATA COLLECTION STRATEGY

Type of project :

☐ audit against standards ☐ baseline audit (no existing standards) ☐ satisfaction survey
☒ service evaluation ☐ other

Will the data collection involve:

QUESTIONNAIRE(s) to:	☐ patients / service users	☐ carers	☐ staff
INTERVIEW (s) with:	☐ patients / service users	☐ carers	☒ staff
FOCUS GROUPS with:	☐ patients / service users	☐ carers	☒ staff
CASE NOTE REVIEW:	☐		

INTERROGATION OF EXISTING DATA SOURCE (e.g. ISD data, already populated database) ☐

Will you be looking at: ☐ whole service population or ☒ a sample

What is the Service Population / Sample size?
(e.g. how many case-notes will be checked, questionnaires sent out?)

Interviews with 6-10 service providers and 6-10 academics.

Focus groups with 10-15 service providers and 10-15 academics.

Mapping workshops with 20-30 professionals (final sample numbers may vary depending on data saturation point).

Selection criteria:
Inclusion criteria:*(why are they included)*

Staff will be identified through negotiation with service leads

Exclusion criteria:*(what would exclude them from the study)*

Will the sample include any of the following?

- ☐ children under 16
- ☐ adults who have a terminal illness
- ☐ adults with mental illness
- ☐ adults with dementia
- ☐ adults with learning disabilities
- ☐ adults in emergency situations
- ☐ adults detained under the Mental Health Act
- ☐ any other vulnerable group
- ☐ those who could be considered to have a dependant relationship with the investigator
- ☐ healthy volunteers

If you answered YES to any of these groups, please justify their inclusion:

Is consent from patients required to carry out this project? ☐ yes ☒ no
If yes, please give details of how informed consent will be obtained

Could any aspect of the project cause potential distress to participants? ☐ yes ☒ no
(e.g. asking patients their opinions of services they may not have been happy with)
If yes, what considerations have been made to deal with this?

What considerations have been made for Equality & Diversity and accessibility (e.g. translation) **?**

Will data collection be:

☒ **concurrent** *(collecting data as the episodes occur)*

☐ **retrospective** *(e.g for episodes that have already happened and details are already recorded)*

If retrospective, where will data be found? *(e.g case-notes, clinic spreadsheet)*

Has permission been arranged to access the information? ☐ yes ☐ no

Who will collect the data?	Duncan Pentland
Who will enter the data?	Duncan Pentland
Who will analyse the data?	Duncan Pentland

Will any of the following be used in the analysis?

☐ Excel ☐ Access ☐ SPSS ☐ Zoomerang ☐ CRT Viewpoint (Opinion meter)

☐ SNAP ☒ Other NVIVO/NUD*IST

How will any patient data be anonymised?

N/A

Where will the data be stored during the project?

All confidential material, including recordings, paper copies of transcripts and back-up files will be kept in a locked filing cabinet. All sensitive electronic materials will be kept on a password protected PC on a secure network.

EXPECTED OUTCOMES

What potential changes to practice – in order to benefit patients or service users – might come about as a result of this project?

Challenges continue to exist around the use of evidence in practice with clinicians finding the application of published research and scholarship findings demanding and researchers' outcomes not necessarily being applicable, useable and accessible to the clinician. These are often the result of differences in focus, timeframes, workplace demands, language, and a lack of academic recognition for knowledge transfer activities.

Innovative Knowledge Exchange Projects have resulted in local initiatives to overcome these barriers. There is a need to review the knowledge use and production practices of and its academic partners with a view to creating a sustainable knowledge exchange system and set of tools enabling to become a learning organization that generates new knowledge of greater priority, relevance, practicality and transferability.

A range of both methodological expertise and new knowledge will also be developed in the course of the project and will be shared with the national community. This will include a) mapping workshops structures & facilitation, b) analytical techniques c) knowledge transfer systems and tools.

ASSISTANCE REQUIRED FROM CGST

☐ Project design
☐ Assistance with data entry
☐ Setting up a spreadsheet / database
☐ Support with report writing
☐ Training on Clinical Audit
☐ Sample identification
☐ Data collection form design
☐ Data analysis
☐ Presentation preparation
☐ Facilitating a group

REPORT

a) A formal report will be submitted to NHS QIS which will be available on the internet

b) The research team will also liaise with and QIS to develop a dissemination strategy across Scotland and the UK

c) The research team will attend and present at:

- National/International conference presentations
- National paediatric groups
- Peer reviewed journal articles

COMMITMENT AND SUPPORT *(printed names, signatures and dates)*

Project lead	
QIT lead	
CEF support	

Appendix K: University Application for Ethical Approval

Queen Margaret University

EDINBURGH

APPLICATION FOR ETHICAL APPROVAL
FOR A RESEARCH PROJECT

This is an application form for ethical approval to undertake a piece of research. Ethical approval must be gained for any piece of research to be undertaken by any student or member of staff of QMU. Approval must also be gained by any external researcher who wishes to use Queen Margaret students or staff as participants in their research.

