Developing evidence-based and acceptable stepped care systems in mental health care: an operational research project

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Glossary of terms/abbreviations

cCBT	Computerised Cognitive Behavioural Therapy
CBT	Cognitive Behavioural Therapy
CMHT	Community mental health team
CORE	Clinical Outcomes for Routine Evaluation
CSIP	Care Services Improvement Partnership
GMHW	Graduate mental health worker
GP	General Practitioner
HI	High-intensity
IAPT	Improving Access to Psychological Therapies
IMD	Indices of multiple deprivation
LI	Low–intensity
MRC	Medical Research Council
MREC	Multicentre Research Ethics Committee
MS	Microsoft
NHS	National Health Service
NICE	National Institute for Health and Clinical Effectiveness
NIMHE	National Institute for Mental Health in England
NSF	National Science Foundation
OCD	Obsessive Compulsive Disorder
PATS	Psychological assessment and treatment service
PCMHT	Primary care mental health team
PCMHW	Primary care mental health worker
PCT	Primary Care Trust
PHQ9	Patient Health Questionnaire 9
PTSD	Posttraumatic stress disorder
UCL	University College London
VBA	Visual Basic for Application

Acknowledgements

We would like to acknowledge the contribution of the NHS clinical staff, patients, managers and commissioners who were involved in our four initial NHS clinical service sites. We would also like to thank those managers and clinicians who tested the modelling tool.

Grateful thanks are owed to all the participants in our qualitative interviews and focus group. We are also grateful for the diligence of our site-based NHS audit clerks who collected and collated the data on patient throughputs.

Final thanks are due to Kerry Cipriano and Joanne English who provided administrative support at the University of York and University College London respectively.

Executive Summary

Background

Around 16% of the adult population experience depression and anxiety in any one year, with common or 'high-prevalence' mental health problems constituting 97% of the total population prevalence. However, the majority of spending in mental health is undertaken by specialist health care providers to deliver care for people with serious mental health problems such as psychosis. Despite patient preference and recommendations in guidelines for anxiety disorders and depression, access to evidence-based psychological treatments is poor. Clinical guidelines recommend stepped care – a system of delivering and monitoring treatments so that the most effective yet least resource-intensive treatment is delivered to patients first – as the means by which resources should be husbanded towards efficient and effective service delivery. However, whilst stepped care offers the potential to make systems more efficient, the optimal configuration of system elements is unknown and although apparently of inherently good sense, there is a lack of specific empirical evidence for stepped care *per se* and the specific system configurations required.

Aims

The aims of the project were to:

- design effective and efficient stepped care systems for psychological therapies in a variety of settings through stakeholder consensus exercises, facilitated by computer modelling to forecast patient throughputs, waiting times and capacity needs;

- investigate the effect of implementing these systems on patient access, throughputs, clinical outcomes and patient choice;

- identify barriers to the implementation of stepped care;

- investigate the generalisability of the reconfiguration process including the utility of an implementation manual and computer modelling tool.

Methods

We took an overarching operational research (OR) approach to this study, using multiple methods within a broad health services research paradigm. We used a specific method of consensus development – the constituency approach – to help sites frame their problems and develop a shared picture of stepped care service designs they were going to develop.

We used data generated by these initial systems to develop a computerised modelling framework to help NHS sites estimate the number of people receiving care at each step within a stepped care system over time and the number of people leaving the service via various exit points. We developed a stand alone CDROM reconfiguration software tool and accompanying user manual in MS Excel with extensive use of Visual Basic for Application (VBA) routines.

We used qualitative interview techniques to help us understand the experiences of the first four sites to extract information on the likely barriers to stepped care reconfiguration in the NHS.

We then disseminated the CDROM stepped care reconfiguration tool and manual across additional NHS sites in England and used further interviews to investigate their use of the tool. All sites were asked to give qualitative feedback on the tool and manual and the context within which it was used.

Results

We successfully used the consensus development process to clarify the specifics of all four sites' aspirational service model and to help them move from their current situation to new stepped care structures. The service models developed were extremely diverse.

Data collected from these sites for our modelling showed that the principle driver of patient flow through stepped care systems was allocation to initial treatments. Service performance was additionally influenced by triage, resource constraints, access points and staff role. Rates of stepping patients up from low- to high-intensity treatment were consistent across three sites but lower where few high-intensity resources were available.

Barriers to change included: staff resistance to the prescriptive nature of stepped care and the degree of professional clinical scrutiny required in stepped care systems; uncertainties about the exact format of the low-intensity clinical methods; the requirement for adequate resources to be present in all steps; and managing the change process of introducing a new workforce and reassigning traditionally qualified professional workers.

Data from the four sites were incorporated into the modelling tool. Additional sites experienced great difficulty using the tool due to a rapidly changing context, principally the national Improving Access to Psychological Therapies initiative. Sites were constrained by the need to follow a centrally determined, prescriptive organisational model and the rapidity of its implementation.

Conclusions

Stepped care as implemented by different NHS sites will vary greatly in structure and design according to different site contexts. Prescriptive

national initiatives should incorporate local modelling to translate national prescriptions to specific situations.

NHS managers and clinical leaders do not find it easy to utilise stand-alone operational research modelling tools and require brief training and support for them to effectively use planning tools. In contrast, a supported consensus development method can be used to design new service configurations.

Stepped care is a 'complex intervention' with multiple clinical and organisational components which requires further investigation through the stages of the MRC's Complex Intervention Research Framework.

The Report

Introduction

Background

In the first five years of the 21st century, concern about an epidemic of anxiety and depression in Western societies entered the cultural Zeitgeist (Centre for Economic Performance, 2006; James, 2007; Lawson, 2007). Despite the increasing economic affluence in the last 30 years, the prevalence of anxiety and depression shows no sign of reduction (Layard, 2005). Prevalence estimates from around the globe suggest that around 16% of the adult population experience depression and anxiety in any one year, with common or 'high-prevalence' mental health problems constituting 97% of the total population prevalence (Andrews & Tolkein II Team, 2006; Kessler et al., 2003; McManus et al, 2009). The worldwide disability caused by such difficulties is highly significant (Johnson, Weissman, & Klerman, 1992; World Health Organisation, 2001), second only to ischaemic heart disease (World Health Organization 2005). In Australia, for example, it is estimated that at least 50% of days lost to disability through all types of mental illness are caused by the experience of depression or anxiety (Andrews, Henderson, & Hall, 2001). In the UK, it has been identified that there is an annual cross subsidy of £7–10 billion on social security benefit payments to cover the unemployment costs for people with high-prevalence mental health disorders (Centre for Economic Performance, 2006). Unfortunately, attempts to treat depression have shown that clinical outcomes for pharmacological and psychological treatments for depression are at best modest (National Institute for Clinical Excellence, 2009), particularly in the long-term where relapse rates of 60% within 1 year of recovery are commonly reported.

These global concerns are being reflected in programmes of research and treatment service planning to increase access and effectiveness of mental health care for people with high-prevalence disorders worldwide. For example, in the USA, there is a large effort to improve the access to and effectiveness of primary care treatments for depression by developing and implementing programmes of 'collaborative care' (Katon et al., 1999; Simon, 2006; Wells et al., 2000). In Canada and elsewhere, 'peer support' initiatives are being developed (Dennis, 2003; Lawn, 2007). In Australia, access to psychological therapies has been incorporated into routine health care through managed care systems in the 'Better Outcomes' programme (Hickie & Groom, 2002; Hickie, Pirkis, Blashki, Groom, & Davenport, 2004; Pirkis et al., 2006) and via Medicare reimbursement allowances for psychological therapies in the 'Better Access' scheme (Australian Government Department of Health and Ageing, 2006). In Europe, similar concerns have led to the funding of large programmes of research into

depression management strategies (Aragones et al., 2007; Gensichen et al., 2005; Ijff et al., 2007; Richards et al., 2008; 2009). This worldwide activity consists of different strategies to improve access to treatment by changing the organization of care, the availability of treatment, and the choice of therapies for people with depression and anxiety disorder.

In most countries worldwide, the majority of spending in mental health is undertaken by specialist health care providers to deliver care for people with serious mental health problems such as psychosis (World Health Organization 2001). However, these conditions are relatively rare, whereas depression and anxiety are extremely common. In depression, although 5-10% of the population experience depression annually, only half are likely to present, be recognised and receive a diagnosis (Simon & Von Korff 1995). Only half of people presenting and being recognized with common mental health problems receive any treatment for their difficulties, mostly in the form of medication (20 per cent). No more than 10% of such people received psychological treatments for their problems and only one in two of these (5% of the total disorder prevalence) had access to a psychological treatment with at least some kind of evidence base (McManus et al, 2009). Not only is this due to a lack of trained personnel but also through the inflexibility of traditional organisational delivery systems (Lovell & Richards, 2000).

Despite priority recommendations in the National Institute for Clinical Effectiveness (NICE) guidelines for anxiety disorders and depression (e.g. NICE, 2007, 2009), sufficient numbers of recommended treatments are not delivered by services as they are currently configured and funded (Bebbington et al., 2000; McManus et al, 2009).

Access

Access has been conceptualised to consist of several interlinked sub-concepts, namely: availability; utilisation; effectiveness; equity (Gulliford et al. 2001). To these four elements one might also add a caveat that services should be efficient and patient-centred.

In essence, we now conceive of access to be more than just availability – i.e. sufficient services funded so that there is an adequate supply. These services should also be utilised by those for whom they are intended. Utilisation depends on the extent to which services are physically accessible, their cost and their acceptability to those that they are designed for. Access is also about access to health, rather than merely access to services. Therefore, these services should actually work – be effective. There is little point in providing interventions which on balance are not effective, or less effective than other alternatives.

There are many barriers to utilisation which threaten equity and operate in a discriminatory manner. Some groups in society may feel that services designed for the mainstream are inaccessible to them. Whilst cultural sensitivity is one important design criteria, ill-thought out services may, for example, deny people with visual or mobility needs the access that they too

need. Finally, efficiency means that both individuals and whole populations should benefit by treatment being delivered in the most cost-effective manner whilst patient-centredness refers to services which reflect people's choices.

Some of these criteria may appear competing. In particular, an efficient service which delivers most of its interventions over the telephone may appear to deny patients choice. Shorter treatments may appear to disadvantage an individual patient, whilst at the same time allowing a larger group of people access. Such concerns may preoccupy commissioners, managers and particularly clinicians.

Organising the Delivery of Mental Health Care in Primary Care to People with Common Mental Health Problems

The structure of mental health care in primary care is generally understood in terms of the 'pathways to care' model (Goldberg & Huxley, 1980), where accessing mental health care involves passing through a series of levels and filters between the community and specialist care. The pathways model highlights the importance of the primary care professional, whose ability to detect disorder in presenting patients and refer to specialist care appropriately represent key stages in the pathway.

To meet the needs of patients with common mental health problems, four broad models have been described (Bower & Gilbody, 2005a). Although the models differ in important ways, a key issue is the degree to which the primary care professional takes the lead responsibility for the management of common mental health problems in each model. The more that a service delivery model requires input from specialist mental health professionals, the more potential for problems with access, efficiency and equity, because specialists are relatively rare and expensive and their input cannot be easily made available for all patients.

Two of these models have received significant research attention. The first model (*education and training*) involves the provision of knowledge and skills concerning mental health care to primary care professionals (Kerwick & Jones, 1996). Generally, this has focussed on improving recognition of common mental health problems and appropriate prescribing of medication. Training can involve widespread dissemination of guidelines, or more intensive practice-based education seminars (Gilbody *et al.,* 2003).

The second model *(replacement referral)* is very different. In this model the primary responsibility for the management of the common mental health problems is passed to a psychological therapy practitioner (such as a counsellor or clinical psychologist). The workforce expansion of counsellors in UK primary care in the 1990s was a result of the enthusiastic adoption of this model (Mellor-Clark *et al.,* 2001).

Education and training models score highly on *access, efficiency* and *equity*, because changing the behaviour of primary care professionals has the potential to impact on *all* patients with common mental health problems in

primary care (Bower & Gilbody, 2005a). However, this model scores low on *effectiveness* and *patient-centredness*. Although there is good evidence that medication itself is effective, trials of interventions to change GP recognition and prescribing behaviour have generally failed (Thompson *et al.,* 2000; Gilbody *et al.,* 2003). Furthermore, patient attitudes to medication are often negative (Priest *et al.,* 1996; Khan *et al.,* 2007), which means that their preferences are not being met.

In contrast, the psychological therapy referral model scores highly on effectiveness and patient-centredness. Psychological therapies such as cognitive behaviour therapy (CBT) are effective (Churchill *et al.,* 2002) and as effective as pharmacological agents in depression (NICE, 2009) and recommended over medication in most anxiety disorders (NICE 2007, 2004a). There is some evidence too that many patients would like at least the choice of 'talking treatments' if not an outright preference for them (Bird, 2006; NICE, 2007; 2009). However, effectiveness and patient-centredness come at a price. The direct healthcare costs associated with employing a psychological therapist are potentially more expensive than a prescription for medication. Because of the prevalence of common mental health problems and the finite number of psychological therapists, demand also far exceeds supply. Replacement-referral models (Richards, Bower and Gilbody, 2009) are, therefore, regarded as clinically effective and patient-centred (Churchill *et al.,* 2002) but create problems with access and efficiency (McManus et al, 2009). They usually require expensive workers and patients sometimes have to negotiate stringent referral and suitability barriers before gaining access. These models only really work well for those patients that successfully transit across the border between referrer and recipient provider of care. Therefore access remains poor, efficiency may be compromised and equity threatened.

Stepped care

Internationally, many clinical guidelines recommend stepped care as the means by which resources should be husbanded towards efficient and effective service delivery (Andrews & Tolkein II Team, 2006; NICE, 2007; 2009). Stepped care is a variation on the traditional 'replacement-referral' system where patients are referred from primary care to a specialist when the primary care health worker does not possess the resources or expertise to deliver the required treatment (Bower and Gilbody, 2005b). It is an attempt to modify the psychological therapy referral model in such a way that the benefits (i.e. effectiveness and patient centredness) are maintained, while its problems (i.e. access and efficiency) are minimised.

Stepped care – a system of delivering and monitoring treatments so that the most effective yet least resource-intensive treatment is delivered to patients first (Davison, 2000) – is recommended in NICE guidelines (NICE, 2007; 2009) as the method by which scarce resources should be most efficiently delivered to provide accessible and effective treatments. Such systems seek to enhance the efficiency of service delivery by providing low intensity 'minimal interventions' to a proportion of patients in the first

instance, before providing more intensive treatment to those that do not improve with the first step. Routine and scheduled monitoring of patient outcomes is a critical aspect of stepped care, allowing treatments to be stepped up should this be required. The most common 'minimal interventions' are those less dependent on the availability of therapists, and focus on patient-initiated use of evidence-based 'health technologies' (Richards et al, 2002) including books (Marrs, 1995), video- and audiotapes (Blenkiron, 2001), computer programmes (Proudfoot et al, 2004) and internet sites (Christensen, Griffiths and Jorm, 2004), facilitated by new workers such as graduate mental health workers or existing workers with new roles, such as nurses, psychologists and counsellors. Other steps can include brief interventions, group interventions and one-to-one psychological therapy, all requiring different levels of psychological therapies skill and a rich mix of appropriately trained personnel.

Stepped care (Haaga, 2000) has two main principles, therefore:

1. The principle of 'Least Burden': treatments received by patients should be the least restrictive possible whilst achieving the required outcomes. This means that the treatment should burden the patient and the health care system as little as possible on the way towards a positive clinical outcome (Sobell & Sobell, 2000). Such a principle underpins most other health care interventions where, for example, a non-invasive diagnostic or therapeutic procedure may be preferred by patients and health care providers alike over more invasive alternatives.

2. The principle of 'Self-Correction': stepped care should have a feedback system of programmed review at clinically relevant intervals whereby the intensity of treatments can be adjusted. If minimal interventions such as guided self-help are not working there must be a system in place to detect this, which in turn leads to alternative more intensive treatments being offered (such as conventional psychological therapy). Unfortunately, in many existing cases clinical decision making is conducted in an ad hoc, un-systematic and subjective manner. Stepped care systems put a systematic mechanism in place to feed into clinical decision making, informed by objective measures of patient outcome.

The two stepped care principles exist in a dynamically fluid relationship. Without self-correction, stepped care merely becomes a menu of low-intensity, low-burden treatments. Without low burdensome treatments, stepped care reverts to an undifferentiated replacement referral system. However, the proportions of people who should be receiving low- and/or high intensity CBT, or both, in a stepped care system is largely guesswork.

Clinical evaluation can be applied at two stages in stepped care. 1) Patients may be assessed and allocated to different treatments; 2). Subsequent reviews of patient progress may step patients up to another more intensive treatment. In reality, stepped care systems are a balance these two decision making points although individual systems occupy different places on the allocation-stepping continuum. Allocation systems judge the response patients will most likely make to the low- and high-intensity

treatments available at different steps and allocate them accordingly. Stepped systems offer all patients a minimal intervention as the initial step in a treatment programme and step up patients to interventions of greater intensity if they do not benefit from the initial minimal intervention.

The extremes of both systems have potential risks and benefits. A 'stratified' approach assesses patients and allocates some to either minimal or conventional interventions. However, assessments are of potentially limited accuracy for at least two reasons. One, in mental health both false positives and false negatives are more common than in other areas of health care since biological markers or other means of objectively assessing signs and symptoms are largely absent. Despite diagnostic categories, identification of mental health problems requires interview techniques which help patients describe their subjective experiences and these are never going to be as accurate as a system of observable signs and symptoms. Indeed, the latest NICE guidelines for depression (NICE, 2009) recommends that symptom counts alone are not used to allocate patients to treatment steps. Secondly, initial allocation requires some judgement to be made as to the likely response patients will make to the treatments available at different steps – so called 'aptitude treatment interaction' (Sobell and Sobell, 2000). Unfortunately, factors such as severity of disorder, chronicity and disability are unreliable indicators of *individual* patient response to treatment. Furthermore, workers familiar with operating conventional services may err on the side of caution and favour more intensive treatment without attempting to deliver a minimal intervention first. Such a risk-averse approach could negate the potential efficiencies of the system as a whole. Indeed, one published review (Bower & Gilbody 2005b) has warned that significant resources may be inappropriately consumed if large numbers of patients are allocated to high-intensity treatments without the option of a LI treatment first.

In contrast, the potential dangers of stepped models are that some patients may potentially undergo unnecessary and unsuccessful LI treatment. As a consequence, a stepped model runs the risk of prolonging waits for higher intensity treatments by requiring all patients to spend some time trying a minimal intervention. If patients who would benefit from a more intensive therapy are not recognised, they may be inappropriately treated. Paradoxically this may inappropriately extend the duration of their contact with services, once again compromising system efficiency. Worse, some commentators fear that inappropriate LI treatment may lead some patients to drop out of therapy and may deter others from further treatment (Kellett & Matthews 2008), although some studies suggest that experience of minimal interventions actually whet patients' appetites for further treatment (MacDonald *et al.,* 2007).

As well as the degree of emphasis on allocation or stepping, the amount of choice given to patients will also influence system performance. Whilst stepped care is not designed to ration health care, health policy managers are concerned with the efficient use of resources in pursuit of the best public health outcomes. Health systems which allow unrestricted access to

specialist health care for those who can afford it are considerably more expensive than those where patients access treatment through a primary care gateway. Apart from some specific disorders such as posttraumatic stress disorder (PTSD) where LI treatments have yet to be developed, offering patients a totally unrestricted choice of evidence based, high-intensity treatment may merely return us to a specialist replacement-referral system. As a consequence, stepped care systems may offer patients choice within steps rather than between them. As ever in stepped care, the key to informed patient choice is through accurate progress monitoring and self-correction.

The introduction of a stepped care approach to psychological therapy could assist in delivering the NSF priority programme (Appleby, 2004) and high impact changes (NHS Modernisation Agency, 2004). However, questions remain on the optimal model and acceptability to patients and professionals of stepped care (Bower & Gilbody, 2005b). Bower and Gilbody's 2005 narrative review of stepped care concluded that whilst stepped care offers the potential to make systems more efficient, the optimal configuration of system elements is unknown. In line with Bower and Gilbody's (2005b) reservations, the Australian 'Tolkein II' review of mental health services organisation pointed that although of inherently good sense, there was a lack of specific empirical evidence for stepped care in high prevalence disorders (Andrews et al, 2006). This causes difficulty when implementing stepped care since the two principles of least burden and self-correction may be interpreted and implemented in more than one way. There are many unknowns, including: the required balance of workers and skills operating at the different steps in a stepped care system; the patient flows through each step; clinical outcomes at each step; patients' views of treatments offered in a stepped care system and staff views of operating a stepped care system. Without better data on these, service planners lack crucial information when attempting to improve services. This report describes one attempt to map and model what happens to patients when a number of services attempt to reconfigure themselves into a stepped care model to address these current knowledge shortcomings.

Aims and objectives

The aims of the project were to:

- design effective and efficient stepped care systems for psychological therapies in a variety of settings through stakeholder consensus exercises, facilitated by computer modelling to forecast patient throughputs, waiting times and capacity needs;

- investigate the effect of implementing these systems on patient access, throughputs, clinical outcomes and patient choice;

- identify barriers to the implementation of stepped care;

- investigate the generalisability of the reconfiguration process including the utility of an implementation manual and computer modelling tool.

Overview of research approach

We undertook this study from the perspective of health services research, whereby researchers try to use research data to develop "appropriate, effective, cost-effective, efficient and acceptable health services" (Bowling, 1997, p6). Our explicit service delivery and organisation research perspective was the study of the meso level of the health care systems themselves, rather than individuals within that system. We took an operational research (OR) approach to this study, using multiple methods within our broad health services research paradigm. We worked with study sites to develop their systems, before using data generated by these systems to model uncertainty in stepped care and the effects of taking different decisions in service planning. In each case we helped services develop and then evaluate the performance of systems within the context they were operating in. We were also concerned to help with the diffusion of the lessons learnt from modelling the performance of these systems.

Although we used qualitative and quantitative methods of data analysis, as well as consensus development techniques, our overarching methods were located within the operational research approach. Rosenhead (2001, p154) defines this as "A process of offering aid to organisational decision making through the construction of a model representing the interaction of relevant factors, which can be used to clarify the implications of choice". Therefore, we undertook this project as a process of interaction between the research team and the study sites. Our aims were not to determine the optimum stepped care system, but to develop a tool which would aid decision makers clarify the results of taking different actions.

Although our model was developed using quantitative data, we relied heavily on qualitative and consensus development approaches to generate the shape of our model. Our consensus development methods were based on the premise that different stakeholders in each site would have different world views in terms of what shape the stepped care system should take. We helped stakeholders compare their views with descriptions of the existing systems in place through a highly focussed 'constituency approach' to consensus development. Having developed our model from these service shapes and quantitative data generated by them, we used the model to provide a starting point for further services developing their own stepped care systems.

Our study methods, therefore, spanned all three functions of modelling from problem framing to optimisation and option scanning (see table 1 below for definitions). We used consensus development methods to help sites frame their problems and develop a shared picture of what they were going to develop. We also used this process to scope stepped care as a novel way of delivering mental health care. Our modelling work initially focussed on

helping people scan their options and moved towards a position where data from these sites was being used to help others optimise their decision making. Finally, after the initial sites had developed their stepped care systems we used qualitative research techniques to help us understand the experience of the first four sites to inform additional sites' use of the modelling tool and their own staff development plans to implement stepped care. We then sought qualitative data on this process itself.

Definitions of three functions of modelling (Fulop et al, 2001, p 158)

Functions of modelling	Definition
Problem framing	"in which the principal functions of the model are to elicit, capture and integrate separately held knowledge about the problem, in order to agree the boundaries of discussion, achieve shared understanding and facilitate mutual commitments among a heterogeneous decision-making group"
Optimisation	"in which the setting of those factors under the control of the decision-makers which can be predicted to give the most highly valued performance is identified"
Option scanning	"in which the outcomes of following a number of different decision policies of interest are predicted and compared"

A note on the Improving Access to Psychological Therapies Programme (IAPT)

At the conception of this project, NICE had recommended stepped care for organising the treatment of anxiety and depression. Given the low numbers of suitable patients treated by mental health services as described above, services were actively wishing to implement NICE compliant systems of delivery. As noted above, the exact structures which needed to be in place to do so were not described by NICE and as such the uncertainty led to a desire to develop this project.

In 2008, in order to address the severe under-provision of treatments, the UK government instigated an unprecedented and highly ambitious programme for people with common mental health disorders in England by

funding the implementation of NICE guidelines for people suffering from depression and anxiety disorders through the Improving Access to Psychological Therapies (IAPT) programme. The IAPT programme aims to address the severe under-provision of these treatments by training 3,600 new psychological therapists in England between 2008-2011. The aim of this expansion is to enable 900,000 more people to access treatment, with half of those engaging in treatment moving to recovery and 25,000 fewer on sick pay and benefits by 2010/11.

The expansion of the IAPT programme throughout England has been underpinned by the results of two 'demonstration sites' which acted as pilot test beds during 2006/7 for the full programme, testing the methods of routine delivery. In one of these sites, psychological therapies were delivered using a radical stepped care organisational protocol (Richards and Suckling, 2008) whereby the vast majority of patients received a low-intensity form of CBT such as guided self-help (Gellatly et al, 2007; Hirai and Clum, 2006). Using this protocol, this site treated around five times more patients than the alternative site where many more patients were allocated to high-intensity CBT (Clarke et al, 2009; Richards and Suckling, 2009). Members of the SDO funded stepped care research team were and remain influential in developing the IAPT programme nationally.

As a consequence of this very significant development, NHS services in England could bid for IAPT monies in order to develop these services. However, IAPT attempted to control the structure of these sites very carefully by commissioning a balance of low- and high-intensity therapist numbers to a 40:60 ratio. IAPT also demanded that for every two training places commissioned, there would be at least one fully qualified member of staff of the appropriate low- or high-intensity grade employed. IAPT also mandated the types of treatment to be provided and the clinical competences of the staff employed. Finally, IAPT set up a minimum dataset of specific clinical outcome measures which all workers were expected to complete at each and every contact with patients. These data were then collected on a range of information systems, many of which were bespoke to IAPT.

The consequences of this major £300m initiative has been to alter the landscape of psychological therapies provision in primary and secondary care for people with high-prevalence mental health disorders such as anxiety and depression. Over 100 Primary Care Trusts (PCTs) have commissioned IAPT services and to date almost 2500 new psychological therapists have been trained, with the full projected new trained workforce of 3,600 being employed by October 2011. These resources now allow PCTS and health care providers to plan and deliver new evidence-based psychological therapies services, even where no such services existed at all in the past.

Furthermore, the highly prescriptive nature of IAPT in terms of its workforce configurations and types of treatment being made available may leave less apparent room for service managers and planners to manoeuvre when designing their services. Perhaps the biggest dilemma which faced this

current study as we developed and tested our model was the extent to which we could or should take account of the rapidly changing circumstances. We chose to do so and incorporated some early IAPT data into our modelling tool. There is no doubt, however, that the need for service planners to move very rapidly indeed in order to obtain the funding to implement stepped care IAPT services made the context in which we developed and tested our modelling tool extremely challenging. There remain, nonetheless, many aspects of IAPT services which are at the discretion of local planners and which may vary according to local circumstances and prior context, should they have the time to consider them. We discuss these issues and the interaction between our research study and IAPT further at the end of this report.

Modelling in health service delivery

Brief history of applications

There is a history of modelling and operational research approaches being used to address problems related to health and health care. Good overviews of activity in this area are given by Davies and Bensley (JOR 2005) and Brailsford and Harper (IMA 2004) and by Vissers and Brailsford (forthcoming), with applications of mathematical analysis to out-patient clinics and GP services dating back to the 1950s (Bailey 1954, Jackson 195?) . That said, with reference to other areas of human activity such as manufacturing industry, transport and telecommunications, it could be argued that scientific approaches are under-used in the planning, organisation and delivery of health care services.

There are parallels between health care and, say, an industrial manufacturing process, in that a person entering a health system may undergo a number of related, sequential care processes before being discharged by that system as a product being manufactured may move between machines on a system of conveyor belts. However, there are a number of important differences. Firstly, people are heterogeneous in that a process of care (diagnosis say) may take longer for one person than for another and the path taken subsequent to diagnosis may be very different from one person to the next. Secondly, the "processes" in health care are often performed by people, often with a degree of professional autonomy who, for perfectly understandable reasons, do not view themselves as "a cog in a wheel" as they perform their duties and can find such a reductionist view of their work unappealing.

Basic concepts used in modelling patient flow systems

1.1.1   States

Patient flow systems are typically considered to comprise of a number of states. Individuals are considered to engage with the system by spending time in one state or a sequence of states. Typically, it is considered that an individual can occupy just one state at any point in time. A single state within such a system may relate to, for example, a particular physical location, a particular activity or therapy, a particular health condition or some combination of the three.

1.1.2   Movements between states

A person-flow system is further characterised by the sequence of states occupied by an individual, often referred to as the path they take as they

move through the system. In some systems, movement may be permitted between any two states. For instance, in a supermarket, customers can visit the fish counter, delicatessen and bakery counter any number of times and in any order before leaving the system via the checkout. In other systems, movement may be restricted to a fixed sequence of states. For instance, at an airport, one has to check in, then go through security, then go to the boarding gate, entering each "state" once and once only.

1.1.3 Variability

As discussed above, one of the key features of health systems is the inherent variability in arrivals to the system, routes through the system taken by individuals and the time that individuals "need" to spend in each state. For those planning health services, failing to account for variability can lead to problems; planning for "average" demand can lead to a system being overloaded half the time (see for example Gallivan et al 2002). To the modeller, variability presents challenges both in terms of constructing appropriate models but also in presenting the output of models. There is intrinsic uncertainty in the behaviour of complex systems that incorporate such variability.

Modelling approaches

1.1.4 Deterministic approaches that do not incorporate variability

One way of modelling systems that incorporate variability is to ignore (within the model developed) the variability and to focus on the average behaviour that a system can be expected to display. This can be a very useful approach but, in some circumstances (systems of queues being an example) can give the wrong average behaviour and in all circumstances the implications of variability need to be borne in mind when interpreting or presenting model output.

1.1.5 Stochastic approaches that incorporate variability

Simulation

Computer simulation is a method for modelling the key components of a system and their interaction and for predicting the effects of any alterations in the way in which the system operates. It is commonly used as a method for the analysis of complex processes such as transportation networks or manufacturing processes. In the case of industrial manufacturing it is typical that numerous processes are undertaken on a variety of components as they are manufactured, finished and then assembled. Simulation is a method by which one can forecast flows of components (or widgets) and delays in the system and how this is disrupted or improved by measures such as increasing the number or efficiency of processing machines (work centres) available at different points of the process.

Essentially, simulation accounts for variability in the duration of processes or in the route through a system taken by an individual, by choosing the duration or next destination from all the available options using a probability distribution to account for the likelihood of the different options. In this way, a simulation of one possible version of "reality" unfolds and, in the context of a health system, the patient trajectories, waiting times and other metrics of interest are stored. This process is repeated hundreds or thousands of times so that a wide range of possible patient trajectories is generated and the metrics of system performance are estimated.

Analytical stochastic models

In developing analytical models of complex systems, the aim is to get similar outputs as those that can be obtained through simulation whilst retaining knowledge of the mathematical relationship between inputs and outputs. This can be an extremely valuable approach for generating insight concerning the behaviour of systems – insight into the why of predicted system behaviour in addition to the what. Understanding the why of system behaviour can help people design systems that behave in an acceptable or desirable manner. It is arguable that there are many circumstances where a simulation approach will give a more accurate picture of system behaviour whereas analytical approaches can give a more useful understanding.

There is a large literature concerning the development of analytical stochastic compartmental models to describe multi-state person flow systems, which we do not intend to review here. The approaches adopted include queueing models such as that given in Worthington (1991) and, of particular relevance to the work presented here in terms of the structure of the system studied and the clinical context of this report, the network queuing model related to the provision of care for serious mental health problems in the US (Koizumi et al 2005). Gallivan et al (2006) give an introduction to a form of stochastic compartmental modelling called patient progress modelling championed by Jackson in the context of clinical trials (see for example Jackson and Aspden, 1979; Jackson et al., 1981). Other, related, work is based on the use of parameterised distributions for the time spent in each state to describe multi-state patient flow processes (see for example McClean & Millard (1993), Marshall et al (2002) and Taylor et al (2000)). In other approaches (for instance Utley et al 2009), use can be made of data-derived distributions.

As can be seen in Chapter 5, we used a variety of modelling approaches in our work to understand and address the planning problems facing the pilot sites and others in the process of reconfiguring services for common mental health problems.

Objective 1 – development

To design effective and efficient stepped care systems for psychological therapies in a variety of settings through stakeholder consensus exercises, facilitated by computer modelling to forecast patient throughputs, waiting times and capacity needs

Settings

We undertook Phase I of the study in four sites. These sites had been volunteered as 'early adopters' during the process of bidding for SDO research funding and were already partners in the project. They had expressed an early desire to implement stepped care and in three sites had already experimented with a variety of ways to structure mental health services in primary care. Sites were identified through collaborative relationships within the Mental Health Research Network's self-help research interest group chaired by the principal investigator (DR) and through connections within the National Institute for Mental Health in England (NIMHE). Originally, we had a fifth site in which we had intended to conduct the same process. However, although we held a consensus meeting this site decided that it was not ready for involvement in the study and dropped out.

Sites two and four were large urban city environments whilst sites one and three covered rural areas including a number of country towns. Two sites (one and three) had services which were led by specialist mental health trusts, site one with two linked PCT provider organisations and the other with complete responsibility for mental health provision in primary care. Sites two and four were led by PCT provider organisations both with associated specialist mental health trusts providing some mental health services for people with anxiety and depression.

All sites operated a traditional system of referral to clinicians with no formalised method of stepping between different intensities of treatment provision. In three of the sites primary care mental health care was provided by PCT direct provider services whilst specialist mental health services were the responsibility of the specialist mental health trust. Two of these sites had good informal links between the different services but no formal care pathway between them. Counselling was provided by independently contracted counsellors in a few GP surgeries in one service. The third service had no link between the two mental health providers. GPs referred to both services or counselling independently depending on what the GP considered necessary for the patient. The first site was unusual in that it was a 'tiered' approach of three linked services: 1) mental health nurses providing short-term interventions linked with primary care; 2) practice counsellors providing counselling in some GP practices; 3) complex

evidence-based psychological interventions delivered by clinic based psychological services and community mental health teams. Although linked, however, there were multiple entry points to these services and each one screened patients independently to determine which of the three linked services would be most appropriate. They then referred on where needed.

Population coverage

The four sites served a range of populations ranging from 570,000 to 1.7 million. For further details please see Chapter 4.

Pre-implementation activities of sites

In Site 1, the decision to implement stepped care occurred against a backdrop of major organisational re-configuration and change. This involved merging two established mental health Trusts and one learning disability organisation into one large mental health and disability provider organisation. Replacing the other three, the new Trust became the main provider of mental health and learning disability care. The newly reconfigured NHS Trust brought together many levels of mental health care within one provider organisation spanning primary to specialist mental health care. As a consequence of the merger a new strategic management structure was developed and implemented. Further, considerable operational level organisational changes were simultaneously being implemented in order to meet government targets. These targets included the development of crisis teams, the introduction of gateway workers and the introduction of graduate mental health workers into the workforce.

In the year prior to this study, mental health services in Site 2 had begun the process of service re-design in order to provide a stepped care service. The re-design of the service followed a series of meetings held to discuss the new and emerging research evidence base around depression management and the application of low-intensity treatment interventions. Regular meetings were held between departmental heads providing mental health services within two local NHS Trusts. These included heads of Primary Care Mental Health Services in the PCT and the clinical leads of psychological therapy services working within the local Mental Health Trust. These meetings were successful in that they brought together key people from within separate organisations to discuss common issues concerning the possible implementation of providing a stepped care service in Site 2. Thus the drive to re-organise local services towards a stepped care model reflected government guidance regarding best practice, but importantly the motivation for change was driven from within clinical services (bottom-up) and was not organisationally driven (top-down).

In the year prior to this study, there has been major service re-configuration within the mental health specialist trust in Site 3. This involved a strategic review of the role and function of Primary Mental Health Services and Community Mental Health Teams. These teams were amalgamated to operate under the title 'Primary Care Assessment &

Treatment Service' (PCAT). In line with Department of Health policy/directives, the new service was reconfigured to improve access to a broader range of treatment interventions for people experiencing common or high prevalence mental health problems, whilst also providing effective care for people with serious and enduring mental health problems. The role and function of the new PCAT team was moving towards stepped care approach to service delivery. This was an intention to manage referrals based on the principle that the simplest and least intrusive intervention would be offered first with more intensive treatments being made available if and when necessary.

The introduction of stepped Care in Site 4 was seen primarily as an internal development that would support 'best practice'. Local politics were not viewed as an issue, although psychology waiting lists were high. The development of a standard stepped care pathway for people with common mental health problems was viewed as 'making sense' and potentially offering the benefit of 'more therapy for the money'

Method for Stakeholder Consensus Building

We utilised the 'constituency approach' (Conally et al, 1980), to develop a consensus building procedure in five NHS sites on the structure and processes of the sites' specific desired stepped care systems. We developed a method based on defining *inputs*, the *structure of the stakeholder interactions* and *specification of the consensus process outputs* using evidence based good practice guidance from the HTA review of consensus development methods (Murphy et al, 1998).

1.1.6   Inputs

a) Participants

Stakeholders from each site were identified through communication with the site lead, the individual charged with overseeing the process of service reconfiguration. We sought to include as wide a constituency as possible including patients with common mental health problems, their carers, primary care clinicians, specialist mental health professionals, service managers from the various units and organisations involved in the delivery of primary care mental health services at each site, PCT commissioners and the directors of PCTs and mental health and social care trusts. We sought to have maximum participant heterogeneity, as above, in all sites.

b) Task

We defined the task as 'to identify and rate the most important specific design features of stepped care systems for use in your individual service in order to come to an agreement on the structure and processes of your proposed stepped care system'. We broke this down into eight specific questions for each participant and group to consider:

1. Which parts of our mental health services should be included in the stepped care system?

2. How will patients access the stepped system and who will be able to make referrals?

3. Who will make the decision to allocate patients to the initial step?

4. What low-intensity treatments should we routinely offer to patients as part of our stepped care process?

5. Who will deliver the low- and high-intensity treatments in the stepped care service?

6. Should any patients **NOT** be offered low-intensity interventions?

7. How will we measure patients' progress?

8. What criteria will we apply to 'step up' patients?

We balanced our questions between 'treatment (stepped care) and 'disorder' (common mental health problems). However, our questions focus was more aligned to 'treatment' than disorder. Equally, we chose to present highly specific rather than general questions in order to focus participants towards our desired outputs.

c) Information

We provided workshop participants with information material on the evidence base for stepped care, and its principles and practice prior to and during the workshops. Information prior to the workshop was in the form of a booklet outlining the operational principles of stepped care together with information on the epidemiology of common mental health problems and the effectiveness of psychological treatments. This information included a short summary of the relevant NICE guidelines for these disorders.

We presented stakeholders with scenarios as cues for their thinking. Four scenarios were presented in the information materials, representing a range of patients presenting with common mental health problems of anxiety and

depression of varying severity. Participants were asked to consider these scenarios and answer the following questions:

XXXX has been referred to psychological therapy. As things currently stand, what would happen to her now? Consider the following questions:

- Who would see her?

- How long would she wait to be seen?

- What type of psychological therapy or talking treatment would she receive?

- How many sessions would she receive?

- Where would she receive her psychological therapy?

- How would she re-access treatment if she relapsed?

XXXX has been referred to stepped care. What would happen to her in a stepped care service? Consider the same questions as above:

We provided space below each series of questions for participants to write down their responses.

The preparatory information also included brief demographic details and the eight questions of the task, with space in the booklet beneath each question for participants to record their answers. We asked participants to do so having considered the four scenarios and thought about how a stepped care system would differ and operate for these four patients.

1.1.7   Structuring the stakeholder interactions

We used the constituency approach's sequential process to build consensus. The constituency approach is a formal method, regarded as more effective at building consensus than informal procedures such as discussion groups (Murphy et al, 1998). The constituency approach builds consensus by eliciting stakeholders' initial individual views and then amalgamating different perspectives in group work to agree elements which are regarded by the whole stakeholder group as the most important. To achieve this, individual stakeholders are sequentially amalgamated into small and large groups where they build consensus around these features and ratings.

The imposition of an externally derived method and set of procedures helped minimise the risk of power imbalances in any group. As such we structured the interactions in five stages:

Stage 1: Presentations

We presented details about the project, stepped care and the methodology proposed to develop consensus. The presentation replicated some of the information material on the evidence base for stepped care, and its principles and practice given to participants prior to the workshop. The presentation also outlined the principles of operational research and the details of the proposed computer modelling tool. Outputs of a prototype modelling tool were presented, using imaginary data to illustrate the principles of the modelling approach. The site lead also gave a presentation outlining reasons why stepped care was being considered as an organisational system at their site and providing some site-specific context for the workshop.

Stage 2: Pair work

Participants were allocated to pairs at random. They were asked to discuss the same eight questions asked of them individually in their preparatory task materials. For each question, pairs were asked to discuss their individual answers and indicate where they agreed and disagreed. Each pair was given a booklet where they recorded their views. Each pair was given a number.

Stage 3: Small group work

This stage replicated the procedures in stage 2. Pairs were brought together and asked to repeat the task they had undertaken as pairs. In this case, however, small groups were asked to indicate for each question which elements of the area they were 'sure' about in terms of their responses and aspects that they were still unsure about. Each small group was asked to write down the areas of consensus and uncertainty on a large piece of flip chart paper.

Stage 4: Collation

The research team collated the recorded information from the flip chart paper produced by each group and identified the major areas of certainty and uncertainty for each question. The aim was to facilitate thematic analysis of individual and group opinions and feed these back to the upcoming plenary group for further consideration.

Stage 5: Plenary session

The principal investigator of the study chaired a structured discussion focussing initially on the areas where consensus had been reached and then moving onto areas where there was still considerable uncertainty. The collated results produced by stage 4 were used to structure the discussions.

The chair maintained a clear agenda, recognised speakers, focussed the group to the desired outcomes, managed any potential or actual conflict and created a constructive environment for the discussions. Each plenary ended with an agreement on key points to take the decisions and discussions into an action plan. We made notes on the discussions and the decisions arrived at.

1.1.8   Outputs

The main output was an agreement at each site to begin the process of implementing service reconfiguration towards a stepped care model. To facilitate this we produced a report summarising the views of each of the stakeholder groups. We collated all the pair and small group recording sheets and the notes from the plenary group. Therefore, the report aggregated the views of all stakeholders openly using an explicit method. We summarised the results of each consensus group using the main themes arising from each meeting whilst also referring to the eight areas of discussion. We themed these as:

- Access to the stepped care system

- Interventions to be provided in the stepped care system

- Patient progress through the step care system

We also reflected specific areas of uncertainty or importance for individual sites in the report. We ended the report by highlighting areas of uncertainty where groups still had not reached full consensus and noted the key action points agreed at the plenary sessions.

Following the consensus development workshops, case study sites were asked to form small project groups to design services to reflect the priorities identified by the workshop participants.

Results

We held five consensus development groups at five different English mental health sites. At one of these sites, it became apparent that no decisions could be taken at the consensus meeting due to an imminent and unknown reconfiguration plan being imposed on the organisation concerned. In discussion with the site lead it was agreed that no further work would take place and the site pulled out of the project. The remaining four sites proceeded into the next stage of the study. Individual reports to sites are included in appendix 2.

1.1.9   Participants

Professional and role details about attendance at each workshop are included in table 2. The table highlights the diversity of stakeholders included in each site and also the differences between each site in terms of

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the perception from site leads as to what their relevant constituencies were. These differences also reflect the current population of clinicians being brought into the new stepped care services. Whilst clinical psychologists were a constant across sites and nurses in three out of four sites, every other role or profession was represented in no more than two sites. Carers and patients were only involved in two sites. Fifty-four of the 68 participants provided age data. Mean age was 45 years (SD 8.8) indicating that stakeholders were generally experienced mental health workers. 31 of the 55 participants giving gender details were female, 24 male. 46 of the participants who gave ethnicity data described themselves as white British, the remainder were white European (3), white other (2), black British (1), Indian (1), Irish (1) and mixed race European (1).