Please note, before any requests for volunteers can be distributed, through the moderator service, or externally, this form MUST be submitted (completed, with signatures) to the Secretary to the Research Ethics Committee.

You should read QMU's chapter on "Research Ethics: Regulations, Procedures, and Guidelines" before completing the form. This is available at:
http://www.qmu.ac.uk/quality/rs/default.htm
Hard copies are available from the Secretary to the Research Ethics Committee.

The person who completes this form (the applicant) will normally be the Principal Investigator (in the case of staff research) or the student (in the case of student research). In other cases of collaborative research, e.g. an undergraduate group project, one member should be given responsibility for applying for ethical approval. For class exercises involving research, the module coordinator should complete the application and secure approval.

The completed form should be typed rather than handwritten. Electronic signatures should be used and the form should be submitted electronically wherever possible.

Applicant details

1. Researcher's name: Duncan Pentland

2. Researcher's contact email address: dpentland@qmu.ac.uk

3. Category of researcher (please tick and enter title of programme of study as appropriate):

QMU undergraduate student	
Title of programme:	
QMU postgraduate student – taught degree	

Title of programme:	
QMU postgraduate student – research degree	
QMU staff member – research degree	✓
QMU staff member – other research	
Other (please specify)	

4. School: Health Sciences

5. Subject Area: Occupational Therapy and Arts Therapies

6. Name of Supervisor or Director of Studies (if applicable): Prof Kirsty Forsyth

7. Names and affiliations of all other researcher who will be working on the project:

Research details

8. Title of study:
Integrating knowledge transfer, knowledge exchange and systems thinking for successful evidence based practice: a multiple case study in mental health

9. Expected start date: August 1st 2010

10. Expected end date: August 1st 2011

11. Details of any financial support for the project from outside QMU: Funded by NHS Lothian and the KTP programme.

12. Please detail the aims and objectives of this study (max. 400 words)

This study aims to explore the mechanisms needed to facilitate health professionals' efforts in evidence based practice by integrating knowledge transfer and exchange activities into their routine operations, and specifically the experience of using systems thinking to guide and structure these processes.

Its objectives are to understand what is required to enable mental health professionals to integrate systems thinking approaches to undertaking knowledge transfer and knowledge exchange activities; the activities thats typically need to occur to enable successful knowledge transfer, exchange and application in practice.

Furthermore it seeks to explore whether using a systems approach helps to identify the factors that will support or impede these activities and if there are any factors that are common across the three processes.

Methodology

13. Research procedures to be used: *please tick all that apply*.

	Tick if applicable
Questionnaires (*please attach copies of all questionnaires to be used*)	
Interviews (*please attach summary of topics to be explored*)	
Focus groups (*please attach summary of topics to be explored / copies of materials to be used*)	✓
Experimental / Laboratory techniques (*please include full details under question 14*)	
Use of email / internet as a means of data collection (*please include full details under question 14*)	
Use of questionnaires / other materials that are subject to copyright (*please include full details under question 14 and confirm that the materials have been / will be purchased for your use*)	
Use of biomedical procedures to obtain blood or tissue samples (*please include full details under question 14 and include subject area risk assessment forms, where appropriate)*	
Other technique / procedure (*please include full details under question 14*)	✓

14. Briefly outline the nature of the research and the methods and procedures to be used (max. 400 words).

The study will be an exploratory multiple case study with a core of qualitative components. Three cases will be involved, each a mental health service or team involved in efforts to develop their effectiveness at completing either knowledge transfer, knowledge exchange or knowledge application activities. Each of these cases is attempting to employ soft systems thinking in these efforts. As a multiple case study design is proposed, the opportunity to collect data from a variety of sources is available. These include focus groups and written narrative feedback, documentary analysis and participant-observation.