1.1.10   Access to the Stepped Care System

Table 3 summarises the decisions taken by each consensus group on characteristics of access to the new reconfigured stepped system

Sites varied between those that wished to retain a professional 'triage' system undertaken by 'Gateway' workers (often qualified nurses and social workers) where these workers took most of the responsibility for assessment and allocation of patients to different steps within the stepped care system (sites 1 and 3), and those that opted for a system allowing patients to be assessed and allocated by both low and high intensity clinicians. Sites also took different decisions as to whether they would allow GPs and others direct access to different elements of the stepped care system. Only one site instigated a single entry system, but even here, GPs could refer direct to highly specialist mental health workers without going through the primary care stepped care system. Only one site allowed unrestricted self-referral, two others permitted self-referral to the low-intensity step only and the fourth site required all referrals to go through the GP apart from those patients who wished to attend mental health education classes.

Table 2: Professional and role details of workshop attendees

	Site 1	Site 2	Site 3	Site 4
Clinical Psychologists	5	4	3	4
Directors				
Psychology	1			
Nursing	1			
Managers				
Psychology				2
Nursing	3	2	1	
Social Work	2		3	
Public Health			1	
Fundraising			1	
Commissioning			1	
Other			1	
Nurses	1	1	4	
Graduate Workers	2			2
Assistant Psychologists	1			
Social Workers		2		
Consultant Psychotherapists				
Psychiatry		3		
Nursing		2		
Other	1	3		
Psychiatrists			1	
Counsellors			1	2
Carers/Patients		1	1	
General Practitioners		1		4
Total Attendees	17	19	18	14

Table 3: Decisions taken about access to new stepped care systems

	Site 1	Site 2	Site 3	Site 4
Self referral	Yes	Yes (low intensity only)	Yes (limited to stress groups only)	Yes (low intensity only)
Professional referral	GP, primary, secondary and voluntary sector	GP, primary and secondary	GP, primary care (low intensity only)	GP, primary and secondary
Initial assessment	Gateway workers to all steps	Low and high intensity workers	Low intensity workers for step 2; Gateway workers for step 3	Low and high intensity workers
Allocation to steps	Gateway workers to all steps	Low or high intensity worker undertaking assessment	GPs and Gateway workers	Low or high intensity worker undertaking assessment
Single entry point in primary care for all patients	No	Yes but in exceptions GPs can make very specialist referral to step 4 and specialist services such as PTSD, drugs and eating disorder services	No	No

1.1.11 Interventions to be provided in the stepped care systems

Low-intensity interventions: all sites agreed that low-intensity interventions should be offered as part of the stepped care systems being developed. As shown in table 4 below, these were variously described by sites but included: self-help/guided self-help (all sites), computerised CBT (all sites), signposting to other services (3 sites), classroom CBT/psycho-education groups (3 sites), information giving (2 sites), lifestyle advice (2 sites), books on prescription (2 sites), telephone contact (2 sites), exercise (2 sites), brief CBT (1 site), activity scheduling/behavioural activation (2 sites), graded exposure (1 site), drop in services (1 site), brief counselling (2 sites), social activities (1 site), the expert patient programme (1 site).

Sites identified low intensity interventions to be delivered in primary care environments by primary care mental health workers (graduate workers specifically and other primary care mental health workers), GPs and voluntary organisations. One site defined these workers as workers with fewer qualifications, experience or specific psychological therapies competencies.

Medium-intensity interventions: two sites identified a class of intervention as 'medium intensity' defined by one site as time limited 1:1 talking therapies of between 2-8 sessions provided mainly in primary care with some direct provision in psychology services. The other site regarded counselling as a medium intensity intervention suitable for life adjustment reactions to issues such bereavement.

High-intensity interventions: there was more agreement on high-intensity treatment. All sites thought that these interventions should be delivered in specialist environments by the most highly trained and specialist workers with more training, experience or specific psychological therapies competencies, particularly psychologists and psychotherapists, although two sites also included nurses, psychiatrists and one site mentioned counsellors in this role.

Supervision was explicitly mentioned by three of the four sites. These sites thought that supervision of low- or medium-intensity workers should be provided by those workers with high-intensity therapeutic competencies. One site thought that low-intensity workers could provide supervision, advice and guidance to members of the primary health care team such as GPs and nurses.

Table 4: Low intensity interventions chosen by sites

	Site 1 N	Site 2 L	Site 3 Ct	Site 4 C
Self –help/guided self-help	✓	✓	✓	✓
Computerised CBT	✓	✓	✓	✓
Signposting to other services		✓	✓	✓
Classroom CBT/psycho-education groups	✓	✓	✓	
Information giving	✓		✓	
Lifestyle advice	✓			✓
Books on prescription			✓	✓
Telephone contact		✓	✓	
Exercise		✓	✓	
Brief CBT	✓			
Activity scheduling/Behavioural activation	✓	✓		
Graded exposure	✓			
Drop in services	✓			
Brief counselling	✓		✓	
Social activities	✓			
The expert patient programme			✓	

Counselling was subject of debate, often un-reconciled. Even though one site regarded counselling as a medium-intensity intervention it was undecided as to how this would link with the other steps and the low- and high-intensity workers. A second site was also unclear about the place and role of counselling in their proposed stepped care system. This site were also unclear about the role of low-intensity treatments for life adjustment reactions to issues such bereavement.

1.1.12 Patient progress through the step care system

There were varying degrees of precision in the suggestions for this area. All sites referred to criteria to be used to include/exclude patients into the stepped care system and to organise the process of stepping. People with high levels of risk, very complex problems such as psychosis, drug and alcohol problems, personality disorders, access difficulties through language, homelessness and being homebound, with a history of treatment failure/chronic problems and patients with conditions for which there is no evidence of effectiveness, for example PTSD were identified as **not** to be offered low-intensity interventions as the first step in their care. However, one site were undecided how or if the stepped care system would assist patients with OCD, eating disorders and alcohol and drug problems. One site proposed that if patients who were suitable for low-intensity interventions refused them or sought higher intensity treatment they should be directed to other providers outside the stepped care system.

The issue of patients with serious mental health problems being treated for co-morbid common difficulties such as anxiety and depression was the subject of less agreement. Two out of the four sites decided that low-intensity interventions should also be delivered by workers operating in specialist teams for patients in active treatment for their complex or serious mental health needs, although one of these two sites also thought that patients within specialist environments should be able to self refer to primary care for low-intensity advice. One site thought that common mental health problems presenting in patients with a past history of serious mental health problems could be treated by low intensity workers with additional supervision.

Criteria for stepping patients up from lower intensity interventions were specified to be a mixture of explicit protocols and criteria, coupled with patient choice but where the clinician retained a major decision making role. Stepping up criteria included when the patient's clinical picture worsened, patients failed to improve with low- or medium-intensity interventions, patients presented with increased risk or the clinician became concerned for another reason. The principle of using objective and subjective clinical outcomes measures to aid this decision was universally proposed, with all sites agreeing that these should be used across all elements of the stepped care system.

Due to the resource constraints in these new proposed mental health systems there were concerns to reduce unlimited patient movement

between steps. This was articulated as including patient choice *within* steps, for example that patients should have a choice of more than one low-intensity treatment. Stakeholders thought that some low-intensity approaches may not suit all patients and if one low-intensity treatment is not effective patients should be encouraged to try others before stepping up. Furthermore, previous failure to benefit from low-intensity treatments should not be an exclusion criterion for further attempts at the same or other low-intensity options. One site was very clear that even with explicit criteria to inform patients about available choices and aid allocation decision making, the default position should be low-intensity interventions for most patients.

1.1.13   Key action points from the Consensus Meetings

Each consensus group identified actions arising from their meetings. For three sites this involved determining the detailed protocol of how patients would be initially allocated to steps and 'stepped up', including developing the explicit criteria to be applied. Three sites also identified that they needed to specify of the clinical measures to be applied ahead of the implementation of the stepped care model. One site, which had an established 'tiered' service model in place already, identified that it needed further clarification of the extent to which the reconfigured system will be stepped as opposed to the emphasis on tiered stratification/allocation currently in place. In this site there was a recognition that gateway workers needed to be educated in the new stepped care interventions in order to be able to provide the proposed allocation function in the stepped care system.

Summary

The consensus development process – the constituency approach – was a successful means of assisting already enthusiastic volunteer 'early adopter' sites develop their proposals for service reconfiguration. Each setting used the process to come to a shared understanding of what their services were going to look like and to highlight areas of remaining uncertainty which they needed to work on. Whilst the outputs differed in terms of many structural components, there was more equanimity in terms of therapeutic components.

At all stages the research team kept to the recommended best practices to provide the structure for the interactions, inputs and outputs (Murphy et al, 1998). The importance of *inputs*, *structure* and *outputs* was very clear to those both facilitating and contributing to the workshops which enabled the research team and the participants to be fully briefed on the task and to receive information relevant and helpful to speed the discussions. Synthesis of the available epidemiological data and a theoretical description of the principles behind stepped care was included in our method. The questions presented to participants were specific enough to produce clear opportunity for discussion and consensus development and to avoid non-specific agreement to which everyone could sign up to but which would have provided no clear basis for subsequent action.

Following this best practice and incorporating it into the specific techniques of the constituency approach was a successful operational research process. We achieved our aim of helping services develop plans for operating stepped care services. This set the scene for the next stage of the research programme – collecting data from these services in order to populate a computer model with real-world stepped care data.

Objectives 2 and 3 – Implementation

To investigate the effect of implementing stepped care systems on patient access, throughputs, clinical outcomes and patient choice and to identify barriers to the implementation of stepped care

Setting

As a result of the consensus development exercises described in Chapter 3, four sites implemented the stepped care services that they had designed. Each of the sites developed a model of stepped care which best served their service and local population needs. Figures 1 to 4 show the structure of the services designed.

Site 1 description

Referrals to the service were made by GPs to mental health practitioners who acted as the entry point to stepped care. On receipt of the referral the mental health practitioner made an initial decision to refer the patient back to the GP or to another service (e.g. the voluntary sector), offered an initial assessment for stepped care or made a direct referral to the most appropriate point within the stepped care system.

Initial Assessment was undertaken by a mental health practitioner and referred to the most appropriate level within the stepped care system. Unless contra-indicated the patient was referred to a low-intensity intervention first.

Step 2 interventions were run by graduate workers and included guided self-help and CBT-based stress management classes, supported by other qualified staff. One-to-one guided self-help sessions tended to be one hour sessions for up to 8 weeks.

Step 3 interventions comprised short-term evidence-based psychological interventions delivered by a mental health practitioner or practice-based counsellor, where available.

Step 4 interventions were complex evidence-based psychological interventions delivered by psychological services, CMHT or the psychiatric service.

Step 5 interventions included crisis teams, self-harm liaison and in-patient admission by specialist clinical teams.

Site 1 comprised two mixed urban/rural areas of a large county-wide mental health trust, covering a large geographical area. Data was collected from June 2007 until April 2008. All mental health referrals were received by the stepped care service, with the exception of crisis referrals. As

planned in the consensus development process, patients were initially assessed by practice-based mental health workers who acted as the entry point to stepped care. Graduate workers were employed by the trust, but were attached to specific GP practices. There was a shortage of graduate workers in the service (fewer than 50% of available posts were filled during the data collection period) and some areas did not have any access to graduate workers. Step 2 interventions were therefore unavailable in those areas. Counselling was included as a Step 3 intervention, although very few GP practices had a practice-based counsellor, and access to counselling was therefore limited. Site 1's implementation of their stepped care service broadly followed their plan for implementation at the consensus development meeting.

Site 2 description

Referrals were made either to a graduate worker-run clinic offering information, signposting and low-intensity interventions, or to mental health workers at the PCMHT. Patients could self-refer to the clinic or be referred by their GP to either option.

Initial Assessment was made by a graduate worker or mental health worker in clinics.

Step 2 interventions, which were provided by graduate workers and mental health workers, included short-term facilitated self-help, psycho-education, individualised problem identification and goal-setting. Psycho-education classes (e.g. stress management) were run by mental health workers and graduate workers together.

Step 3 interventions, provided by mental health workers, offered more intensive therapy, often CBT based, for up to six sessions, with the option of offering up to six additional sessions in a small proportion of cases.

Step 4 interventions were delivered by CMHTs, psychology and psychotherapy services working within the secondary care mental health trust.

Step 5 interventions were delivered by experienced mental health practitioners working within the mental health trust and included crisis resolution teams and work aimed at avoiding hospital admission.

Site 2 was based in one of four primary care mental health teams in a city. Data was collected from September 2006 until December 2007. All mental health referrals were channelled through the PCMHT, with the exception of crisis or specialist referrals. Site 2, in the consensus development process, did plan to allow GPs to refer directly to step 4 if deemed necessary, however in practice this didn't happen and all patients were assessed or referred straight to step 2. Therefore, the service followed a stepped care model, with the majority of patients being initially allocated to a time-limited low-intensity intervention in the first instance, although there was the option to refer a patient direct to specialist services if this was deemed

appropriate. Patients were referred to the graduate worker-run clinic or to the primary care team where they were initially assessed by a graduate worker or a mental health worker. Graduate workers were based in the PCMHT and supervised by mental health workers. Site 2 implemented a stepped care service which was very similar to that which they had planned in the consensus meeting. The main differences were that GPs did not deliver low intensity interventions as first planned and medium-intensity treatment sessions were limited to six sessions rather than eight as originally planned.

Site 3 description

Step 1 interventions focused on health promotion activities and initial assessment for patients with mild mental health problems, and longer-term monitoring and support for patients with severe mental illness.

Referrals to the stepped care service were made by GPs to the mental health worker providing the triage clinic in their practice.

Initial Assessment was undertaken by a senior mental health worker in a GP based triage clinic. Decisions sometime were made from the initial referral letter, and sometimes consulting the patient by telephone. Where appropriate a face-to-face assessment was arranged.

Step 2 interventions included psycho-education courses, cCBT, guided self-help, medication concordance and routine follow-up. Step 2 interventions were delivered by graduate workers, as well as other members of the team.

Step 3 interventions were delivered by graduate workers (who had undertaken specific training to deliver CBT-based therapy) and senior mental health workers. The options included face-to-face CBT, and group work e.g. anxiety management, anger management and OCD workshops.

Site 3 was based in a primary care mental health team which was merged with three other local PCMHTs. Data was collected from September 2006 until December 2007. The stepped care service was being re-organised and rolled out across the trust. Senior mental health workers provided a triage service accepting referrals in 23 participating GP practices. This differs slightly to the original implementation plan in which it was intended that low intensity workers would be carrying out assessments for step 2 services. Graduate workers were based in the primary care mental health team. This site had a well-resourced graduate worker service and the intention was that some graduate workers would be encouraged to undertake training to deliver CBT based therapy at Step 3. This is a development from the first plan for stepped care implementation at this site, when high intensity interventions were only going to be provided by specialist mental health care workers. There was an 18 week time limit on patients receiving treatment at steps 2 – 3. Although not originally planned at the consensus development meetings, PCMHT staff also worked at Step 1 level within

primary care, offering information, training, consultation and mental health promotion activities.

Site 4 description

Referrals were made by staff based at the GP practice to the practice-based graduate worker.

An Initial Screening Phone Call was usually made by the graduate worker and at this point some patients were referred elsewhere or immediately stepped up.
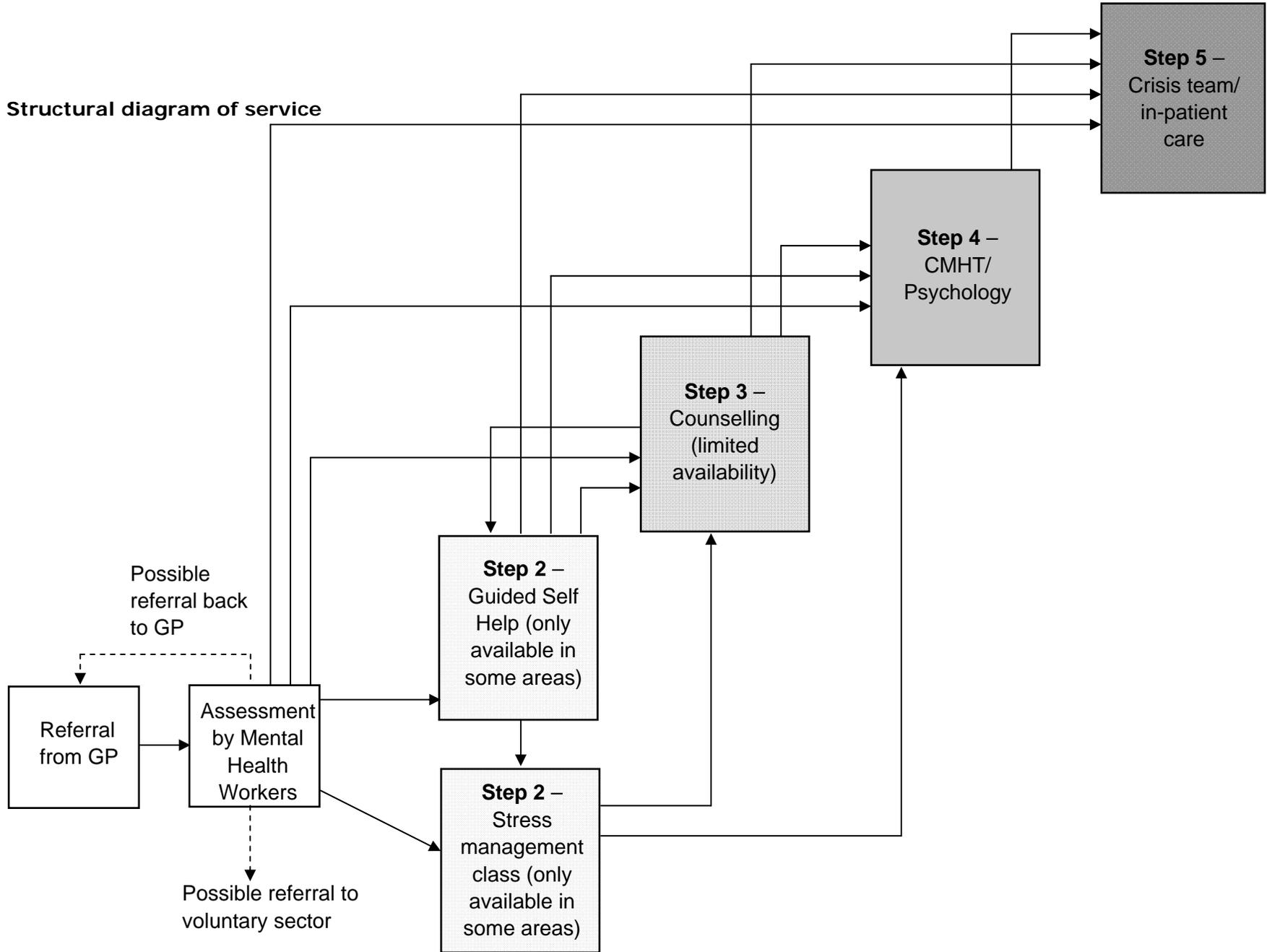
Initial Assessment was undertaken by the graduate worker, usually face-to-face, at the GP practice. Graduate workers were supervised by psychologists who were able to advise on assessment decisions. Patients were referred direct to psychology or counselling (when available) if this was deemed appropriate either on clinical grounds or because the patient was not interested in any of the low intensity interventions, or if the GP had requested that they wished the patient to receive higher intensity interventions.

Step 2 interventions included facilitated self-help, books on prescription and cCBT which was delivered in a library setting, supervised by a graduate worker.
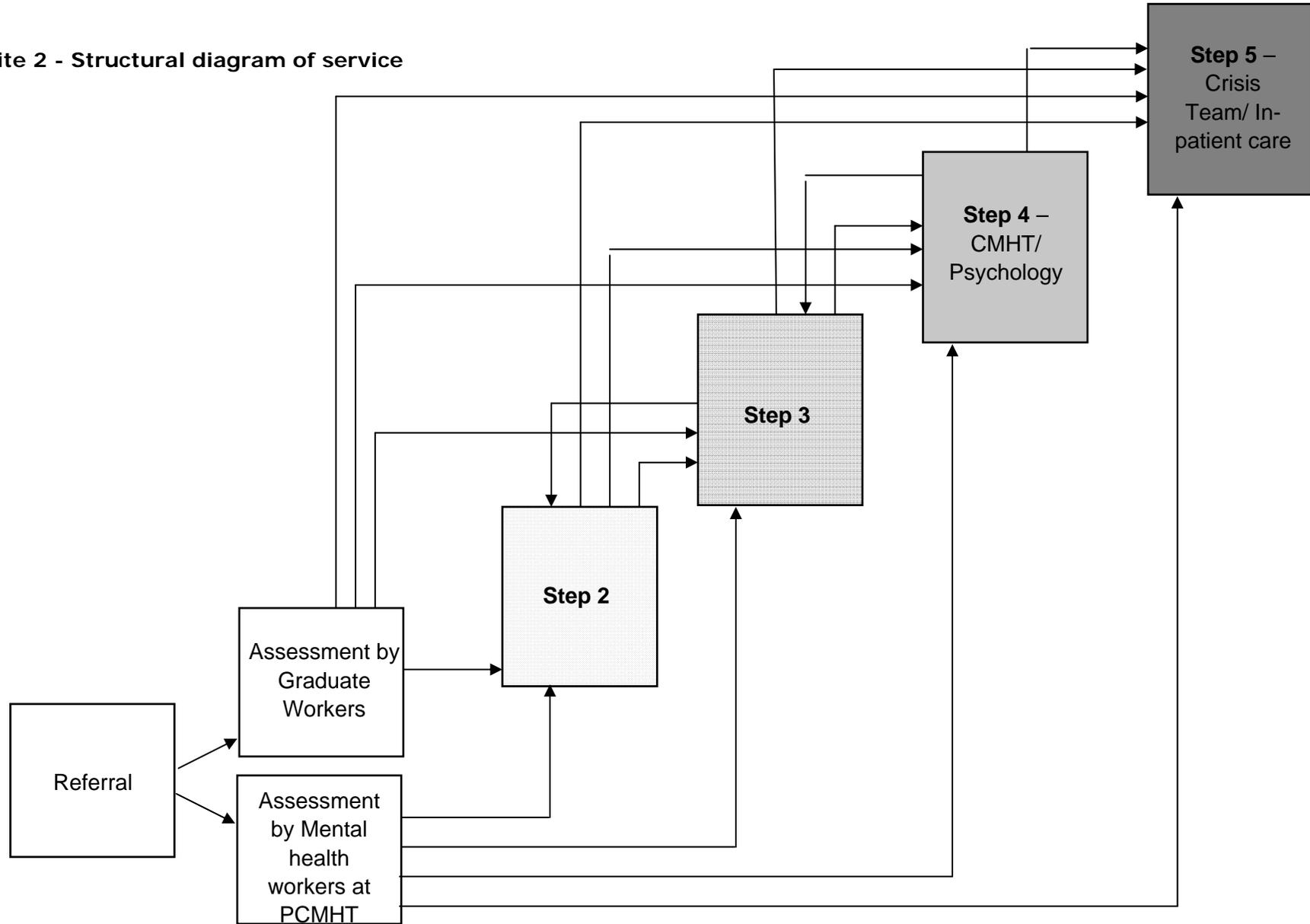
Step 3 and Step 4 interventions were referral to psychology, which was sometimes practice-based, and to counselling where available.

Site four was an inner city mental health trust and two associated PCT provider organisations jointly providing mental health services for people with anxiety and depression Data was collected from October 2006 until March 2008. The stepped care model only included GP practices who had chosen to have a graduate worker in their practice. This accounted for 60-70% of GP practices in the area. Graduate workers provided guided self-help, and also had a role called Community Links, which involved providing information and sign-posting. Patients were referred to graduate workers for initial assessment, with support and supervision from psychological services, who also conducted independent assessments of direct referrals. In this model low-intensity interventions, delivered by graduate workers, were based on the 2+1 model, i.e. two sessions and then a three-monthly review at which progress is assessed and stepping up may be an option. In practice there was some leeway in the number of low-intensity sessions offered and some graduate workers provided more sessions, including both face-to-face and telephone work. One difference from the original implementation plan was that interested GPs were going to carry out low-intensity interventions but in practice this did not happen. The Psychological Assessment and Treatment Service (PATS) provided step 3 interventions. Some practices employed counsellors, but counselling contracts were being terminated. GPs retained the option to refer direct to PATS if they thought it was clinically appropriate.

Site 1 - Structural diagram of service

Step 5 – Crisis team/ in-patient care

Step 4 – CMHT/ Psychology

Step 3 – Counselling (limited availability)

Step 2 – Guided Self Help (only available in some areas)

Step 2 – Stress management class (only available in some areas)

Possible referral back to GP

Referral from GP

Assessment by Mental Health Workers

Possible referral to voluntary sector
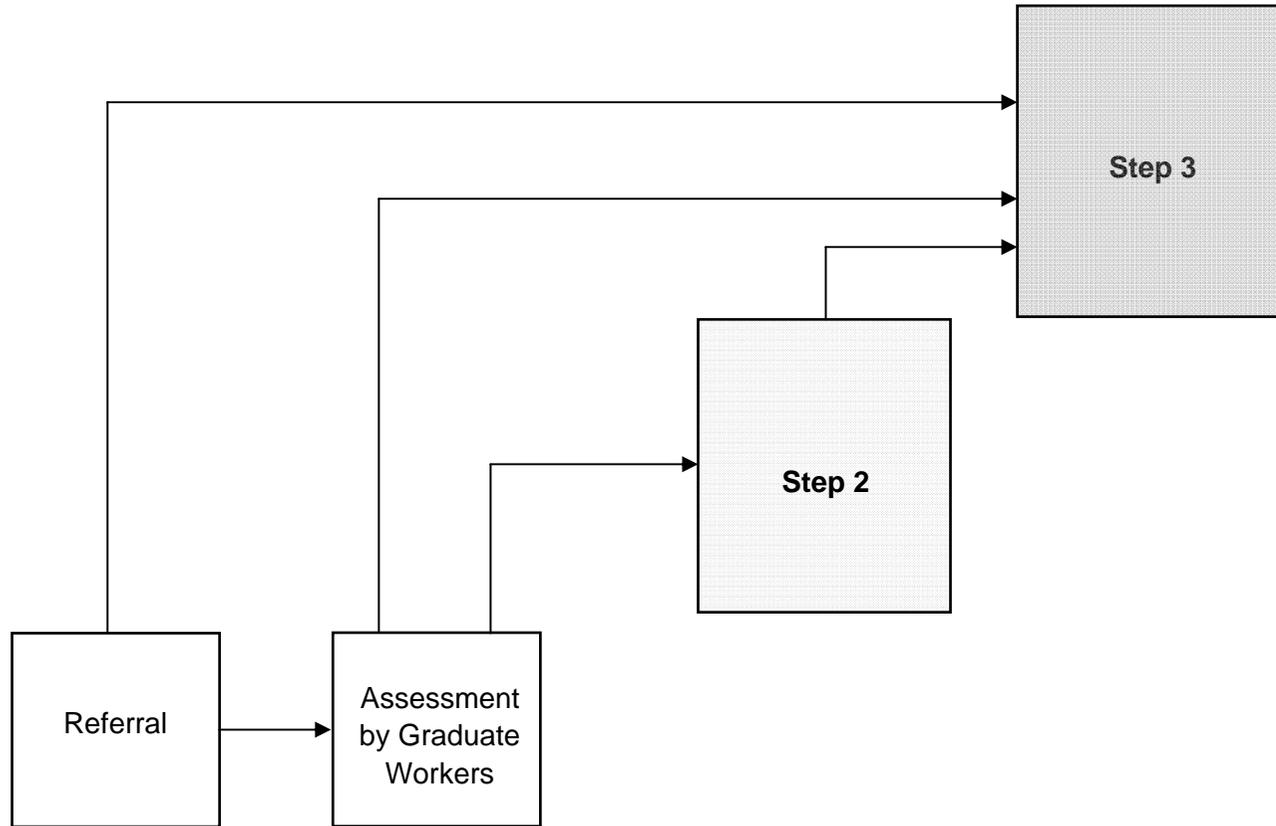
Site 2 - Structural diagram of service

Site 3 - Structural diagram of service
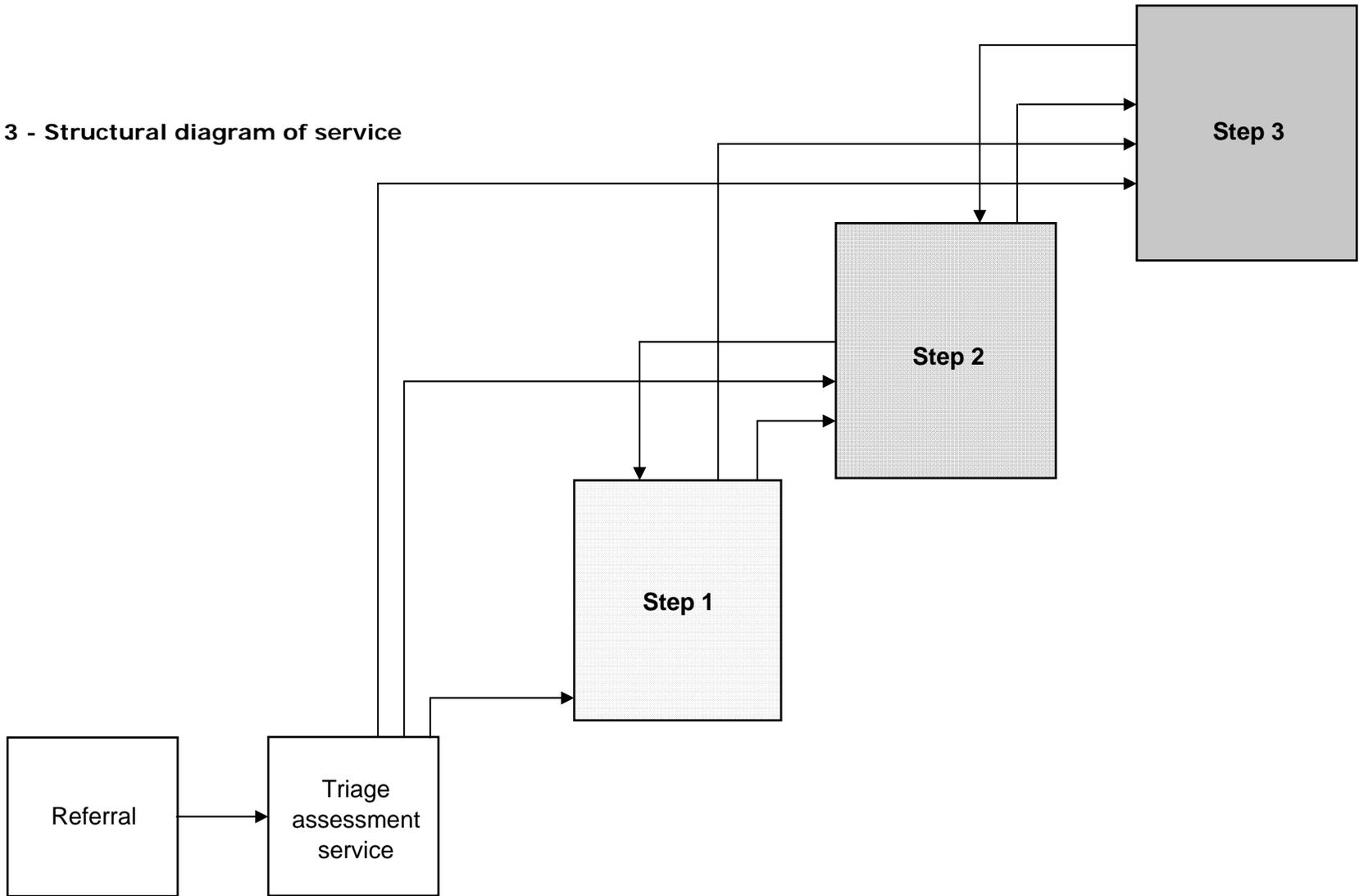
Site 4 - Structural diagram of service

Method

1.1.14   Study Design

We used a mixed methods approach incorporating both observational quantitative methods and a qualitative element. These methods and results are described separately in this chapter.

We examined the design and implementation of a stepped care model of treatment for common mental health problems across four NHS primary care sites. Sites were studied for between 6 and 16 months between the period from September 2006 until April 2008. The four sites were in a variety of locations including inner city, and urban/rural and their patient population varied accordingly. The sites had a wide range of referral numbers ranging from just over 1000 to nearly 4000 in a period of just over 12 months, with the highest proportion of patients between the ages of 20-29 and with a 65/35 female to male ratio. Each of the sites developed a model of stepped care which best served their service and local population needs. Some sites were part of a mental health trust while others were primary care mental health teams. In most sites the majority of patients were assessed by graduate workers who were either based in a dedicated specialist clinic or were attached to GP surgeries, although one site offered a triage service run by senior mental health workers. Shortages in some staff roles meant that each site varied greatly in treatments they offered; whilst some well-resourced sites offered step 1 or 2 treatments to all patients, other sites had shortages of graduate or senior mental health workers and so were not able to offer step 2 or 3 treatments.

Demographic details of the 4 sites that implemented a stepped care model are shown in table 5. Indices of Multiple Deprivation (IMD) are shown for the PCT (IMDs were not available for specialist trusts) as well as the total population served by the organisation.

Table 5: Demographic details of Phase I sites

	Type of organisation	Average IMD Rank[a]	Rank of Average Rank	Size of population covered
Site 1	**Specialist Trust**			**1.4 million**
	PCT A	17833.10	79	
	PCT B	22435.26	32	
	PCT C	16325.80	91	
Site 2	**PCT**	17879.46	78	**750,000**
Site 3	**Specialist Trust**			**570,000**
	PCT D	7768.17	149	
	PCT E	11972.64	126	
Site 4	**Specialist Trust**			**500,000**
	PCT F	22069.20	35	
	PCT G	26885.05	7	

[a]The Index of Multiple Deprivation 2007 combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each small area in England. This allows each area to be ranked relative to one another according to their level of deprivation.the Indices of Deprivation 2007 have been produced at Lower Super Output Area level, of which there are 32,482 in the country.1 indicates the most deprived area. Rank of average rank is shown out of a total of 152 PCTs.

1.1.15 Quantitative study

Method

During the consensus development process all sites indicated that they wanted to implement routine data collection systems both for process, demographic and treatment outcome data. Audit workers were employed to observe data collection in each site and to interrogate existing data systems and encourage clinicians to input additional data. Process data about patient flows through the system were collected by each site in order to manage their stepped care system and to provide data on patient flows for the CORU modellers to incorporate into the tool.

Participants

Process and outcome data was collected from all patients referred within the four pilots sites during September 2006 until April 2008.

Data measurement

In each of the four sites described above, an audit worker was employed to set up systems within the sites to collect the following data:

Patient flows - number of patients referred and their pathway through the services, referrer, date of referral, assessment and subsequent treatment sessions and end points.The current status of patients was recorded using codes referring to specific end points, for example, patient dropped out of treatment or completed the treatment plan. Patients remaining in treatment were also coded.

Treatment inputs were collected including the time and duration of each treatment session, the purpose of the session and the treatment offered.

Treatment outcomes; both qualitative (e.g. 'improved, 'worsened') and quantitative (e.g. 'Clinical Outcomes for Routine Evaluation' –CORE, Evans et al, 2000).

Demographic data (e.g. gender, age, ethnicity etc.) was also collected where possible.

Where possible this data was collected from existing information systems, however, where this wasn't possible for some data, clinicians were asked to collect as much additional information as they were prepared to. All sites used different information systems and had varying levels of information collected by clinicians.

Data cleaning process

The database received from each site was cleaned in order to only include those patients who were part of the stepped care system. On a site-by-site basis, after taking into account various data sources, and after liaison with CORU, it was decided those patients that would be included in the patient flow analysis (see figures 5 to 8). For example, in one site (site 3), patients seen in step 4 were removed as this step was only offered for part of the collection period and therefore there was no data available at this step for most of the data collection period. Records with only a unique identifying code and no other information were excluded. If patients were 'still in treatment' then these were included by indicated as such on the patient flow diagrams.

Data was cleaned up further for the purposes of modelling. Where patients were coded as 'still active'' or 'still in treatment', or if it was unclear what had happened to them then they were removed from the database as their flows were incomplete. All records with incomplete data from assessment or

only a unique identifying code and no other information were removed. For 3 out of 4 sites, patients who had a first contact before a specified date were excluded to avoid bias for early leavers. This was decided on the basis of comparison of durations of treatment between patients referred during the first and second halves of the data collection period. Durations of treatment for patients referred during the second half of the data collection period were lower, indicating that there was some bias towards early leavers in the higher intensity data. The exact cut-off date for excluding patients entering high intensity treatment was decided by examining the moving average of duration of treatment month by month, and choosing the cut-off month as the month where average durations of treatment started to decrease. In site 4, those patients not referred by a GP or CPN were removed as they were not considered part of the stepped care system and so might have very different characteristics.

Quantitative Variables/Analysis

For the number of people who accessed each part of the services and duration of treatment totals and averages were calculated and these figures were put into graph format. During analysis of all categorical data, means and totals (with ranges where applicable) were calculated. For those variables where there was missing data, these cases were excluded and the total number of cases used for each variable was presented in the results. Where data was missing for outcome measures from each site, percentages of data missing were calculated. Average waiting times at each site were calculated for each step and across all steps, as well as average waiting times across all sites.

The collection of information about patients' journeys through the system; start and end points, number of sessions and whether they were stepped up or down was used to model patient flows in the reconfiguration tool (described in Chapter 5).

Patients' journeys within the services were also mapped visually by using patient flow data received from the services. The data included percentages of all patients and where they went from one part of the service to another (e.g. referral to assessment, step 2 to step 3 etc.) as well as end points (i.e why and where a patient left the service). These percentages and end points were used to create a map of where patients went in each service and the main flows through each service.

Quantitative results

Data was collected from a total of 7808 patients referred to the 4 stepped care services between September 2006 to April 2008.

1.1.16   Patient Flow data

Table 6 shows the average number of patients who accessed each part of the stepped care services during the period of data collection. For site 3 the

referral and assessment figures are the same as we only had the number of people who were assessed and not the number that were referred overall before assessment. In all sites over 50% of people who were referred were assessed and in site 1 the number of people assessed was as high as 74.6%. Numbers of people that accessed each step indicate that sites 2 and 4 were more low intensity orientated whilst sites 1 and 4 had more people access the high intensity service than the low intensity.

Table 6. Number of patients who accessed each part of each service

Activity	Site 1	Site 2	Site 3	Site 4	Total
Referral	1043	1644	1185[a]	3936[b]	7808
Assessment	778	831	1185	2518	5312
Step 1	N/A	N/A	607	N/A	607
Step 2	168	776	178	589	1711
Step 3	336	298	40	436	1110
Step 4	39	75	N/A	N/A	114

[a]Opt-in patients only; [b]Includes opt-in only patients to PATS

Site 1 Patient Movement

The data shown above shows the percentages of patients from this service who moved from one part of the stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through the service. The average number of referrals to Site 1's service per week was 17.

Site 1 operated a mainly stratified service with 45% of patients going straight to Step 3 or specialist services from assessment. Table 6 indicates that in Site 1, 1043 patients were referred and of those 778 (74.6%) went on to be assessed. Site 1 had low numbers of graduate workers, and therefore a limited capacity to deliver low intensity interventions. The service offered more high intensity treatments than low with a ratio of low to high intensity treatments of 1:2.2.This large number of patients referred to higher intensity interventions indicates that this is a high burden system.

The data shows only 20.3% of people starting with Step 2 interventions or classes. Both Step 2 interventions and classes had high completion rates. Around one third of people did not attend or withdrew (unscheduled discontinuations). Nearly 10% of those people that had Step 2 or classes were 'stepped up' to Step 3 or Psychiatry/Psychology.

The data shows that as 50% of people who were assessed moved straight on to Step 3, just over a third of those assessed completed Step 3 treatment. However, there is a high percentage of people who are either still in treatment or their outcome is unknown. Just under 5% of people were 'stepped up' to Psychiatry/Psychology.

Of the total number of people who were assessed for this service, 5% were assessed and then referred or were 'stepped up' to Psychiatry/Psychology.

Site 1 – Patient flows
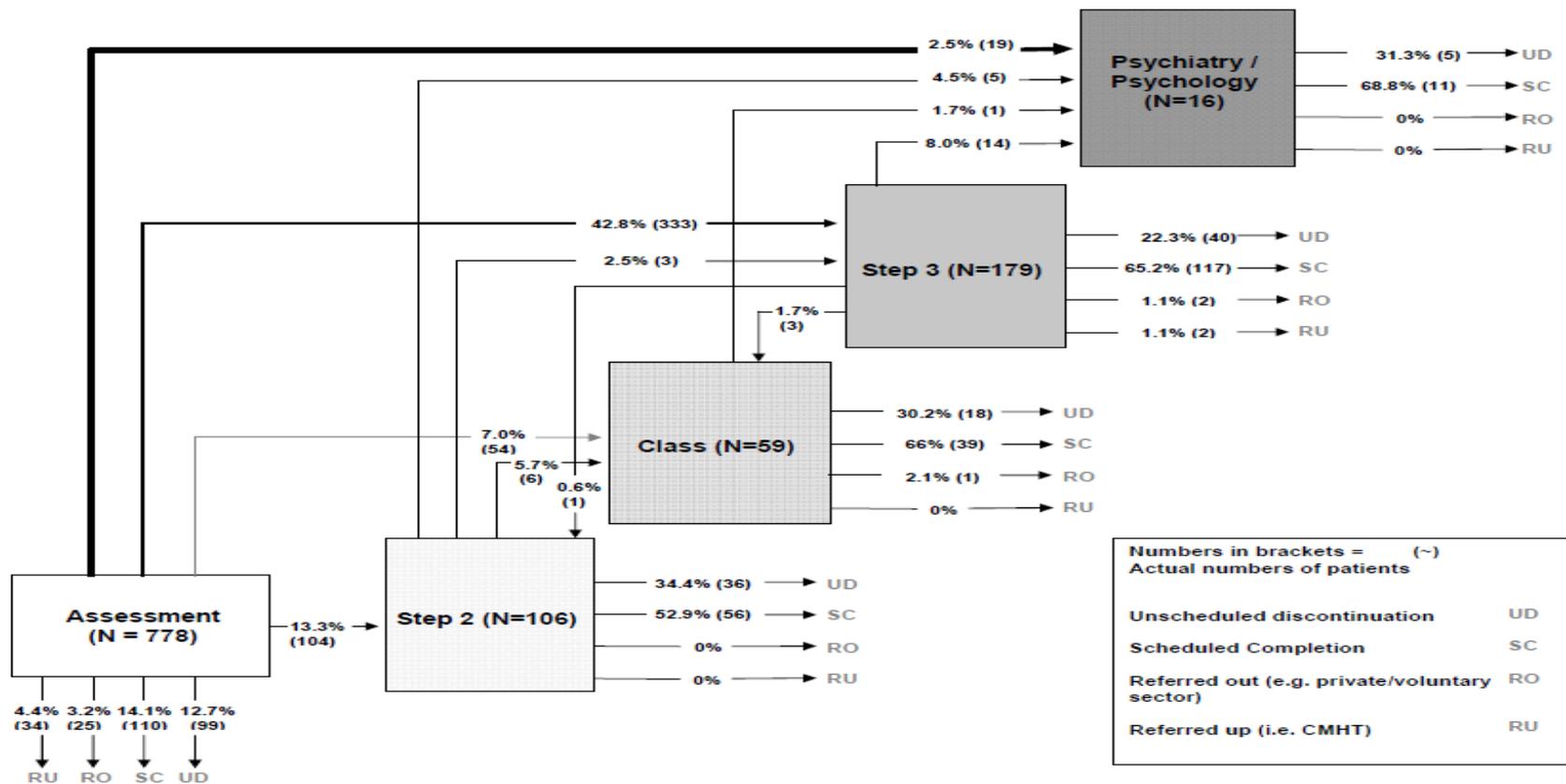
Site 2 Patient Movement

The data shown above shows the percentages of patients from this service who moved from one part of the stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through their service. The average number of referrals to the service per week was 32.1.