15. Does your research include the use of people as participants? *Please delete as appropriate.* **Yes**

16. Does your research include the experimental use of live animals? *Please delete as appropriate.* **No**

17. Does your research involve experimenting on plant or animal matter, or inorganic matter? *Please delete as appropriate.* **No**

18. Does your research include the analysis of documents, or of material in non-print media, other than those which are freely available for public access? *Please delete as appropriate.* **No**

19. **If you answered 'Yes' to question 18**, give a description of the material you intend to use. Describe its ownership, your rights of access to it, the permissions required to access it and any ways in which personal identities might be revealed or personal

information might be disclosed. Describe any measures you will take to safeguard the anonymity of sources, where this is relevant:

20. Will any restriction be placed on the publication of results? *Please delete as appropriate.* **No**

21. If you answered 'Yes' to question 20, give details and provide a reasoned justification for the restrictions. (See Research Ethics Guidelines Section 2, paragraph 7)

This text box will expand as required.

22. Will anyone except the named researchers have access to the data collected? *Please delete as appropriate.* **No**

23. Please give details of how and where data will be stored, and how long it will be retained for before being destroyed. (See Research Ethics Guidelines Section 1, paragraph 2.4.1)

Data will be stored in locked file cabinets or on password encrypted desk-top computers. Data will be retained until the end of the funded research period at which point it will be destroyed (September 1st 2012).

24. Please highlight what you see as the most important ethical issues this study raises (eg. adverse physical or psychological reactions; addressing a sensitive topic area; risk of loss of confidentiality; other ethical issue. If you do not think this study raises any ethical issues, please explain why).

There may be some loss of clinical time to participants participating in the focus groups if it is not possible to align these with existing on-clinical work streams or allocated CPD time.

25. If you have identified any ethical issues associated with this study, please explain how the potential benefits of the research outweigh any potential harms (eg. by benefiting participants; by improving research skills; other potential benefit).

Any loss of clinical time during the research process should be mitigated by the probable outcomes of the project including: information that can contribute to overall service improvement; opportunities for personal and professional skill and knowledge development.

Any loss of clinical time will be negotiated and agreed with participants' operational managers.

Protection for the Researcher

26. Will the researcher be at risk of sustaining either physical or psychological harm as a result of the research? *Please delete as appropriate.* **No**

27. If you answered 'Yes' to question 26, please give details of potential risks and the precautions which will be taken to protect the researcher.

Research Involving Human Participants

You should only complete this section if you have indicated above that your research will involve human participants.

28. Please indicate the total number of participants you intend to recruit for this study from each participant group:

Participant Group	Please state total number
QMU students	
QMU staff	
Members of the public from outside QMU	
NHS patients	
NHS employees	40 max
Children (under 18 years of age)	
People in custody	
People with communication or learning difficulties	
People with mental health issues	
People engaged in illegal activities (eg. illegal drug use)	
Other (please specify):	

* *Please declare in section 32 where the participant group may necessitate the need for standard or enhanced disclosure check*

29. Please state any inclusion or exclusion criteria to be used. (See Research Ethics Guidelines Section 1, paragraph 2.4)

Participants within each site will be selected due to their involvement in the SSM process. As this process focuses on enabling all those individual which have an interest in the situation under scrutiny, no other restrictions will be in place. Healthcare systems are made up of many clinical, ancillary, administrative and management functions, services, groups and individuals. The soft systems approach understands that the provision of health services is a result of complex interactions and relationships that continually occur amongst these elements. Arbitrarily excluding potential participants from the SSM process risks omitting valuable insight and information and potentially reduces the quality of information that can be generated.

30. Please give details of how participants will be recruited:

Participants will be purposively recruited from three sites from a NHS health board in Scotland provide data. The sites have also been chosen to generate data from a variety of services with contrasting characteristics such as services comprised of single professions or multidisciplinary teams, institutionally or community based services, and specialist or more general service provision. Potential participants will be identified for recruitment through discussion and negotiation with operational managers and lead clinicians to ensure that those identified are relevant to and involved in the processes under investigation.

31. Please describe how informed consent will be obtained from participants. (See Research Ethics Guidelines Section 1, paragraphs 2.1.2 – 2.1.5)

Potential participants will be provided with information sheets in advance of data collection sessions. These outline the title and aim of the study, the potential benefits of the research results, what their involvement will constitute, who will be conducting the research and who their supervisor is. This sheet also indicates that the steps taken to ensure confidentiality. Informed consent based on this information sheet and a verbal reiteration at the start of each session during which data may be collected will be recorded in writing on a consent form. This will indicate their understanding that they are free to withdraw at any time without giving a reason, that they agree to be audio-taped and that they confirm their understanding of the information outlined in the information sheet. It also indicates their agreement that the recorded material may be used for educational purposes with postgraduate students participating in the research.