This site operated a service which is closest to the stepped care model of treatment delivery. Patients are offered a low intensity intervention firstly and there are options to step up at later stages in the system. A large range of treatments are offered including short-term facilitated self-help, psycho-education, individualised problem identification and goal-setting and stress management classes. The service is a low burden service, offering mainly low intensity interventions with a ratio of low to high treatments of 2:1.

The data shows that 48.4% of people referred were assessed and 30% were given Step 2 interventions straight away and around 20% had an unscheduled discontinuation. Around 47% of people referred to the service were either directly referred, were assessed and referred or were 'stepped down' to Step 2. Nearly 10% of those who had Step 2 interventions were stepped up to Step 3. Over a third of people completed Step 2, however, nearly 50% had an unscheduled discontinuation. Five people had a second assessment and two of these were stepped up to Step 3.

Of the total number of people referred to the service, 18% were assessed and then referred or were 'stepped up' to Step 3. Of those who had Step 3 interventions 9.4% were stepped up to step 4, around one third completed and 21.8% of people had a unscheduled discontinuation. Just over a quarter of people were either still in treatment at the end of data collection or their outcome was unknown.

Nearly 5% of the total number of people referred to the service were assessed and referred or 'stepped up' to Step 4. For this step, at the end of data collection, there are a large number of people (78.7%) who were still in treatment or their outcome was unknown. If these are removed from the data then 16 people accessed and completed Step 4 treatment. Over a third of these had a scheduled completion around 50% had an unscheduled discontinuation or were found to not be appropriate.
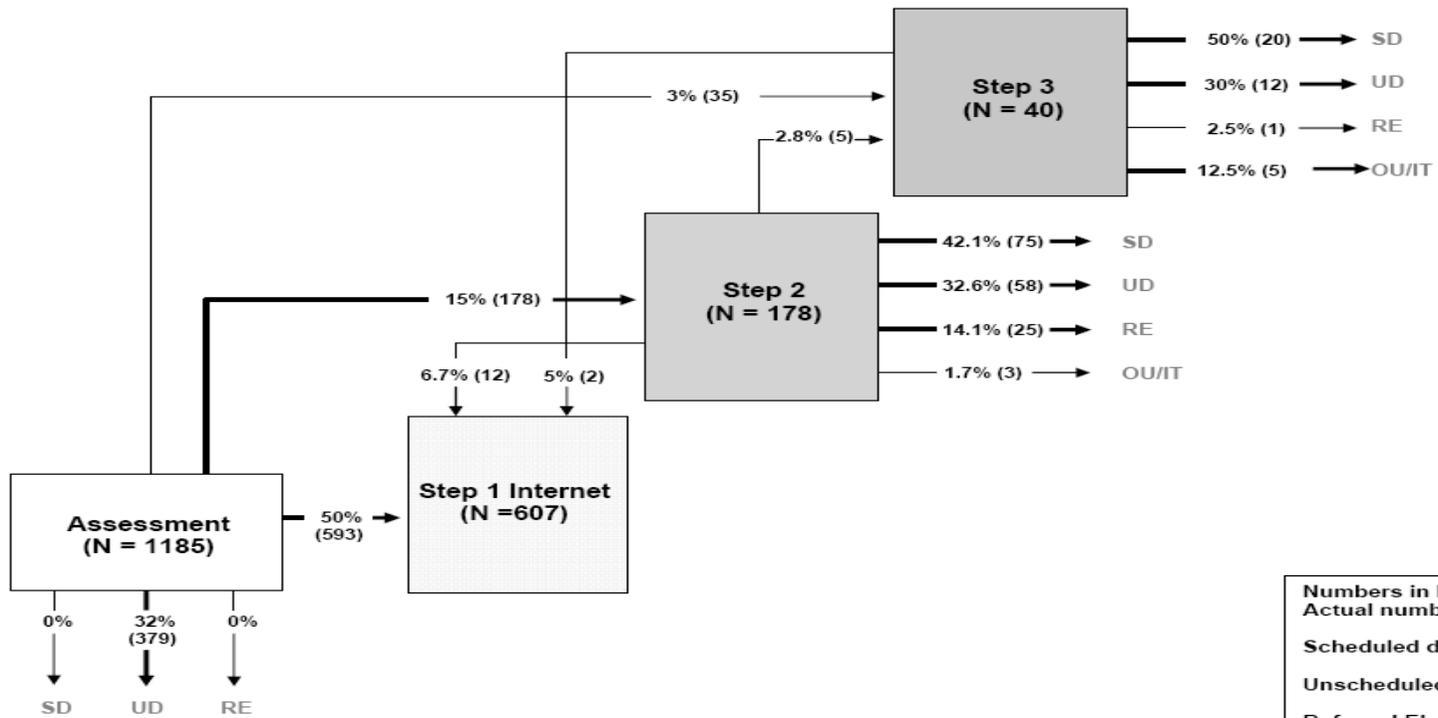
Site 2 – Patient flows
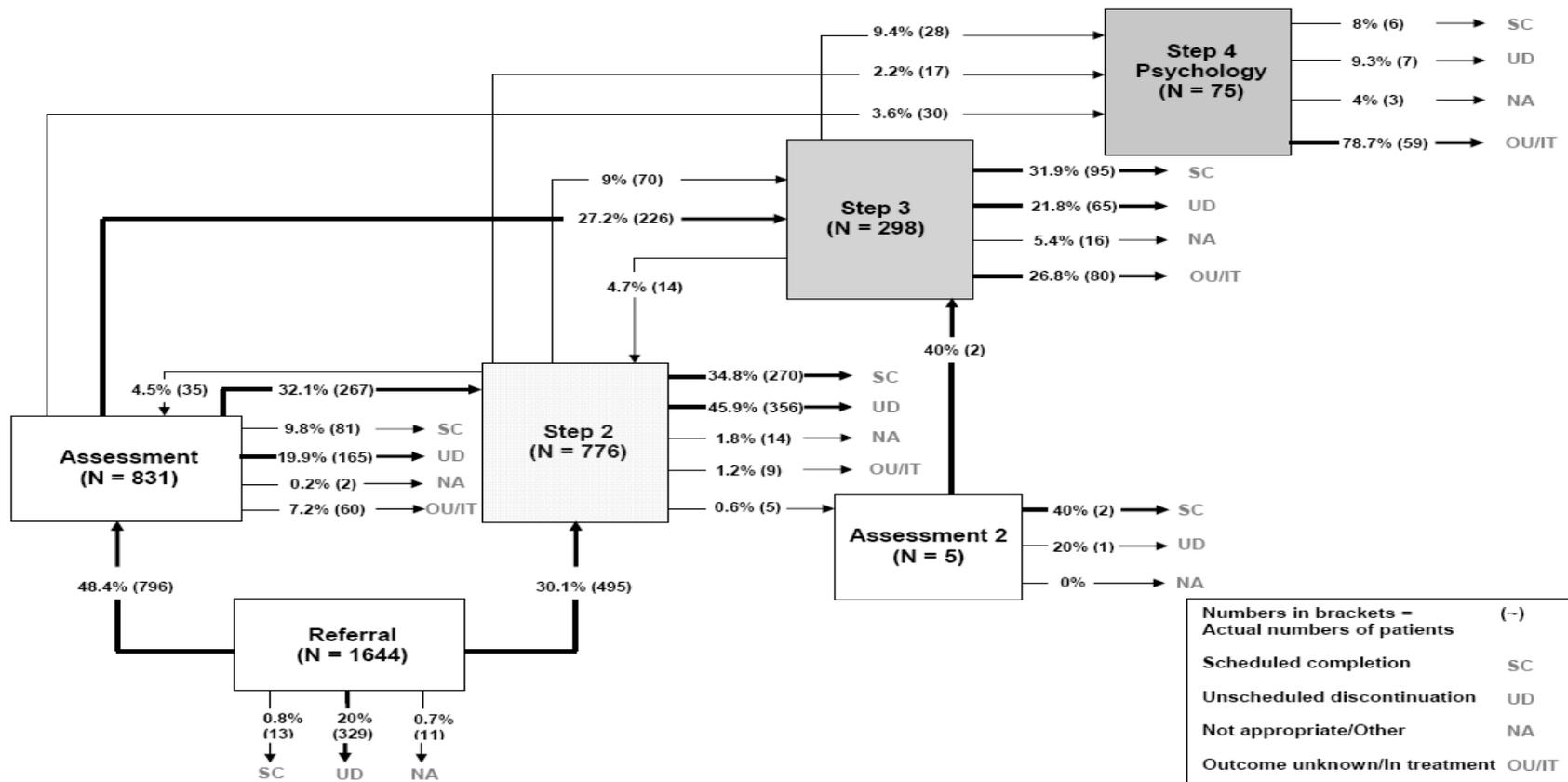
Site 3 Patient Movement

The data shown above shows the percentages of patients from the service who moved from one part of the stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through site 3's service. The average number of referrals to the service per week was 21.

This service operated a partly stepped model of treatment delivery. A large number of people were referred to low intensity interventions, however there were very few patients who were stepped up to a higher intensity treatment (2.8%). A range of treatments were offered at step 2 and 3 including psycho-education courses, cCBT, guided self-help, and step 3 interventions include face-to-face CBT, and group work e.g. anxiety management, anger management and OCD workshops. Many patients were offered a low intensity treatment first, with a ratio of 20:1 low to high intensity treatments.

The data shows that half of the people who were assessed moved straight on to step 1 – internet interventions, with only 15% of people starting with Step 2 interventions and only 3% starting on step 3 interventions. For all steps around a third of people had an unscheduled discontinuation. Steps 2 and 3 had high successful completion rates of 42.1% and 50% respectively. Like the PATS service in site 4, we only have details of patients who were assessed rather than referred, since this service did not record details of referrals that did not attend for assessment.

Site 3 – Patient flows

Step 3
(N = 40)

50% (20) → SD
30% (12) → UD
2.5% (1) → RE
12.5% (5) → OU/IT

3% (35) →
2.8% (5) →

Step 2
(N = 178)

42.1% (75) → SD
32.6% (58) → UD
14.1% (25) → RE
1.7% (3) → OU/IT

15% (178) →

6.7% (12)   5% (2)

Step 1 Internet
(N =607)

Assessment
(N = 1185)

50% (593) →

0%   32% (379)   0%

SD   UD   RE

Numbers in brackets = (~)
Actual numbers of patients

Scheduled discontinuation   SD
Unscheduled discontinuation   UD
Referred Elsewhere   RE
Outcome unknown/In treatment   OU/IT
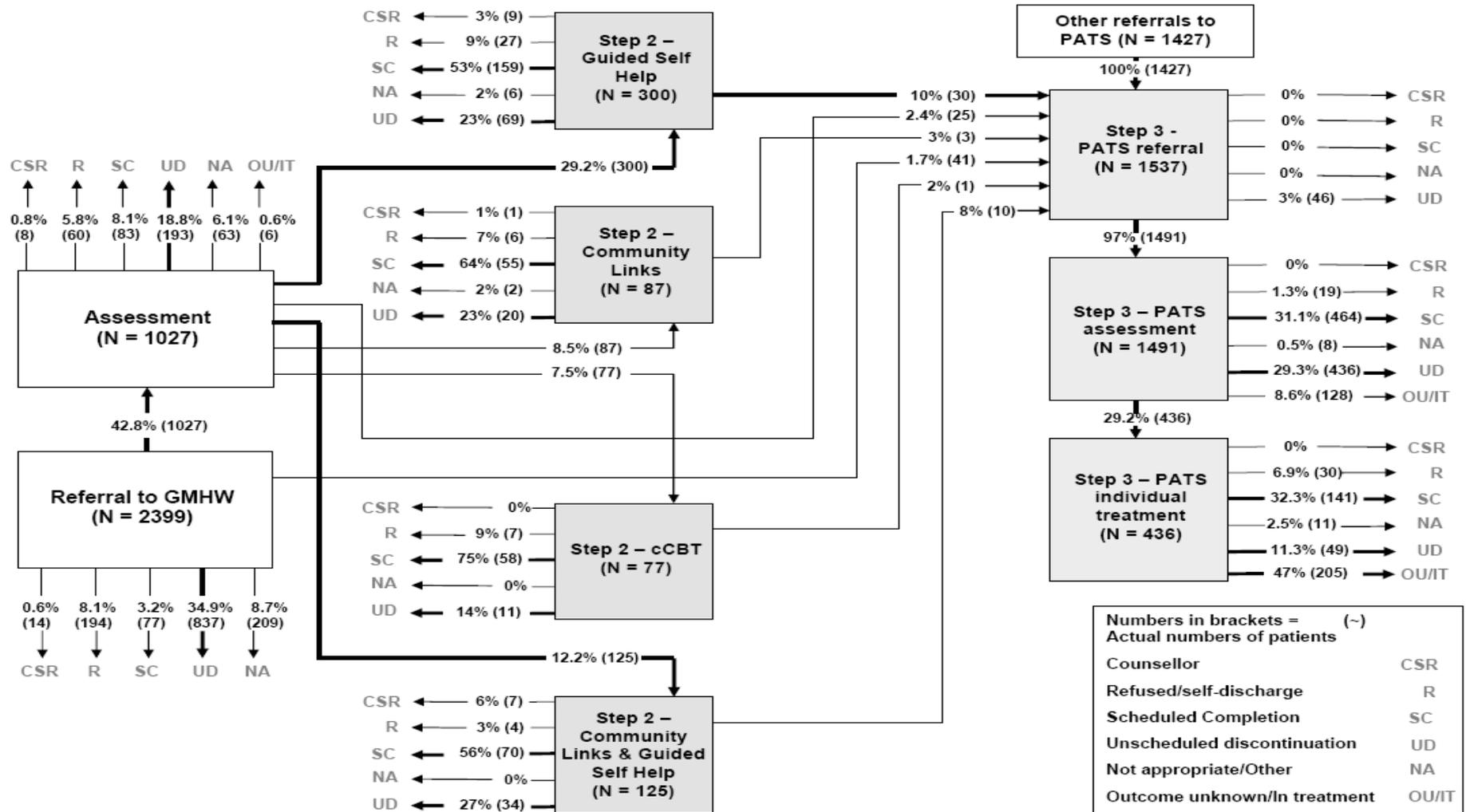
Site 4 Patient Movement

The data shown above shows the percentages of patients from the service who moved from one part of the stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through the service. The average number of referrals to the service per week for GMHW was 40.4 and to PATS was 18.6.

Site 4 operated a complex service, offering a range of different treatments. At step 2 these treatments included facilitated self-help, books on prescription and cCBT. The service was a stepped one with over 40% of people assessed receiving low intensity interventions and 10% being stepped up. The ratio of low to high treatment was 1.4:1 indicating a low burden system offering more low than high intensity treatments.

The data shows that only 42.8% of people referred to GMHW were assessed. Of those assessed, nearly thirty percent were offered guided self help, just over 10% were offered community links and guided self help, around 10% were offered community link and another 10% cCBT. All Step 2 interventions had good scheduled completion rates, ranging from 53-75%, with cCBT having the highest completion rate. Unscheduled discontinuation rates for Step 2 ranged from 14% to 27%. Of the total number of patients who had step 2 interventions 27% were stepped up to PATS treatment (10% of the total number assessed).

Of those that were referred to the PATS service 97% were assessed, but these data only refer to patients who had 'opted in' to the service following referral. Records were not kept of those referrals who did not respond to letters from PATS. Around a third of those assessed had individual treatment. PATS individual treatment had a completion rate of 32.3% but a large proportion of people (47%) were still in treatment or their outcome was unknown at the end of the data collection period.

Site 4 – Patient flows

Patient Movement Summary

Service models varied between a mainly stepped service to a mainly stratified service and services somewhere in between the two. Accordingly, there were a range of different patient flows seen in each site. For those services that were mostly stepped, main patient flow was through a low intensity route. Those more stratified services showed patient flows that had more allocation of patients, less stepping up or down and more patients receiving a high intensity treatment. Services varied in complexity and the amount of treatments offered. In some services graduate workers were at a premium and therefore low intensity treatment was limited, whereas, in other services there were low numbers of high-intensity therapists and this had an impact on availability of high intensity treatments. The ratio of treatments (low:high) varied across the sites and ranged from 20:1 (mainly low) to 1:2.2 (mainly high).

For those sites where we have information about movement from referral to assessment, typically around 40-50% of patients were assessed, although in one service this figure was as high as 74.6%. In those more stratified services some patients were allocated to a step without assessment.

A broad range of allocation rates were seen, between 2 and 43% of patients (depending on site) were allocated to high intensity treatment. Rates of stepping up to high intensity were around 10% in three sites, in contrast to site 3, where only 2% of patients were stepped up. In some more stepped services patients were allocated directly to low intensity treatment without an assessment.

All sites had reasonably similar drop out/unscheduled discontinuation rates of around 33%. In all but one site, scheduled completion rates were higher for step 2 (range 34.8 - 75%) than step 3/4 (28.2 – 50%), although, again, more patients were still in treatment for the later steps.

Waiting times

Table 7 below are the average waiting times from referral to assessment across all steps and all sites. N/A indicates that data was not available. All sites had relatively similar waiting times (differences of a few days seem of little clinical significance) and there appeared to be no relationship between how stepped or stratified a service was and their waiting times. However, much of the waiting time data was not available and so only limited conclusions can be made.

Table 7: Average waiting times from referral to assessment of each site and overall (range in brackets)

Activity	Site 1	Site 2	Site 3	Site 4	Mean	Range
Referral to assessment	22 days (0-233)	N/A	16.5 days (1-150)	22.5 days (1-181)	20.3 days	0-233
Step 2	18 days (1-224)	17.9 days (1-117)	N/A	22.5 days (1-120)	19.5 days	1-224
Step 3	22.4 days (1-199)	23 days (1-167)	N/A	N/A	22.7 days	1-199
Step 4	16.5 days (1-52)	25.3 days (8-80)	N/A	N/A	20.9 days	1-80
Mean waiting time across all steps	24.2 days (0-224)	19.4 days (1-167)	N/A	N/A	21.8 days	0-224

1.1.17   Treatment Inputs data

Data was collected about the percentage of patients who attended each number of sessions for each activity across all sites. Table 8 and figures 9 to 12 showing the average number of sessions that patients attended for each part of the service. N/A indicates that data was not available.

Table 8 shows that for sites 2 and 4, whose services offered more lower intensity treatment than higher, the step 2 number of sessions was lower than other sites and step 3/4 are slightly higher. For the sites who offered more high intensity treatment (1 and 4) the number of treatment sessions was very similar across all steps.

Figure 9 shows that in site 1 although the mean number of sessions attended during Step 2 is 3.41 (from Table 8), nearly a third of people only attend 1 session and the majority of people (80.6%) attend no more than 5 sessions. For site 2 nearly all patients (94.7%) attend between one and six sessions, with 74.1% of people attending three sessions or less. Only 0.3% of patients attended more than ten sessions, this equates to only 2 people. At site 3, although the mean number of sessions attended during Step 2 is 4.28 (from Table 8), 40% of people only attend 1 session and the majority of people (68.9%) attend no more than 5 sessions.

Figure 10 shows duration of treatment for the different step 2 treatments at site 4. For guided self-help over half of patients (51.6%) of people attend only one session and nearly all patients (96.5%) attend between one and three sessions. Only 1.5% of patients attended more than four sessions, this equates to only 5 people. For community links, the majority of people attended between one and two sessions (90.1%) with only 9 people (out of 87) attending more than three sessions. There is a great variation in the number of sessions patients used cCBT. The majority of people used between six and nine sessions (75.3%). The majority of people who received guided self-help and community links attended between one and three sessions (93.2%). Only 3 people out of 125 used five sessions or more.
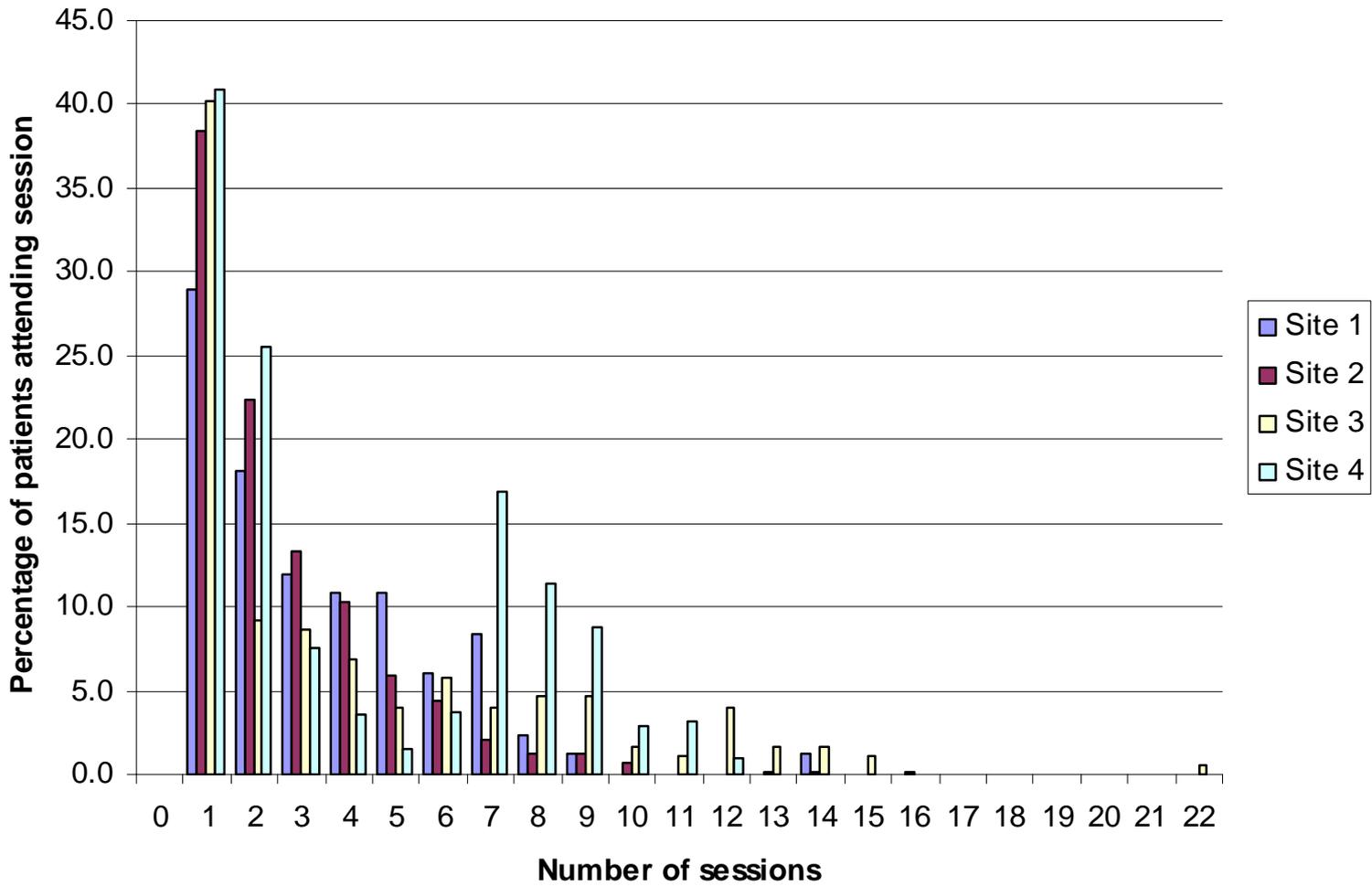
Figure 11 shows that in site 1 nearly half of people (47%) only attend between 1 and 3 sessions at step 3 and only 13% attend over 7 sessions. For site 2 there was a huge variation in the amount of sessions that people attended. The majority of people (70.7%) attended between one and five sessions and only 5.6% of people attend more than ten. At site 3, over a third of people (34.2%) only attend 1 session at step 3 and approximately a third of people (34.2%) attend over 7 sessions. Although there are only 35 people who use step 3 interventions so only 12 people attended over 7 sessions and only 4 people attended 14-16 at that site. At site 4, there is a huge variation in the different number of PATS treatment session that patients attended. Sixty two percent of patients attended between one and seven sessions but over a third of patients take more. 3.3% of patients attended over 20 sessions, this equates to 8 out of 231 people treated.

Figure 12 shows duration of treatment for Step 4. For site 1, although the mean number of sessions attended during Step 4 is 3.38, this graph shows that over a third of people (37.5%) only attend one session and most attend between 1 and 5 (87.5%). Please note that for site 1 only 16 people accessed Step 4 and completed treatment during the time of the study and so the 12.5% of people who had 9 sessions actually only equates to 2 patients. For site 2, there is a great variation in the number of sessions patients had during Step 4. Although, only 16 people in total accessed Step 4 of your service and completed treatment during the time of the study so around half of those people (52.6%) had between 1 and 4 sessions. Two of the 16 people attended 15 sessions but for all of the other sessions shown as bars on the graph only one person attended each session at site 2.
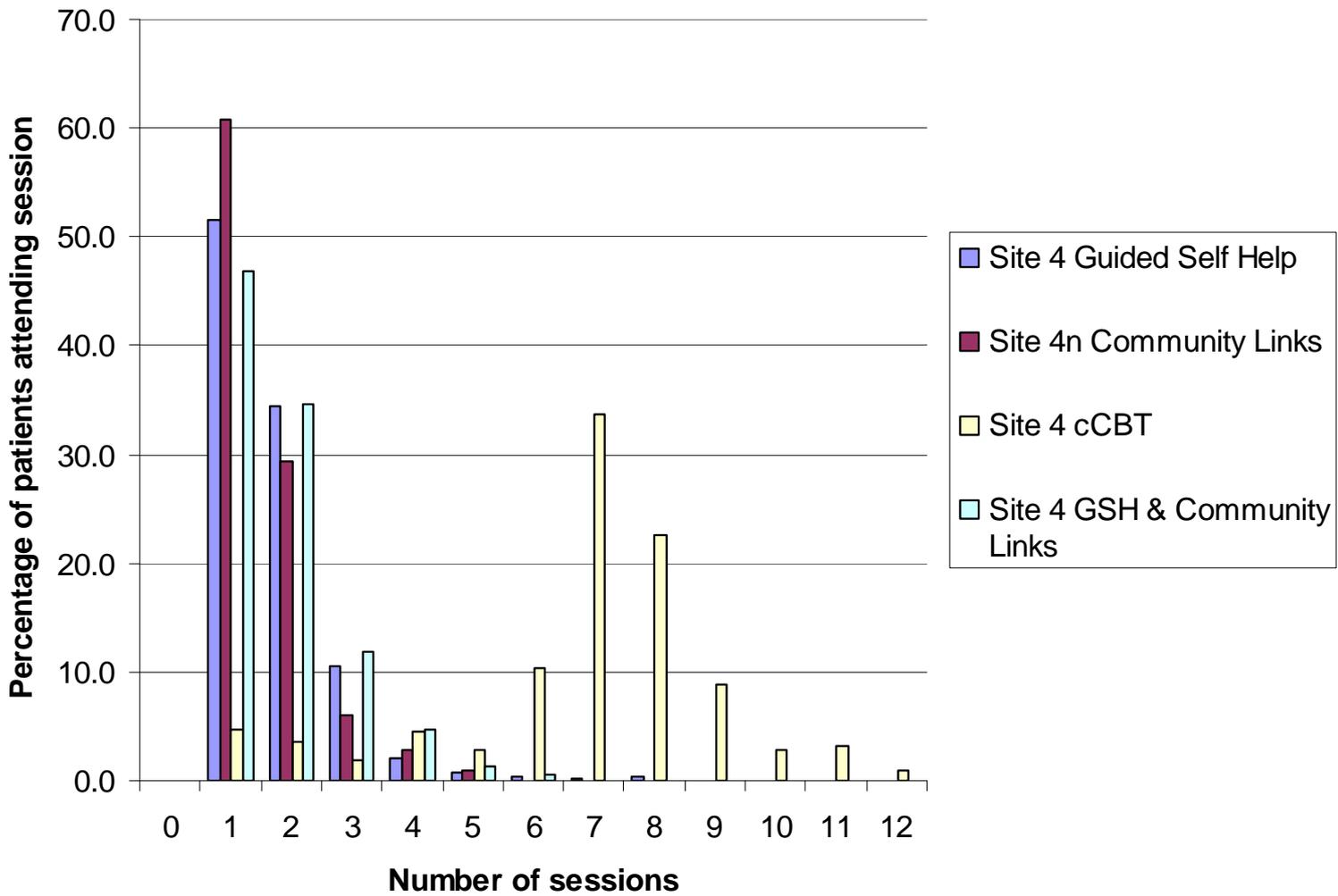
Table 8: Duration (number of sessions) of treatment data for all clinical activities at all sites (no data for step 1)

| Activity	Site 1	Site 2	Site 3	Site 4	Mean Duration	Standard Deviation
Assessment	1	1.13	1	1.19	1.1	0.10
Step 2	3.41	2.66	4.28	2.96	3.3	0.71
Step 3	4.47	4.43	4.79	6.80	5.1	1.13
Step 4	3.38	7.58	N/A	N/A	5.5	2.97

Overall duration of treatment for step 2

Number of sessions (x-axis)

Percentage of patients attending session (y-axis)

Legend:
- Site 1
- Site 2
- Site 3
- Site 4

Overall duration of treatment for step 2 for Site 4

Overall duration of treatment for step 3
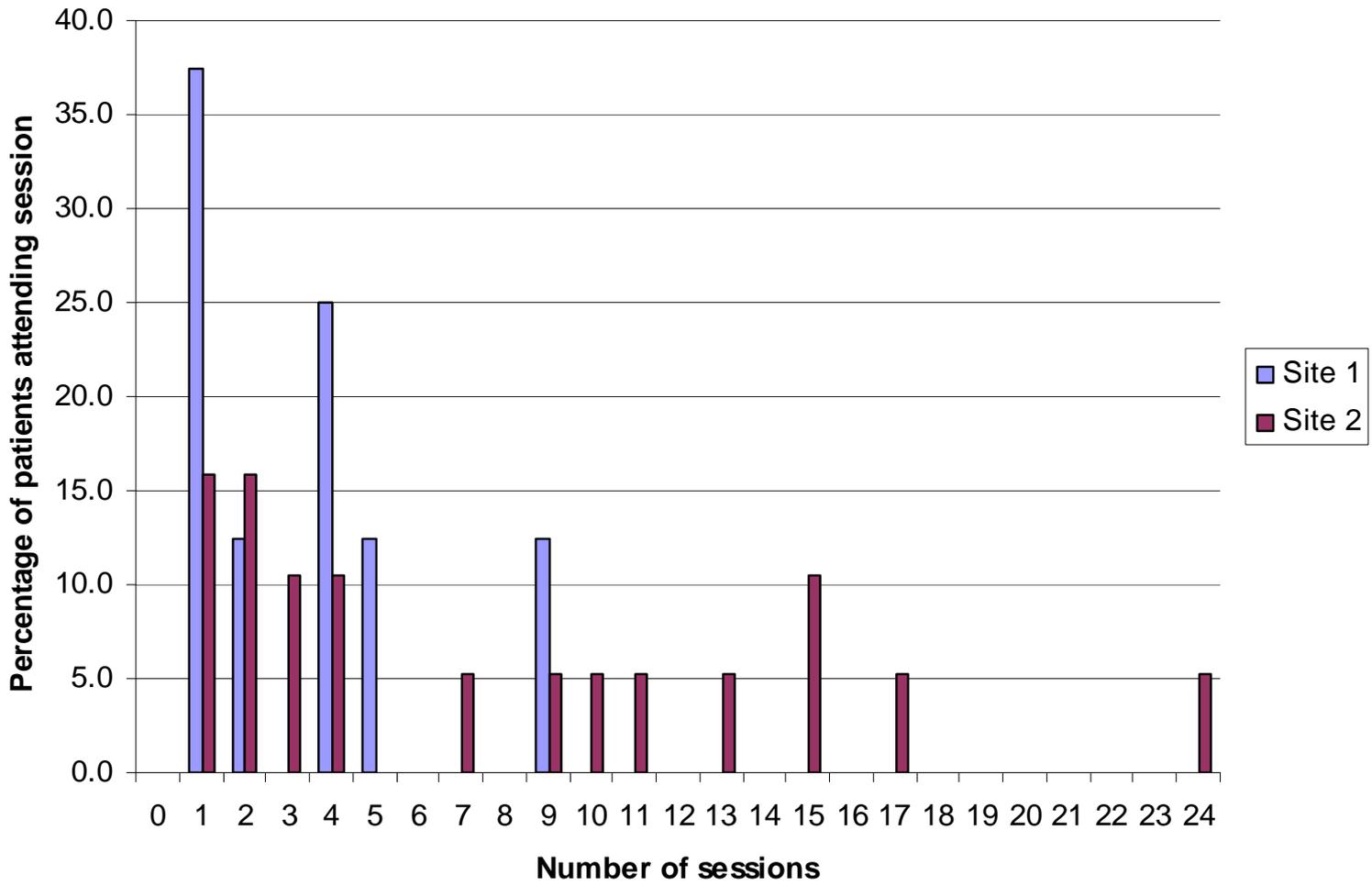
1.1.18 Figure 12: Overall duration of treatment for step 4
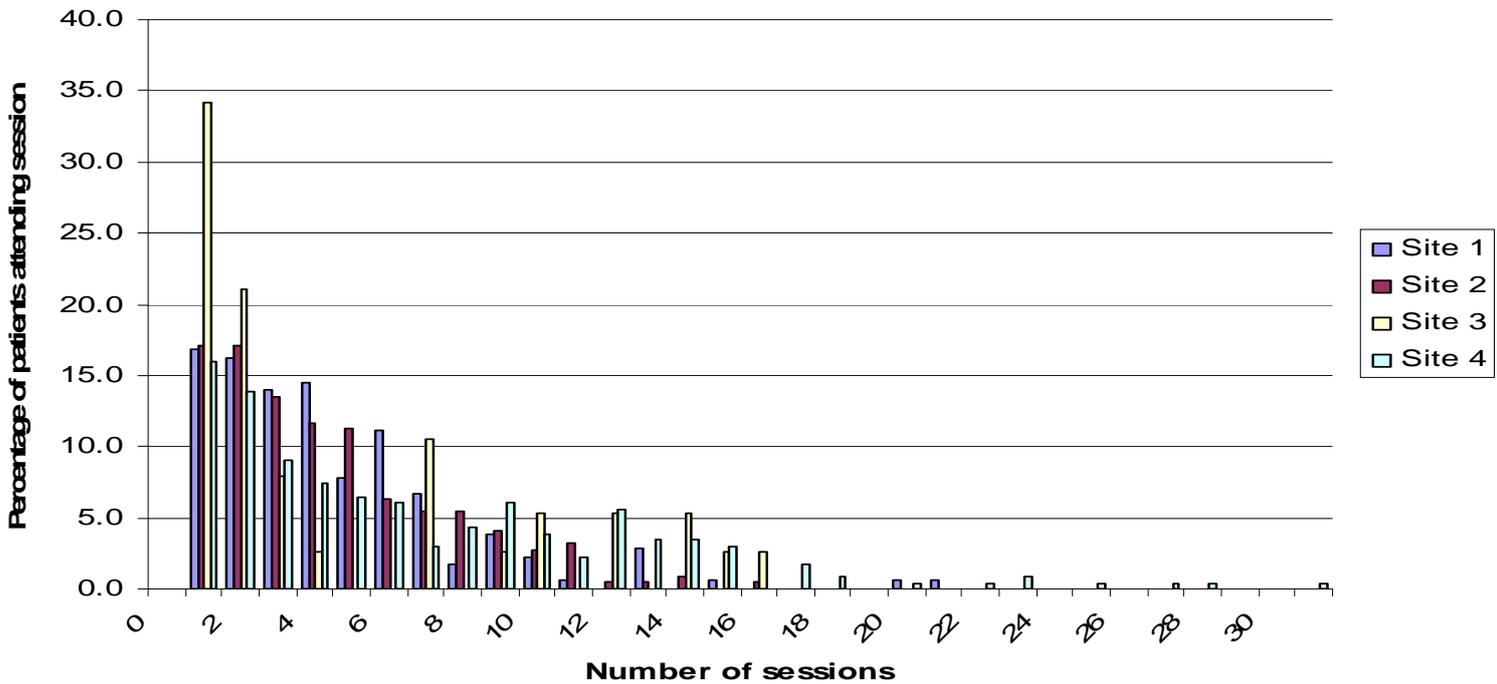
1.1.19

1.1.20 Treatment Outcome Data

Although, in the consensus development process stakeholders had made the decision to collect additional data, beside patient flows, in practice, data such as demographics and treatment outcomes were infrequently inputted and this led to gaps in data collected. All sites had expressed a desire to incorporate routine outcome measurement into their stepped care decision making using standard outcome measures. Measurement could take place at initial assessment, during treatment, at the end of treatment to assist in initial allocation and stepping decision making. In reality, sites collected very little routine outcome data, particularly after the first appointment. Table 9 shows that only one site collected initial clinical data on the majority of patients assessed, the remaining three sites collecting data on less than 50%. Post-treatment data was virtually entirely absent.

Subjective, therapist rated assessment of improvement was recorded more frequently. However, even here, only one site recorded this for more than 50% of their patients, the remainder varying between 10% - 30%. Table 10 details the clinician assessed subjective improvement rates in each site.

Table 9: Outcome data by site (completeness)

Activity	Site 1	Site 2	Site 3	Site 4	Mean	Standard Deviation
Pre-treatment	27.6%	36.1%	88.3%	32.1%	46.0%	0.28
Post-treatment	1.9%	0.0%	0.0%	6.4%	2.1%	0.03
Subjective Clinical Improvement	57.7%	28.8%	8.9%	18.8%	28.6%	0.21

Table 10: Clinician-assessed subjective improvement rates by site

Clinical Outcome measure	Site 1 (1043)	Site 2 (1644)	Site 3 (1185)	Site 4 (3936)	Mean	Standard Deviation
Improved	383	366	75	516	335	185.85
No change/same	205	89	23	188	126	85.76
Worsened	14	19	7	35	19	11.90
Data missing	441	1170	1080	3197	1472	1194.91

1.1.21 Demographics

Table 11 shows that all sites saw more female patients than male. The majority of patients were between the ages of 20-50 years old. Most patients seen, across all sites, were White English/European. Many patients were employed, with only around 10% of those we have data for indicating that they were unemployed and the majority of patients reported having no sickness from work. Other than in site 4 where more patients had been seen before for depression or anxiety, there was not much difference in the numbers of patients who had and had not been seen before for depression and anxiety. The majority of patients had anxiety and/or depression as their main identified problem, although between 8-20%, across sites, reported 'other' (e.g. stress, PTSD) as their main problem. N/A indicates that data was not available at that site.

Table 11: Demographic details of sites

Demographics	Site 1 (1043)	Site 2 (1644)	Site 3 (1185)	Site 4 (3936)	Total (7808)	Mean
Gender						
Male	226 (21.7%)	289 (17.6%)	N/A	691 (17.6%)	1206 (15.4%)	302 (14.2%)
Female	457 (43.8%)	500 (30.4%)	N/A	1198 (30.4%)	2155 (27.6%)	539 (26.2%)
Data missing	360 (34.5%)	855 (52.0%)	1185 (100%)	2047 (52.0%)	4447 (57.0%)	1112 (59.6%)
Age						
19 and under	N/A	56 (3.4%)	N/A	43 (1.1%)	99 (1.3%)	25 (1.1%)
20-29	N/A	246 (15.0%)	N/A	599 (15.2%)	845 (10.8%)	211 (7.5%)
30-39	N/A	223 (13.5%)	N/A	562 (14.3%)	785 (10.0%)	196 (6.9%)
40-49	N/A	166 (10.1%)	N/A	383 (9.7%)	549 (7.0%)	137 (5.0%)
50-59	N/A	92 (5.6%)	N/A	205 (5.2%)	297 (3.8%)	74 (2.7%)
60-69	N/A	30 (1.8%)	N/A	77 (2.0%)	107 (1.4%)	27 (1.0%)
70+	N/A	18 (1.1%)	N/A	20 (0.5%)	38 (0.5%)	10 (0.4%)
Data missing	1043 (100%)	813 (49.5%)	1185 (100%)	2047 (52.0%)	5088 (65.2%)	1272 (75.4%)
Ethnicity						
White (English / European)	N/A	516 (31.4%)	773 (65.2%)	517 (13.1%)	1806 (23.1%)	452 (27.4%)
Asian (Bangladeshi)	N/A	1 (0.1%)	1 (0.1%)	8 (0.2%)	10 (0.1%)	3 (0.1%)
Asian (Chinese)	N/A	4 (0.2%)	2 (0.2%)	N/A	6 (0.1%)	2 (0.1%)
Asian (Indian)	N/A	13 (0.8%)	4 (0.3%)	4 (0.1%)	21 (0.3%)	5 (0.3%)
Asian (Pakistani)	N/A	20 (1.2%)	N/A	3 (0.1%)	23 (0.3%)	6 (0.3%)
Asian (Other)	N/A	8 (0.5%)	N/A	11 (0.3%)	19 (0.2%)	5 (0.2%)
Black (African)	N/A	26 (1.6%)	5 (0.4%)	14 (0.4%)	45 (0.6%)	11 (0.6%)
Black (Caribbean)	N/A	22 (1.3%)	19 (1.6%)	22 (0.5%)	63 (0.8%)	16 (0.9%)
Other	N/A	12 (0.7%)	2 (0.2%)	62 (1.6%)	76 (1.0%)	19 (0.6%)
Data missing	1043 (100%)	1022 (62.2%)	379 (32.0%)	3295 (83.7%)	5739 (73.5%)	1435 (69.5%)
Employment status						
Employed	421 (40.4%)	466 (28.3%)	463 (39.1%)	940 (23.9%)	2290 (29.3%)	573 (32.9%)
Unemployed	123 (11.8%)	191 (11.6%)	109 (9.2%)	251 (6.4%)	674 (8.6%)	169 (9.8%)
Student	27 (2.6%)	61 (3.7%)	25 (2.1%)	158 (4.0%)	271 (3.5%)	68 (3.1%)
Homemaker	67 (6.4%)	45 (2.7%)	50 (4.2%)	86 (2.2%)	248 (3.2%)	62 (3.9%)
Retired	31 (3.0%)	42 (2.6%)	24 (2.0%)	65 (1.7%)	162 (2.1%)	41 (2.3%)
Other (e.g. Long-term sick)	14 (1.3%)	26 (1.6%)	12 (1.0%)	120 (3.0%)	172 (2.2%)	43 (1.7%)
Receiving benefits	N/A	N/A	123 (10.4%)	269 (6.8%)	392 (5.0%)	98 (4.3%)
Data missing	360 (34.5%)	813 (49.5%)	379 (32.0%)	2047 (52.0%)	3599 (46.1%)	900 (42.0%)

Demographics	Site 1	Site 2	Site 3	Site 4	Total	Mean
Previously seen for anxiety/depression						
Yes	300 (28.8%)	N/A	326 (27.5%)	1245 (31.6%)	1871 (24.0%)	468 (22.0%)
No	383 (36.7%)	N/A	480 (40.5%)	644 (16.4%)	1507 (19.3%)	377 (23.4%)
Data missing	360 (34.5%)	1644 (100%)	379 (32.0%)	2047 (52.0%)	4430 (56.7%)	1108 (54.6%)
Identified Problem						
Depression	99 (9.5%)	145 (8.8%)	247 (20.8%)	638 (16.2%)	1129 (14.4%)	282 (13.8%)
Anxiety	181 (17.4%)	201 (12.2%)	156 (13.2%)	404 (10.3%)	942 (12.1%)	236 (13.3%)
Depression & Anxiety	268 (25.7%)	170 (10.3%)	138 (11.6%)	532 (13.5%)	1108 (14.2%)	277 (15.3%)
Other (e.g. PTSD, stress)	135 (12.9%)	315 (19.2%)	163 (13.8%)	315 (8.0%)	928 (11.9%)	232 (13.5%)
No problem identified	N/A	N/A	102 (8.6%)	N/A	102 (1.3%)	26 (2.1%)
Data missing	360 (34.5%)	813 (49.5%)	379 (32.0%)	2047 (52.0%)	3599 (46.1%)	900 (42.0%)
Taking prescribed medication						
Yes	341 (32.7%)	395 (24.0%)	525 (44.3%)	N/A	1261 (16.1%)	315 (25.2%)
No	342 (32.8%)	436 (26.5%)	281 (23.7%)	N/A	1059 (13.6%)	265 (20.8%)
Data missing	360 (34.5%)	813 (49.5%)	379 (32.0%)	3936 (100%)	5488 (70.3%)	1372 (54.0%)
Sickness from work						
Yes	181 (17.4%)	156 (9.5%)	206 (17.4%)	114 (2.9%)	657 (8.4%)	164 (11.8%)
No	502 (48.1%)	675 (41.0%)	600 (50.6%)	941 (23.9%)	2718 (34.8%)	680 (40.9%)
Data missing	360 (34.5%)	813 (49.5%)	379 (32.0%)	2881 (73.2%)	4433 (56.8%)	1108 (47.3%)

1.1.22   Summary

Data collected from these four stepped care early implementer sites demonstrates the considerable heterogeneity in system design and performance. Few clear messages emerge although when patients were triaged by high-intensity workers more patients were allocated to high- than low-intensity treatment and freedom to make referrals to multiple points of entry led to more patients being assessed by a high-intensity treatment service component

There was less heterogeneity in rates of stepping up in sites where high-intensity resources were available. This was no more than 10%, even where large numbers of patients had already been allocated directly to high-intensity treatment. However, resource constraints at high-intensity lead to more patients receiving an initial allocation to low-intensity treatment

Attrition rates between referral and assessment and between assessment and treatment are generally around one quarter to one third of patients at both stages. Scheduled completion rates for low-burden treatments are higher than potentially more burdensome high-intensity treatments.

In all our sites, average 'length of stays' in both high- and low-intensity treatments are short, and in high-intensity treatments are considerably shorter than those recommended in NICE guidelines.

Qualitative study

1.1.23 Method

We collected qualitative data from stakeholders in the four sites using semi-structured interviews guided by topic guides which were then analysed using inductive techniques to determine consistent themes in the data.

Participants

A purposive sample of staff and patients from each of the four pilot areas were invited to take part in the interviews. Members of staff working in different roles within each of the pilot sites were invited to be interviewed, as they might be expected to have a different experience of working within a stepped care model and have differing views on the process of instituting stepped care. Patients with a variety of experiences of stepped care were invited to take part, based on four criteria: patients who self-referred (in one site), patients who had a successful outcome to low intensity treatment, those who were stepped up to receive higher intensity interventions and patients who dropped out of treatment.

Data sources/measurement

Quantitative data was collected at each site. Information was collected about the number of referrals and number of patients accessing each part of the service. Also demographic data was collected, including age, gender, presenting condition etc. Waiting times and duration of treatment was also measured at each site.

Qualitative data were collected from a range of staff and patients from each site. Data were collected using semi-structured interviews, either face-to-face or on the telephone. Face-to-face interviews were used for those within easy access of the research team, otherwise telephone interviews were used. A topic guide was followed, with prompts, to elicit views on areas which were considered particularly pertinent and participants were given the opportunity to make any additional comments which they chose. The topic guide included questions aimed to find out about the context in which the tool was used and why interviewees wanted to get involved with the project, mechanisms through which the tool was used, specifics details about the usability of the manual and tool and an evaluation of the tool and manual and any outcomes there may have been.

All interviews were tape-recorded and transcribed verbatim. Participants were given a unique indentifying number which was used on the transcripts.

Data analysis

After the first interview were conducted the data were analysed using a framework analysis. There are five stages of framework analysis (Miles and Hubermann, 1994). Firstly, one author, familiarised herself with the narratives and context of the data by reading and rereading the interview transcripts in order to gain an overview of the material gathered. Whilst reading through the data she made notes of key ideas and themes. Secondly, once the material was reviewed the author began to create a thematic framework including key ideas, themes and concepts by which the data was then re-examined and referenced. The thematic framework including both a priori issues, for example, from the topic guide described above (also see appendix 4), as well as issues that had been identified when reviewing the data. The third step involved systematically applying the thematic framework to the data. The transcripts were analysed and indexed thematically according to the themes in the framework. Themes were indexed across the whole dataset as well as within individual interview transcripts using a constant comparative method, whereby each piece of data is compared to all others for similarities and differences. Original transcripts were regularly consulted to clarify contextual meanings. Fourthly, once the data had been indexed, it was then taken from its original context and was rearranged into a chart which identified themes and subthemes in order to build up a broad picture of the whole dataset. Lastly, the author reviewed the chart created and gathered key characteristics and interpretations of the data. Another author looked in detail at the themes and subthemes identified and explored the credibility of interpretation and themes.

Sample processes of analysis from sub themes to themes are presented in Table 12, with quotes to illustrate the progression from data to thematic interpretation. Also, examples of quotes from respondents are included within the text as examples contributing to the analysis.

Table 12: An overview of the analytical process in the interpretation of themes and subthemes

Statement/meaning unit	Condensed statement	Subtheme	Theme
Personally, as a professional, I've trained up to a specific level, I've invested time and money in that outside of work, I want to work at that level. I don't want the level 2 work because, it doesn't meet my clinical interests. Staff member 13	Staff members are feeling deskilled	Staff role	Changing to Stepped Care
Let's just say that you know graduate workers working in some teams are able to get an awful lot of training and basically be able to take anything that comes up. Those working in other areas have actually been told at one point that they're not allowed to do any training. Staff member 16	Availability of training opportunities not equal in all services	Training	
I guess one of the main things is this lack of communication between Step 2 and Step 3 and Step 4, which I think they have tried to overcome that in those group meetings, but I still kind of feel that because the two teams are very separate from each other …so I guess that's the main problem' Staff member 10	More communication needed between steps	Communication	
there was like eight names on the piece of paper but you know I was like, you weren't told anything about the sort of quality of all these people… it felt more like a sort of, a sort of a network of options of a, just a, of equal importance or whatever rather than, rather than any stepping or anything. It just felt like you can do this, that or the other, so you know, none of them were any better or worse and wouldn't recommend anything above anything else. Do you know what I mean? It wasn't presented in a hierarchy. Patient 3	Could have been more detail in the explanation of the stepped care service	Explaining	Stepped care in operation
Well it, it is really because if you've been screened by someone … screen you and recommend a course of treatment, then to then have to have another two sessions, you know two hour assessment, it does feel a bit over the top, well not over the top, it does feel a bit, well, long-winded and also, you know, if you've got a vested interest in this working then, you know, it doesn't, yeah, its another, it doesn't feel great really. Patient 11	The treatment process is too convoluted and long-winded	Process	
Yes, I would say definitely those with the mild to moderate presentations are getting a better service than they did four years ago, definitely. Staff member 7.	The system is successful for those patients that have mild to moderate problems	Effectiveness	
Yes, and also she treated me as an equal. You sometimes, especially even as early as sixty which I am, sometimes you do get people that are very patronising and you feel just put down. She didn't do that. So she gave me a sense of self-respect, I think, or helped me to get it. Patient 4	The therapeutic alliance with therapists was good	Interpersonal factors	Content of stepped care
She gave me a leaflet to read about it, and it was about me reflecting on the problems I was having, one of them was about dealing with some anger and aggression so she gave me a leaflet on anger and aggression, the other one was feeling a sense of sort of quite deep sadness so I got a letter about that so it was more about me going away, reading things and there were self-help leaflets as well, and then the next session would of been how I got on with the leaflets, and then I went home and read the leaflets and I didn't feel I needed to see that, from what she'd told me about what the things she could do, I didn't feel it was worth me coming out of work to do that, then I felt I needed more than that. Patient 10	Self-help books were limited and did not offer enough support	Specific content	
And we get, we get a lot of very, very disturbed patients. A lot of, you know, the younger, they tend to get to, I think it is the highest population of under 40s in the country… And um, yeah there is a lot of student population there. There is certainly a lot of young people living, moving to ***, young professional people, but also just young people. There is a lot of social housing in our patch actually, so there is a real mixture. We get, we tend to get a lot of quite complicated cases, a lot of drugs, alcohol, lots of self harm, lots of personality disorders. Staff member 4	Case-mix is more complex than before	Contextual factors	
I mean, they usually, well in ***, they are usually lovely middle class girls, who've got a psychology degree, who are 23. But, you know, and had a weekend training, and actually, you know, I think I did have, I did have a man who was referred to one in another part of London, actually, who then came round, got re-referred to us in PAT, that's our psychology assessment treatment service, and he said, he's about he is about 38, and he said "I got referred to this woman in the surgery and she was about 12. And I couldn't tell her that I was watching internet porn and I was, you know, doing." I think there is that sort of sense of, you know. Staff member 4	Low intensity therapists too young		
well actually I've got a new offer, a new option here where I can refer to somebody for a lower intensity treatment. Staff member 1	Staff feel that have more options to offer	Choice	
I was given a choice of what location I wanted to go to, but it was the easiest place for me to access, so, yes she came to the GP's surgery and I saw her. Patient 11	There was flexibility around where patients could be seen	Flexibility	

Qualitative results

1.1.24   Participants

We interviewed 18 members of staff and 14 patients from across the 4 sites. The members of staff comprised 5 graduate workers, 7 mental health practitioners/nurses, 4 psychologists 1 GP and 1 counsellor. The patients represented one self-referral, 5 who did well at low intensity intervention, 4 who were stepped up to high intensity treatment and 3 who withdrew from treatment. Information is missing for one patient.

1.1.25   Interpretation and result

Our analysis indicated that the experience of stepped care for staff and patients could be understood in three themes - Changing to Stepped Care, Stepped Care in Operation and Content of Stepped Care (table 13). Changing to Stepped Care was underpinned by the sub-themes: *staff role, training* and *communication*. Stepped Care in Operation was underpinned by sub-themes of *explaining, process,* and *effectiveness* whilst the sub-themes *interpersonal factors, specific content, contextual factors, choice* and *flexibility* underpinned the theme Content of Stepped Care. Data on Changing to Stepped Care were provided by interviews with staff, whereas data from both staff and patients contributes to the other two themes.

Table 13: Summary of theme and sub-themes for Phase I

Themes and sub-themes
Changing to Stepped Care
Staff role
Training
Communication
Stepped Care in Operation
Explaining
Process
Effectiveness
Content of Stepped Care
Interpersonal factors
Specific content
Contextual factors
Choice
Flexibility

Theme 1: Changing to Stepped Care

Staff role

Moving to a stepped care service required realignment of staff functions, provoking some disquiet at the loss of traditional high status roles. Some staff described interpreting the stepped care system rigidly, being unwilling to adapt to a new way of working and reported dissatisfaction with management.

> *Yeah. I felt totally deskilled, absolutely deskilled. And I felt you could have trained a monkey to do the assessing, to be honest. Staff member 6 - Experienced*

it's just that when you introduce a system like this, it means that people interpret it rigidly. And they're sticking to their, 'that's your problem now you get on with it'. Staff member 12 - Experienced

However, the low-intensity role was considered to be a welcome innovation with the workers themselves considered to be effective at delivering low intensity interventions.

The graduate part I think is excellent, flexible and helpful to most people. Staff member 9 - Inexperienced

Nonetheless, given the relatively severe case-mix in some sites, there were concerns for experienced mental health practitioners about the time they needed to allocate for adequate supervision of low-intensity workers.

There is definitely still the issue of what is appropriate for the remit of a graduate worker and what isn't. Staff member 16 - Inexperienced

I'd say the difference since they've introduced stepped care is that it has increased the number of referrals that they [Graduate Workers] receive, and so has therefore increased the load on supervision, not in terms of numbers, but as they're getting more complex cases it means that those more complex cases require longer in supervision, to make sense of, which might mean supervision is longer, but also it means that it's kind of harder to get through all their, you know, their caseload. Staff member 3 - Experienced

The low-intensity workforce had mixed views on their role, depending on the extent to which they were accepted and integrated into the mental health team, a problem reported particularly in services where graduate workers were specifically linked to GP practices where they felt isolated and unsupported.

The introduction of the graduate worker role… depending which team you were in, some of us had quite horrendous experiences as graduate workers within the negativity and the reaction against the post…, not the person, but the post. Staff member 16 - Inexperienced

Training

In some sites, staff members reported a lack of induction training and preparation for working in the new system, whilst other staff members highlighted the good training that their staff had received and the positive difference this made to communication and team-working. The clinical skills training for low-intensity working was patchy across sites. Some low intensity workers, in particular, commented about a lack of training opportunities.

We had no training on it. We just turned up one day and were expected to run with it … The team, our primary care team was really badly set up. We had no induction period as I said before, we had no team building. Staff member 6 - Experienced

I think our model in [site name] actually is pretty good… I think the sort of people that we recruit and they have their training and they're very well supervised. I think it's you know it's a good model. Staff member 4 - Experienced

I think there are lots of issues around graduate training in that the courses that were set up … are really being shown to not meet the needs of the graduate workers. Staff Member 3 - Experienced

Mental health staff thought that GPs needed education to ensure their role of making appropriate referrals was fulfilled.

Then I think there's an issue about the ability of GPs to make proper assessments about whether someone should go to a graduate worker or be stepped up immediately before. Staff member 1 - Experienced

Communication

Staff highlighted the importance of communication in moving from traditional to stepped care systems, which in turn impacted on patient treatment. Strategies such as team meeting and informal discussion greatly improved communications

I think one of the areas that's improved is it's meant that our colleagues at, if you like, tiers above us in secondary care have communicated better with us and we've opened better lines of communication with them. So that's one good change. Staff member 11 - Experienced

> *I think its been really valuable attending their meetings and seeing just
> how well things can be thought out and how well things can be put into
> place…they're just very pro-active, they communicate well, they have
> meetings where they just sit and they get through stuff, they plan and
> they act Staff member 16 - Inexperienced*

In summary, therefore, although low-intensity work and workers were
valued, changes in working practices led to struggles with issues of patient
appropriateness, training, supervision, worker competence and professional
role identities. These issues were handled more readily in sites where
stepped care was perceived to have been implemented via good induction
and communication between and within teams. Where this was less true,
staff felt isolated and unsupported, a consequence of the change process
rather than an opposition to the stepped care system per se.

Stepped care in operation

Explaining

Patients appreciated the stepped care system and wanted more explanation
which would have been reassuring to know. Staff confirmed that giving a
clear explanation of stepped care, using lay language, can help to prepare
and reassure patients.

> *I mean this stepped thing would be good to know without a doubt… It
> would have been reassuring to know that I was on the bottom of five
> rungs. Patient 3*

> *Yes, that's right and I think its very unthreatening. Steps don't sound
> like you know Therapy Level A, B, C, …I think people get a sense of, a
> sense of security out of that. Staff member 11 - Experienced*

Some patients, at first, said that they unsure of the new experience and felt
as if the treatment may be 'amateurish'.

> *I honestly thought that this, I wasn't looking forward to it. I thought
> either they do it properly or they don't, so I wasn't initially for it at all.
> And I just thought this is some sort of fob and perhaps an amateurish*

thing and all that. So I was quite negative … I was very much surprised that it wasn't like that. Patient 4

Process

Patients discussed stepped care non-specifically through their experience of receiving treatment and the effects it had on them personally. Staff, however, viewed stepped care from the perspective of the intended organisational benefits and whether or not these were being achieved. These perspectives coalesced, particularly around the issue of waiting times and the experience of patients being passed between steps.

I think there's more clarity now… now we are just stepping the person up, or referring them up to the psychology service who then makes a decision about whether they will retain that person to treat them or send them across to the specialist trauma service. Staff member 1 - Experienced

There are positives and negatives, but it's perhaps not particularly to do with the system itself, but the provision of the workforce along each step of the way. So in an adequately sort of staffed system then the stepped care system is a very good one and logical one to work within. But if there are shortages in any of those steps then it can make for complications. Staff member 7 - Experienced

The waiting list was horrendous, absolutely horrendous. I waited nine months.. You know when you need help, you need some acknowledgement. Patient 13

Well I think if we had more psychologists then the referral, rather the waiting time would be reasonable, because frankly I feel it's a non-service at the moment. So even if people are getting an early consultation they're then just sitting on the waiting list. Staff member 17 - Experienced

Well, I had the initial assessment and then before I started treatment I had another assessment by the psychologist. So I had two assessment interviews in fact with the psychologists service… So it felt like a long [laughing] series of hurdles really. Patient 11

Long waiting list times meant that staff ended up 'holding' patients while they were on a waiting list for higher intensity treatment. Both groups expressed concerns that necessary treatment may be delayed for those that need it when being treated within a stepped care system.

Well its like a false option [stepping people straight up to psychology] really because there's currently a six month waiting list. If there was a flow through the system right from the beginning, from step 2, it there wasn't, sometimes there's a bottleneck, with the graduate workers getting assessment slots, so they're holding people they don't feel competent to work with until there's a slot with us. Staff member 13 - Experienced

If somebody needs more intensive help, have you got to go through all those stages before that's identified?... I'm just wondering whether stepped care would help or would it delay them actually getting effective treatment straightaway? Patient 5

We get hardly any stepped-up referrals to psychology... I mean...my anxiety is that people who would have been referred to me or to psychology, who then end up seeing a graduate worker, if they don't get any benefit, they just drop out. And they're not stepped up. Now, I don't, I don't have any data, but that's my worry about it. Staff member 1 - Experienced

Effectiveness

Patients had mixed views about the outcomes of the stepped service they had received. Many patients said that they were consulted about the end of their treatment although some patients commented that treatment had ended too early and that it was not their decision. Some patients reported that one of the real advantages was having an alternative to the 'anti-depressant route' or that the two together could be even more beneficial than drugs alone.

It was actually a joint one [the decision to end treatment] between me and [mental health worker name]. Patient 6

To be honest with you, it's more than I expected. I was so satisfied and so happy, you know. Patient 1

definitely not better … If anything maybe slightly worse in that I felt a bit disillusioned in terms of if they can't do anything for me then. Patient 3

I mean I've experienced just a massive improvement to my quality of life and my enjoyment of life, which is wonderful. So, I suppose that I feel that the, the, the tablets that I take are critical, but that, that the treatment I had was complementary and I think, I think probably the two have, have you know, fed off each other to help me to feel so much better. Patient 7

Some staff were unsure which patients the system would work for and whether the stepped care system was any more clinically effective than previous systems, requesting more data on clinical outcomes.

My feeling about what is bad is that my overriding sentiment is that the patient is, is being forced to fit into a model, as opposed to the model adapting to fit that human being, and I think that's my main concern. Staff member 17 - Experienced

Yeah, and I also think that you need quite long term follow-up data to really understand the system, because you know the spontaneous remission rates for depression are really high. So you really need to know, not whether people get better from, whether people's symptoms improve from depression, but whether their relapses, relapse rate of changes… we don't really know how satisfied people are with the service, what happens to people who get, who drop out of it, and we're collecting data on outcomes, but I know if we're collecting it that data will be partial. Staff member 1 - Experienced

In summary, although patients were unsure of the stepped care system at first because it was new and unknown, they welcomed an alternative to antidepressants and were generally pleased with the outcomes. Equally, despite some reservations, staff were happy with the process in theory and attributed failures to address waiting times to staffing levels at other steps. Repetitive assessment was an unwelcome side effect of stepped care, as was the requirement to 'hold' patients at lower steps whilst waiting for slots to become available further up the system.

Content of Stepped Care

Respondents commented on many aspects of the treatment they received or delivered. Although many comments could conceivably be made towards mental health treatments more generally, stepped care systems had an impact on who the mental health worker was, what they did and the manner in which they delivered treatment.

Interpersonal Factors

Many patients commented positively about the interpersonal skills of their therapists/low intensity workers although others said that their worker's interpersonal skills were patronizing, unprofessional and gave limited opportunity to input to the session.

> *she was excellent. She was very caring, dedicated, very pleasant and I did feel that she was listening and focusing on me for that period time that I was talking on the phone. Patient 7*

> *What she did was, sat and didn't face me. She faced the computer, sat in the big chair. Patient 13*

Specific Content

Patients expressed a variety of opinions about the range of different techniques used and delivered within the stepped care systems. Low-intensity treatments focussing on books and manuals were viewed equivocally by patients. Staff members and patients both noted that some people just wanted to talk and at Step 2 there wasn't much time for this.

> *To be honest the telephone sessions were neither here nor there, I think. I think the workbook, I went through that a week at a time like you were supposed to and that helped me pinpoint areas of my life that I could change. Patient 5*

> *You know, it felt to me as though I needed somebody there, or somebody demonstrating or showing me what the breathing looked like or. So I didn't find it easy to, in fact I found it pretty impossible to, to translate the printed word into exercises that I could use from day to day. Patient 7*

> *They say 'I just want somebody to talk to' and actually in that step 2 appointment there isn't time to talk…Yes, yes, I think so [patients would benefit from a few sessions at the beginning of Step 2 to tell their story]. Staff member 13 - Experienced*

Some staff expressed doubts about the low-intensity treatments being used in the stepped care model whilst other staff members pointed out that, although there may be a strong evidence base for CBT, this might not suit everyone.

> *When I'm referring somebody I have quite a good idea sometimes that CBT is what, is what's needed. I know its not what the guidelines only says but its clearly where the evidence base sits. I'm actually wanting them to be delivered a CBT package. And its not always the case that that's what's delivered…. for depression I would be very keen that people had access to CBT. Staff member 14 - Experienced*

> *CBT is not a panacea. Yet that's how it's viewed. It's the cure-all for absolutely everything and yes, I know it has value. I've seen it work so brilliantly so many times, but it's not going to be the right thing for everybody. So, it's about being, as a service I think we need to do more kinds of therapies offered, than just CBT. Staff member 6 - Experienced*

Contextual factors

The age of the mental health worker and the mode of delivery were two of the contextual factors commented on most. Many patients said that they would prefer to speak to a therapist face-to-face rather than on the phone, whilst others said they found the anonymity and convenience of a telephone conversation more favourable than a face-to-face appointment.

> *And I felt a bit embarrassed talking to her about what I'd been going through as well… and she was a really nice girl but I felt she, she was trying to empathise with things that if she had no life experience, I don't know how she could empathise Patient 10*

> *We did have a very good graduate mental health worker, who was a bit older, and I think she did a very good job with her patients. I think*

they tended to come back. So that is quite, that's quite interesting, personally in the surgery. Staff member 4 - Experienced

I didn't find the whole phone experience particularly helpful. I think I'm more of a face to face person…I think that's why I would have preferred to have either taken myself out of the situation and either say like gone to the centre, gone and met somebody or something like that. Patient 5

I very much appreciated having somebody available at the end of the telephone for an extensive or an extended conversation… I think that was very helpful. Patient 7

We are in a evidence-based service as you know, and in terms of outcome measures there is very little difference in terms of success between telephone and face-to-face. Staff member 9 - Inexperienced

Choice

Some patients and staff reported feeling reassured that choice of treatments was available whilst others thought there was a lack of choice in stepped care.

But there was always my choice, always, which I found very reassuring that you know somebody wasn't just cutting you off. They were actually, you know, meeting my needs. Patient 14

It is quite nice to be able to say to somebody, why don't you try this in the interim. So I quite like the range of things that we have on offer in [site] Staff member 4 - Experienced

you just felt, there was there was nothing available really. Patient 3

I think it [stepped care] needs to be broader in what it offers…In the treatments that are available to people. Staff member 6 - Experienced

Flexibility

There were mixed views as to the amount of flexibility offered in the stepped care systems. Patients welcomed flexibility they had around timing and location of appointments and some staff members reported that the stepped care system made them more flexible and accommodating. Whilst demands on time caused by high caseloads for some workers reduced flexibility, for other patients this was actually helpful.

> *I think the fact that I was able to make an appointment in my own time, that fitted you know when I had a gap in lectures or whatever, was exceedingly helpful. Patient 7*

> *Its changed with me actually because I mean when I started we were quite rigid … I'm a lot more flexible now Staff member 5 - Inexperienced*

> *I found that [worker] struggled to fit me in. And obviously with my schedule as well…For somebody that wasn't working, it probably would have been fine, but I think it was the whole fact that I was working full time. You know, [worker] probably had a busy caseload, and she was trying to slot me in. Patient 5*

> *I suppose because I know its time-limited I'm quite keen to make the most of it as well, so no it has been good. Yeah. I think its been very helpful. Patient 11*

Artificially imposed limits to session numbers, although not part of the stepped care model per se were a feature of some services causing frustration for workers.

> *we're all trying to be much stricter about the sessions but I think it does, with the way the system's set up at the moment, it leaves a real hole for people, people who need more than that eight sessions… and so you do feel very much as though you are leaving them in the lurch and they'll probably just come back again even though they were making really good progress. Staff member 16 - Inexperienced*

> *I would have liked to have seen her, a couple of more times. Patient 2*

In summary, stepped care has the potential to impact on all aspects of the delivery and content of mental health care, and this was commented on both positively and negatively by all respondents. Choice, flexibility, content and delivery methods were issues for discussion and comment. The extent to which these comments are specific to stepped care or are more general views of the therapeutic encounter varies.

4.5.3 Summary

Staff and patient views of stepped care can be understood within three broad themes about the change to a stepped care system, the content of stepped care and stepped care in operation. The change to stepped care meant that many staff had changing roles, and for some this was unwelcome and was deskilling. This was compounded with a lack of training for their job and meant that some staff felt ill suited to their role. However, other staff, especially low intensity workers, said that they had good training and were comfortable in their job role. Communication was a big factor in the implementation of new stepped care systems and those sites that had good induction processes and communication reported fewer difficult issues, whilst for those where there was poor communication this was less true. This indicates perhaps the change theme may have been more about the change process rather than stepped care *per se*.

When talking about stepped care in operation, many staff and patients reported an unsure and unknown process. Some patients seemed to know about stepped care and what it meant for their treatment, however, some patients would have liked more information about it. Staff were frustrated about some aspects of the process such as waiting times and 'holding' people. There were also concerns about whether the system was clinically effective. Patients on the other hand welcomed the alternative to medication and were generally pleased with outcomes.

There were varied opinions about the interventions used and how they were delivered within the stepped care systems. Patients reported on a range of interpersonal skills of their workers, with a mixture of positive and negative comments. Patients were enthusiastic about the amount of choice and flexibility they had, although staff members felt that they could be more flexible if their caseload was not so high.

Objective 4 - Modelling

To investigate the generalisability of the reconfiguration process including the utility of an implementation manual and computer modelling tool.

Introduction

In this chapter we discuss the modelling approaches that were developed or adopted over the course of this project, highlighting insights that were generated through the modelling process as well as specifying the models that form the basis of the reconfiguration software tool. A variety of modelling approaches were adopted for different purposes, with the team adapting to changing expectations as to the nature, volume and quality of data available from the pilot sites.

Simulation to illustrate key concepts

To illustrate to the stakeholder groups at pilot sites the consequences of variability in the duration of time that an individual spend in a given care process, the different paths that can be taken through a care system and the dynamics of queues, we built a simulation model. Screenshots from the animated graphical interface of the simulation model are shown in figures 13 (illustrative of a traditional configuration of service) and 14 (illustrative of a stepped care service). There animations were shown as part of the initial introduction to system reconfiguration and modelling at the pilot-site stakeholder meetings, along with illustrative results showing the potential impact of reconfiguration on throughput and queue sizes.

The "happy face" and "sad face" motifs indicating successful and unsuccessful treatment were used to make plain to the stakeholder groups that, whilst hopefully useful, the models developed throughout the project would not reflect the true complexity of common mental health problems and their treatment.

Figure 13 – Illustration of a traditional configuration for a mental health care system
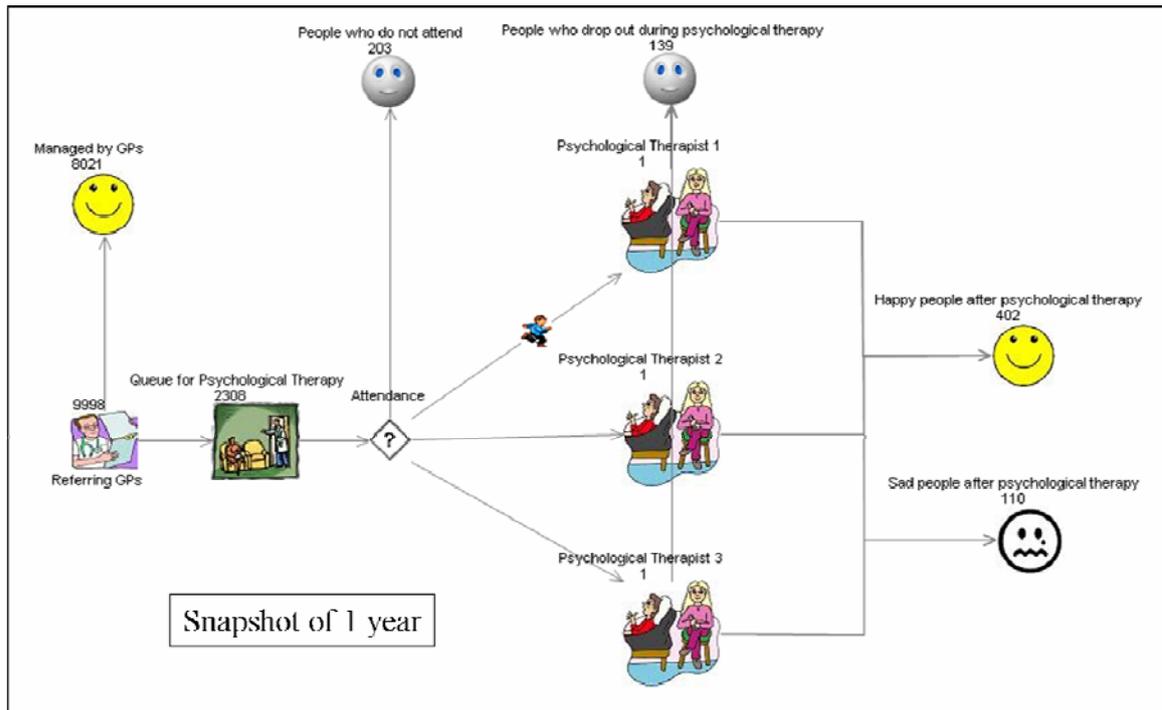
Figure 14 – Illustration of stepped care configuration for a mental health care system
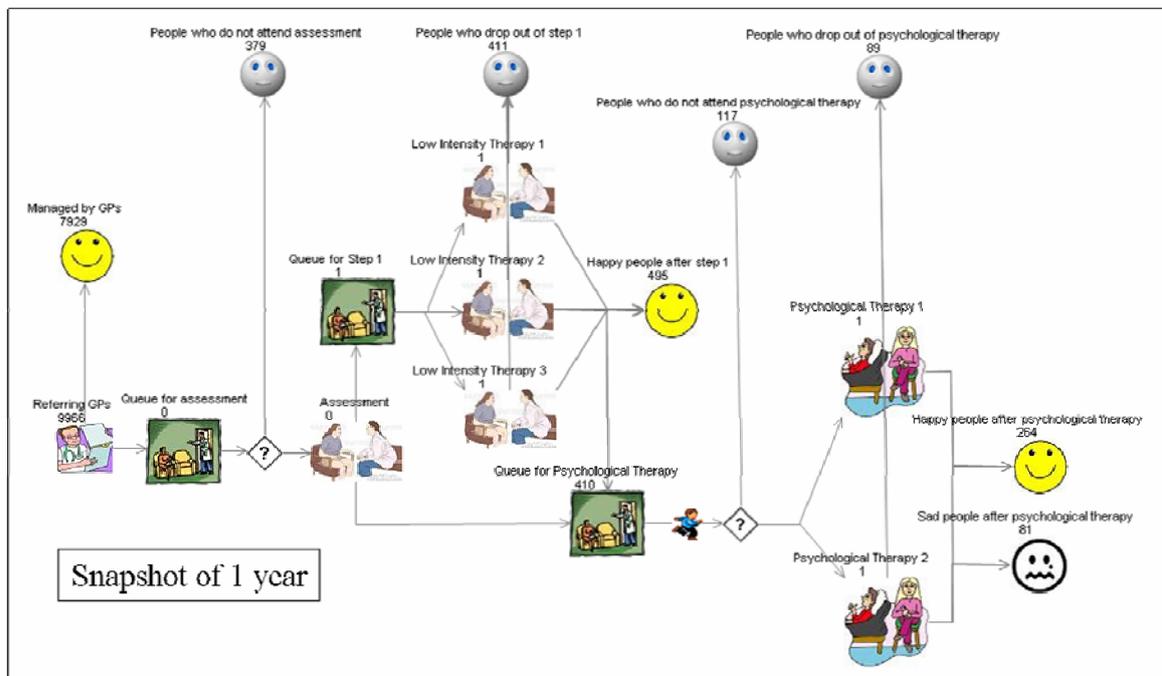
Initial plans for modelling: estimating outcomes and the optimal use of resources

The initial plans for modelling were to build upon analytical techniques for the analysis of flow and demand in acute settings (Gallivan et al 2002, Utley et al 2003) to incorporate multiple states, multiple outcomes (clinical and administrative) and the scope for different groups of patients to have different trajectories through the system. Additionally we aimed to explore the use of optimisation techniques (see for example Gallivan and Utley IMA 2006) with a view to deploying resources to maximise the number of successful treatments that could be delivered within a system constrained by the numbers of staff available that could deliver services at different steps within the system (see Gallivan et al 2009). These plans were revised in the light of changes to plans for data collection and collation at pilot sites, as discussed elsewhere in this report (see chapter 4), particularly the move away from collecting data concerning clinical status at each treatment session, which precluded modelling and analysis related to clinical outcomes and shifted the focus to the administrative outcome of scheduled or unscheduled completion of treatment.

Analysis and modelling based on pilot site data

The initial feedback reports given to pilot sites are attached as an appendix (see Appendix 2) and we do not give a detailed account here. Analysis included:

- Referral rates per week over time

- Overall referral rates

- Referral rates to different steps (if more than one route into the system)

- Duration of treatment for those patients who had left the system (whether as an unscheduled or scheduled completion)

- Calculation of rates of unscheduled completion

- Overall unscheduled completion rates

- Unscheduled completion rates by gender and primary diagnosis

- Destinations of patients from different treatment steps

- Calculation time of the average number of days between referral and first treatment session, for different treatment steps

- Estimation of the number of people currently in treatment for each step, using mathematical modelling.

Key insights generated by this early work included:

- Apparent high early discontinuation rates due to a bias towards 'early leavers'. Such high measured rates early in the implementation process are to be expected and are not a sign of poor system performance.

- No significant differences between men and women, in terms of duration of treatment and destinations.

- Patients with a primary diagnosis of depression tend to be more likely to have an unscheduled discontinuation than those with a primary diagnosis of anxiety.

The modelling framework used to provide pilot-sites with predictions and insight concerning workload, throughput and administrative outcomes is described in detail in Utley et al (2009), attached as appendix 5. Essentially, the model constructed was used to estimate the number of people receiving care at each step within a stepped care system over time and the number of people to have exited the service via various exit points.

Example output, generated using data from a site other than the pilot sites, is shown in figure 15a. This figure shows estimates for the expectation and standard deviation of the time-varying occupancy of each state within the system concerned over the first year of operation. In addition to the actual levels of occupancy, of particular interest to the service concerned was the large degree of variability in the number of patients expected to be in low-intensity therapy at steady state (as indicated by the size of the standard deviation compared to the expected occupancy) and the estimated time it will take for the number of patients in high-intensity therapy to reach steady state. The increase over time in the number of people leaving the system due to the referral being deemed inappropriate or because they "drop-out" prior to the completion of therapy (states 3,4 and 6 in figure 1) is initially more rapid than the increase in the number of people that leave low-intensity therapy having completed the treatment. Item b) in figure 15 illustrates this effect, which has the consequence that early audit of the outcomes for patients leaving the system will give an unduly pessimistic view. When these findings were presented to the service there was a broad acceptance of the face-validity of the numerical results and several comments were made that the insight concerning early performance of the service would be valuable to other new services since this effect had caused the service difficulties with external stake-holders as well as undermining staff morale.

Figure 15. Model output concerning the time-varying occupancy of different states comprising the system for the provision of mental health services.

Illustrative example of analysis - output:
stepped care for common mental health problems

a) State occupancies (note scale differences)

(1) low intensity

(2) high intensity

(3) not appropriate

(4) dropped out of low intensity

(5) completed low intensity

(6) dropped out of high intensity

(7) completed high intensity

b) Ratio of occupancies

$$\frac{(\overline{3})+(\overline{4})+(\overline{6})}{(\overline{5})+(\overline{7})}$$
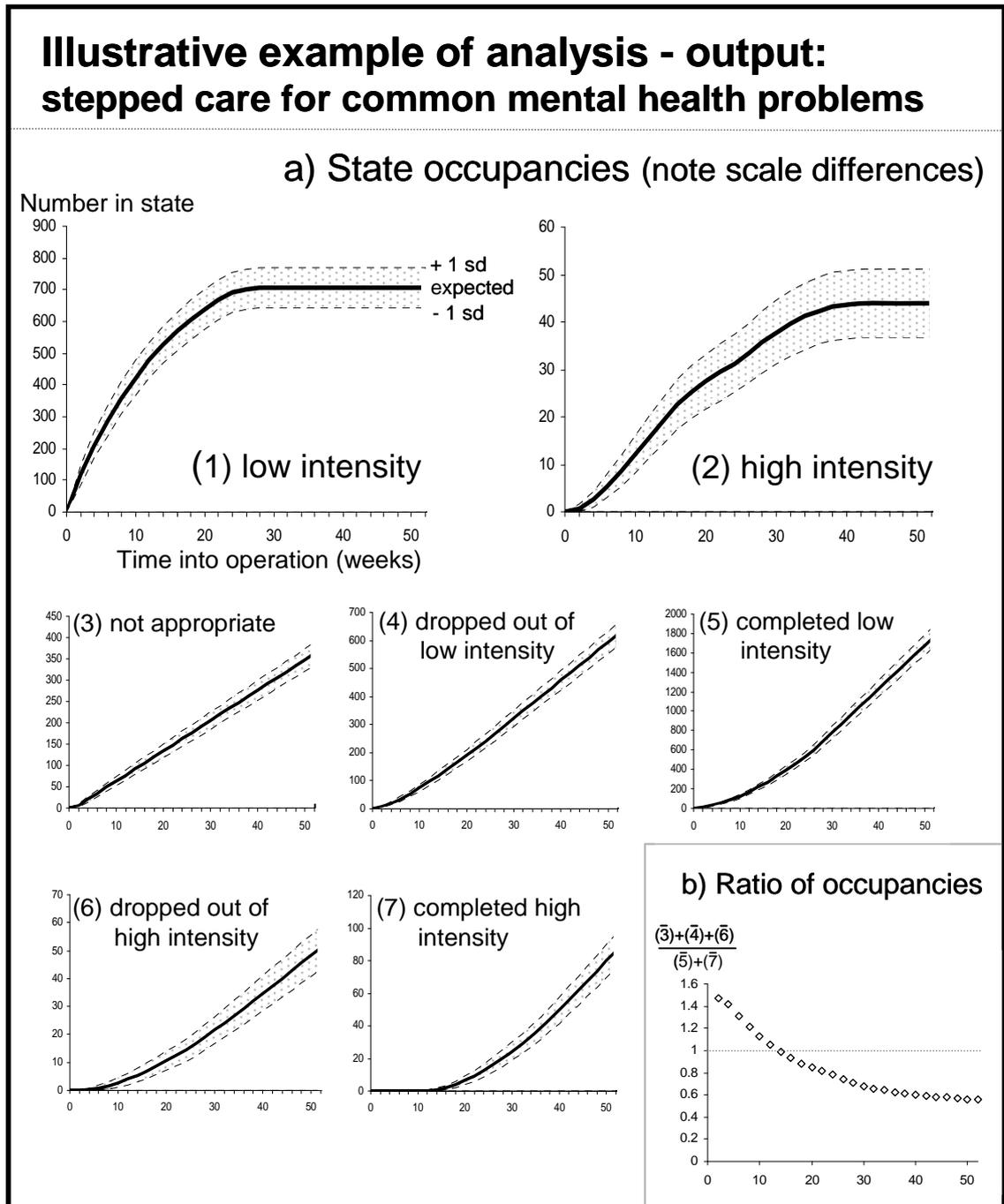
Reproduced from Utley et al, IMA MM 2009

Models incorporated within tool

Figure 16: An example of how a stepped care system might be configured. (Boxes with dashed borders represent exits from the system.)
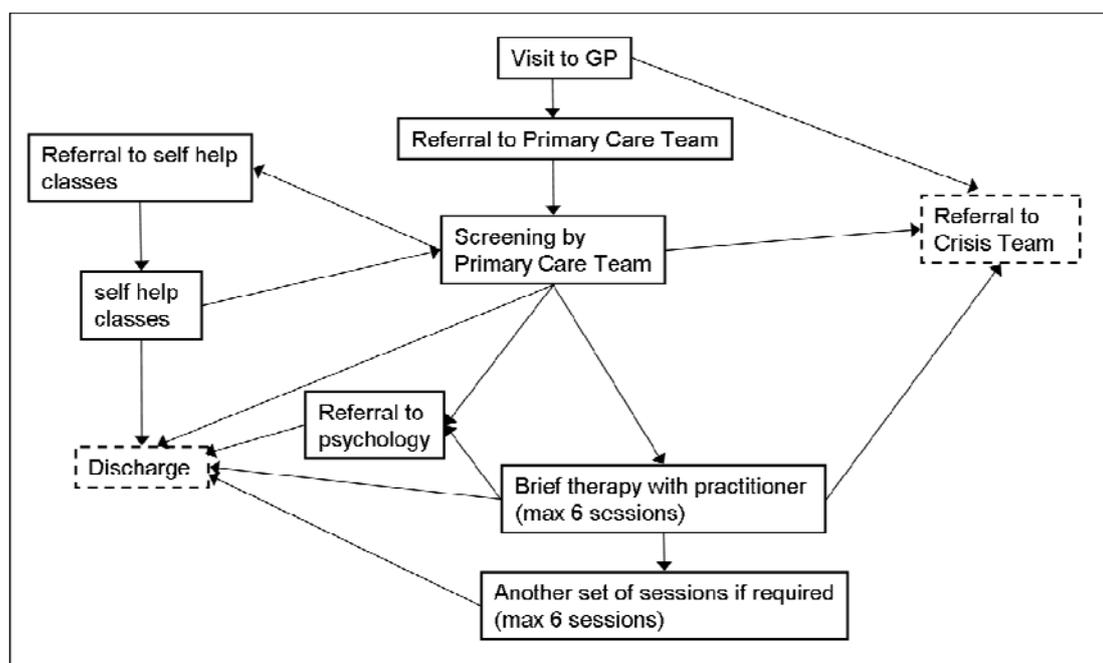
Stepped care systems can be very complex (see for example Figure 16 and/or those in chapter 4). Planning the delivery of stepped care requires decisions concerning the treatments to be offered, the number of staff of each category, the protocol for how patients transfer between treatments and the balance of provision between low and high intensity treatments. The aim of our modelling approach was to provide information that could be used to help in the design of stepped care services by providing estimates of throughput and changes in waiting list size for a given system congifuration. Since it could not be assumed that planners would know detailed information about prospective service parameters, and since any resulting tool needed to be flexible enough to account for a large range of potential configurations, our mathematical models needed to be simple and robust.

We developed two mathematical models for inclusion in the software tool that were designed to complement each other by providing the user with information on different aspects of their proposed stepped care system. Both models are based on the idea of a network of different treatments offered with flows of patients moving between treatments (for instance as shown in figure 16).

Estimating demand for each service within a stepped care system

This sub-model was used to estimate the unfettered demand for each service within a stepped care system and present this to the user as a fraction of the capacity allocated to that service. By "unfettered demand", we refer to the demand for a service that would be experienced given a specified pattern of arrivals to the system if there were no capacity constraints. While to an extent unrealistic, this provides planners with useful information if they are deciding how to allocate resources across a number of services (Gallivan et al 2002, Utley et al 2003).

The calculations performed for any single service involved calculating the mean arrivals to that "state" per unit time and multiplying this by the mean number of sessions utilised by an individual in that state to give the mean demand for appointments per unit time at that state. This was then divided by the number of sessions to be offered per unit time for that service, as specified by the user (see later sections), to give the demand and a fraction of supply.

For systems in which individuals can only visit a state once, the calculations are straightforward, even with due account being taken of the scope for there being multiple paths to a given state. For systems that contain cycles such that it is possible to visit a particular state more than once, the analysis was less straightforward. Figure 17 below illustrates part of a system where patients enter low intensity and then transfer to high intensity.