32. Ethical Principles incorporated into the study (*please tick as applicable*):

	Tick as applicable
Will participants be offered a written explanation of the research?	✓
Will participants be offered an oral explanation of the research?	✓
Will participants sign a consent form?	✓
Will oral consent be obtained from participants?	✓
Will participants be offered the opportunity to decline to take part?	✓
Will participants be informed that participation is voluntary?	✓

Will participants be offered the opportunity to withdraw at any stage without giving a reason?	✓
Will independent expert advice be available if required?	✓
Will participants be informed that there may be no benefit to them in taking part?	✓
Will participants be guaranteed confidentiality?	✓
Will participants be guaranteed anonymity?	✓
Will the participant group necessitate a standard or enhanced disclosure check?	
Will the provisions of the Data Protection Act be met?	✓
Has safe data storage been secured?	✓
Will the researcher(s) be free to publish the findings of the research?	✓
If the research involves deception, will an explanation be offered following participation?	
If the research involves questionnaires, will the participants be informed that they may omit items they do not wish to answer?	
If the research involves interviews, will the participants be informed that they do not have to answer questions, and do not have to give an explanation for this?	
Will participants be offered any payment or reward, beyond reimbursement of out-of-pocket expenses?	

Declarations

33. Having completed all the relevant items of this form and, if appropriate, having attached the Information Sheet and Consent Form plus any other relevant documentation as indicated below, complete the statement below.

- I have read Queen Margaret University's document on "Research Ethics: Regulations, Procedures, and Guidelines".

- *In my view* this research is:

See Research Ethics Guidelines Section 6	*Please tick*
Non-invasive	✓
Minor invasive using an established procedure at QMU	
Minor invasive using a NEW procedure at QMU	
Major invasive	

- I request Ethical Approval for the research described in this application.

Name *(if you have an electronic signature please include it here)*

_____ Date _____

Documents enclosed with application:

Document	**Enclosed (please tick)**	**Not applicable**

		(please tick)
Copy of consent form(s)	✓	
Copy of information sheet(s)	✓	
Sample questionnaire		✓
Example interview questions		✓
Copy of proposed recruitment advert(s)		✓
Letters of support from any external organisations involved in the research		✓
Evidence of disclosure check		✓
Subject area risk assessment documentation		✓
Any other documentation (please detail below)		✓
Focus group discussion topics	✓	
Demographic information sheets	✓	
Narrative feedback forms for focus group participants	✓	

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34. If you are a student, show the completed form to your supervisor/Director of Studies and ask them to sign the statement below. If you are a member of staff, sign the statement below yourself.

- I am the supervisor/Director of Studies for this research.
- *In my view* this research is:

See Research Ethics Guidelines Section 6	Please tick
Non-invasive	
Minor invasive using an established procedure at QMU	
Minor invasive using a NEW procedure at QMU	
Major invasive	

- I have read this application and I approve it.

Name *(if you have an electronic signature please include it here)*

_____ Date _____

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35. For all applicants, hand the completed form to your Head of Subject or Head of Research Centre or, if you are an external researcher, submit the completed form to the Secretary to the QMU Research Ethics Committee. **You should not proceed with any aspect of your research which involves the use of participants, or the use of data which is not in the public domain, until you have been granted Ethical Approval.**

Appendix L: Research Ethics Service Letter of Advice

[redacted]

Name: Duncan Pentland
Address: Occupational Therapy
& Arts Therapies
Queen Margaret University
Edinburgh
EH21 6UU

Date: 23/09/2009
Your Ref:
Our Ref:
Enquiries to:
Extension:
Direct Line:
Email:

Dear Duncan,

Full title of project:

You have sought advice from the Research Ethics Service on the above project. This has been considered by the Scientific Officer and you are advised that, based on the submitted documentation , it does not need NHS ethical review under the terms of the Governance Arrangements for Research Ethics Committees in the UK. The advice is based on the following

- *The project is an opinion survey seeking the views of NHS staff and the public at large on service delivery.*
- *The project is an opinion survey seeking the views of NHS staff and the public at large on a service development*

If this project is being conducted within you should inform the relevant local Quality Improvement Team(s).

Please note that this advice is issued on behalf of the Research Ethics Service and does not constitute a favourable opinion or an endorsement from a Research Ethics Committee. It may be provided to journal editors, conference organisers or others who require evidence of consideration of the need for ethical review prior to publication or presentation of your results. If you wish you may still decide to apply to a REC, but note that a retrospective ethical opinion cannot be given.

You should retain a copy of this letter with your project file as evidence that you have sought advice from the Research Ethics Service.

Yours sincerely,

[redacted]

Scientific Officer
Research Ethics Service

Enclosure: NRES leaflet – "Defining Research"

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