Figure 17: Example of a portion of a stepped care patient-flow system containing a cycle.
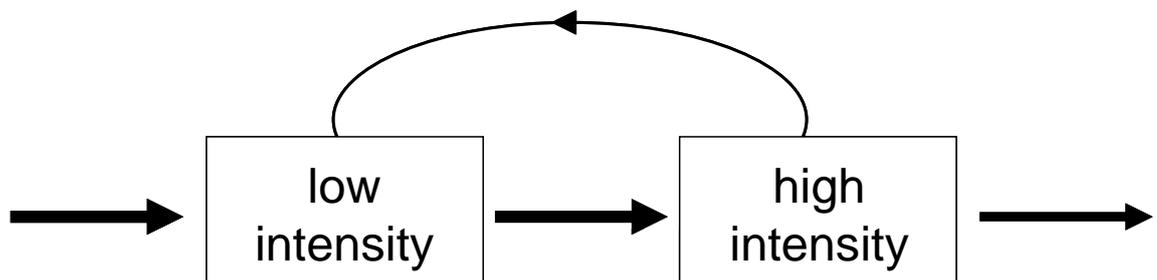
Whilst most patients leave the system from the high intensity state, some return to low intensity therapy. This means that the arrival rate used in the calculation of average demand should be greater than the number of new arrivals. We took a pragmatic approach to estimating this "effective arrival rate" based on restricting the patient flows

incorporated in the model such that patients were assumed to perform a given cycle of states at most once. In the example given below, this would mean that the model would account for some patients returning to low intensity once but not for patients returning to low intensity twice or more.

Estimating throughput

The development of the second model was based on the observation that mental health care systems are often working at capacity with long waiting lists. If a unit of capacity is *always* 'busy', then its throughput depends only on how long the service provision takes. The key assumption here is that not only can there be an unlimited number of people waiting to be seen, but also that queue sizes never drop to zero so that there is always at least one person waiting. Thus, if we assume that a mental health service is always "full", we can model it as a network of units of capacity, each of which is always busy and so its throughput is independent of all the others. This greatly simplifies the mathematical treatment of the problem.

In the model, we choose a single diary slot as the basic unit of capacity. A patient is assumed to occupy the same diary slot every week until his or her treatment ends. Each diary slot is associated with a particular type of activity (for instance a treatment type), which in turn is associated with a characteristic distribution of duration of treatment in terms of the number of diary appointments used. In the implementation of this model (see chapter 6), these durations of treatment are taken from data collected by researchers in the pilot sites. We assume that the service times of different patients are independent of one another and that a diary slot is allocated to just one type of treatment.

By considering the distribution for duration of treatment of an individual patient, we can calculate the distribution of the number of people who have been treated in a particular diary slot over a given number of weeks (Figure 18).

Figure 18: Using the duration of treatment distributions, we can calculate the distribution of the number of patients seen, for example, over 26 weeks.
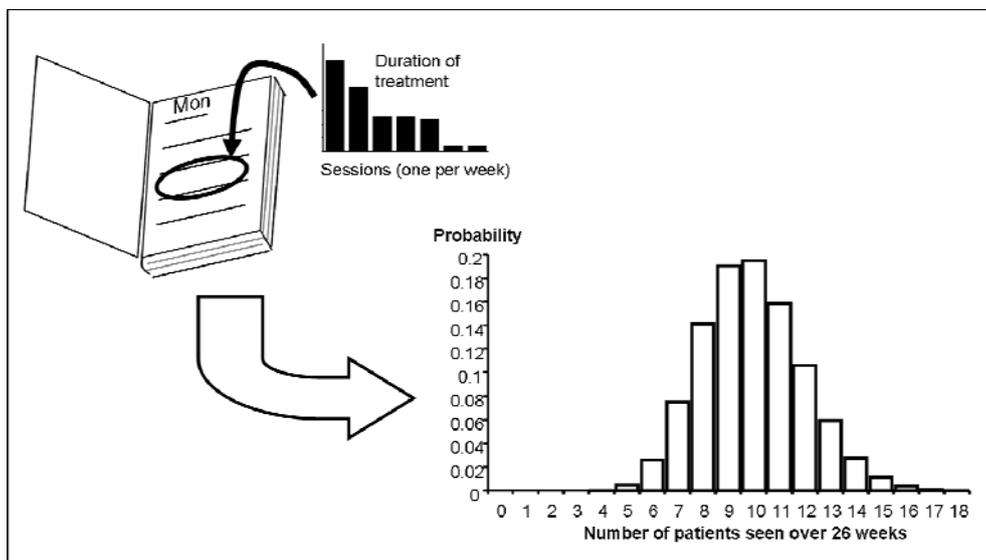
For each diary slot we can therefore calculate the number of people expected to have been treated within that time period. The distribution of the number of patients seen in a given number of weeks will typically be different for each type of treatment. For planners configuring a stepped care system, a key task is to determine the number and allocation of weekly diary slots to different treatments.

Figure 19: Potential pathways through a stepped care system
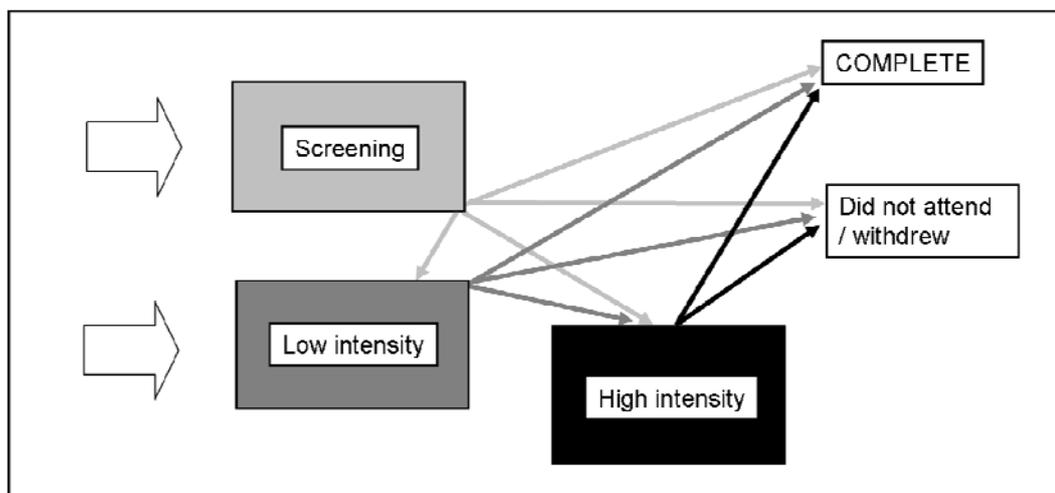
To address this task, how patients transfer between treatments and how they enter or leave the system need to be specified (e.g. Figure 19). Once the proportion of patients transferring between

---

treatments, and entry and exit points, have been specified we can calculate the expected input and throughput to each treatment, and the expected number of people leaving via each exit point.

Figure 20 shows an example for the low intensity treatment shown in the network configuration in Figure 19. In this example:

- p is the proportion of patients who transfer from screening to a low intensity treatment;
- λ is the weekly rate of external arrivals to low intensity treatment;
- $E(SC_{out})$ is the number of people expected to have left one screening diary slot over the time period considered
- $E(LI_{out})$ is the number of people expected to have left one low intensity diary slot over the time period considered
- N_{SC} is the number of weekly diary slots allocated to screening.
- N_{LI} is the number of weekly diary slots allocated to low intensity treatment.

Figure 20: Calculating input and throughput of one treatment (low intensity).
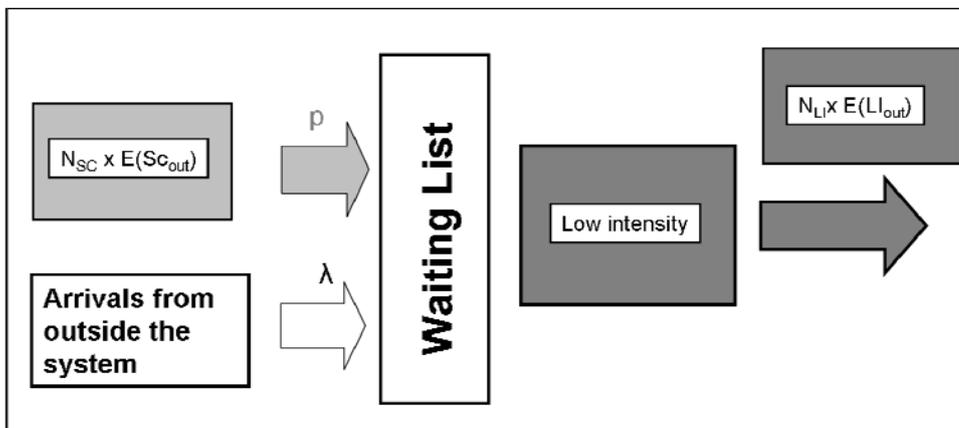
If the system is always full, the expected throughput from low intensity is simply the expected number of people treated in one diary slot multiplied by the number of diary slots allocated to low intensity treatments: $N_{LI}E(LI_{out})$.

The total input over the period, T, is the sum of the mean number of external arrivals in that period and the expected throughput from diary slots allocated to screening: $\lambda T + N_{SC}E(SC_{out})$.

The expected change in waiting list size over that time is then the difference between the expected input and output: $\lambda T + N_{SC}E(SC_{out}) - N_{LI}E(LI_{out})$.

For any general treatment j, the expected input is the sum of all external arrivals and all outputs from treatments that lead to treatment Printer j. Its output is the number of diary slots allocated to treatment j multiplied by the expected number of people treated in one diary slot of type j. The expected change in waiting list size is again the difference between the expected input and output.

A full mathematical description of the model is given in appendix 6.

Limitations of the model

While very useful, this model does have limitations. The first is clearly that we assume that the system is always busy, which may not necessarily the case. However, the output of the model would still provide the maximum possible throughput of the system. Another limitation is that we treat patients as homogeneous in that each patient is assumed to follow the same distribution for duration of treatment for any given treatment. It is however possible that, for instance, patients with different presenting problems would typically have different characteristic durations of treatment.

Finally, "holding" or "blocking back" behaviour is not accounted for in the model, in that both duration of treatment and the destination of patients from each treatment are assumed independent of the state of the system. In reality, it is plausible that if there is a large waiting list for a certain treatment, therapists may "hold" patients in another treatment to wait for an available slot, which would have the effect of inflating measured duration of treatment distributions beyond those deemed clinically necessary. It is also possible that the therapist might refer that patient to a different treatment, altering the intended "clinical path" of that patient.

Considerations influencing software design

The development of the reconfiguration software tool was guided by the following design considerations

- the tool should be available to use at no direct cost to NHS organisations and should not require the availability of other specialist software;

- the tool should be designed for use as a planning tool by organisations at an early stage of the reconfiguration process, and as such should permit users to construct and evaluate hypothetical services with a wide variety of structures and permissible patient flows;

- the tool should be predicated on the use of data collated at the pilot sites since intended users would not have data pertaining to their own services.

Tool architecture

The user interface of the toolkit and both mathematical models were implemented in MS Excel with extensive use of Visual Basic for Application (VBA) routines. All the data used or generated by the tool are stored and retrieved from a custom-designed relational database in MS Access. We chose to store the data in Access to facilitate quick retrieval and manipulation (the pre-populated data that come with the tool amount to over 500 records in total) and appropriate data management by the Access specialised database software. Special routines were included in the tool so that the data interface between Excel and Access is seamless and hidden from the user.

Data are organised in a relational data structure as shown in Figure 21. User input is organised around scenarios, highlighting the intended use of the tool to explore planning options at an early stage of system reconfiguration. Different scenarios representing different implementations of a stepped care system (for example, in terms of different clinical activities offered or variable input parameters) can be created and saved by the user. Each scenario comprises a number of clinical activities and end points. Each activity is of a certain type (e.g. individual treatment or assessment, and is linked to an analogous pilot site activity providing an estimated duration of treatment in terms of number of sessions. The activities and end points of each model are connected to each other forming a network representing the movement of patients from one activity to another and to end points (). Each scenario in turn, belongs to a site. Multiple sites, each having multiple scenarios, can be easily maintained by the user. One site comes pre-populated with data and the user cannot change its contents (Examples site).

Figure 21. Conceptual data model structure of the database underlying the software tool
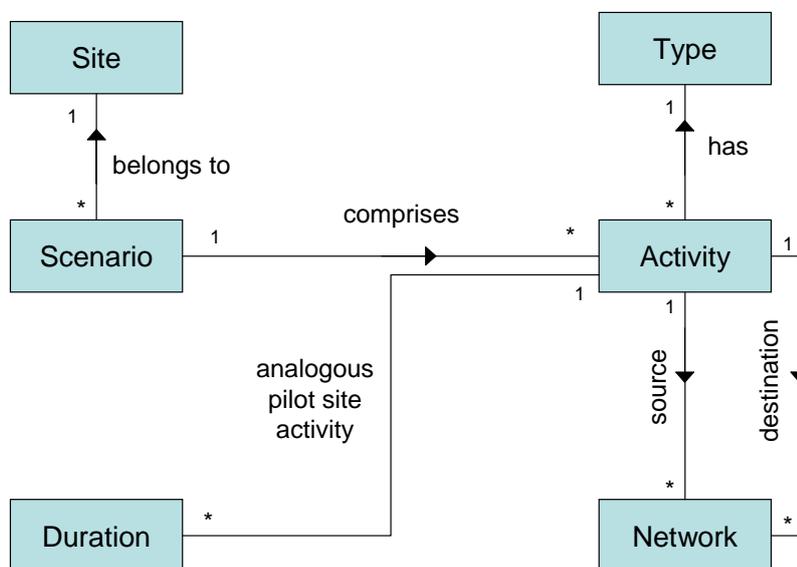
User Interface

The user interface uses a combination of Excel worksheets and forms to accept input and present output. The main input parameters are entered by the users through two worksheets. The first worksheet, called 'Interface', is divided into four areas (see Figure 22). Information about the particular site and scenario currently being viewed is displayed in the area at the top left corner. The buttons for managing, saving, viewing and running scenarios are contained in the top right corner while a quick guideline for creating a scenario is displayed in the bottom right corner. The bottom left corner is where the user creates, updates or views the profile of each scenario.

The profile of each scenario is made up by a collection of data records. A scenario comprises a user-defined number of clinical activities and end points (outcomes). A clinical activity can be one of following types: referral, assessment, individual treatment or class. Each clinical activity is matched to an analogous pilot site activity that the tool comes pre-populated with and is made available to the user via a pop-up window, (see Figure 22). The analogous pilot site activity determines the duration of the treatment as estimated from one of the four pilot sites (with the median duration in terms of number of sessions displayed in the pop-up window). Finally, the user is asked to provide estimates of new referrals from external sources per week, the number of appointments of classes offered per

week, as well as the course length and maximum class size in the case of class or group-based clinical activities.

Figure 22. The main 'Interface' worksheet

The second worksheet, called 'Patient Movement', is used for entering the proportions of patients moving between care activities and from care activities to end points (see Figure 23). All proportions are user-defined apart from unscheduled completion rates which are defaulted from the analogous pilot site activity associated with each activity (a prerequisite for accessing this worksheet). These rates cannot be changed as they are intrinsically linked to the activity duration of treatment distributions. Given that the context of this tool was to assist planners in the early stages of system configuration, it was decided not to include scope for users to enter their own duration of treatment distributions.

Other functionality accessible from the main 'Interface' worksheet includes a help button that provides shortcuts to most of the user actions, a button that allows users to calculate the number of appointment offered each week based on the FTE's available, a 'Start again' button in case of difficulty, and a "Flowcharts" button that generates a series of graphical flowcharts of patient pathways that provide the opportunity for the user to visualise and validate the entire network that they have entered.Functionality added in response to user-feedback includes a "wizard" that takes the user through the steps for creating a new scenario.

Figure 23. The 'Patient Movement' worksheet

From \ To	Referral	Assessment	Low intensity	Assessment 2	High intensity	Psychology	Unscheduled completion*	Scheduled discontinuation	Not appropriate / Other	Remaining
Referral		48%	30%	0%	0%	0%	20%	1%	1%	0%
Assessment	0%		35%	0%	29%	4%	21%	11%	0%	0%
Low intensity	0%	5%		1%	9%	2%	46%	35%	2%	0%
Assessment 2	0%	0%	0%		40%	0%	20%	40%	0%	0%
High intensity	0%	0%	6%	0%		13%	30%	44%	7%	0%
Psychology	0%	0%	0%	0%	0%		44%	37%	19%	0%

Save and return   Return without saving

* Plase note that Unscheduled Completion rates are defaulted from the analogous pilot site activity.
They cannot be changed as this would result in wrong estimates of demand and throughput.

Tool Output

Model output is provided by the two mathematical models described previously, using a combination of the data entered by the user and the pilot site data. It is presented in two different output displays. All figures that are estimated from the models in both displays are rounded to the nearest five in an effort to avoid over-interpretation of what are essentially ballpark estimates of system performance.

In the 'Planning Summary' display (Figure 24) the output is generated by the model that estimates demand. It provides the user with estimates per clinical activity of the expected weekly demand for appointments (3rd column), the ratio of demand to appointments offered (4th column) and the number of appointment suggested by the expected weekly demand (last column). The name of each activity and the number of weekly appointments offered (first and second column) are displayed for information purposes. A message informing the user of a mismatch between demand and supply appears when the ratio of demand to appointments offered exceeds 120%.

Figure 24. The 'Planning summary' output form
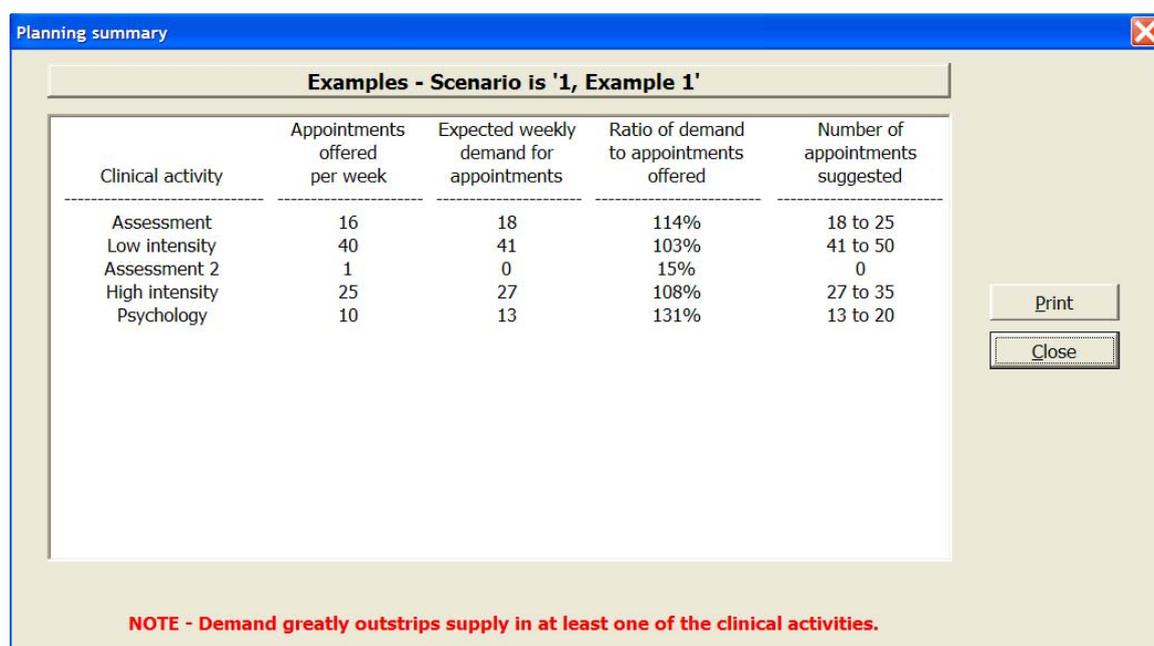
Clinical activity	Appointments offered per week	Expected weekly demand for appointments	Ratio of demand to appointments offered	Number of appointments suggested
Assessment	16	18	114%	18 to 25
Low intensity	40	41	103%	41 to 50
Assessment 2	1	0	15%	0
High intensity	25	27	108%	27 to 35
Psychology	10	13	131%	13 to 20

NOTE - Demand greatly outstrips supply in at least one of the clinical activities.

In the 'Summary of system performance over a 6 month period' display (Figure 25) the output is generated by the model that estimates throughput. It includes the estimated throughput for all clinical activities and end points. For clinical activities the output also includes the estimates of expected increase in waiting list size and waiting times. Also, a range in the estimate is given where appropriate. As this particular mathematical model is based on the assumption that the care system is always full, a message informing

of potential overestimation of activity and throughput is displayed whenever the estimated throughput (displayed as 'Ratio of demand to appointments offered' in Figure 24) for at least one activity is under 100%.

Figure 25. The 'Summary of system performance over a 6-month period' output form.

Summary of system performance over a 6-month period

Examples - Scenario is '1, Example 1'

Clinical activity	Appointments offered per week	Expected throughput*	Expected increase in waiting list size*	Expected increase in waiting times¶
Referral	0	830	0	0
Assessment	16	360 to 375	35 to 70	0 to 5
Low intensity	40	375 to 410	0 to 15	0
Assessment 2	1	25	0	0
High intensity	25	135 to 150	0 to 20	0 to 5
Psychology	10	30 to 40	0 to 15	0 to 10
End point				
Unscheduled completion		465 to 505		
Scheduled discontinuatio		255 to 285		
Not appropriate / Other		25 to 40		

*number of patients; ¶ weeks

NOTE - Clinical activity and throughput might be overestimated for this scenario.

Print

Close

Summary

We developed a stand-alone CDROM based modelling tool accompanied by a comprehensive manual for managers and service leaders to use when planning their own stepped care services. This tool was based on data from four pilot sites which we supplemented with data from the two IAPT demonstration sites in Doncaster and Newham. Data was used to drive the model on the CDROM to provide NHS sites with predictions and insight concerning workload, throughput and the administrative outcomes of scheduled completions and unscheduled discontinuations, often known as 'drop-outs' in NHS psychological therapies services.

Objective 4 – Implementation of tool and manual at sites

To investigate the generalisability of the reconfiguration process including the utility of an implementation manual and computer modelling tool.

Methods

1.1.26   Study Design

We used a qualitative design to investigate the use of a stepped care reconfiguration tool and manual across various NHS primary care sites in England. All sites were at various stages in implementing a stepped care model of health care. Users of the tool were from a range of positions within the NHS, including service managers, clinical leads and business managers. Staff members were allowed up to eight months to use the tool, after which they were asked to give qualitative feedback on the tool and manual and the context within which it was used.

1.1.27   Setting

This study recruited staff members in managerial/consultancy roles from a number of NHS sites across England which were at various stages in the implementation of a stepped care system. Staff members were recruited from January 2009 until April 2009. Staff members received the tool from March 2009, approximately two months after recruitment began, and were followed up for the first time at around six months after receiving the tool (August 2009). At the second follow up, in October/November 2009, staff members that had reported using the tool either attended a user group or were interviewed for a second time.

1.1.28   Participants

Sites were eligible to take part in the study if they were currently, or considering in the future, implementing a stepped care system. Participants contacted were at a managerial level as these were the staff members whom it was felt they would be most equipped with the information to input to the tool.

1.1.29   Data sources/measurement (Data analysis)

Qualitative data were collected from eleven sites in total. There were three stages to data collection, the first was a semi-structured

interview which took place over the telephone, based on a topic guide exploring the following three broad themes:

- the general suitability and generalisability of the modelling tool to various NHS services

- the process of reconfiguration using the implementation manual and tool

- their experience of barriers to change and the strategies they used to address them

The second stage of data collection involved some of those participants interviewed at the first stage and was a half-day focus group attended by staff members, developers of the tool, the principle investigator and research staff and was conducted to gain more detailed knowledge of themes discussed in the first set of interviews. The focus group used a topic guide based on participants' responses in the first interviews with an aim to validate that feedback.

Accordingly, the third stage of data collection, the second set of interviews, were conducted with those users unable to attend the focus group, and used a topic guide generated by analysis of the focus group data with the aim of reaching a final set of repeatedly validated themes. The same topic guides were followed for all participants, with prompts, to elicit views on areas which were considered particularly relevant and participants were given the opportunity to make any additional comments they so wished.

All interviews were tape-recorded and transcribed verbatim. Participants were given a unique indentifying number which was used on the transcripts. Data from all interviews and the focus group was analysed using a framework analysis.

There are five stages of framework analysis (Miles and Hubermann, 1994). Firstly, one author, familiarised herself with the narratives and context of the data by reading and rereading the interview transcripts in order to gain an overview of the material gathered. Whilst reading through the data she made notes of key ideas and themes. Secondly, once the material was reviewed the author began to create a thematic framework including key ideas, themes and concepts by which the data was then re-examined and referenced. The thematic framework including both a priori issues, for example, from the topic guide described above, as well as issues that had been identified when reviewing the data. The third step involved systematically applying the thematic framework to the data. The transcripts were analysed and indexed thematically according to the themes in the framework. Themes were indexed across the whole dataset as well as within individual interview transcripts using a constant comparative method, whereby each piece of data is compared to all others for similarities and differences. Original

transcripts were regularly consulted to clarify contextual meanings. Fourthly, once the data had been indexed, it was then taken from it's original context and was rearranged into a chart which identified themes and subthemes in order to build up a broad picture of the whole dataset. Lastly, the author reviewed the chart created and gathered key characteristics and interpretations of the data. Another author looked in detail at the themes and subthemes identified and explored the credibility of interpretation and themes.

Data from the focus group was transcribed in the same way as the first interviews and analysed according to the framework established from the first stage of analysis. Themes and subthemes were added or removed according to more detailed responses that were gained and validated.

This method of immediate preliminary data analysis alongside continuing data generation is extremely beneficial in that it allows emerging themes and concepts to be tested further and developed and validated in subsequent interviews or user groups (Murray et al, 2009). The data from the final interviews were transcribed in the same way as above.

The final stage of the data analysis involved a synthesis of all interviews and the focus group. The thematic framework was modified and validated according to all data from all stages of data collection. This process was designed to ensure that themes represent coherent groups of data and so that the final themes were validated by all users of the tool.

Sample processes of analysis from sub themes to themes are presented in Table 15, with quotes to illustrate the progression from data to thematic interpretation. Also, examples of quotes from respondents are included within the text as examples contributing to the analysis.

Results

1.1.30   Participants

We contacted via email and letter 69 NHS sites detailing information about the project and tool, 24 of whom self-selected as they expressed an interest in and received the tool and manual (the other sites dropped out as they made no contact with us). Out of the 24 that expressed interest, 14 completed the process of gaining ethical approval (with 10 having no further contact with us after receiving the tool). Of the 14 who gained ethical approval, 10 sites were interviewed in total (eleven staff members), 4 didn't complete the ethics process. Ten staff members were interviewed at the first time point via a first semi-structured interview on the telephone (August-September 2009). Seven of these had used the tool and so were asked to give secondary feedback either at the focus group or via a second telephone interview (two and five staff members respectively). One staff member only gave feedback at the focus group. Out of the total of eleven participants interviewed, four did not use the tool and one participant who had used the tool only gave us feedback at the first interview and not the second as she didn't get in contact with us. See figure 26 for a visual flowchart of recruitment.

Figure 26: Recruitment flowchart

```
┌─────────────────────────────┐
│ Number of sites contacted   │
│ about the project           │
│ n=69                        │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Number of sites who stated  │
│ interest and were sent the  │
│ tool                        │
│ n=24                        │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐        ┌─────────────────────────────┐
│ Number of sites who         │───────▶│ Number of sites who didn't  │
│ completed ethics process    │        │ get in contact after        │
│ n=14                        │        │ receiving the tool          │
│                             │        │ n=10                        │
└─────────────────────────────┘        └─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐        ┌─────────────────────────────┐
│ Number of sites who were    │───────▶│ Number of sites who didn't  │
│ interviewed                 │        │ get in contact after        │
│ n=10                        │        │ completing ethics           │
│                             │        │ n=4                         │
└─────────────────────────────┘        └─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Number of sites who were    │
│ interviewed at stage 1      │
│ n=9                         │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐        ┌─────────────────────────────┐
│ Number of sites who         │───────▶│ Number of sites who were    │
│ attended focus group        │        │ not interviewed at time 1   │
│ (stage 2)                   │        │ but took part in the focus  │
│ n=2                         │        │ group                       │
│                             │        │ n=1                         │
└─────────────────────────────┘        └─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Number of sites who were    │
│ interviewed at stage 3      │
│ n=5                         │
└─────────────────────────────┘
```

1.1.31 Demographics

Demographic details of the 24 sites that were sent the tool are shown below. Indices of Multiple Deprivation (IMD) are shown as well as the total population served by the organisation. IMDs were not available for specialist trusts or external providers and total populations were not available for external providers. Respondents were from staff with a variety of roles including 1 Nurse Consultant, 1 Head of Psychology, 1 Head of Mental Health Services, 2 Business Managers, 1 Clinical Psychologist/Service Lead, 1 Head of IAPT Services, 1 Adult Mental Health Services Manager, 1 Gateway Service Manager, 1 IAPT Project Manager, 1 IAPT team manager.

Table 14: Demographic details of Phase II sites

Type of organisation	Average IMD Rank[a]	Rank of Average Rank	Size of population covered	Interviewed
PCT	25078.76	12	305,000	
PCT	23830.96	23	232,000	*
PCT	19438.92	61	203,800	*
PCT	19336.65	63	249,000	
PCT	12255.96	121	395,000	✓
PCT	9784.53	139	420,000	✓
PCT	9357.59	143	186,000	✓
PCT	7585.08	150	197,805	
Specialist Trust			220,000	
Specialist Trust			700,000	✓
Specialist Trust			850,000	✓
Specialist Trust			950,000	*
Specialist Trust			1 million	*
Specialist Trust			1.1 million	✓
Specialist Trust			1.3 million	✓
Specialist Trust			1.4 million	✓
Specialist Trust			1.5 million	
Specialist Trust			1.6 million	✓
Specialist Trust			4.3 million	
External				
External				✓
External				
External				
External				
			*= ethical approval granted but not interviewed	

[a]The Index of Multiple Deprivation 2007 combines a number of indicators, chosen to cover a range of economic, social and housing issues, into a single deprivation score for each small area in England. This allows each area to be ranked relative to one another according to their level of deprivation.the Indices of Deprivation 2007 have been produced at Lower Super Output Area level, of which there are 32,482 in the country.1 indicates the most deprived area. Rank of average rank is shown out of a total of 152 PCTs.

Table 15: An overview of the analytical process in the interpretation of themes and subthemes

Statement/meaning unit	Condensed statement	Subtheme	Theme
so the constraint is that we've had to integrate the IAPT service into what was already just been put into place, they were not going to redesign again because they had that front end set up and so that's the major constraint – how we do that. And it adds a constraint upon the whole assessment and entry. Staff member 9.	IAPT and it's prescriptive nature, as well as the system already in place, limited services' use of the tool	Prescriptive nature of change	Change
Well the implementation of the IAPT service was a rollercoaster and the timescales within which the service needed to be up and running were fiercely competitive and challenging for everyone involved in doing that and therefore by the time the service started, we really had no idea about what to expect in terms of referral numbers other than through the forecast that had been made by the commissioner in specifying the service. So we were really quite anxious about whether those forecasts were going to be seen in reality and in fact following the implementation we know that in some cases surgeries have referred at least three times as many people to the service as was forecast. Staff member 1.	Pace of change was rapid and IAPT timescales were a rollercoaster	Pace and timing of change	**1.1.32**
Well it kind of felt like the tool wasn't really a priority because IAPT really is the big hitter in the primary care landscape at the moment, in terms of resource, maintaining current resource on the one hand and attracting new resource on the other hand. My feeling with the tool, whilst I thought it was an excellent tool, what happened was the use of it got overtaken by this, as you quite rightly say, this prescribed notion in IAPT, which we have to basically go along with in order to attract the funding so in a way, getting the funding through, you know, writing bids and liaising with both commissioners and staff around IAPT took a priority over the tool. There were much more pressing deadlines and targets. Staff member 7.	Staff members highlighted the contradictory nature of the change they were experiencing and being unable to use the tool to help them with that change.	Using the tool to facilitate change	
I think in all honesty the reason we probably haven't looked at it is because every time we went to look at it, it looked too complicated and time consuming and I think that's probably the real reason why we haven't sat down. Staff member 11.	Visually some users felt the tool was complicated and at times overwhelming	Visual	Technical Factors
we were doing really well with it until we got to the bit where it was setting up your own project and the scenario for your own service and that's when we got stuck because none of the percentages and the figures that you were giving fitted the service that we had, we couldn't find a way of changing them. Staff member 6.	Users found the patient movement part of the tool confusing and would have liked to have changed the unscheduled discontinuation rates	Patient Movement	
I got stuck in comparing like with like really, from one of the pilot sites to our own, they just didn't kind of match up Staff member 1.	Staff members found using a data-based tool difficult as their services were not similar to those pilot sites in the tool	Pilot sites/tool based on data	
So guided self help, 25% will be stepped up to high intensity individual. All of them have concurrent groups occurring, so there's not…this is where I got caught…movement is concurrent. Staff member 10.	Users found concurrent activities (e.g individual therapy and group therapy) difficult to model using the tool	Concurrent activities	
I found it very helpful, the first few pages where it just introduces you to the stepped model. I thought that was a brilliant summary of how the stepped model should work and I found it quite useful as well, the installation and starting guide was quite clear as well and that worked quite well for me. Staff member 4.	Users liked the manual and found it straightforward and easy to follow	Manual	
I think this has been the other challenge of using the tool …I mean, it's not the tool per-se, it's just simply the volume of other work that is absolutely piling in all the time. Staff member 2.	Workload pressures were a major challenge for staff members using the tool	Workload/Capacity	Personal Factors
'A lack of capacity really to commit myself to it wholly without any obvious immediate benefit. So I've had to kind of leave it really. If I could, kind of, see that there were going to be obvious immediate benefits to the service by using it then it would probably become more of a priority to me.' Staff member 1	Staff members needed to be more sure that outcomes from the tool would be beneficial before putting time and effort into it	Benefits vs costs	
I would say it would be good if there was just a little training session for people that are going to use it to just see it in practice really and see the different features. I know the manual does kind of go through that but it's different isn't it seeing it to reading about it?...Staff member 5	Staff members said they would have benefited from more support and training with the tool	Lack of support/training	

1.1.33

1.1.34 Qualitative results

A number of factors were involved in using the tool and manual including change, and within this the pace and timing of change, technical and personal factors. See table below for a summary of themes and sub-themes.

Table 16: Summary of themes and sub-themes for Phase II

Themes and sub-themes
Change
Prescriptive nature of change
Pace and timing of change
Using the tool to facilitate change
Technical factors
Visual
Patient movement
Pilot sites / Tool based on data
Concurrent activities
Manual
Personal factors
Workload / Capacity
Benefits vs costs
Lack of support / training

Change

Staff members talked about change as a major factor that influenced their use of the reconfiguration tool, including the prescriptive nature and pace of change they experienced and the challenges of using the tool throughout a time of change.

Prescriptive nature of change

With the introduction of new stepped care systems, in the form of IAPT (Increasing Access to Psychological Therapies), across the UK at the time of tool distribution, for all sites this meant significant service changes. For

some, the introduction of the IAPT model was a positive experience, with the prescriptive nature of the program allowing implementation of a stronger stepped care model.

> *Indeed and that constraint's actually very helpful because such a clear prescription allows us to bring a stronger stepped care model into play… peoples' pet projects or pet ideas can divert on a more vigorous stepped care approach but it allows us to be more rigorous than we might have ended up being. Staff member 9.*

Some staff members said that the prescriptive nature of IAPT and the limitations of systems already in place led to constraints on how exactly systems could be set up and how key aspects of the service like assessment would work, as well as confusion over staff roles. This disorder and unsettled nature of services meant that staff members found them hard to model.

> *I've been thinking about my service and psychologists and therapists in my service, and then we were using stepped care terminology, talking about steps for 18 months or so but we actually haven't had a stepped care model in place. People have tried to, in effect, start to stratify a service without a systematic way of thinking about it…and people start using a terminology without a real underlying model to really understand clearly so that's what we're putting into place now, a model. Staff member 9.*

> *We found it very prescriptive when it was first introduced but at the same time it's, IAPT just changed constantly, from the 1st September last year we had more put on us each month things had changed, and different requirements were needed so that was difficult. Staff member 6.*

As well as IAPT requirements, staff members also felt restricted by the system that was previously in place in some of the services. Users of the tool found that their IAPT system implementation, and therefore service modelling with the tool, was constrained by what was already in place previously and the new service had to be integrated into the existing one. This meant a lot of restructuring, employment of new staff and changing staff roles.

> *And people moved posts, I mean it was a complete restructuring really but there was hardly any people within the Primary Care Mental Health*

service before so it was a lot of new people but there were some old people moving across into the new service. Staff member 5.

Yeah, we've got an existing Primary Care Mental Health service, IAPT services, in this end of the trust, aren't live yet but yeah certainly one of the challenges is kind of looking at existing services and how they work with an IAPT service… there's so many various stake holders involved in it, it's quite a challenging concept and certain bits of the Primary Care services will need to evolve and change their focus, other bits, commissioners have served notice on, so from our point of view we can model it out but whether we model it out in a way that the commissioners want to continue to purchase is a different issue. Staff member 7.

Pace and timing of change

Staff members felt that the pace of change when implementing IAPT was rapid and IAPT implementation brought with it commissioning competition and demanding timescales. The unfamiliar and new state of most services meant that some staff members felt *'thrown into it'* (Staff member 5) and were trying to use the tool with no idea of actual referral numbers and were trying to model care pathways that were rapidly changing. Pressing service changes meant that staff members were faced with decisions that were dealt with in a necessarily pragmatic way and therefore the tool was not used to it's full potential.

Well the implementation of the IAPT service was a rollercoaster and the timescales within which the service needed to be up and running were fiercely competitive and challenging for everyone involved in doing that and therefore by the time the service started, we really had no idea about what to expect in terms of referral numbers other than through the forecast that had been made by the commissioner in specifying the service. So we were really quite anxious about whether those forecasts were going to be seen in reality and in fact following the implementation we know that in some cases surgeries have referred at least three times as many people to the service as was forecast. Staff member 1.

The IAPT timescale has put us on a rollercoaster and we've just rushed at it because that is what the requirements are in order to get people into posts and start training and whatever. So we made estimates, we knew there were pools of waiting, but we didn't know' Staff member 9

No, I think it's a really relevant tool, I think ultimately though it's about, planning a service is both a, is both a scientific approach using a tool like this, and it's also a process of politics and pragmatism. Staff member 2.

Staff members said that this tool would have been very useful as a planning tool, had they received it earlier. The tool was dropped into the implementation at a time of rapid, investment driven change and staff members thought they had time to use the tool but in fact found they had none.

I think the conclusion we came to, or at least *** because obviously she has been around right at the beginning, she said if she had had this when she set up this service like or when she was planning the service last summer she would have found it really useful…While now some of the information I think she felt that we are now getting from PCMIS and the other, because she felt that it didn't quite give her the information in the format that she expected it…She thought it wasn't as helpful at this stage now than if she had had it twelve months ago. Staff member 4.

I think it would have been an excellent tool it just fell on us at the wrong time and got overtaken by other things. Staff member 7.

Using the tool to facilitate change

Staff members highlighted the contradictory nature of the change they were experiencing and being unable to use the tool to help them with that change. Whilst the tool, in theory, would be very useful in terms of looking at patient flows and outcomes, staff members found that because of the rapid change they had no time to use the tool. Users thought they would have time to use the tool but soon found that they hadn't anytime, even though they acknowledged that the outcomes would be useful.

whilst the aims of the IAPT services and the aims of what we were doing were the same, IAPT kind of, has resulted in a complete change to the approach we were taking to move towards stepped care, IAPT's dropped in suddenly, we had a five year plan.Staff member 7.

I just think it's a lack of time and a lack of ability to, unless managers could, and I suppose I have a certain work ethic which says that I work hard within the hours that I'm given and I do not, I have a life outside of it which exists, and unless you choose to sacrifice that life, managing what is increasingly just change on change doesn't allow you to sit down, personally speaking, and use

tools in an effective way because it requires some time, some focus and some patience from the people around you. Staff member 3.

Staff members who were at later stages in IAPT implementation, when reflecting on the tool, said that in hindsight the tool would have been useful but at the time they were so caught up in the change process that they didn't realise it could have been of use or simply did not have a chance to use the tool.

Having got experience of actually thinking about the system and obviously having redesigned the service as a project team, I was involved in that, so it was a lot easier to get behind the thinking of 'well where are we going to deploy staff?' as we've changed into this new system. So now I've done it, I've done it again last night, I've run it again with my expected full referral rate, knowing how many people we're going to put into the screening stage, how many sessions we're going to have out in the community. Because when we started we didn't even know, we didn't know how many sessions we were going to put into community…but that's where probably using the tool would have been very useful and I didn't and that was, you know, my mistake, because that's what it's there for. Staff member 2.

'we've got caught in the middle of commissioning desires and the desires of IAPT and the desires of our provider and I think we've got hit by change on change on change.' Staff member 3.

Some staff members stated that the tool would be very useful to them both currently and in the future but that it needed to develop and become applicable to the new '*IAPT world*' (Staff member 7).

I think last time I think it would have been an excellent tool it just fell on us at the wrong time and got overtaken by other things, particularly IAPT, and the way IAPT lays things out so I think that's the only comment, that I would support it's development but I think it's development has got to be in the context of an IAPT service that kind of dictates how you lay out, certainly, that core element of your Primary Care Mental Health service anyway. Staff member 7.

Technical Factors

The people interviewed gave a variety of reasons for their involvement in the project and how they used the tool. Some wanted to use the tool to look at how they may be able to improve their service and to inform planning and decision making. Others were trying to use the tool to cope with system

expansion, pressure to change and quality and service issues (e.g. waiting lists). One service wanted to compare the figures from this tool with another tool they had been using. Accordingly, participants compared their own data with pilot sites, input current data from their service to look at possible improvements, used retrospective data to see how their service is panning out and tried to forecast demand and look at specific resource implications. However, users who were immersed in a service rapidly changing were then faced with a tool that looked complicated and did not meet their expectations in terms of outcomes.

Visual

Users had a varied opinion about the tool visually. Some tool users felt that the interface was clear and easy to use.

> *I think it looked good in terms of it's very clear, I didn't have any problems. Staff member 2.*

Whilst others felt that the tool interface wasn't very intuitive and that when first opening the tool it looked too daunting and these things contributed to the tool not being used. More guidance about what information to put into the tool was a suggestion made for improvement by users.

> *I think once you were familiar with it, it would be fine but kind of on a first opening it looked like 'oh my god what do I do where?' sort of thing. Staff member 7.*

> *I would say it's fairly straight forward in terms of the different options on there but it's I don't know sometimes there was just too many things on one screen to know what you should do really and what each button does. Staff member 5.*

Patient movement

Staff members found that one of the most confusing parts of the tool was the patient movement table where users can specify the flow of patients through their system. Users felt that visually this was complicated and this made it difficult to input data. One suggestion to improve this was to make this into a flowchart or graph rather than a table.

> *I'm a visual person, when the table came up showing where I hit problems, if that was a runtime graph saying 'month 1 patient numbers' then you hit trouble here* [further point along

graph/timeline], *I think that would really help people engage with it a lot better. Staff member 10.*

I don't know whether it could be put into tabs or something which would make it kind of flow through a process so if you had a range of tabs along the bottom seeing as it's in Excel, then you'd know to follow, when you've done one page you go onto the next one or something like that. Staff member 5.

Staff members complained that they couldn't change the unscheduled discontinuation rates in the patient movement table. This meant that if their service's discontinuation rates were very different then the tool gave unrealistic figures and the outcomes were not useful.

the unscheduled completion rate [the fact that it couldn't be changed], *meant that it wasn't helpful to us as a product, so we sort of got stuck there and that was where we stayed. Staff member 10.*

Pilot sites/Tool based on data

Many users attempted to input their own data into the tool from their service. However, users found it difficult to use a data based tool, even though this included some IAPT sites, as their own services were not configured in the same way as those in the tool. Even though the nature of IAPT is prescriptive, users found variation in the way services had been implemented and this meant it was hard to model.

I think what we need to do was for the tool to be altered so that we could put our own figures in and then it would have been helpful. Staff member 6.

'because we're an existing service the immediate problem we had is finding one of the scenarios that fitted with us…and none of them matched well which immediately meant we were compromising by trying to find the best fit.' Staff member 10.

There was one [pilot site], I can't remember off-hand, which was about 70% there but I thought I don't want to put time and effort into something that is 70%. Staff member 10.

Tool users who tried to input their own data from their service found the output figures they were getting did not match what they might expect.

> *we found it really difficult because it wasn't just a little bit out, the examples you gave weren't just a little bit out to our service, they were way out and we couldn't use the figures that you'd set up. Staff member 6.*

> *the unscheduled completion rates the percentages that that we were given to choose from didn't represent our existing service's reality. Staff member 10.*

Furthermore, some staff members used the tool in a curious way, not to input their own service data but to compare their service to the pilot sites on the tool. Some users found this valuable in terms of planning how their own services might develop.

> *it seems to me that one of the uses I'm going to be making use of it, because we don't have data yet … what we will be doing for a while is using these sites as comparisons to, do our data match? It's interesting what you've done as well, your retention is worse and that's an interesting question isn't it, it's comparative. And so I think the availability to compare your data with these pilot ones is valuable. Staff member 9.*

Landscape changed in terms of information available within services about these disorders. People who are data savvy now want to put in their own data and this is a very different place to where we were at the beginning of this project.

> *I guess the other thing is, I may be trying to use this much more than it's designed for. We've gone through the planning and I'm a step ahead of that but also what hasn't been mentioned is we have the PCMIS tool and the maiden IAPTUS system, we're on the IAPTUS system, which allows me on a weekly basis to know my range and my average for every therapist in every step, as well as the service and so what I do is I take that monthly, or quarterly data actually, and put it into the tool to readjust it, so I haven't got a predetermined pathway, it's being updated fairly constantly by the IAPTUS real information as we go. Staff member 10.*

Concurrent activities

Some users were working in a service in which patients were offered concurrent treatment options, for example, taking part in individual therapy and group work. Users found that they were unable to model this in the tool.

> *Yeah I mean we have a lot of people who attend groups and are waiting for individual therapy or they are already having the one-to-one so I would say yeah that was very hard to try and, kind of have true figures…I think it was just the fact I couldn't see a way around it in terms of, I mean I could obviously put one therapy at a time in and have the throughputs through one but I couldn't see how to do one into the other I think. Staff member 5.*

Manual

Most users of the tool found it clear and fairly easy to use. Comments about the manual and tool instructions were positive with tool users saying that the manual was informative, tool instructions were easy to follow and the screenshots were useful.

> *'I found it [the manual] very helpful, the first few pages where it just introduces you to the stepped model. I thought that was a brilliant summary of how the stepped model should work and I found it quite useful as well, the installation and starting guide was quite clear as well and that worked quite well for me.' Staff member 4*

> *we thought the manual was absolutely fantastic. It was wonderful to have a concise summary of our experience over the last 12 or 13 months! So I just really need to put that on record, fantastic introduction…The qualitative data was a therapy exercise in normalisation!…And good to have, it really was a good experience. Staff member 10.*

> *The manual's great, I think it does… it's really helpful…it's very helpful in having a, sort of, these are why stepped care, this is why stepped care is good, this is the patient and clinician experience of it…I think it was really good to, sort of, hear peoples' experience from it, I presume those were from the pilots sites?…And also to understand, you know, to recognise that it is a very complex process. Staff member 2.*

Many staff members also liked the fact that the manual was separate and in paper format as this made it easier to use with the tool.

> *It was just, it was really good having the manual in paper format rather than having to go through a help process so that was really good. Staff member 2.*

> *The manual is good...and to work, you know, alongside the pc which was good...I found all of the manual helpful. Staff member 1.*

Personal Factors

Workload/capacity

A major challenge for many staff members was the workload pressures within their job role. This meant a lack of time to use the reconfiguration tool.

> *I wouldn't say it's the tool itself as such I think where I've got confused with it I've probably put it away, got on with other work obviously that comes in and then thought 'oh god I haven't used this for a bit, I better use it again'. I would say it's more workloads, I mean that's down to me and maybe I should have probably got someone else to have a look at it at the time as well. Staff member 5.*

> *Yeah, I think that's been the other issue really is that I've, the other issue I've had is that my clinical lead that I've been working alongside has had no time because he was kind of, the commissioners didn't commission that properly, his time, so in effect I've been covering the clinical lead's role which we've sorted out in the last, probably three or four weeks, and you know I've got five sites and I only had two managers in post from August and I found it extremely difficult to recruit other managers. I've now got five managers in post as of last week so actually that time pressure might begin to reduce a bit so I can take on a more strategic overall perspective and also I'll be able to pass things on to managers and clinical leads but there's been no capacity in the system to do it [use the tool]...I think it came at the wrong time. Staff member 3.*

Often a lack of time meant that staff members weren't able to use the tool to it's full potential.

And we couldn't find a mutually convenient time for which to talk through some of the problems I'd found, I wasn't sure whether it was the software, whether it was me… I think I got to the point where I was looking at specific resource implications…and I kind of got stuck there really…And then I kind of lost heart a bit and…I had other commitments that I thought I would be more successful with. Staff member 1

I was reading through the manual as well and I just came across a few things that I wasn't sure of and then you know other work comes in and it kind of goes back, and it's a voluntary thing and so it kind of gets pushed back in your workload unfortunately. So I probably haven't dedicated enough time to it. Staff member 5.

Benefits vs costs

Staff members, although commenting that the tool may be useful, also said that because of a heavy workload and lack of time they needed to be more sure of the benefits that the tool may bring before investing time in it.

Errr… no I just think that potentially it could be very useful to us and I'd like to continue with it, if it's…certainly if it's demonstrated elsewhere that it's beneficial to services then I'd like to know about it. I mean I've not heard anyone else talking about it in the expert reference groups for example, have there been any in the South West? We should be hearing more about, you know, there could be a sort of learning set really couldn't there?… I WOULD MAKE time to use it, if I really thought that it was going to help us reconfigure our service. Staff member 1.

Lack of support/ training

Some people commented that they had come across technical problems and would have liked more support to deal with these immediately. Some people mentioned that they would have found a training session before using the tool helpful. Staff members said that these things would have helped them persevere with using the tool.

Without training I probably didn't progress as far as I could have with training, looking back. Staff member 1.

I mean I didn't give up as such but it did make it more difficult kind of not having a training session I would say. I think we would have used it probably more fully if we had of had a training session rather than just the manual. Staff member 5

1.1.35 Summary

Staff members were originally given the reconfiguration tool and manual to help them with the reconfiguration of their service to a stepped care system. Staff members attempted to use the tool, however, they found it difficult to use for a variety of reasons.

Change was a big factor in staff members use of the tool. IAPT implementation was happening at the same time that they were trying to use the tool and this had various implications. The significant service restructuring that IAPT required meant that when staff members received the tool, the service they were trying to model had often not finished being modified. The pace and timing of change was very fast and this meant increased workload and other priorities for managers with decisions being made pragmatically rather than with a tool. A tool that was intended for use as a planning aid, got taken over by change and meant that staff were too far through the change process to use it to it's full potential.

Technically some users found the tool simple and easy to use. Some felt that visually it could have been less complicated, especially the patient movement part of the tool. The manual was seen as easy to use and very informative with useful screenshots. Staff members had problems finding pilot sites' data to match their own, however, the tool was not designed to be used with sites who were so data savvy.

Personal factors affected staff members use of the tool including pressures on time and workload. Many staff did not have the capacity to use the tool and some felt they would like to see proven benefits of the tool before they committed time and energy to it. Lastly, staff members felt that they would have benefited, and may have used the tool to it's full potential, if there had been some more support, for instance over the telephone or in the form of a workshop.

As a consequence of these results we modified the tool and accompanying manual to reflect some of the technical considerations expressed by our respondents. These modifications should make the tool easier to use although we have not had time to test this assumption out in further testing.

Summary, discussion and recommendations

In this study we used a mixed methods operational research approach to address four objectives.

Objective 1 was to design effective and efficient stepped care systems for psychological therapies in a variety of settings through facilitated stakeholder consensus exercises. We successfully helped four NHS services design their stepped care systems, helping them move them from a range of 'traditional' service configurations to a local and consensually derived stepped care system.

Objective 2 was to investigate the effect of implementing these systems on patient access, throughputs, clinical outcomes and patient choice. We successfully recorded throughput data on almost 8000 patients, mapping their entry and exit from the systems as well as recording the choices of therapeutic inputs received. We were not able to link this to clinical outcomes due to the lack of efficient routine systems for collecting clinical outcome data in sites.

Objective 3 was to identify barriers to the implementation of stepped care. We were able to understand this aspect of implementation through qualitative data gathered from the four sites we worked with to address objectives 1 and 2, and through further qualitative research in parallel with our work addressing objective 4.

Objective 4 was to investigate the generalisability of the reconfiguration process including the utility of an implementation manual and computer modelling tool. We successfully developed a computerised reconfiguration tool and accompanying manual. However, attempts to use these materials in a stand-alone manner were unsuccessful in a series of additional NHS sites.

Underpinning our approach was the intention to populate a model with real world stepped care patient flow data so that the model developed from this data would have greater face validity for services wishing to reconfigure their own systems. The first service reconfiguration method we used (the constituency approach, Poulton and West, 1994; Richards and Rees, 1998) was an extremely effective one and we believe that the lessons we learned can be used by other NHS services undergoing reconfiguration. The service structures developed by our four sites differed considerably from each other and provided a rich seam of patient progress data once they began to operate. These data can help the NHS understand how different systems can produce markedly different patient pathways, when ostensibly all are attempting to implement the same published guidelines (NICE, 2004). Our success in collecting patient throughput data highlighted the situation in terms of clinical outcomes, where the opposite situation prevailed. Clinicians and services were unable to collect and collate mental health clinical outcome data for all but a handful of their patients. Our attempts to do so

demonstrated starkly just how inadequate routine data collection systems and practices were.

Nonetheless, the patient progress data was developed into a model which could estimate patient throughput numbers, waiting times and waiting list size as a function of the component elements of individually designed stepped care systems. Patient level response variability in terms of 'length of stay' in the system was built into the modelling using data derived from our four sites. This model was then provided with an interface which allowed users to input their own data on service capacities at different steps in a bespoke designed stepped care system. Users from additional sites received this interface tool in the form of a CDROM and accompanying user manual. However, we found that users struggled to use these tools in the stand alone manner intended.

Unlike the first four sites, where the research team facilitated consensus building workshops and supported sites in their reconfiguration, additional sites struggled to use the stand-alone tool effectively due to a range of technical, personal and contextual factors. There were some technical aspects of the stand-alone tool which did not facilitate its use (which were addressed in response to feedback from the focus group), and many potential users reported that they were too busy or insufficiently prepared to sit with the modelling tool and use it in their planning decision making. Contextually, of most importance was the rapid roll out of the national Improving Access to Psychological Therapies (IAPT) programme, which involved many potential users in setting up new services, employing new staff and designing new patient pathways to a rigidly prescriptive model.

Our study raises a number of important questions and potential solutions on how best to develop new service models. Evidence-based guidelines based on systematic reviews of treatment outcomes such as those produced by NICE provide a basic template but there is limited clarity about how such treatments will be implemented and care systems actually designed. Some of our findings could assist this process. Further, we have shown how local interpretation of apparently unifying, albeit complex, delivery systems can dramatically alter patient pathways and both staff and patient experiences. We also know from this study that using modelling tools to manage the transition from the old to the new is not something that those allocated this task can undertake without support.

The Constituency Approach: a model for assisting the NHS to design care systems

During this study we adopted a method of consensus development called the constituency approach (Poulton and West, 1994) to assist some services develop their systems. We used this with our four initial sites whom we might regard as 'early adopters', in that they were enthusiasts for stepped care but had not yet made decisions as to what their systems would look like. Although we used this approach to help them provide the study with

data for incorporation into the computer modelling tool, we also enabled them to move from enthusiasm to implementation.

Using specified inputs, structuring the stakeholder interactions and specifying the consensus process outputs (Murphy et al, 1998) we were able to facilitate four sites to clarify their thinking, incorporate diverse stakeholder opinions and develop clear plans on the structure and content of their proposed stepped care systems. In some sites, these proposed systems were very different indeed from the systems already in place. These existing systems could be characterised by a series of two or three distinct and separate services, although in one site there had been some attempt to improve communication and formalise linkages. The existing situations largely reflected the prevailing division of mental health services into 'primary care' for people with common disorders such as depression and anxiety and 'specialist' services for serious disorders such as schizophrenia, although in sites one and four at least specialist services had already staked a claim to reaching out and treating common mental health problems. Two sites also described counselling services, present in the mental health service landscape as a consequence of the ability of GPs to purchase such services directly since 1990, in turn in response to a move away from service provision for common mental health problems by specialist mental health service providers.

The consensus development process itself was a highly effective method of helping sites clarify the specifics of their aspirational service model and to subsequently move from their current situation to one which represented their new structures. These services were of course keen 'early implementers' and the stakeholder process interacted with their expressed desire to implement stepped care services, coming up with useful changes that were then implemented. The constituency approach (Poulton and West, 1994) method provided the structure for the interactions but the principle of defined inputs and outputs was taken from HTA guidance (Murphy et al, 1998). The process brought a large range of stakeholders together to determine the shape of their new systems. The importance of *inputs*, *structure* and *outputs* was very clear to those both facilitating and contributing to the workshops.

Following this best practice enabled the research team and the participants to be fully briefed on the task and to receive information relevant and helpful to speed the discussions. Information given provided a common starting point to aid the group achieving cohesion around the task. As recommended, we provided both a synthesis of the available epidemiological data and a theoretical description of the principles behind stepped care. The provision of scenarios in the form of case studies was also an effective method of focussing participants' attention on the task in hand and enabling them to move from the theoretical and epidemiological data presented to translational clinical information. We were careful to ensure that the scenarios we presented to participants were relevant and common, reflecting both the likely proposed patients in a stepped care system and also at least one scenario where some doubt might exist as to

the eligibility of such a patient being treated in a stepped care system. We were also careful to ensure that the questions presented to participants were specific enough to produce clear opportunity for discussion and consensus development and to avoid non-specific agreement to which everyone could sign up to but which would have provided no clear basis for subsequent action.

In terms of inputs, whilst the task and supporting information was in the control of the research team, participant selection was determined by site leads. This led to considerable variation in the characteristics of each participant group (table 2). Site leads could be reasonably supposed to have the best knowledge of whom they should include in their stakeholder groups but the variation was quite marked. Although this may be a weakness in the process, it would not be reasonable to expect the research team to be able to identify and invite the key local constituents. Equally, the variation is symptomatic of the great variation in local service provision and professional/organisational power blocs present between sites. Site 2, for example, was served by a large specialist psychotherapy service from which many members were represented at the group meeting. Site 1, in contrast, saw many managers attend. Site 4 had almost 25% of group attendees as GPs, reflecting the embededdness and importance ascribed to primary care mental health workers in GP surgeries. Despite these differences, all groups were heterogeneous allowing for input from a range of stakeholders with an investment in the outcome of the reconfiguration process. One exception is that carers and patients were only present in two of the four groups, and then only one person each. As such, the consensus decisions arrived at are likely to represent a professional or managerial consensus, rather than a broader stakeholder agreement including those that use services or look after patients.

The structure of the constituency approach in facilitating the exchange of views and the subsequent build up of agreement and uncertainty largely achieved its aims. It did require, nonetheless, characteristics of good practice identified in other consensus approaches (Murphy et al, 1998) such as the Nominal Group Technique (Delbecq and Van de Ven, 1971) and the Delphi method (Pill, 1971). Firm chairing and leadership has been identified as one of these characteristics and we were careful to ensure that the process was carefully explained, that pairs and groups kept to task and that all members of the group were able to voice their opinions without fear of censure. Skilled facilitation provided structure, maintained attention to the agenda, allowed speakers to be recognized and have their voice heard, any conflict managed and a constructive environment created. As noted by Murphy et al (1998) the quality of the interactions is more important that the specific method but we found that the constituency method to be an effective way of structuring interactions.

In terms of the outputs we defined clear criteria for consensus structured initially around the eight original questions. We were careful to maintain absolute confidentiality in terms of individual contributions but were very explicit and open with regard to our aggregation of individual contributions.

However, we provided a further analysis of these questions to sites in the form of three areas which represented an amalgamation of the key operating principles of stepped care. Access to stepped care, what treatments would be provided at different steps and how patients would progress through the steps are three critical aspects of stepped care and these made up our themed feedback.

The process of consensus development was, therefore, a successfully managed one where the four sites all agreed a set of principles for the implementation of stepped care. These principles varied between sites and some areas were left undecided. Sites divided into those that preferred a system favouring allocation to different steps depending on triage type assessments and those that preferred a more clearly stepped system where patients would arrive at lower steps first. Each site set in place a working group to clarify remaining areas of uncertainty and to implement the next stage of the project: providing an environment where the research team could collect data on patient progress through stepped care in order to populate the modelling tool with real service data.

In summary, we endorse the use of the constituency approach providing that evidence-based principles of consensus development are incorporated (Murphy et al, 1998). These are:

- Clear inputs on group task, epidemiology, theory and case studies

- Selection of participants to represent as wide a legitimate stakeholder group as possible

- Careful structure gradually building from individual to group consensus and uncertainty

- Skilled facilitation and workshop leadership to maintain fidelity to the structure of the interactions and the overall constituency approach process

- Clear output definition and criteria for consensus development around a pre-determined thematic structure

- Feedback to participants of thematically analysed constituency approach workshop outputs

Ironically, one obvious limitation in this approach is a product of its success at engaging local stakeholders. Our four sites developed quite different service models. In part, this is likely to be influenced by existing resources, relationships and previous attempts to redress the historical problems of poor access to psychological interventions. The origins of the four services will have shaped the way they responded to the move towards stepped care, in that historical local factors are often quite constraining. The limited direction in clinical guidelines (e.g. NICE, 2004a; 2004b; 2009), which often focus in detail on evidence about *what* works but in contrast leave methods of implementation and delivery vague, further opens the door to significant local variation.

There is, nonetheless, a more general tension between developing bespoke local systems, and applying a generic model. As noted by Oxman, Dietrich and Schulberg (2003, p514)

"although good outcomes can be obtained with system change at the primary-care level, these outcomes still may not match the level obtained in specialty-setting research trials."

This 'voltage drop' effect is one danger of allowing local variation. Had we undertaken a national consensus development process, the resulting service model could have acted as a national template. However, the extent to which a more directive national template can shape local behaviour is questionable given the aforementioned local constraining factors. The issue here is that even when consensus methods are successful in bringing diverse stakeholder to an agreement on service models, the more local the groups, the more they are likely to be influenced by highly specific and historical local characteristics. The next section of the discussion illustrates these dilemmas more acutely.

Design uncertainties in stepped care services and their impact on patient pathways

Our first objective, to help services design stepped care systems for psychological therapies, led on to objective 2 where we then investigated the effect of implementing these systems in our four study sites. The four service models developed illustrate the considerable uncertainties and influences bearing on those that wish to design stepped care systems. Whilst the architecture of primary care mental health services has been recently changed by the IAPT programme, many of these uncertainties remain. At the time of this study, there was far less prescriptive instruction available and as a consequence of this, together with the different workforce and service configuration starting points, services varied significantly in construction.

In sites where staff associated with low-intensity interventions were scarce or potentially regarded by traditional professionals with uncertainty, allocation/triage systems and direct referral to high-intensity steps were implemented. This is most clearly illustrated in site one, where a stratified system developed, allowing 45% of assessed patients to go directly to a high-intensity or specialist worker. Triage does not, however, guarantee allocation to high-intensity treatment. In site 3, after triage by a senior mental health worker, lack of high-intensity resources led to patients overwhelmingly receiving a low-intensity, self-supported internet based treatment. The senior workers, almost exclusively engaged in triage assessments, were unable to deliver more than a handful of high-intensity treatments. This illustrates that although entry to the two systems was controlled by professionally qualified and experienced workers, other

factors, not least the availability of high-intensity treatments, dramatically affected the pathways patients experienced.

In marked contrast to site one, site two developed a system which was more 'stepped'. In this site few patients were allocated immediately to high-intensity treatment and the overall ratio of low- to high-intensity treatments was the reverse of site one. Of those patients who were allocated to and subsequently received a treatment, in site two one third received high-intensity treatment compared to two thirds in site one. In site two, entry was not controlled by professionally qualified and experienced workers, freeing these workers up to utilise their time in the delivery of 'medium-' or high-intensity treatment. This site demonstrates how assessment by low-intensity workers, coupled with the availability of high-intensity treatment delivers a picture which looks more like the stepped service envisaged by Bower and Gilbody (2005b).

Site four was a complex mixture using both stepping and stratification strategies. Although the ratio of low- to high-intensity treatments favoured low-intensity interventions (1.4:1), this was less than in site two (2:1). The main differentiating factor in this site's system seems to be the ability of GPs to make a direct referral to high-intensity primary care psychology. As a consequence, there were two very clear entry points to site four's system. Therefore, although more patients were referred directly to low-intensity workers, who conducted the assessments here, a considerable number of patients could omit this step and go directly to a psychological assessment conducted by a high-intensity professional.

Each site was, therefore, considerably different from the others and whilst it is tempting to place them on an operational continuum from stepped to stratified (certainly sites one and two would fit this conceptualisation neatly) this does not do sufficient justice to the complexity and diversity of each site's attempt to design and implement what they regard as a stepped care service. Although, according to Bower and Gilbody (2005b), a stepped/stratified distinction could be one dimension that dramatically influences the performance of stepped care systems, staff availability and deployment rendered site three into an essentially low-intensity service only, despite considerable high-intensity expertise being available. Site four demonstrates how enabling more than one entry gate can alter the configuration of patient pathways in what is to all intents and purposes a structure leaning more towards stepping than allocation.

There were interesting similarities as well as differences between sites. For the three sites where we have data, all 'lost' considerable numbers of patients between referral and assessment, ranging from 44% to 49% of referrals. In contrast, the one site (four) where direct referral to high-intensity services was permitted achieved 97% assessment rates for referrals. At the next stage, whereas all four sites treated between 60%-68% of patients assessed through the stepped care route, only 29% of patients assessed in the high-intensity direct referral route went on to receive treatment. In most cases, an additional 10%-15% of patients had their cases closed after the assessment following brief advice and guidance.

This figure was doubled for the direct referral high-intensity condition (31%), suggesting that high-intensity workers were acting as expert advisors as well as high-intensity clinicians. These levels of attrition in routine services have been observed previously in relation to the first IAPT demonstration sites (Clark et al, 2009; Richards and Suckling, 2009) and are a well known phenomena in psychological therapies services (Barrett et al, 2008; Gilbert et al, 2005; Wierzbicki & Pekarik, 1993).

In the three sites where there was a balance of low- and high-intensity provision (excluding site three where little high-intensity treatment was delivered) we observed a consistent stepping up rate of 10% from an initial low-intensity option to high-intensity treatment. In these sites, scheduled completion rates from high-intensity treatment was about one third of all cases treated. However, our data is affected by the cut-off date for completion of the analysis, in that it did not allow us to follow up the endpoints for patients who remained in treatment at the cut-off date, particularly in high-intensity treatment which by its nature is of longer duration than low-intensity. In two sites these patients were almost 50% of the remaining high-intensity cohort.

In contrast, completion rates for low-intensity treatment were more variable, in some cases over 50%. One explanation for this is that low-intensity treatment is by its nature shorter than high-intensity treatment and it is conceivable that patients will be more likely complete a shorter course of low-intensity treatment than the longer high-intensity option. This observation, whilst requiring further investigation, is at the heart of the original concept of stepped care – that treatments should be 'least restrictive' for the patient (Bower and Gilbody, 2005b; Davison, 2000; Haaga, 2000; Sobell & Sobell, 2000), rather than (or at least as well as), least costly for the service. Clinicians often assume that patients want longer treatments, but this data suggests that the original definition of stepped care in terms of patient burden still has relevance. Unfortunately, the lack of clinical outcome measures makes us unable to assess the clinical impact of this application of the low-burden principle of stepped care.

We saw very little evidence that sites were 'stepping down' patients from high- to low-intensity treatments, which occurred for no more than a tiny handful of patients in sites 1-3. Stepping down is an ambiguous concept which might conceivably occur in two types of circumstance. Firstly, a patient may be triaged to high-intensity treatment and in subsequent negotiations with a therapist decide that a lower intensity treatment suits them better. This would require a high-intensity therapist to be prepared to discuss lower intensity interventions during treatment, which one might argue is unlikely once a patient has engaged with the therapist. Secondly, stepping down could be an option for patients who require ongoing management of their condition, akin to chronic disease management of physical health problems such as diabetes. Such a principle is very firmly part of collaborative care models of depression management (Oxman, Dietrich and Schulberg, 2003) but has not been articulated as a core component of stepped care. Even in site 1, where many patients were

allocated to high-intensity therapy which could conceivably result in inappropriate patient stratification, stepping down was very rare.

All these observations have considerable implications for the future design of stepped care services. As IAPT services are rolled out across the NHS more completely, they will operate to clearly defined workforce targets, including 40% of workers trained and competent at a low-intensity 'Psychological Wellbeing Practitioner' (PWP) level, the remainder being professionally qualified and experienced workers operating as high-intensity therapists. However, IAPT has not specified how these workers should be deployed. This study shows that if assessments are completed by professionally qualified and experienced workers, they may refer more patients to high-intensity treatment (as in site one) unless the process of assessment itself drains sufficient high-intensity resources away from treatment to leave nothing but high-volume, low-intensity options available (as in site three). Allowing GPs and other referrers to decide the entry point could lead to more patients receiving high-intensity treatments (as in site four) than where one entry point (to low-intensity as a default first step) exists (as in site two). Furthermore, the availability of resources close to primary care and relationships between different professional and para-professional groups can lead to differences in points of entry and rates of referral to individual components of a stepped care system where these options exist. The fact in site three that almost all the expert high-intensity resource was being consumed by assessment activity would have been ameliorated had additional resource been available for therapeutic activity at this step. Nonetheless, other sites chose to use their high-intensity resources differently and these decisions lead to very different pathways. The diversity of service design and the resulting pathway volumes in this study demonstrates how sensitive stepped care systems are to critical on the ground decision making.

The extent to which the patient pathway volumes we observed in this study are dependent on other important variables could not be determined. Crucially, no service implemented their expressed desire to collect routine outcome measures in sufficient volume for us to assess the relationship between clinical outcome and patient allocation or step. Clinician behaviour and informatics were simply not capable of collecting and collating clinical outcomes in a routine and reliable manner. We would like to note at this stage in the discussion that this situation has recently changed dramatically with the implementation of systems in IAPT services which have ensured that new services are collecting outcomes on 88%-98% of all patients treated (Clark et al, 2009). However, our sites were unable to provide us with clinical outcome data during the course of our engagement with them.

In summary, we observed that:

- When patients were triaged by high-intensity workers more patients were allocated to high- than low-intensity treatment

- Freedom to make referrals to multiple points of entry led to more patients being assessed by a high-intensity treatment service component

- The rates of stepping up in sites where high-intensity resources were available was no more than 10%, even where large numbers of patients had already been allocated directly to high-intensity treatment.

- Resource constraints at high-intensity lead to more patients receiving an initial allocation to low-intensity treatment

- Stepping patients 'down' from high- to low-intensity treatment was a rarely used system option.

- Attrition rates between referral and assessment and between assessment and treatment are generally around one quarter to one third of patients at both stages.

- Scheduled completion rates for low-burden treatments are higher than more burdensome high-intensity treatments.

It would appear, therefore, that the principal driver of patient flow through stepped care systems is the allocation to initial treatments. The rate of stepping up was remarkably consistent no matter how the patients were assessed or how many were allocated directly to high-intensity treatment. The same proportion of patients were stepped up in systems which allocated large numbers directly to high-intensity, allowed referrers to make direct referral to high-intensity treatment or directed most patients to low-intensity treatment. The only service which stepped fewer patients from low- to high-intensity treatment was one where there was very little high intensity treatment provision. Stepped care systems do not seem to differ from the oft observed attrition rates to psychological therapies at all stages in the patient pathway.

Barriers to implementing stepped care: the experiences of staff and patients

Our third objective, to understand the barriers to the implementation of stepped care, was investigated through qualitative interviews. Our method was to investigate the general experiences of staff and patients in stepped care systems and from this data extract themes which could be barriers to stepped care implementation. Given NICE's (2004), recommendation to restructure mental health services for anxiety and depression into stepped care models there is a surprising paucity of data on how patients and staff experience stepped care. We are aware of only one unpublished doctoral study on the experience of 11 patients who were 'stepped up' from low- to high-intensity treatment (Horn, 2009) and one ongoing PhD study (Gellatly, University of Manchester, personal communication). Our study is the first to be completed which has illuminated staff and patient experiences of stepped care as implemented in four sites across England.

Introducing stepped care intentionally changes working practices but also has a potential indirect impact on many aspects of mental health care, including the relationship between patients and worker. Associated with (although not entirely *caused* by) stepped care were changes in types of treatment, the timing of treatment and treatment delivery methods.

Consequently, our respondents reported on aspects of their experience that might conceivably be common issues in any mental health care delivery system. These included the nature of the interpersonal relationship between patient and worker, contextual factors affecting this relationship and the process of change itself. However, they also described specific elements of the stepped care system itself which impacted on their delivery or receipt of care. These included new structures, new staff roles, new workers and new delivery methods. Many of these were seen as potential barriers to the implementation of stepped care.

For some workers stepped care was perceived as bringing in an unwelcome degree of scrutiny, prescription and system rigidity. In terms of scrutiny, the process of stepping patients up from low- to high-intensity treatment requires that some assessment of patient outcomes, possibly including an objective measurement tool, is undertaken regularly. As Sobell and Sobell (2000, p.578) point out 'stepped care…adds the guideline that decisions to change treatments should be performance based'. As evidenced by the low rates of completion of clinical outcome measures in all our four sites, respondents in our sites were not compliant with the routine use of measures. Therefore, in services where the implementation of the second principle of stepped care (self-correction) involves the routine use of clinical outcome measures, work will be needed to overcome potential resistance by clinical staff.

The prescribed nature of the elements of stepped care is also a potential barrier. Although CBT is not an intrinsic part of stepped care, it is very clearly associated with both high- and low-intensity treatments and recommended as the first line treatment for many common mental health problems (Salkovskis et al, 2002 Chambless & Ollendick, 2001, Clarke et al, 2009; NICE 2009). Although stepped care is *not* CBT, CBT does fit well with the low-burden principle of stepped care given that it can be readily translated into low-intensity self-help variants. Indeed, at least one systematic review shows found that non-CBT based self-help was ineffective (Gellatly et al, 2007). Although stepped care is recommended by NICE merely as the primary organising principle behind the delivery method of its recommended evidence-based psychological treatments, the majority of such treatments, particularly at low-intensity, are CBT based. So despite the fact that stepped care is only the framework to put evidence-based interventions into practice, content and process may be perceived by many people as being very closely intertwined. Of course this is not strictly correct. It could be argued that since different patients may respond to better to different psychological treatments, a system of minimal CBT and higher intensity therapies other than CBT is entirely feasible (assuming equivalent effectiveness). Nonetheless, the confusion of process and content and the conflation of CBT with stepped care is a potential barrier if staff see stepped care merely as a method to change practice from other psychological interventions into CBT.

Our respondents were concerned about some of the efficiency assumptions underpinning stepped care. Whilst low intensity interventions have been

proven to be more effective than 'treatment as usual' or 'no treatment' conditions (e.g. Cuijpers, 1997; Lovell & Richards, 2000, Hirai & Clum, 2006, Gellatley et al, 2007), Bower & Gilbody (2005) propose that for low intensity treatments to be viable they must be more efficient than the alternative – that it is only when a treatment costs less and is equally efficient that it is deemed to be 'technically efficient' (Donaldson et al, 2002).Indeed, in related organisational implementation methods such as collaborative care (Katon et al, 1999), cost savings are only apparent after the first year of follow-up (Gilbody et al, 2006). Consequently, another barrier might be that clinical staff do not believe that stepped care will actually enable their services to treat more patients effectively and efficiently as predicted by stepped care theorists.

The evidence underpinning our respondents' fears is mixed. It has been found that those patients who have received minimal interventions may be more likely to seek additional interventions than those receiving traditional treatments (Treasure et al, 1996; Thiels et al, 1998). Conversely, it is feared that ineffective low intensity interventions may discourage patients from seeking further treatment (Wilson et al, 2000). However, a recent large UK cohort study suggests that patients do at least as well in a predominantly low-intensity stepped care system (Richards & Suckling, 2009) as in randomised controlled trials or in a system where high-intensity treatments predominate (Clarke et al, 2009).

Another barrier which emerged from our respondents' accounts is the lack of consensus on factors such as the amount of support required for low-intensity interventions (Bower et al, 2001; Cuijpers, 1997; Lewis et al, 2003) and the utility of self-help resources. Systematic reviews of self-help adopt wide variations in defining the amount of support time 'allowed' for a trial to be regarded as a test of self-help (Gellatly et al, 2007; Lewis et al, 2003). In a review of 96 self-help books, Richardson, Richards and Barkham (2008) found that the majority of self-help books included lengthy chapters and required a reading age of above 12 years. Some of our respondents' reservations about stepped care can be seen, therefore, in the context of such concerns about the content and delivery of low-intensity treatment options.

A very clear barrier to the implementation of stepped care is lack of resources at various points in the patient pathway. As we observed in our four sites, stepped care includes both progression of some patients through increasing intensities of treatment, and initial allocation or stratification of patients to low- and high-intensity treatment. It has some similarities to 'matched care' (van Straten et al, 2006, Richards & Suckling, 2008, Bower & Gilbody, 2005) where patients are allocated to treatments at initial assessment, but matched care does not build in an explicit self-correction principle. Some respondents interviewed felt that there was a lack of stepping up in that in some circumstances staff were 'holding' patients in lower steps whilst they were on a waiting list for a higher intensity treatment. This contrasted with positive reports from respondents on the benefits of working in a more integrated manner with specialist services and

was a source of frustration driven by resourcing problems rather than the stepped care system *per se*. Although patient mix within sites may lead to uncertainty about appropriate points to step patients up, and with a more complex patient group giving way to more complex assessments by clinicians, it is important that 'benefits of stepped care are not swallowed up by the professional time required to implement the system' (Bower & Gilbody, 2005, p13). The problem of 'holding' patients reported by our participants highlights the need for adequate resourcing at all stages of a stepped care system for both patient outcomes and for the system to be cost-effective and efficient. The problem of holding patients at low-intensity may be less of a problem in future, since one possible effect of the recent investment in IAPT services has been the significant expansion of the high-intensity therapy workforce.

Another barrier to the implementation of stepped care is the requirement to either bring new workers into the workforce or allocate new work to existing workers. Both situations can cause tension and disquiet. Although the introduction of para-professional staff such as graduate workers – now called Psychological Wellbeing Practitioners (PWPs) in IAPT services – is not central to the stepped care method, their introduction as a way to reduce burden and increase treatment volumes arises indirectly from the implementation of stepped care. The low-intensity workforce in particular may be younger and less experienced than their professional peers, who will have been through lengthy professional training programmes. For example, the UK national curriculum for low-intensity workers (PWPs) requires only 45 days of training for the role (Department of Health, 2008), compared to several years for traditional professions such as nursing, social work, occupational therapy or psychology.

Studies are inconclusive as to whether our respondents fears are grounded. For example, although some older studies show a modest interaction effect of therapist and patient age on treatment benefit (e.g. Beck, 1988; Luborsky, Mintz, Auerbach, et al 1980; Morgan, Luborsky, Crits-Christoph et al, 1982), Barber & Muenz (1996) found no significant relationship between age or age similarity (of therapist and patient) and outcome. Some studies have suggested better outcomes for experienced rather than less experienced therapists (DeRubeis et al, 2005), however, others have found no such relationship (Okiishi et al, 2006). Competence rather than experience may be the critical factor which further underlines the importance of assessing individual worker's clinical outcomes. There have been no studies of these factors in modern stepped care or empirically driven treatment services.

Role-challenge was a factor reported by our respondents and may be a barrier to implementation which requires addressing by those that wish to implement stepped care. Specifically role-trained new workers such as PWPs may present a challenge to traditional generically-trained professionals given the post-graduate nature of many low-intensity courses. This challenge to traditional roles posed by stepped care should not be underestimated. As Gustafson details, "One is a 'member' of a profession;

one 'belongs' to his or her profession. It is an important mark of one's personal and social identity" (1982, p. 507). Within some sites in our study there were people who had been asked but felt overqualified to do a low-intensity job. In some new stepped care roles, established staff felt that by accepting what they felt to be basic, simple tasks, they felt as if they were risking their professional credibility (MacDonald,1995). Furthermore, new staff groups challenged professional roles by taking on work that had previously required more 'expert' input. Conversely, the appearance of a new low-intensity workforce put pressure on more experienced staff to deliver greater amounts of supervision, a function which despite being more 'expert', took experienced workers away from direct patient contact.

Finally, the effect of change itself, independent of the specific topic, is often seen as a side-effect of the move to more efficient and effective delivery of public services (Diefenbach, 2007). Structural change has been a consistent feature of the UK healthcare sector over the last 25 years, and is often associated with negative consequences and effects (Bamford & Daniel, 2005). Many issues mentioned by respondents in our study relate to the impact of change in general rather than stepped care itself. Ameliorating this challenge to role comfort is adequate preparation, training and high quality communication to facilitate openness and positive attitudes to change, which in turn effectively addresses employees' uncertainty (Bordia et al, 2004). Although communication and provision of information form vital components of any successful implementation of a new system (Schweiger & Denisi, 1991; Lewis & Seibold, 1998), strategies implemented by management often fail to fulfil the main purpose of providing quality information to employees (Smeltzer, 1991; Armenakis & Harris, 2002). Our findings suggest that those team members who held more team meetings and had access to relevant information about service changes reported less dissatisfaction than in those sites where communication and change information was reported as lacking.

In summary, therefore, we found barriers to change in terms of:

- The degree of professional clinical scrutiny required in stepped care systems including the introduction of routine outcome measures

- The prescriptive nature of both the content and process of stepped care

- Doubts as to the validity of the assumption that stepped care is more efficient

- Uncertainties about the exact format of the low-intensity clinical methods

- The requirement for adequate resources to be present in all steps

- Challenges associated with introducing a new workforce

- Challenges to the existing professional identities and roles of traditionally qualified professional workers

- Management of the process of change itself in terms of communication and facilitation

Details on this mixture of generic change management issues and specific barriers to stepped care implementation were included in the reconfiguration guide which we wrote to accompany the computerised modelling tool developed from the data gathered from our four sites. The next section discusses what happened when services attempted to use these materials.

Using a stand-alone modelling tool to aid system planning

Our fourth objective was to investigate the utility of a computer modelling tool and accompanying implementation manual in the stepped care reconfiguration process. In contrast to the heavily supported development procedures outlined above and used in the first four sites, we gave the next phase of sites little support, bar a comprehensive manual and the CDROM based modelling tool, described in chapter 5. Qualitative data from those that tried to use the tool provides illumination in a variety of areas, including not only the tool itself but also the manner in which unsupported tools can be used as stand alone products, rather than supported procedures.

Despite some sites being enthusiastic and willing to use the tool, it became apparent that many sites attempted it but then gave up. This was mirrored in our difficulties obtaining consent and participation for research interviews from sites. Although sites regarded the manual as of high quality, users reported that they had no time to get involved with the complexities of the tool, some of which they thought a little off-putting. Indeed, many expressed a desire to have had some training prior to using the tool. Whilst there were some technical and visual issues with the model as it appeared on respondents computer screens, these were easily overcome following information derived from our focus group. The manual was highly rated but the qualitative data highlighted the difficulty of turning an operational research 'process' into essentially a non-guided self-help tool. Respondents thought that the addition of training would have helped them use the model more. Participants also described how even a small amount of consultancy input would have enabled them to move beyond sticking points in their use of the model. There are some clear parallels with therapeutic self-help, where unguided materials have been shown to be ineffective compared to patients using materials supported, albeit briefly, by mental health workers. Had we adopted a similar procedure it may have been that at least some of the contextual and technical difficulties might have been overcome.

For reasons discussed earlier in this report concerning the intended use of the model and the anticipated availability of data, the software tool was not fully customisable. That said, in some senses what we attempted was the development of a 'generic' model in that the software allowed services to specify the structure of their planned stepped care system. Indeed, this ambition arguably went beyond one accepted definition of 'generic models' within health operational research, where there is a movement to use the same model across providers where there is sufficient similarity in the

structure of services but where sites can specify their own model parameters (Fletcher and Worthington, 2009). A good example of such work is the 'generic model' of patient flows within Accident and Emergency departments described by Fletcher et al (2007). One point to be made here is that, while the sites in this work used a 'generic', or more accurately, a 'made to measure' model, they benefited from a bespoke *process*, with input from the team of model developers specific to that organisation's own context, problems and goals. As an aside, whilst mental health practitioners are quick to recognise the value that they add to the use self-help materials, operational researchers can often attach too much importance to the model and place insufficient value on the modelling.

However, the context surrounding the use of the model was so powerful in terms of prescriptive behaviours and time pressures, that the extent to which even closely supported model use could have enabled planning is unknown in this particular operational research scenario. Many of the planning decisions that the tool was intended to inform seemed to have been taken out of the hands of local managers by the requirements attached to IAPT funding. Sites found that they could not connect their (new) experiences with those of the early pre-IAPT implementers. IAPT demanded specific workforce configurations and by implication, specific patient pathways, limiting freedom of reconfiguration movement. Rather than struggle with interpreting NICE's conceptual description of stepped care, one that concentrated on therapeutic content rather than organisational process, services now had a clear workforce plan and set of operational principles to follow. Indeed, not only were services informed by the IAPT 'prescription', the requirements of the financial package underpinning IAPT required services to follow closely the methods identified by IAPT.

The changed situation challenged the very premise of our model. We had designed it to offer assistance to service planners in an environment where choices were many and data was absent. In a situation the very opposite of this, many managers found the model difficult to apply, despite the fact that we had incorporated data from two IAPT sites as example scenarios in our model, in addition to data from the four original closely studied sites. The ease with which the research team could obtain this IAPT data is itself indicative of the vastly changed service environment. It took us up to 16 months to collect length of stay data from our four initial sites. It took us two phone calls to obtain similar data from the two early IAPT demonstration sites. Ironically, our provision of a data-based model intended to replace the estimates previously employed backfired as the data in the model was not consistent with that being collected by new sites.

This latter finding is worth further elucidation. In the qualitative data from interviewing implementers at later sites, a frequent point made was that the example scenarios did not 'fit' these new sites' service structures and patient flows. A point to note here is that these services actually had data on these issues, a situation previously rare. From working in most cases in a largely data-free environment, services and managers found themselves

with an emerging and rich seam of data to assist their service plans. New information systems and clinical procedures potentially allowed these managers to review and consider diagnostic, demographic, clinical and outcome data in a way previously unheard of.

Whilst the availability of data might be encouraging for the future, at the stage of development in which most of our second wave of sites found themselves in, managers and implementers were struggling to adapt to this new data-rich environment. Whilst they recognised the constraints of the new context in terms of modelling, they were not at a position where they could use their own data in the model itself to measure their performance against the model's predictions. The modelling tool might be best construed in the future as a method by which sites can input their own data (certainly there is enough flexibility in the model's architecture to do this) and examine predicted performance against that observed in their routine clinical information systems.

Secondly, despite the IAPT service model prescription and the incorporation of early IAPT data into our model scenarios, new services still described sufficient structural heterogeneity to render the modelling process problematic for them. Our attempt to provide data-driven modelling solutions was challenging for services in a new data-rich environment and where the architecture of stepped care services was still considerably variable. Many of the design issues highlighted in the development of our first four sites' systems were reflected in the variety of structures implemented in our later sites. In section 7.1 we referred to the general tension between developing bespoke local systems, and applying a generic model. Our conclusion is that IAPT treated local modeling as irrelevant in a desire to replicate the clinical protocols (and hence clinical outcomes) of psychological treatments tested in clinical trials, in order to avoid any 'voltage drop' (Oxman, Dietrich and Schulberg, 2003) consequent upon treatments being implemented routinely. The reality of implementation, however, was very different, with considerable structural and organizational heterogeneity being the norm. Ironically, therefore, just at the time when modeling may have helped local services square the circle of prescription versus local context, they perceived themselves as being unable to incorporate the modeling into their decision making.

Compounding the impact of IAPT service model prescription was the speed by which new sites were required to implement their new service structures. IAPT was implemented very rapidly, in some cases over no more than a few months, and respondents reported little time to draw breath in the process. They reported that the tool would have been useful but it arrived too late in the rush to obtain IAPT funding. Acquiring IAPT finance obliged services to employ and train new staff, to redeploy existing staff, to incorporate existing systems into a new set up, and to design and implement new access routes and evaluation systems. Some services had to do so through a PCT commissioner-led tendering process. There simply was not time for services to sit back and consider the uncertainties highlighted by the model and work out how they might prepare for and address them. Indeed, these

uncertainties were not welcomed given the challenge they might have posed for the apparent certainty of the IAPT model, notwithstanding the many options still available for service planners. This tension – prescription versus heterogeneity – and the speed of change left little time for a mature consideration of the models outputs.

It seems, therefore, that the highly prescriptive approach which characterised the IAPT development may have ignored the potential benefits of the consensus development and modelling which was so successful in assisting our four early implementer sites. For example, the decision by the Department of Health IAPT Board to fund 40% of their new workforce as low-intensity training posts is a good example of something that is probably a reasonable best estimate, but is unlikely to be sensitive to local conditions. The benefits of being prescriptive (i.e. speed of implementation, standardization and control) have their limits in curtailing consensual decisions about tailoring services to local and historical contexts.

Limitations

Our initial study was of four sites attempting to implement the NICE guidelines in operation at the time (NICE 2004a; 2004b), where stepped care was recommended but defined with little detail. As a consequence and as a result of being at different starting points, our sites were very divergent in their procedures on the ground. They were 'early implementers' working with little guidance and even less data. Indeed, the premise of our study was that this absence of data and knowledge could be addressed somewhat by these sites and then this intelligence made available to others. We could not have foreseen that the Department of Health would instigate the 'once in a lifetime', heavily politicised initiative of improving access to psychological therapies during the course of the project. When we arrived at a modelling tool the context for our study had changed out of all recognition. Even if this had not happened, a limitation of the study would have been the generalisability of data from four keen early implementer sites to the NHS in general. This proved particularly true and our model was stuck somewhere between being seen as not generalisable to IAPT services and ironically, close but not close enough to the still very different service design parameters being considered by service planners and managers. We had expected that services would gradually move themselves to stepped care designs. Instead, we found that almost all areas of the NHS were speeding towards a prescribed IAPT stepped care model, often with little time for reflective planning.

A significant limitation is our inability to utilise clinical outcome data in our modelling. Clinicians and information systems were unable to provide us with this data. Our model, therefore, had to be adjusted to focus on flows rather than outcomes. Whilst the outpourings of flows might be reasonably seen as proxies for clinical improvement (for example, discharge rates and times from our four sites reflected patients that improved, did not improve or dropped out), we cannot assume that treatments delivered in our sites are those that would have produced the best patient outcomes.

Two pieces of data support this. One, the length of stay data for patients receiving high-intensity treatment is far less than the number of sessions currently recommended by NICE (2009), although at the time of the study the previous NICE guidelines (2004) suggested rather fewer sessions of CBT than the new guidelines. Nonetheless, average numbers of sessions received by patients were less than one might expect had NICE guidelines been followed.

Secondly, in their mix of service provision almost all of our four sites identified the desire to deliver treatments which had weak evidence of effectiveness, principally non-guided self-help and psycho-education groups for anxiety, both of which whilst referred to in NICE guidelines for anxiety (2004) have little randomised clinical trial evidence to support them and are not recommended as strongly as other treatments, particularly psycho-educational groups. To be fair to services, when we started this study, few high quality reviews on the lack of effectiveness of non-guided self-help had been published (Gellatly et al, 2007; Hirai and Clum, 2006) but even now IAPT services continue to use such therapies for about 25% of their patients (Gyles Glover, personal communication). Our length of stay modelling data, therefore, might be less than one might hope for and not reflect that which would be apparent if services were using treatments supported by a stronger evidence-base. Unfortunately, without clinical outcome data we are unable to say how much our flows represent ineffective or effective mental health service provision.

The individualised nature of the site implementations may mean that the experiences of staff and patients collected in our qualitative study are relevant only for these four sites. Conversely, the thematic amalgamation of data from more than one site has produced a wide variation of views within these themes which may have diluted some individual responses. However, throughout we have tried to balance the widely variant respondent descriptions of their experiences with core themes for the relevance of stepped care. Interviews with staff members and patients were conducted within the first 18 months of stepped care implementation when services were relatively immature. This may have been the reason why the theme of change was so predominant for some of our respondents, particularly those who expressed disquiet about this process. It would be useful to interview patient and staff members from more mature stepped care sites as this may lead to other themes emerging at later time points

Implications and recommendations

1. A structured consensus development method – the Constituency Approach, implemented in accordance with good practice guidelines for developing consensus can be used to effectively assist groups of NHS workers crystallise their thinking and design new service configurations. It may be useful to extend this activity to include all staff, not just representative stakeholders, and to include public and patient involvement representatives.

2. Those wishing to prescribe the structure of stepped care must be mindful of the impact of context on the eventual implementation of any proposed stepped care template. Stepped care as understood and implemented by different NHS sites will vary greatly in structure and design according to the different starting points of sites. Understanding these varying contexts and designing service systems to reflect them, requires more time than recent centralised programmes such as IAPT have allowed.

3. Understandable desires by central planners to replicate the outcome results from clinical trials, by prescribing service designs to a national template, place services in the position of trying to adapt these prescriptions to local contexts without the tools to do so. Prescriptive national initiatives treat local modelling as irrelevant when in fact modelling could be used to great effect to translate national prescriptions to specific situations.

4. Although service planers should place their service designs on a continuum which reflects their desired balance between stepping and stratification, they must be aware that the number of people being allocated to different component treatments in stepped care services is highly sensitive to other factors, including the background of the worker. Triage or assessment by a traditionally qualified workforce is likely to lead to more people receiving high-intensity treatment, providing that option is available.

5. It is important to resource all stepped care's available steps sufficiently to allow patients to be stepped up from low- to high-intensity treatment and to prevent patients being inappropriately 'held' at a low-intensity step.

6. Service managers may need to plan on the basis that whatever the initial allocation rates of patients to low- or high-intensity treatments, providing sufficient high-intensity resource is available, no less than 10% of patients will be stepped up from low- to high-intensity treatment.

7. Service commissioners and managers must factor into their planning large amounts of patient attrition between referral and assessment and between assessment and treatment. The default rate from less burdensome and shorter low-intensity treatments may be lower than that from high-intensity treatment, another factor important to consider when addressing workforce capacity.

8. Service managers should carefully prepare staff for the change to stepped care and be aware of existing workers feeling challenged in their role by new ways of working and new workers. In particular, workers may find the increased scrutiny and the prescriptive nature of typical interventions used in stepped care difficult.

9. Managers should actively plan strategies to minimize staff resistance to empirically supported treatments such as low- and high-intensity variants of CBT. Staff trained and experienced in other treatments must

be supported and re-trained if managers wish them to practice these new treatments.

10. Although patients understand the concept of stepped care, individual patients will need to be carefully prepared by clinicians for potential treatment choices and the likely consequences of improvement or lack of improvement during low-intensity treatment.

11. NHS managers and clinical leaders do not find it easy to utilise stand-alone operational research modelling tools and are unable to overcome problems with their use. Managers will require training and support, albeit brief, for them to effectively use planning tools such as the ones developed for this study.

12. As new IAPT stepped care services mature and become comfortable with using routine datasets, these can be compared and contrasted with expectations. As these new services bed down, deal with flow problems and resource constraints, the modelling tool developed in this study may be helpful in decisions about fine tuning their stepped care systems. We can only do this in collaboration with commissioners and with the support of change managers familiar with using modelling tools.

13. Stepped care is a 'complex intervention' with multiple clinical and organisational components. It requires further investigation through the stages of the MRC's Complex Intervention Research Framework (2008) including definition, development and evaluation of the optimum mix of components in randomised controlled trials.

References

Andrews, G., Henderson, S., & Hall, W. (2001). Prevalence, comorbidity, disability and service utilisation: Overview of the Australian mental health survey. *British Journal of Psychiatry, 178*, 145–153.

Andrews, G., & Tolkein II Team (2006). *A needs-based, costed stepped-care model for mental health services.* Sydney: CRUFAD, University of New South Wales.

Appleby, L. (2004). *The National Service Framework for Mental Health – Five Years On.* Department of Health: London.

Aragones, E., Caballero, A., Pinol, J. L. I., Lopez- Cortacans, G., Badia, W., Hernandez, J. M., Casaus, P., Folch, S., Basora, J. & Labad, A. (2007). Assessment of an enhanced program for depression management in primary care: A cluster randomized controlled trial. The INDI project (Interventions for depression improvement). *BMC Public Health, 7,* 253 doi: 101186/147112458-7-253.

Armenakis, A. A. & Harris, S. G. (2002). Crafting a change message to create transformational readiness. *Journal of Organizational Change Management, 15*, 169–183.

Australian Government Department of Health and Ageing (2006). *Better access to mental health care.* Canberra: Commonwealth of Australia.

Bailey, N. T. J. (1954). On Queueing Processes with Bulk Service. *Journal of the Royal Statistical Society. Series B (Methodological), 16*(1), 80-87.

Bamford, D. & Daniel, S. (2005). A Case Study of Change Management Effectiveness within the NHS. *Journal of Change Management, 5*, 391-406.

Barber, J. P. & Muenz, L. R. (1996). The role of avoidance and obsessiveness in matching patients to cognitive and interpersonal psychotherapy: Empirical findings from the Treatment of Depression

Collaborative Research Program. *Journal of Consulting and Clinical Psychology, 64*, 951-958.

Barrett, M.S. Chua, W-J. Crits-Christoph, P. Gibbons, M. Casiano, D. & Thompson, D (2008) Early withdrawal from mental health treatment: implications for psychotherapy practice. *Psychotherapy*, 45, 247–267

Bebbington, P., Brugha,T. & Meltzer,H., Jenkins, R., Ceresa, C., Farrell, M. & Lewis, G. (2000). Neurotic disorders and the receipt of psychiatric treatment. *Psychological Medicine, 30,* 1369–1376.

Beck, D. F. (1988). *Counselor characteristics: How they affect outcomes.* Milwaukee, WI: Family Service of America.

Bennett-Levy, J., Richards, D.A., Farrand, P., Christensen, H., Griffiths, K., Kavanagh, D., Klein, B., Lau, M., Proudfoot, J., White, J. and Williams, C. eds. (2010). *The Oxford Guide to Low Intensity CBT Interventions.* Oxford, Oxford University Press (in press)

Bird, A. (2006). *We Need to Talk: The Case for Psychological Therapy on the NHS*. London: Mental Health Foundation

Blenkiron, P. (2001). Coping with depression: a pilot study to assess the efficacy of a self-help audio cassette. *British Journal of General Practice, 51,* 366-370.

Bordia, P., Hobman, E., Jones, E., Gallois, C. & Callan, V. J. (2004). Uncertainty during organisational change: types, consequences, and management strategies. *Journal of Business and Psychology, 18*, 507-532.

Bower, P. & Gilbody, S. (2005a). Managing common mental health disorders in primary care: conceptual models and evidence base. *British Medical Journal, 330*, 839-842

Bower, P., & Gilbody, S. (2005b). Stepped care in psychological therapies: Access, effectiveness and efficiency. Narrative literature review. *British Journal of Psychiatry, 186*, 11–17.

Bower, P., Richards, D., & Lovell, K. (2001). The clinical and cost effectiveness of self-help treatments for anxiety and depressive disorders in primary care: A systematic review. *British Journal of General Practice, 51,* 838–845.

Bowling, A. (1997). *Research Methods in Health: Investigating Health and Health Services.* Open University Press: Buckingham.

Centre for Economic Performance (2006). *The depression report: A new deal for depression and anxiety disorders.* London: London School of Economics and Political Science Centre for Economic Performance.

Chambless, D. L. & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology, 52*, 685-716.

Christensen, H., Griffiths K. & Jorm A. (2004). Delivering interventions for depression by using the internet: randomised controlled trial. *British Medical Journal, 328*: 265.

Churchill, R., Hunot, V., Corney, R., Knapp, M., McGuire, H., Tylee, A. & Wessely, S. (2002). A systematic review of controlled trials of the effectiveness and cost-effectiveness of brief psychological treatments for depression. *Health Technology Assessment*, *5*, 1-173.

Clark, D. M., Layard, R., Smithies, R., Richards, D. A., Suckling, R. & Wright, B. (2009). Improving access to psychological therapy: Initial evaluation of two UK demonstration sites. *Behaviour Research and Therapy, 47*, 910-920.

Connally, T., Conlan, E. J. & Deutsch, S. J. (1980). Organizational effectiveness: a multiple constituency approach. *Academy of Management Review, 5*, 211-17.

Cooper, R. B. (1981) *Introduction to Queueing Theory.* Edward Arnold, London.

Cuijpers, P. (1997). Bibliotherapy in unipolar depression: A meta-analysis. *Journal of Behavior Therapy and Experimental Psychiatry, 28*, 139-147.

Davies, R. & Bensley, D. (2005) Editorial. *Journal of the Operational Research Society 56,* 123-125.

Davison G. (2000). Stepped care: doing more with less? *Journal of Consulting and Clinical Psychology, 68*, 580-585.

Delbecq A, Van de Ven A (1971). A group process model for problem identification and program planning. *Journal of Applied Behavioural Science*;**7**:467–92.

Dennis, C. L. (2003). The effect of peer support on postpartum depression: A pilot randomized controlled trial. *Canadian Journal of Psychiatry, 48*(2), 115–124.

Department of Health (2010). *Realising the benefits: IAPT at full roll-out.* London: Department of Health/National Mental Health Development Unit/Improving Access to Psychological Therapies Programme.

Department of Health (2008). *Improving access to psychological therapies. Implementation plan: Curriculum for low-intensity therapies workers.* London: Department of Health/Mental Health Programme/Improving Access to Psychological Therapies.

DeRubeis, R. J., Hollon, S. D., Amsterdam, J. D., Shelton, R. C., Young, P. R., Salomon, R. M., O'Reardon, J. P., Lovett, M. L., Gladis, M. M., Brown, L. L. & Gallop, R. (2005). Cognitive Therapy vs Medications in the Treatment of Moderate to Severe Depression. *Archives of General Psychiatry, 62*, 409-416.

Diefenbach, T. (2007). The managerialistic ideology of organisational change management. *Journal of organizational change management, 20*, 126-144.

Donaldson, C., Currie, G. & Mitton, C. (2002). Cost effectiveness analysis in health care: contraindications. *BMJ, 325*, 891-894.

Evans, C., Mellor-Clark, J., Margison, F., Barkham, M., McGrath, G., Connell, J. & Audin, K. (2000). Clinical Outcomes in Routine Evaluation: The CORE-OM. *Journal of Mental Health, 9*, 247–255.

Fletcher A and Worthington DJ, 2009, 'What is a 'generic' hospital model? - a comparison of 'generic' and 'specific' hospital models of emergency flow patients', *Health Care Management Science*, vol 12(4), pp 374-391

Fletcher A, Halsall D, Huxham S and Worthington DJ, 2007, 'The DH accident and emergency department model - a national generic model used locally', *Journal of the Operational Research Society*, vol 58, pp 1554-1562

Fulop, N., Allen, P., Clarke, A., & Black, M. (2001). *Studying the organisation and delivery of health services: Research Methods.* Routledge: London.

Gallivan S, Utley M, Treasure T. & Valencia O. (2002) Booked inpatient admissions and capacity: a mathematical modelling study. *British Medical Journal. 324*, 280-282.

Gallivan S, & Utley M. (2005) Modelling admission booking of elective in-patients into a treatment centre. *IMA Journal of Management Mathematics. 16*, 305-315.

Gellatly, J., Bower, P., Hennessy, S., Richards, D., Gilbody, S. & Lovell, K. (2007). What makes self-help interventions effective in the management of depressive symptoms? Meta-analysis and meta-regression. *Psychological Medicine, 37*, 1217-1228.

Gensichen, J., Torge, M., Peitz, M., Wendt-Hermainski, H., Beyer, M., Rosemann, T., Krauth, C., Raspe, H., Aldenhoff, J. B. & Gerlach, F. M. (2005). Case management for the treatment of patients with major depression in general practices –rationale, design and conduct of a cluster randomized controlled trial – PRoMPT (Primary care Monitoring for depressive Patient's Trial) [ISRCTN66386086] – Study protocol. *BMC Public Health, 5*, 101. doi:10.1186/1471-2458-5-101.

Gilbert, N., Barkham, M., Richards, A. and Cameron, I. (2005) The effectiveness of a primary care mental health service delivering brief psychological interventions: a benchmarking study using the CORE system. Primary Care Mental Health 3, 4, 241-251

Gilbody, S., Bower, P. & Whitty, P. (2006). Costs and consequences of enhanced primary care for depression: Systematic review of randomised economic evaluations. *British Journal of Psychiatry, 189,* 297-308.

Gilbody, S., Whitty, P., Grimshaw, J. & Thomas, R. (2003). Educational and organisational interventions to improve the management of depression in primary care: a systematic review. *JAMA, 289*, 3145-3151.

Goldberg, D. & Huxley, P. (1980) *Mental Illness in the Community: The Pathway to Psychiatric Care.* Tavistock Publications.

Gulliford, M., Hughes, D., & Figeroa-Munoz, J.,Hudson, M., Connell, P., Morgan, M., Beech, R., Gibson, B., Arumugam, C., Mohiddin, A. & Sedgwick, J. (2001). *Access to Health Care: Report of a Scoping Exercise for the National Co-ordinating Centre for NHS Service Delivery and Organisation R&D NCCSDO.* London: Kings College.

Gustafson, J. M. (1982). Professions as "Callings". *The Social Service Review*, 56, 501-515.

Haaga, D.A.F (2000). Introduction to the special section on stepped care models in psychotherapy. *Journal of Consulting and Clinical Psychology*, 68, 4, 547-548

Hickie, I., & Groom, G. (2002). Primary care-led mental health service reform: An outline of the better outcomes in mental health care initiative. *Australasian Psychiatry, 10*, 376–382.

Hirai, M. & Clum, G. A. (2006). A Meta-Analytic Study of Self-Help Interventions for Anxiety Problems. *Behavior Therapy, 37*, 99-111.

Hickie, I., Pirkis, J., Blashki, G., Groom, G., & Davenport, T. (2004). General practitioners' response to depression and anxiety in the Australian community: A preliminary analysis. *Medical Journal of Australia, 181*(7), S15–20.

Horn,R. (2009). *Exploring Stepping-up in a Stepped Care Model of Service Delivery. Thesis Submitted for the Degree of Doctorate in Clinical Psychology.* Sheffield. University of Sheffield.

Ijff, M. A., Huijbregts, K. M. L., van Marwijk, H. W. J., Beekman, A. T. F., Hakkaart-van Roijen, L., Rutten, F. F., Unützer, J., van der Feltz-Cornelis,

C. M. (2007). Cost-effectiveness of collaborative care including PST and an antidepressant treatment algorithm for the treatment of major depressive disorder in primary care; a randomised clinical trial. *BMC Health Services Research, 7*, 34 doi:10.1186/1472-6963-7-34.

Jackson, R. R. P., & Aspden, P. (1979). Treatment evaluation – a modelling approach with application to acute myeloid leukaemia. *Journal of the Operational Research Society, 30*, 11-22.

Jackson, R. R. P., McKay, V. L., Malpas, J. S. (1981). Patient progress modelling and results in Wilm's tumour. *Omega, 9*(5), 527-536.

James, O. (2007). *Affluenza*. London: Vermillion.

Johnson, J., Weissman, M. M., & Klerman, G. L. (1992). Service utilization and social morbidity associated with depressive symptoms in the community. *JAMA 18*, 227(11), 1478–1483.

Katon, W., Von Korff, M., Lin, E., Simon, G., Walker, E., Unützer, J., Bush, T., Russo, J. & Ludman, E. (1999). Stepped collaborative care for primary care patients with persistent symptoms of depression: A randomized trial. *Archives of General Psychiatry, 56*, 1109–1115.

Kellett, S., & Matthews, L. (2008). Reflecting on the clinical, organisational and methodological implications of the Doncaster IAPT site: A commentary on Richards and Suckling. *Clinical Psychology Forum*, *181*, 29–30.

Kerwick, S. & Jones, R. (1996). Educational interventions in primary care psychiatry. *Primary Care Psychiatry*, *2*, 107-117.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., Rush, J., Walters, E. E. & Wang, P. S. (2003). The epidemiology of major depressive disorder: Results from the National comorbidity survey replication (NCS-R). *JAMA, 289*(23), 3095–3105.

Khan, N., Bower, P. & Rogers, A. (2007). Guided self-help in primary care mental health: a meta synthesis of qualitative studies of patient experience. *British Journal of Psychiatry*, *191*, 206-211.

Koizumi, N., Kuno, E., & Smith, T.E. (2005) Modeling Patients Flows Using a Queueing Network with Blocking. *Health Care Management Science, 8*, 49–60

Lawn, S. (2007). Mental health peer support for hospital avoidance and early discharge: An Australian example of consumer driven and operated service. *Journal of Mental Health, 17*(5), 498–508.

Lawson, N. (2007, February 22) 'New Labour has presided over a social recession', *The Guardian*, p. 32.

Layard, R. (2005). *Happiness: Lessons from a new science*. London: Allen Lane.

Layard, R. (2006). The case for psychological treatment centres. *British Medical Journal, 332*, 1030–1032.

Lewis, G., Anderson, L., Araya, R., Elgie, R., Harrison, G., Proudfoot, J., Schmidt, U., Sharp, D., Weightman, A., & Williams, C. (2003). *Self-help interventions for mental health problems.* Bristol: University of Bristol.

Lewis, L. & Seibold, D. (1998). Reconceptualizing organizational change implementation as a communication problem: a review of literature and research agenda, in: M. E. Roloff (ed) *Communication yearbook 21*, 93–151 (Thousand Oaks, CA: Sage).

Lovell, K, & Richards, D. (2000). Multiple Access Points and Levels of Entry (MAPLE): Ensuring Choice, Accessibility and Equity for CBT Services. *Behavioural and Cognitive Psychotherapy, 28*, 379-391.

Luborsky, L., Mintz, J., Auerbach, A., Crits-Christoph, P., Bachrach, H., Todd, T., Johnson, M., Cohen, M. & O'Brien, C. P. (1980). Predicting the outcome of psychotherapy: Findings of the Penn Psychotherapy Project. *Archives of General Psychiatry, 37*, 471-481.

MacDonald, K. M. (1995). *The Sociology of the Professions*. Sage Publications, London.

MacDonald, W., Mead, N., Bower, P., Richards, D. & Lovell, K. (2007). A qualitative study of patients' perceptions of a 'minimal' psychological therapy. *International Journal of Social Psychiatry*, *53*, 23-35.

Marrs R. (1995). A meta-analysis of bibliotherapy studies. *American Journal of Community Psychology*, *23*: 843-870.

Marshall, A. H., McClean, S. I., Shapcott, C. M. & Millard, P. H. (2002). Modelling Patient Duration of Stay to Facilitate Resource Management of Geriatric Hospitals, *Health Care Management Science, 5*, 313-319.

McClean, S. I. & Millard, P. H. (1993). Modelling In-Patient Bed Usage Behaviour in a Department of Geriatric Medicine, Methods Inform. Med. 32, 79-81.

McManus, S., Howard Meltzer, H., Brugha, T., Bebbington, P. and Jenkins, R. (2009). Adult Psychiatric Morbidity in England, 2007: results of a household survey. London: The Health & Social Care Information Centre

Mellor-Clark, J., Simms-Ellis, R., & Burton, M. (2001). *National Survey of Counsellors in Primary Care: Evidence for growing professionalisation*. London: Royal College of General Practitioners.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* London: Sage Publications.

Morgan, R., Luborsky, L., Crits-Christoph, P., Curtis, H. & Solomon, J. (1982). Predicting the outcomes of psychotherapy by the Penn Helping Alliance Rating Method. *Archives of General Psychiatry, 39*, 397-402.

Murphy, M. K., Black, N. A., Lamping, D. L., McKee, C. M., Sanderson,C, F, B., Askham, J. & Marteau, T. (1998). Consensus development methods, and their use in clinical guideline development. *Health Technology Assessment, 2* (3), 1-88.

Murray, S. A., Kendall, M., Carduff, E., Worth, A., Harris, F. M., Lloyd, A., Cavers, D., Grant, L., & Sheikh, A. (2009). Use of serial qualitative interviews to understand patients' evolving experiences and needs. *BMJ, 339*:b3702

National Institute for Clinical Excellence (2009). *Depression: Management of depression in primary and secondary care.* London: NICE.

National Institute for Clinical Excellence (2007). *Anxiety (amended): Management of anxiety (Panic disorder, with or without agoraphobia, and generalised anxiety disorder) in adults in primary, secondary and community care.* London: NICE.

National Institute for Clinical Excellence (2004a). *Anxiety: Management of anxiety (Panic disorder, with or without agoraphobia, and generalised anxiety disorder) in adults in primary, secondary and community care.* London: NICE.

National Institute for Clinical Excellence (2004b). *Depression: Management of depression in primary and secondary care.* London: NICE.

National Institute for Clinical Excellence. (2009). *Management of Depression in Primary and Secondary Care*. London: NICE.

NHS Service Delivery and Organistation (2008), *Evaluating models - Developing evidence-based and acceptable stepped care schemes in mental health care: An operational research project*; www.sdo.lshtm.ac.uk/sdo1092005.html, accessed 17.01.2008.

NHS Modernisation Agency. *10 High Impact Changes for Service Improvement and Delivery: A Guide for NHS Leaders*. Department of Health: London, 2004.

Office of National Statistics (2007). *Psychiatric Morbidity among Adults Living in Private Households, 2007.* London: The Stationery Office.

Oxman, T., Dietrich, A. and Schulberg, H. (2002). The depression care manager and mental health specialist as collaborators within primary care. *American Journal of Geriatric Psychiatry*, 11, 507-516.

Okiishi, J. C., Lambert, M. J., Eggett, D., Nielsen, L., D., Dayton, D. D. & Vermeersch, D. A. (2006). An Analysis of Therapist Treatment Effects:

Toward Providing Feedback to Individual Therapists on Their Clients' Psychotherapy Outcome. *Journal of Clinical Psychology, 62*, 1157-1172.

Pill J (1971). The Delphi method: substance, context, a critique and the annotated bibliography. *Socioeconomic Planning Science*;**5**:57–71.

Pirkis, J., Stokes, D., Morley, B., Kohn, F., Mathews, R., Naccarella, L., Blashki, G., Shandley, K., Littlefield, L. & Burgess, P. (2006). Impact of Australia's better outcomes in mental health care program on psychologists. *Australian Psychologist, 41*(3), 152–159.

Poulton, L., & West, M. A. (1994) Primary health care team effectiveness: developing a constituency approach. *Health and Social Care in the community, 2*, 77-84.

Priest, R., Vize, C., Roberts, A., Roberts, M. & Tylee, L. (1996). Lay people's attitudes to treatment of depression: results of opinion poll for Defeat Depression Campaign just before its launch. *British Medical Journal, 313*, 858-859.

Proudfoot, J., Ryden, C., Everitt, B., Shapiro, D. A., Goldberg, D., Mann, A., Tylee, A., Marks, I. & Gray, J. A. (2004). Clinical efficacy of computerised cognitive behavioural therapy for anxiety and depression in primary care: randomised controlled trial. *British Journal of Psychiatry, 185*: 46-54.

Richards, A., & Rees, A. (1998). Developing criteria to measure the effectiveness of community mental health teams. *Mental Health Care, 2*, 14-17.

Richards, D.A., Bower, P. and Gilbody S.M. (2009). Improving Access to Psychological Therapies. In: Gask, L., Lester, H., Peveler, R. and Kendrick, A. (eds). *Handbook of Primary Care Mental Health.* London, Gaskell

Richards, D. A., Lovell, K., Gilbody, S., Gask, L., Torgerson, D., Barkham, M., Bland, M., Bower, P., Lankshear, A. J., Simpson, A., Fletcher, J., Escott, D., Hennessy, S. & Richardson, R. (2008). Collaborative care for depression in UK primary care: A randomised controlled trial. *Psychological Medicine, 38*, 279–288.

Richards, D. A. & Suckling, R. (2009). Improving access to psychological therapies: Phase IV prospective cohort study. *British Journal of Clinical Psychology, 48*, 377-396.

Richards, D. A. & Suckling, R. (2008). Improving access to psychological therapy: The Doncaster demonstration site organisational model. *Clinical Psychology Forum, 181*, 9-16.

Richards, D. A., Hughes-Morley, A., Hayes, R. A., Araya, R., Barkham, M., Bland, J. M., Bower, P., Cape, J., Chew-Graham, C. A., Gask, L., Gilbody, S., Green, C., Kessler, D., Lewis, G., Lovell, K., Manning, C., Pilling, S. (2009) Collaborative Depression Trial (CADET): multi-centre randomised controlled trial of collaborative care for depression - study protocol. *BMC Health Services Research*, *9*:188; doi:10.1186/1472-6963-9-188

Richards, D., Richards, A., Barkham, M., Cahill, J., Williams, C. (2002). PHASE: a 'health technology' approach to psychological treatment in primary mental health care. *Primary Health Care Research and Development, 3*: 159-168.

Richardson, R., Richards, D. A. & Barkham, M. (2008). Self-help books for people with depression: A scoping review. *Journal of Mental Health, 17*, 543-552.

Rosenhead, J. (2001). *Operational Research. In: Studying the Organisation and Delivery of Health Services: Research Methods*. *Eds: Fulop N, Allen P, Clarke A, Black N.* London: Routledge.

Sackett, D.L., Rosenberg, W. M. C., Gray, J. A., Haynes, R. B. & Richardson, W. S. (1996) Evidence based medicine: what it is and what it isn't. *BMJ, 312*, 71-72.

Salkovskis, P. M. (2002). Empirically grounded clinical interventions: Cognitive-behavioural therapy progresses through a multi-dimensional approach to clinical science. *Behavioural and Cognitive Psychotherapy, 30*, 3-9.

Schweiger, D. & Denisi, A. (1991). Communication with employees following a merger: a longitudinal field experiment. *Academy of Management Journal, 34*, 110–135.

Simon, G. E. (2006). Collaborative care for depression. *BMJ,* 332, 249-250.

Simon, G.E., & Von Korff, M. (1995). Recognition and management of depression in primary care. *Archives of Family Medicine*, 4, 99-105.

Simon, G. E., VonKorff, M., Rutter, C., & Wagner, E. (2000). Randomized trial of monitoring, feedback, and management of care by telephone to improve treatment of depression in primary care. *British Medical Journal, 320*, 550–554.

Singleton, N., Bumpstead, R., O'Brien, M., Lee A., & Meltzer, H. (2001). *Psychiatric morbidity among adults living in private households*, 2000. London: The Stationary Office.

Smeltzer, L. R. (1991). An analysis of strategies for announcing organization-wide change. *Group & Organization Studies, 16*, 5–24.

Sobell, M. & Sobell, L. (2000). Stepped care as a heuristic approach to the treatment of alcohol problems. *Journal of Consulting and Clinical Psychology*, *68*, 573-579.

Stiles, W. B., Barkham, M., Mellor-Clark, J. & Connell, J. (2008). Effectiveness of cognitive-behavioural, person-centred, and psychodynamic therapies in UK primary care routine practice: replication in a larger sample. *Psychological Medicine, 38*, 677-688*.*

Taylor, G. J., McClean, S. I. & Millard, P. H. (2000). Stochastic models of geriatric patient bed occupancy behaviour. *Journal of the Royal Statistical Society A,. 163,* 39-48.

Thiels, C., Schmidt, U., Treasure, J., Garthe, R. & Troop, N. (1998). Guided self change for bulimia nervosa incorporating use of a self-care manual*. The American Journal of Psychiatry, 155*, 947-953.

Thompson, C., Kinmonth, A., Stevens, L., Peveler, R.C., Stevens, A., Ostler, K. J., Pickering, R. M., Baker, N. G., Henson, A., Preece, J., Cooper, D. & Campbell, M. J. (2000). Effects of a clinical practice guideline and practice-based education on detection and outcome of depression in primary care:

Hampshire Depression Project randomised controlled trial. *Lancet*, 355, 185-191.

Treasure, J., Schmidt,U.,Troop,N. & Todd, G. (1996). Sequential treatment for bulimia nervosa incorporating a self-care manual. *British Journal of Psychiatry, 168*, 94-98.

Utley, M., Gallivan, S., Treasure T., & Valencia O. (2003) Analytical methods for calculating the capacity required to operate an effective booked admissions policy for elective inpatient services. *Health Care Management Science. 6*, 97-104.

Van Straten, A., Tiemens, B., Hakkaart, L., Nolen, W. A. & Donker, M. C. H. (2006). Stepped care vs. matched care for mood and anxiety disorders: a randomized trial in routine practice. *Acta Psychiatrica Scandinavica, 113*, 468-476.

Wells, K., Sherbourne, C., Schoenbaum, M., Duan, N., Meredith, L., Unützer, J., Miranda, J., Carney, M. F. & Rubenstein, L. V. (2000). Impact of disseminating quality improvement programs for depression in managed primary care: A randomized controlled trial. *JAMA, 283*, 212–220.

Wierzbicki, M., & Pekarik, G. (1993). A meta-analysis of psychotherapy dropout. *Professional Psychology: Research and Practice*, 24, 190-195.

Wilson, G. T., Vitousek, K. M. & Loeb, K. L. (2000). Stepped care treatment for eating disorders. *Journal of Consulting and Clinical Psychology, 68*, 564-572.

World Health Organisation (2001). *The World health report 2001 mental health: New understanding, new hope*. Geneva: Author.

World Health Organization (2005). *The European Health Report 2005 Public Health Action for Healthier Children and Populations*. Copenhagen: World Health Organization Regional Office for Europe.

Worthington DJ (1991), Hospital waiting list management models. *Journal of the Operational Research Society*, 42:833-43.

Appendix 1: Consensus development reports

Report of the Northumberland Consensus Development Group Meeting

Overview: there is a desire in Northumberland to incorporate a greater degree of 'stepping' into the current tiered 'stratified' system enabling more patients to receive low-intensity interventions as a routine first step in their care. The following decisions were made by the stakeholder group.

Access to the stepped care system

- Patients can self-refer to the stepped care system
- Primary, secondary health care professionals or the voluntary sector can refer to the stepped care system
- Gateway workers will provide the initial assessment and point of entry into the stepped care system
- Gateway workers will decide where to allocate patients in the stepped care system, including referring to low and high interventions
- Gateway workers will retain some clinical treatment sessions

Interventions to be provided in the Stepped Care system

- *Low intensity interventions* to be provided will include:
    o Information giving
    o Self-help/ guided self-help
    o Computerised CBT
    o Lifestyle advice
    o Brief CBT
    o Classroom CBT
    o Activity scheduling
    o Graded exposure
    o Drop in services
    o Brief counselling
    o Social activities
- Low intensity interventions will be delivered by primary health care teams, graduate workers and voluntary organisations
- People delivering high-intensity interventions should be involved in supporting and supervising low-intensity workers and evaluating the impact of treatment interventions
- The following patient groups should *NOT* be offered low-intensity interventions:
    o People with severe mental health problems
    o People with psychosis
    o People with illnesses associated with brain deterioration
    o People at high risk of harm to self or others

- People with a history of treatment failure/chronic problems
- A protocol is needed for stepping up which includes negotiation between the clinician and the patient but where the clinician retains a major decision making role
- High intensity interventions should be delivered by the most highly trained workers such as nurses, therapists, psychiatrists and psychologists
- All mental health services should be involved in the stepped care service
- Staff groups providing low and high-intensity interventions should communicate with each other effectively.

Measures

- It was agreed that clinical measures should be a routine part of managing the stepped care system

Areas of uncertainty requiring further discussion

- Participants were unclear about the place and role of counselling in a stepped care system
- Participants were unclear whether low-intensity interventions should be offered to people already in receipt of psychological treatment elsewhere
- Participants were unclear whether low-intensity treatments should be offered to people whose 'problems' are the result of a recent life event such as relationship breakdown,

Key action points from the Consensus Meeting

- There needs to be further clarification of the extent to which the reconfigured system will be stepped as opposed to the emphasis on tiered stratification currently in place. The local implementation group must now clearly establish the proposed infrastructure of the new system and determine how it will work.
- The specification of the clinical measures to be implemented is required ahead of the implementation of the local stepped care model.
- A protocol needs to be decided upon by stakeholders to clarify in detail how patients will be 'stepped up'. This should include a discussion around who will make the decision to 'step-up' and a specific list of criteria that might apply to 'stepping-up'.
- Gateway workers need to be educated in stepped care interventions in order to be able to provide the allocation function in the stepped care system.

Northumberland Tyne and Wear NHS Trust

This paper provides an overview of the Stepped Care model operationalised by Northumberland Tyne and Wear NHS Trust in the Northumberland locality as part of the SDO funded research project entitled 'Developing Evidence Based and Acceptable Stepped Care Systems in Mental Health Care'.

Context

The decision to implement Stepped Care occurred against a backdrop of major organisational re-configuration & change. This involved merging two established mental health Trusts and one learning disability organisation into one large mental health and disability provider organisation now known as Northumberland Tyne and Wear NHS Trust. Replacing the other three, the new Trust became the main provider of mental health and learning disability care across Northumberland, Newcastle, N Tyneside, Gateshead, Tyneside & Sunderland. The newly reconfigured NHS Trust brings together many levels of mental health care within one provider organisation spanning primary to specialist mental health care in the Northumberland locality.

As a consequence of the merger a new strategic management structure was developed and implemented. Further, considerable operational level organisational changes were simultaneously being implemented in order to meet government targets. These targets included the development of crisis teams, the introduction of gateway workers and the introduction of graduate mental health workers into the workforce.

Overview of the pilot project:

Stepped Care models for anxiety and for depression have been designed and implemented as a pilot project across two areas of Northumberland (Tynedale and Blyth) in Northumberland Tyne and Wear NHS Trust. Data collection commenced in April 2007.

The stepped care model includes 4 steps spanning mental health in primary care at level 2 up to specialist (crisis) mental health care at level 5. Each step is described in more detail later in this paper. The newly re-configured Stepped Care service aims to get patients presenting for mental health care to the correct level of the mental health service straight away following the principle of offering low intensity interventions first of all unless this is contra-indicated. In order to facilitate this, Gateway Workers perform an initial screening (triage) of all referrals into the mental health system. Following this, Gateway Workers then direct referrals to the most appropriate point within the stepped care system. The process of screening (or triaging) referrals will now be explained in more detail.

Accessing mental health care through the *gateway*

Referrals into the mental health service are co-ordinated through a single point of access system known as 'The Gateway'. Referrals into the mental health Stepped Care system can be made by GPs, members of the primary care team or by social services. Referrals are usually received in writing by Gateway Workers (although the referral may have been discussed

individually before hand). Gateway Workers are qualified mental health nurses who have experience of working in primary care settings. On receipt of the referral the Gateway Worker makes an initial *triage* decision. Decisions made at this level might include:

- No need to become involved (re-direct referral)
- Re-route referral away from mental health services (for example to voluntary sector)
- Offer a face to face assessment with Gateway Worker
- Direct referral straight to most appropriate point within the stepped care system following the principle of offering low intensity interventions first.

Where a face to face assessment by a Gateway Worker is offered, patients are referred to the most appropriate level of the stepped care service following the principle of offering low intensity interventions first of all unless there are contra-indications to this. The only exceptions to the gateway approach are crisis referrals. Crisis referrals are made directly to available crisis services and do not follow the gateway system.

The full range of stepped interventions offered within the stepped care model will now be described.

Stepped Care Levels

Interventions available at level 2: CBT-based Stress management classes currently delivered by graduate workers supported by other qualified staff.

It is hoped that as Graduate Workers develop their confidence in running stress management groups that they will in the future be able to undertake running the groups independently. Graduate Workers also provide guided self-help as a level 2 intervention.

Interventions available at level 3: Individual short term evidence based psychological interventions delivered by a Gateway Worker or Practice Based Counsellor. Please note that not all participating practices have a counselling service and counselling is only available as a treatment option at level 3 within GP practices that already have an established counselling service.

Interventions available at level 4: Complex evidence based psychological interventions delivered by Psychological Services, multi-disciplinary based care from the CMHT or Psychiatric treatment from Psychiatrists.

Interventions available at level 5: Crisis teams, self-harm liaison and in-patient admission delivered by specialist clinical teams.

Movement between the steps:

Decisions to move people between steps are primarily made based on clinical judgements in collaboration with each individual patient. The results of outcome measures (currently CORE & PHQ9 are in use) are also used to support clinical decision making when determining movement between steps.

Blockages in current stepped care system

Some blockages in the current stepped care model have already been identified, particularly at level 4. The blockages reflect a lack of capacity in Community Mental Health Teams and Psychological Therapy services. It is important to note that waiting lists for these services already existed prior to the introduction of Stepped Care. In practice, clinicians working at level three currently 'hold' some patients within the Stepped Care system whilst the patient awaits a level 4 appointment. Alternatively clinicians may elect to discharge the patient back to the care of the GP whilst the patient awaits further treatment at level 4

Report of the North East Leeds Consensus Development Group Meeting

Overview: there is a desire in Leeds North East to establish a single point of entry to a stepped care service for common mental health problems with primary and specialist service providing interventions at low, medium and high levels.

The Stepped Care System

- The stepped care system will consist of GPs, the Primary Care Mental Health team, Psychology, Psychotherapy and possibly some elements of the CMHT system.

Access to the stepped care system

- There should be a single entry point in primary care
- A standardised protocol will be followed
- Some exceptions for GPs to make direct referral to Tier 4 services where people have very severe symptoms
- Patients should be able to self-refer to low-intensity interventions
- Mental health and primary care services should be able to make referrals
- Specialist medical services should access referral through the GP

Interventions to be provided in the Stepped Care system

- **Low intensity interventions**
    - Low intensity interventions should be routinely available in primary care
    - Low intensity interventions include psycho-education groups, facilitated self-help, telephone contact, behavioural activation, CCBT, exercise and signposting to voluntary sector
    - Low intensity interventions should be delivered by graduate workers, GPs and primary care mental health workers
- **Medium intensity interventions**
    - Medium intensity interventions should be provided mainly in primary care with some direct provision in psychology services
    - Medium intensity interventions are time limited 1:1 talking therapies of between 2-8 sessions
    - Supervision from high intensity workers to those delivering medium interventions should be provided

- **High intensity interventions**

o High intensity interventions should not normally be provided in primary care
o High intensity interventions should be delivered by psychologists and psychotherapists

Patient Progress Through the Stepped Care System

- Patients should have a choice of more than one low-intensity treatment, as some low-intensity approaches may not suit all patients
- Patients with high levels of risk, very complex problems such as psychosis, drug and alcohol problems and PTSD should **not** be offered low-intensity interventions as the first step in their care
- If one low-intensity treatment is not effective patients should be encouraged to try others before stepping up
- Previous failure to benefit from low-intensity treatments is not an exclusion criterion for further attempts at the same or other low-intensity options
- Low-intensity interventions should be provided within specialist teams for patients with complex needs
- Patients within specialist environments should be able to self refer to primary care for low-intensity advice
- Objective and subjective patient-centred outcomes measures should be used across the whole stepped care system
- Patients will be stepped up if their clinical picture changes, they present with increased risk or they fail to improve with low- or medium-intensity interventions

Relationship between Stepped Care and Specialist Services
- Primary care mental health team should be able to refer to community mental health and specialist services
- General practitioners should retain direct the right to refer to specialist services such as PTSD, drugs and eating disorder services

Key action points from the Consensus Meeting
- The steering group needs to move quickly to determine the detailed protocol of how patients will be allocated to steps and 'stepped up' where necessary
- Specific measures need to be decided upon
- A date is required for implementation of the stepped care system and the start of the subsequent collection of data for the SDO project

North East Leeds Primary Care Mental Health Team

This paper describes the Stepped Care System operationalised by North East Leeds Primary Care Mental Health Team as part of the SDO funded research project entitled 'Developing Evidence Based and Acceptable Stepped Care Systems in Mental Health Care'.

Context:

Over the last year (2006/7) mental health services in North-East Leeds have been re-designed in order to provide a stepped care service. The re-design of the service followed a series of meetings held to discuss the new and emerging research evidence base around depression management and the application of low intensity treatment interventions. Regular meetings were held between departmental heads providing mental health services within two NHS Trusts locally. These included heads of Primary Care Mental Health Services working for North-East Leeds PCT and the clinical leads of psychological therapy services working within Leeds Mental Health Trust. These meetings were successful in that they brought together key people from within separate organisations to discuss common issues concerning the possible implementation of providing a stepped care service in Leeds. Thus the drive to re-organise local services towards a stepped care model reflected government guidance regarding best practice, but importantly the motivation for change was driven from within clinical services (bottom-up) and was not organisationally driven (top-down).

Service Overview:

The primary care mental health services in North-East Leeds provide a routine psychological intervention service for people aged 17 and over. The staff team is made up of a mix of experienced mental health practitioners and graduate mental health workers. Leeds Mental Health Trust provides specialist mental health services including care in CMHT's, Psychological Services, Psychotherapy Services and Crisis mental health services. Thus designing a stepped care model locally the providers of two services would necessitate the better integration of these two services. Importantly the service would need to bereconfigured to provide a single point of entry into a common mental health pathway embraced by both services.

Who the service is for:

The new stepped care system provides a mental health service for residents of Chapletown and Central Leeds locality experiencing common mental health problems aged 17 or over.

Referral Process:

Referrals into the stepped care system come from two sources. The patient either self referres having been signposted to the FLASH service by a GP or primary care worker. FLASH (focus learning and self help) is a service which aims to improve access to low intensity treatment interventions for people with common mental health problems. Alternatively the patient

accesses the service following the receipt of a written referral form a local GP. The FLASH service supports 20 local GP practices.

It is important to recognise that following the introduction of the new stepped care system GP's in this locality have been unable to refer patients directly to either psychology or psychotherapy services in Leeds and that all mental health referrals are being channelled through one entry gate. The only exceptions to this rule are crisis or specialist referrals which are made directly to CMHT's

Stepped Interventions:

The North-East Leeds model of stepped care involves the delivery of clinical interventions from steps 2-5 by staff members working within two different NHS Trusts. Interventions at levels 2 & 3 are delivered by experienced mental health workers & graduate workers, working for North East Leeds PCT. Interventions at levels 4 are delivered by experienced mental health clinicians working in CMHT, psychology or psychotherapy settings in Leeds Mental Health NHS Trust. Level 5 interventions involve specialist staff working in crisis resolution settings.

Step 2:

At step 2 the patient has accessed the stepped care service either by self-referral (following signposting to FLASH) or via a written referral (usually a letter from GP).

People who self-refer to FLASH following signposting receive the following service.

The patient will usually be seen and assessed by a graduate mental health worker who will undertake a risk assessment and identify what it is that the patient wants help with. FLASH offers improved access to a range of low intensity interventions. Level 2 interventions include 1.1 facilitated self-help, psycho-education, individualised problem identification and goal setting. Self help materials are selected that best fit the needs of the patient. The patient might also access an evening stress management course. This course is delivered by band 6 practitioners and graduate workers together and has two facilitators.

If the graduate mental health worker has any concerns regarding the patient, they are able to refer the patient at this point for another assessment to a band 6 practitioner working within the team who might then take the patient on or guide the graduate worker as to the best treatment approach.

Where a written referral is received from a GP this usually indicates that the GP has a greater level of concern about the needs of the patient. Thus the patient will be offered a half hour assessment delivered by a mental health practitioner working at Band 6 (usually a nurse, social worker or occupational therapist). Following an initial 30 min assessment a patient will usually begin sessions with treatment options delivered from the level 2 list (above). However where this level of intervention isn't felt to be enough

or where the patient seems to require a more intensive form of intervention the band 6 worker might also offer level 3 interventions. However it should be stressed that it is usual to commence interventions at level 2 initially.

Graduate workers and band 6 practitioners working at steps 2 & 3 review patient progress every three sessions. Outcome measures are used to objectively determine patient progress (CORE) but patient and staff views are also taken into consideration when considering stepping up decisions.

LEVEL 3:

Interventions at level 3 are delivered by band 6 workers and include:

Longer sessions with the patient (up to 50 mins)

More involved CBT based interventions

The opportunity to go through guided self-help at a slower pace and in more detail

Work more on an individualised formulation

It should be stressed that work at level three is more therapy based rather than merely psycho-education.

LEVEL 4:

Interventions at level 4 are delivered by CHMT's, Psychology and Psychotherapy services working within Leeds Mental Health Trust.

LEVEL 5:

Interventions at level 5 in the stepped care service are delivered by experienced mental health practitioners working within Leeds Mental Health Trust and include crisis resolution teams and work aimed avoiding hospital admission.

Blockages within the current Stepped Care System:

Although no formal evaluation data is currently available, anecdotally it would seem that that there has been a reduction of referrals up-wards within the stepped care system. This is to say that patients are in the main being effectively treated at levels 2 & 3 within the stepped care system and it would appear that fewer clients are requiring referral up to level 4 in the stepped care system. However it is interesting to note that despite this – this has not resulted in a reduction of waiting time for the small number of patients awaiting treatment at level 4 in the new system. This seems to reflect the fact that psychology services continue to accept referrals from CMHT's as well as old style referrals from the East of the city (via direct referral from GP's and Primary care).

Holding patients at a lower step:

As a result of the blockages present within the current system clinicians sometimes have to 'hold' patients receiving treatment at level 3 but requiring treatment at level 4. In practice this means delivering more than the desired number of clinical sessions at level 3. This is managed by clinicians who might for example elect to lengthen the times between each session (whilst the patient is waiting). The clinician might also maintain contact with the client over the telephone. Some patients are discharged back to the care of the GP whilst awaiting treatment at level 4.

Report of the Cheltenham and Tewkesbury

Consensus Development Group Meeting

Overview: there is a desire in Cheltenham and Tewkesbury to reconfigure mental health services in primary care for people with common mental health problems into a stepped care system using a mixed system of referrer and mental health worker allocation.

Access to the stepped care system

- The least intensive forms of intervention such as information websites should be available to patients without referral
- Patients cannot self-refer directly to individual mental health services but must go through a GP or other member of the primary health care team. The exception to this is self-referral to stress management courses and services provided by the voluntary sector
- GPs or other members of the primary health care team can refer people for low intensity interventions to practice based graduate primary care mental health workers
- Access to services at step 3 and above will be controlled by gateway workers acting as a triage point for referrals from GPs, other members of the primary health care team and a wide variety of statutory and non statutory/voluntary sector workers.
- Patients at severe risk to themselves or others, with 'unstable' psychosis or who had not responded to previous low-intensity treatments.

Interventions to be provided in the Stepped Care system

- **Low intensity interventions**
    - Low intensity interventions include: books, exercise and learning on prescription; psycho-education groups; facilitated self-help; telephone contact; brief counselling and CBT; CCBT; expert patient programme; signposting to voluntary sector.
    - Low intensity interventions should be delivered by workers with fewer qualifications, experience or specific psychological therapies competencies. These might include graduate workers, GPs, other primary health care workers, people working in the voluntary sector.
- **High intensity interventions**
    - High intensity interventions should normally be provided by specialist mental health care workers with more training, experience or specific

psychological therapies competencies such as psychologists, CPNs and counsellors.

- **Supervision**
  - o Supervision of low intensity workers should be provided by those workers with high intensity therapeutic competencies. Low intensity workers can provide supervision, advice and guidance to members of the primary health care team such as GPs and nurses.

Patient Progress Through the Stepped Care System

- Low-intensity interventions should be provided within specialist teams for patients in active treatment for their complex or serious mental health needs
- Common mental health problems presenting in patients with a past history of serious mental health problems could be treated by low intensity workers with additional supervision
- Objective, subjective and organisational performance measures should be used across the whole stepped care system
- Patients will be stepped up if they deteriorate, they fail to improve with low-intensity interventions or the clinician is concerned.
- Patients should have a choice of more than one treatment within each step of the system. Patients choice should be based on 'needs' not 'wants' and due to resource constraints patients should not be able to exercise unrestricted choice of moving up steps.

Key action points from the Consensus Meeting
- The steering group needs to move quickly to clarify the nature and intensity of treatments within each step
- Specific outcome measures need to be confirmed
- A date is required for implementation of the stepped care system and the start of the subsequent collection of data for the SDO project.

Cheltenham and Tewkesbury Primary Care Assessment & Treatment Service

This paper gives describes the Stepped Care system operationalised by the Cheltenham and Tewkesbury Primary Care Assessment & Treatment Service (PCAT) as part of the SDO funded research project entitled 'Developing Evidence Based and Acceptable Stepped Care Systems in Mental Health Care'.

Context

Over the last year (2006/7) there has been major service re-configuration within Gloucestershire Partnership NHS Trust. This involved a strategic review of the role and function of Primary Mental Health Services and Community Mental Health Teams. These teams have now been amalgamated and operate under the title 'Primary Care Assessment & Treatment Service' (PCAT). In line with Department of Health policy/directives, the new service has been reconfigured to improve access to a broader range of treatment interventions for people experiencing common or high prevalence mental health problems whilst also providing effective care for people with serious and enduring mental health problems. The role and function of the new PCAT team has been reconfigured adopting a Stepped Care approach to service delivery. This means that the team has implemented a stepped approach to the management of referrals based on

the principle that the simplest and least intrusive intervention will be offered first with more intensive treatments being made available if and when necessary.

Service Overview:

The newly developed PCAT service provides a single point of access to mental health services across Cheltenham and Tewkesbury. Service delivery is based upon health promotion, recovery and social inclusion principles and is organised via a Stepped Care approach. A major feature of the new way of working is the introduction of a triage service within 23 participating GP practices. The triage system is described in more detail later.

Who the Service is For:

The PCAT service provides a service for people:

1. Residing in Cheltenham and Tewkesbury

2. Aged between 18-65

3. Who have a mental health problem thought to be resolvable at initial assessment within an 18 week time-frame. Operational difficulties however have meant that in practice people are being treated for longer than 18 weeks. This reflects 'real world' problems higher up the stepped care system. There are problems for example making specialist referrals.

Also, local psychology services have been closed to new referrals during the period of this study.

Referral Process:

1. Routine referrals are made by GP's or by primary care practitioners.

2. Referrals are screened by a (Senior) Triage Worker in the GP surgery. The triage worker is most usually a qualified mental health nurse working at local band 5 or 6.

3. Crisis referrals are made by GP's to the PCAT duty system. The PCAT service provides 'telephone triage' and the outcome is communicated to the referrer.

4. Fast track referrals for known SMI patients are triaged directly to recovery teams.

Stepped Interventions:

Step 1:

Step 1 interventions are principally delivered by the Primary Care Health Team to patients with mild, self-limiting and long-term conditions. Interventions usually include initial assessment, watchful waiting, and signposting patients with common mental health problems. Also included are support and medical treatment for patients with long term but stable severe mental illness.

At Step 1 there is open access for patients to the Primary Care Health Team, who make informed choices about the most appropriate action to take. Decisions regarding common mental health problems at assessment are based on validated assessment tools such a CORE. Further, PCAT has a role in supporting decision making processes through the provision of mental health information, training and consultation.

At Step 1 patients have open access to PCAT information resources. Stress management workshops are also provided by paid facilitators sometimes in collaboration with graduate mental health workers. PCAT interventions at Step 1 focus on mental health promotion activities. Where the condition of a patient with severe mental illness is stable the responsibility of the Primary Health Care Team is to monitor their physical health needs and to provide depot medication when required. Any concerns regarding relapse are addressed through consultation / referral to PCAT.

Where initial assessment by the Primary Health Care Team indicates a mild to moderate common mental health problem OR if interventions at Step 1 have not improved the situation, then the primary care practitioner/GP should consider accessing Step 2 intervention via a referral to PCAT.

Triage:

Triage is undertaken within each participating GP practice. Each practice is visited at least weekly by a (senior) triage worker. The triage worker is

usually a qualified mental health nurse working at local band 5 or 6. Triage involves screening all referrals made to the PCAT service. The triage worker is able to read the referral and access GP records before deciding on the most appropriate available treatment intervention. As part of this process, the triage worker will sometimes also consult with the patient over the telephone in order to make an informed judgement regarding the treatment interventions required to best support the patient.

After screening the list the triage worker provides advice and guidance to the PHCT, GP's and patients regarding the most appropriate treatment interventions available locally. A range of options are available. For example the triage nurse may discuss the case on the phone with a patient and refer back to PHCT (level 1) suggesting books on prescription for example. Alternatively the triage worker may decide that the patient meets the criteria for level 2 interventions and manage the referral directly utilising available resources within the PCAT team.

After screening the list and reading the patients medical record the triage worker might require more detailed information regarding the most appropriate treatment needs of patient. This might be the case if the patient does not clearly meet the criteria for a Step 2 intervention for example. In this case the triage worker might make contact with the patient and offer a *triage assessment.* Undertaken by the triage worker, the triage assessment allows the patient to be assessed in person and the most appropriate treatment recommendation to be made. However, where there

is doubt as to the appropriate level of intervention, this is most usually addressed through consultation between the Primary Care Health Team and the surgery PCAT worker rather than referral to a triage assessment at this step.

Step 2

Step 2 interventions principally address mild to moderate common mental health problems. These interventions are accessed by referral to the PCAT team. Referrals are triaged and patients that meet the criteria for the intervention being requested are taken on by the team   Interventions provided at step 2 include; Psycho-educational courses, Computerised Cognitive Behavioural Therapy, Guided Self Help, Medication Concordance and routine follow up. Step 2 interventions are delivered by graduate mental health works as well as other members of the PCAT team.

Interventions at Step 2 may also be accessed in order to compliment treatment delivered at a higher step or accessed by stepping down from a higher step.

When a patient has received a Step 2 intervention and this has not improved the situation, or if they clearly require a Step 3 intervention a further face to face *triage assessment* may become necessary.

Step 3

Step 3 interventions are commenced as appropriate following an initial triage assessment. Step 3 interventions are delivered by graduate mental health workers who have received a CBT Foundation and MasterClass training programme and (senior) triage workers. The triage workers most usually taking on more complex cases for example where there are issues of risk. Interventions include face to face CBT which is formulation driven and tailored to a patients' specific presenting problems. A range of CBT techniques will used including; goal setting, self monitoring, thought challenging and behavioural experimentation. Core beliefs and assumptions work may be undertaken if appropriate. A Level 3 intervention may be offered in a group format, for example, anxiety management, thorn (PSI) approaches, anger management and OCD workshops.

Due to the complexity of the issues the patient may experience at level 3 further assessment may be necessary. This takes place outside normal triage clinic time. These assessments are taken to weekly PCAT team meetings to review the action to be taken. If the patient clearly requires treatment which will go beyond the 18 week remit of PCAT, an outline Care Plan is completed and forwarded to the appropriate Specialist Care team. If the treatment required can take place within 18 weeks the person presenting the case will look initially at their own case load / skills to determine if it is appropriate to work with the patient. If the treatment required is more specialised, then the resources of PCAT will be used to find the most appropriate practitioner.

Movement Between Steps

Within the preceding stepped intervention categories, the appropriate step at which a patient receives treatment, and movement within/between steps, is based on clinical judgment but informed by validated assessment tools such as CORE. Interventions are underpinned by Clinical Supervision cascading down the steps.

Data Collected on the Stepped Care System:

Data collection commenced in December 2006. Data were collected on all people entering the newly reconfigured Stepped Care system who had a primary presentation of anxiety and depression. Some retrospective data regarding the triage process is available. For example, the number of patients in receipt of triage as well as the outcome of this process. This is currently being added to the available data set.

Report of the Camden and Islington Consensus Development Group Meeting

Overview: Camden and Islington decided to implement the stepped care pilot on a practice based footprint, using practices where graduate workers will be attached.

The Stepped Care System

- The stepped care system will consist of all parts of the mental health system, in particular the graduate and primary care mental health workers and psychological services.
- Counsellors will not offer low-intensity interventions as part of stepped care unless they have the personal interest and competencies required

Access to the stepped care system

- Patients should be able to self-refer to low-intensity interventions
- Mental health and primary care services should be able to make referrals
- Specialist mental health services and high intensity services should be able to refer 'down' the steps
- Patients with severe depression and anxiety should be able to access low-intensity interventions even if they are also referred elsewhere

Interventions to be provided in the Stepped Care system

- **Low intensity interventions**
    - o Low intensity interventions include guided self-help, CCBT, books on prescription, lifestyle advice and signposting
    - o Attention needs to be paid to the cultural acceptability of low-intensity interventions
    - o Low intensity interventions should be delivered by primary care mental health workers and interested GPs
- **Medium intensity interventions**
    - o Counselling is a medium level intervention suitable for life adjustment reactions to issues such bereavement
- **High intensity interventions**
    - o High intensity interventions should be delivered by psychologists and the psychotherapy service

Patient Progress and Decision Making Through the Stepped Care System

- Explicit criteria will be developed to aid informed patient choice and decision making to allocate patients to the appropriate step in the system
- Assessment and allocation to initial interventions should take place within the GP practice by consultation between the GP and primary care mental health worker
- In terms of patient choice the default position should be low-intensity interventions for most patients
- Patients with high levels of risk, psychosis, personality disorders, access difficulties through language, homelessness and being homebound should not be offered low-intensity interventions
- Low-intensity interventions should not be offered to patients with conditions for which there is no evidence of effectiveness, for example PTSD
- If patients who are suitable for low-intensity interventions refuse them or seek higher intensity treatment they should be directed to other providers outside the stepped care system
- Objective and subjective patient-centred outcome measures should be used across the whole stepped care system
- Patients will be stepped up if their clinical picture worsens, they fail to improve with low-intensity interventions or the clinician becomes concerned for another reason
- The process of stepping up will be a mixture of explicit criteria driven decision making and patient choice

Key action points from the Consensus Meeting

- The steering group needs to determine the detailed criteria for how patients will be allocated to steps and 'stepped up' where necessary
- The role of counselling needs to be explored with individual counsellors
- The way the stepped care service will support patients with OCD, eating disorders and alcohol and drug problems has not been decided upon
- A date is required for implementation of the stepped care system and the start of the subsequent collection of data for the SDO project

Stepped Care Model: Camden and Islington

This paper gives describes the Stepped Care system operationalised in Camden and Islington as part of the SDO funded research project entitled 'Developing Evidence Based and Acceptable Stepped Care Systems in Mental Health Care'.

Context:

The introduction of Stepped Care in Camden and Islington was seen primarily as an internal development that would support 'best practice'. Local politics were not viewed as an issue, although psychology waiting lists were high. The development of a standard stepped care pathway for people with common mental health problems was viewed as 'making sense' and potentially offering the benefit of 'more therapy for the money'

Overview of Stepped Care System:

1. GP referral to a multiple entry gate system

2. There is no triage system within this system

3. System encourages the referrer to direct the referral first of all to Graduate Workers, rather than directly to psychology. However referrers are still able to make a referral direct to psychology if this is deemed necessary. The circumstance in which this might happen are instances when the patient refuses to see a Graduate Worker, or when a patient has

previously accessed a part of the service such as Psychology which is higher up the Stepped Care system.

4. Where a GP practice has a practice counsellor, GP direct referrals to the practice counsellor continue to be encouraged. Many current referrals for counselling are considered unsuitable for the kinds of intervention offered by the Graduate Workers and, in addition, there is not sufficient Graduate Worker capacity to direct all referrals initially to a Graduate Worker.

5. System only operates for GP practices which have a Graduate Worker.

6. Objective symptom severity measures are not routinely used to support initial referral decisions

Stepped Care Implementation Protocol:

The Stepped Care implementation protocol for the model operationalised in Camden and Islington has been added to this paper below. This is a direct copy of local documentation. It details:

a. The referral process and inclusion criteria for Stepped Care

b. The assessment and interventions offered by Primary Care Mental Health Workers

c. The criteria and process for 'Stepping-Up' after Primary Care Mental Health Worker Intervention

d. The assessment and treatments available higher up the Stepped Care System via Psychology or by Practice Based Counsellor

Local implementation guide commences below:

GP/PCMHT Referral Process and Inclusion Criteria for Stepped Care

The first step is for GPs/PCMHT members to refer patients for stepped care to the practice graduate primary care mental health worker (PCMHW). All patients currently referred either to the PCMHW or to the in-practice psychologist or Psychological Assessment and Treatment Service (PATS) will be eligible to be referred for stepped care. As currently, GPs/PCMHT members will be able to refer patients just to the PCMHW if appropriate, without them proceeding to stepped care. They will also have the option of referring patients directly to the in-practice psychologist/PATS without first seeing the PCMHW if considered appropriate. But the care pathway encourages use of the stepped care option as many patients improve with just self-help and with patients currently having to wait usually over 3 months for treatment by the psychologist, this gives patients the chance of earlier relief from their symptoms.

1. Practices decide whether just GPs in the practice refer or whether others in PCMHT can refer as well[1,2].
2. Referral form will be a modified version of the existing PCMHW referral form, modified to include a tick box as to whether the referral is just to the PCMHW or for the PCMHW to refer on/step up to the psychologist in the practice/PATS

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[1] Practices who currently allow self-referral to the PCMHW can retain this in the stepped care pathway.

[2] Occasional patients initially referred by the practice to secondary care mental health services - outpatient psychiatry, CMHTs, or PATS - may on secondary care assessment be considered suitable for initial PCMHW intervention.

or practice counsellor or other service if needed/indicated (i.e. whether just for the PCMHW or for stepped care)

3. Inclusion criteria for stepped care will be all patients currently eligible for referral either to PCMHWs (for facilitated self-help or for community links) or to practice psychologist/PATS, with certain defined exclusions. The exclusions (which the GP/PCMHT should refer directly to the in-practice psychologist or PATS via a referral letter as current practice) will be:

- Patients seen previously by psychologist/PATS whom GP considers it appropriate to return directly to see the psychologist rather than see PCMHW first

- Patients who have seen the PCMHW previously and the GP considers it would be best now to go straight to the psychologist

- Patients who refuse to see the PCMHW

In addition,

- Practices may define other exclusion criteria of types of patients for referral directly to their in-practice psychologist/PATS

- GPs will of course have the freedom to refer any individual patient directly their in-practice psychologist/PATS, without seeing the PCMHW first, if they think

  this is clinically appropriate. Clearly, if this happened most of the time, then stepped care would not be happening, but the natural experiment of this project is to explore exactly this question of how many patients is stepped care appropriate for. If this is happening frequently, the psychologist may come back to the GP to clarify if a referral might be suitable for the PCMHW to see first

- Patients with significant risk should continue to be referred to the crisis team or community mental health team, as appropriate, patients with psychosis or severe depression should be continue to be referred initially to the community mental health team and patients with severe drug and alcohol problems to the specialist substance misuse services.

PCMHW Assessment and Intervention

The PCMHW will assess the patient within 2 weeks and offer them one or more of a menu of self-help and other options.

1. The PCMHW will contact the patient, by telephone where possible, and arrange an appointment at the practice. Some screening for suitability may occur in this initial phone call.

2. At the assessment, which will usually be face-to-face but occasionally over the telephone, the PCMHW will follow a structured assessment protocol, including assessment of risk.

3. The PCMHW will contact/refer back to the GP if their assessment indicates the patient is at significant risk of harm to self or others or is not suitable in other ways (e.g. the patient doesn't want the PCMHW service offered and GP/referrer did not indicate on the referral form to refer on/step up the patient if needed)

4. The PCMHW will refer directly on to the psychologist or practice counsellor or other service, as appropriate, patients for whom (1) PCMHW intervention is not indicated (either on clinical grounds or because the patient is not interested in any of the menu options offered), and (2) whom the GP/referrer

has indicated on the referral from they would wish to be referred on/stepped up if needed.

5. The menu of options offered by the PCMHW will be:

   - PCMHW facilitated self-help

   - Library book prescription scheme

   - CCBT (in Camden)

   - Suggestions of self-help groups

   - Other community links/referral facilitation

6. Patients who agree to one or more of the menu of options will be followed up by the PCMHW at 3 months. For those offered CCBT (in Camden), the follow-up contact after the CCBT may be by the person facilitating the CCBT service.

Criteria and Process for Referral On/Stepping Up after PCMHW Intervention

Criteria for referral on to in-practice psychologist or PATS or practice counsellor or other service after PCMHW intervention will be:

- GP/PCMHT referrer checked on referral form to PCMHW that patient should be referred on if appropriate

- Patient attended the third (review) appointment with the PCMHW to enable discussion of appropriateness of referral on to take place

- The patient has not improved sufficiently with the PCMHW intervention (the guideline for this will be that the patient has not met response/recovery

thresholds on CORE-OM following the PCMHW intervention[3]; this will be a guideline rather than a rigid rule)

- Patient wishes to be referred on to the psychologist, practice counsellor or other service

In addition:

- Some practices may want the GP to review the patient following the PCMHW intervention and agree the onward referral to the psychologist, practice counsellor or other service, either by discussing the patient with the PCMHW or by seeing the patient again

Process of referral on to psychology, where indicated, will be one of the following, the specific option to be decided on a practice/site basis (between practice, PCMHW and in-practice psychologist/PATS coordinator for the practice):

- Written/e-mail referral from PCMHW

- Patient given PATS/psychologists detail to make contact/opt-in, backed up with some written info from the PCMHW

- Written referral from GP (if practice implements system, as above, that GP reviews patient after PCMHW intervention before onward referral)

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[3] Initial CORE-OM response/recovery criteria for stepping up (of form such as "still in clinical range and made no more than 40% improvement from baseline or risk score still > 3") to be established through extrapolation from the literature (Pete Bower, Simon Gilbody, Steve), although through course of the project these may be modified in light of experience.

Process of referring on to the practice counsellor, where indicated, will be as agreed locally in the practice.

Assessment and Treatment by Psychologist

The assessment and treatment by the psychologist (in-practice or at PATS) would proceed as at present.

1. Making of appointments (whether by written appointment or opt-in system) can be as at present, but will need to be prompt as overall waiting time to psychology treatment (from initial GP referral to the PCMHW to the patient's first treatment session with the psychologist) should be no longer than occurs currently.

2. At assessment, the existing criteria as to whether patients are taken on for treatment in PATS (i.e. clinically significant problem as defined by DSM-IV diagnosis with certain exclusions and ability to impact some aspect of the clinical problem within the maximum treatment length of 20 sessions) would continue to apply. Patients not meeting these criteria or for whom there is a more appropriate service elsewhere would be referred on after assessment or back to the GP.

3. The current range of available treatments, individual and group, within PATS would be available

Assessment and Treatment by Practice Counsellor

Assessment and treatment by practice counsellors, following stepping up, would proceed as at present, in accordance with arrangements agreed and in place at each practice.

Where the practice counsellor and the practice agree, the practice counsellor will collect outcome questionnaires (CORE-OM) following treatment with those patients who have been stepped up.

N.B Local implementation guide ends here

Blockages in Current Stepped Care System:

The new Stepped Care system resulted in Graduate Workers beginning to receive a high volume of referrals very quickly. The current system encourages this. Thus the re-direction of referrals to Graduate Workers from Psychology has resulted in a significant increase in workload for this occupational group. In some participating GP practices there are currently waiting lists of up to 2months for patients to be assessed by a Graduate Worker.

While, introducing the stepped care system has had a significant impact on referral rates directly from GPs to Psychology (anecdotally there has been no change in GP direct referrals to practice counsellors in those practices which have a counsellor), it is too early to evaluate whether it will reduce eventual workload at higher levels of the Stepped Care system or whether the same number (or more) cases than previously will eventually be stepped up for psychological therapy.

Data Collected on the Stepped Care System:

Data collection commenced in January 2007. Data were collected on all people entering the newly reconfigured Stepped Care system who had a common mental health problem (anxiety and depression). First round data (at four months) were submitted in June to UCL for analysis.

Appendix 2: Phase I site reports

Stepped Care for Common Mental Health Problems

Phase I Report

Developing evidence based and acceptable stepped care systems in mental health care: an operational research project

David Richards[1], Steve Gallivan[2], Lilian Owens[3], John Cape[2], Roger Paxton[4], David Tomson[5], Peter Bower[6], Simon Gilbody[7], Judy Leibowitz[2], Karina Lovell[6], Steve Pilling[2] , Martin Utley[2]

[1]University of Exeter, [2]University College London, [3]CSIP, [4]Newcastle, North Tyneside and Northumberland NHS Trust, [5]Collingwood Surgery, [6]University of Manchester, [7]University of York

Contents

Introduction

This SDO funded research project is an observational study to examine the design and implementation of stepped care systems for psychological therapies. You have taken part in Phase I of the study in which stepped care systems have been (a) designed through stakeholder consensus exercises (b) implemented in a number of case study sites (c) assessed through quantitative and qualitative data collection in each site. The results of this extensive process and lessons learnt have been incorporated into a written manual with associated computer capacity planning tool.

This report is to give you a summary of the background of the project, the method used and results found in phase I of this study.

Background

The individual and public health burden of mental health problems is dominated by 'common mental health disorders' such as depression and anxiety. Estimates from around the globe suggest that around 16% of the adult population experience depression and anxiety in any one year, with common or 'high prevalence' mental health problems constituting 97% of the total population prevalence of mental health disorders. Somewhere between 1% - 3.5% of the adult population are likely to be diagnosed with a common mental health disorder annually.

Currently, patients with common mental health problems such as anxiety and depression experience limited availability of treatment choices. In particular, traditional psychological therapies services are characterised by relative inaccessibility and long patient waiting times. In the UK, the National Institute for Health and Clinical Excellence (NICE) has recommended organising the provision of evidence based treatments differently to improve their availability and effectiveness. The principle means suggested to do this is 'Stepped Care'. Stepped care is a system of delivering and monitoring treatments so that the most effective yet least resource-intensive treatment is delivered to patients first. This system allows scarce resources to be more efficiently delivered to provide accessible and affective treatments. It seeks to enhance the efficiency and volume of treatments delivered whilst retaining the effectiveness of traditional treatment approaches. However, such systems are complex and require considerable reconfiguration of existing services.

Phase I of this project aimed to collect evidence and methods to help reconfigure psychological treatment services within and across primary and secondary care to improve patient access, choice and implement national clinical guidelines.

Method

You were one of four NHS sites providing mental health care for people with common mental health problems that took part in Phase I of the project. During Phase I:

- **Stepped Care Systems were designed through stakeholder consensus exercises**. Stakeholders from each case study site were brought together in site specific workshops to explore options for the redesign of your service. Stakeholders from your site were asked to determine specific configurations and organisation of the stepped care system they wished to implement in your area. We used a consensus development technique called the 'constituency approach' to do so. A small number of people from your site were then formed into a project group to reflect the priorities identified by those who attended the workshop.
- **The stepped care model that your project group designed was implemented in your site.**
- **The stepped care model was assessed through quantitative and qualitative data.** Quantitative data included service structure, service processes, patient waiting times, number of patients entering the various steps in the services and how many sessions patients attended. Qualitative data was measured through patient satisfaction questionnaires and qualitative interviews with a sub sample of patients (and staff?) We cannot include site specific qualitative data will in this report as we need to preserve the anonymity of respondents. We will however be able to provide qualitative data from all four sites as a supplementary report.

We understand your chosen service redesign to be:

- A service in which all mental health referrals are received by the Stepped Care service, with the exception of crisis referrals.
- Graduate workers are employed by the specialist mental health Trust, but are attached to specific GP practices. However, there were a shortage of graduate workers in your trust and so there are some areas of your trust in which there was no graduate worker input and therefore no Step 2 interventions were available.
- Counselling is included as a Step 3 intervention, however, access to this service was limited as very few GP practices have a practice based counsellor.

Your service

Referrals to the service are made by GPs to mental health practitioners who act as the entry point to stepped care. On receipt of the referral the mental health practitioner makes an initial decision to refer the patient back to the GP or to another service (eg the voluntary sector), offers an initial assessment for stepped care or makes a direct referral to the most appropriate point within the stepped care system.

Initial Assessment is undertaken by a mental health practitioner and referred to the most appropriate level within the stepped care system. Unless contra-indicated the patient will be referred to a low-intensity intervention first.

Step 2 interventions are run by graduate workers and include guided self-help and CBT-based stress management classes, supported by other qualified staff. One-to-one guided self-help sessions tend to be one hour sessions for up to 8 weeks.

Step 3 interventions comprise short-term evidence-based psychological interventions delivered by a mental health practitioner or practice-based counsellor, where available.

Step 4 interventions are complex evidence-based psychological interventions delivered by psychological services, CMHT or the psychiatric service.
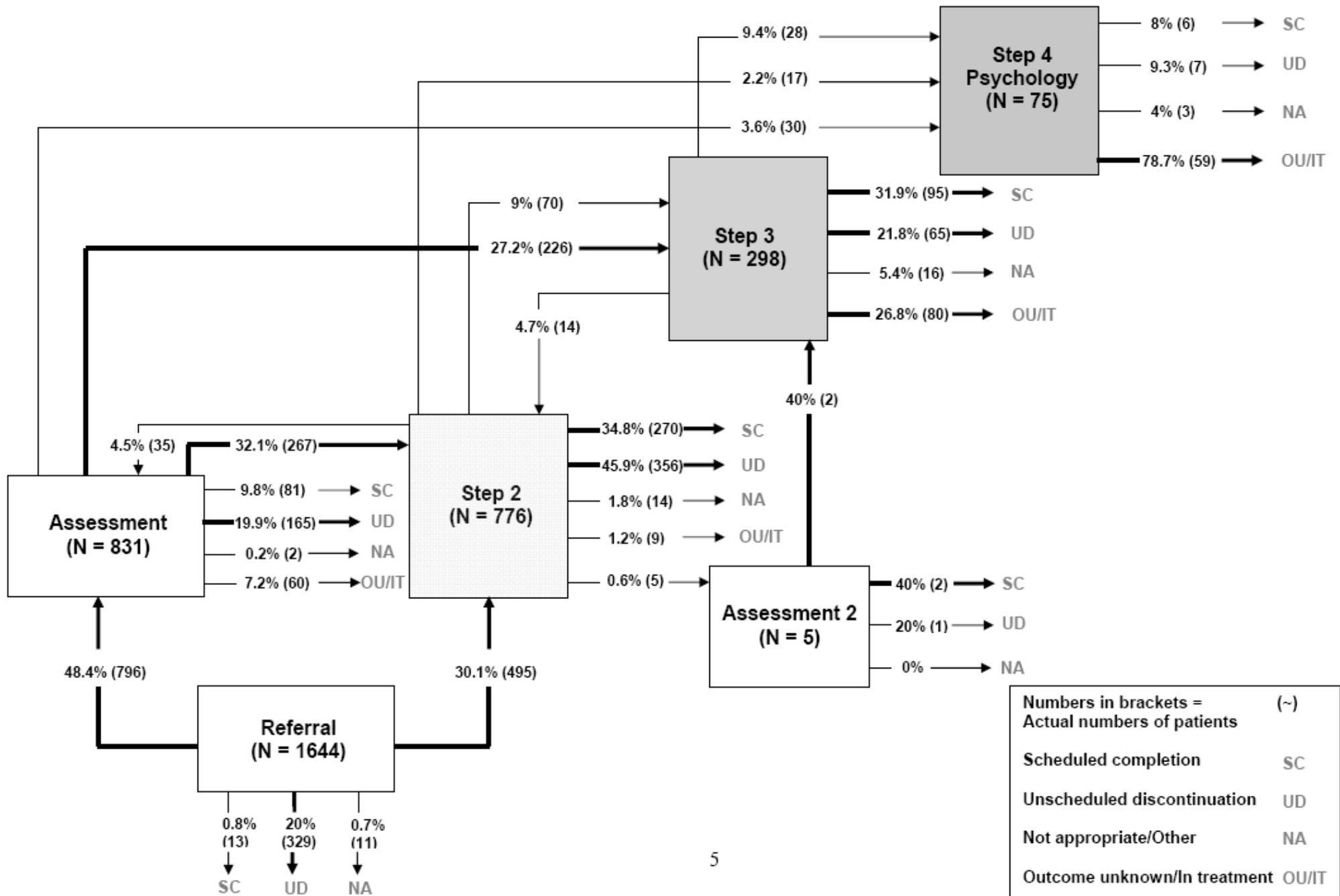
Results

Data was collected from 1043 patients referred to your stepped care service from June 2007 to the end of April 2008.

The table below shows the number of patients who accessed each part of the stepped care service during the period of data collection.

There was no specific Step 5 (crisis team, self-harm liaison, in-patient admission etc) data collected for your site, however, some the patients who were referred to Step 5 will be included in the statistics for 'referred up' and 'referred out' (see patient movement flowchart on page 5).

Table 1: Number of patients who accessed each part of your service

Activity	Number of patients
Referral	1043
Assessment	778
Step 2	105
Step 2 class	63
Step 3	336
Step 4	39

Psychiatry / Psychology (N=39)
- 2.5% (1) → W
- 10.3% (4) → DNA
- 28.2% (11) → C
- 0% → RO
- 0% → RU
- 59% (23) → OU/IT

Into Psychiatry / Psychology:
- 2.5% (19)
- 4.5% (5)
- 1.6% (1)
- 4.2% (14)

Step 3 (N=336)
- 3.9% (13) → W
- 8% (27) → DNA
- 34.8% (117) → C
- 0.6% (2) → RO
- 0.6% (2) → RU
- 46.7% (157) → OU/IT

Into Step 3:
- 42.8% (333)
- 2.5% (3)
- 0.9% (3)

Class (N=63)
- 1.6% (1) → W
- 27% (17) → DNA
- 61.9% (39) → C
- 1.6% (1) → RO
- 0% → RU
- 6.3% (4) → OU/IT

Into Class:
- 7.0% (54)
- 5.7% (6)
- 0.3% (1)

Step 2 (N=105)
- 10.6% (11) → W
- 23.8% (25) → DNA
- 52.9% (55) → C
- 0% → RO
- 0% → RU

Assessment (N = 778)
- 13.3% (104) → Step 2

Assessment outcomes:
- 4.4% (34) → RU
- 3.2% (25) → RO
- 14.1% (110) → C
- 12.2% (95) → DNA
- 0.5% (4) → W

Legend

Numbers in brackets = (~)
Actual numbers of patients

Withdrew	W
DNA/Drop out	DNA
Complete	C
Referred out (e.g. private/ voluntary sector)	RO
Referred up (i.e. CMHT)	RU
Outcome unknown/In treatment	OU/IT

Patient Movement

The data shown above shows the percentages of patients from your service who moved from one part of your stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through your service. The average number of referrals to your service per week was 17.

The data shows that only 20.3% of people starting with Step 2 interventions or classes. Both Step 2 interventions and classes had high completion rates. Around a quarter of people did not attend. Nearly 10% of those people that had Step 2 or classes were 'stepped up' to Step 3 or Psychiatry/Psychology.

The data shows that almost half of the people who were assessed moved straight on to Step 3, with just over a third of people completing. However, there is a high percentage of people who are either still in treatment or their outcome is unknown. Just under 5% of people were 'stepped up' to Psychiatry/Psychology.

Of the total number of people who were assessed for your service 5% were assessed and then referred or were 'stepped up' to Psychiatry/Psychology. Just over a quarter of people completed treatment, however, over half the number of people referred to Psychiatry/Psychology were still in treatment or their outcome was unknown at the end of data collection.

Demographics

Below are tables showing various demographic details of the patients that used your service. Please note that we only used the data from those patients that received an assessment (683 out of 1043) as most demographic information is collected at assessment and so was not available for those patients who did not attend assessment.

Gender (683)	
Male	226 (33.1%)
Female	457 (66.9%)

Outcome (CORE & PHQ9 scores) (683)	
Improved	383 (56.1%)
No Change / Same	205 (30%)
Worsened	14 (2%)
Missing	81 (11.9%)

Taking prescribed medication (683)	
Yes	341 (49.9%)
No	342 (50.1%)

Sickness from work (683)	
Yes	181 (26.5%)
No	502 (73.5%)

Identified Problem (683)	
Depression	99 (14.5%)
Anxiety	181 (26.5%)
Depression & Anxiety	268 (39.2%)
Other (e.g. PTSD, anger management, stress)	135 (19.8%)

Previously seen for anxiety/depression (683)	
Yes	300 (43.9%)
No	383 (56.1%)

Employment Status (683)	
Employed	421 (61.6%)
Unemployed	123 (18.1%)
Student	27 (3.9%)
Homemaker	67 (9.8%)
Retired	31 (4.5%)
Other (e.g. Long-term sick)	14 (2.1%)

Waiting Times

Average waiting time from referral to assessment was 22 days (not including weekends), and ranged from 0 to 233 days.

Below are the overall waiting times, as well as average waiting times by treatment step, from date of first referral to date of first appointment. As we have varying amounts of data for each step the number in brackets are the number of patients whose data was available for each step and some may still be in treatment. Please be aware that only week days and not weekends are included as 'waiting days' and holidays (e.g. Christmas and Easter) have not been accounted for and therefore may still be included as 'waiting days'.

Average Waiting Times (528)	
Across all steps (528)	24.2 days
Step 2 (168)	18 days
Step 3 (336)	22.4 days
Step 4 (24)	16.5 days

Duration of Treatment

Data was collected about the percentage of patients who attended each number of sessions for each activity. Below is a summary table showing the average number of sessions that patients attended for each part of your service.

Table 2: Mean duration of treatment for all clinical activities

Activity	Mean Length of Stay (sessions)
Assessment	1
Step 2	3.41
Step 3	4.47
Step 4	3.38

The table shows that patients attended on average 1 session of assessment. There was a wide range of length of stay data and so data has been displayed in graph format below.
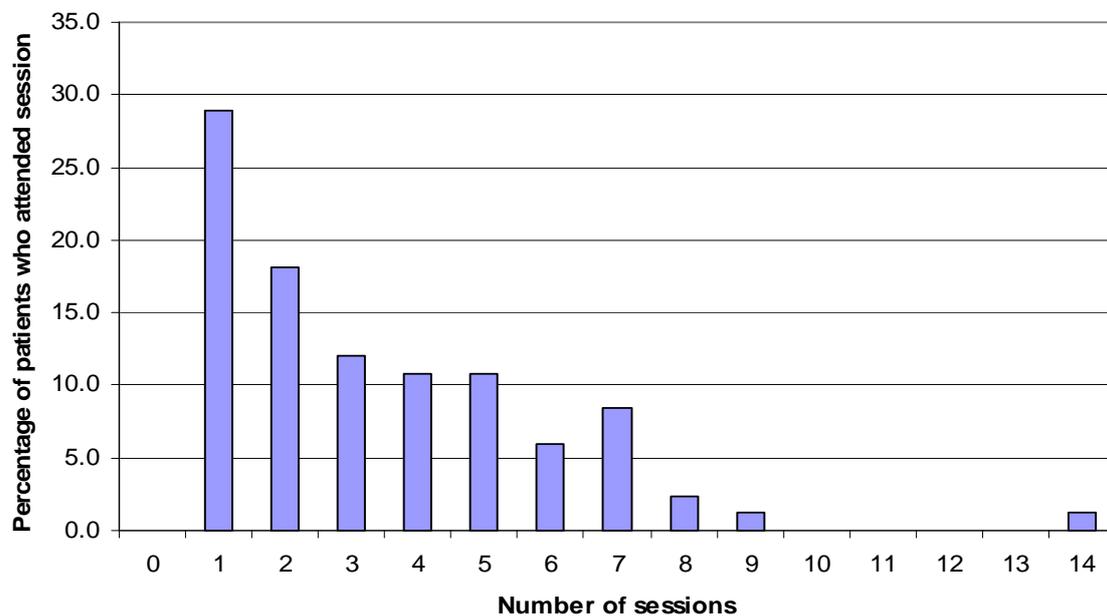
Graph 1: Duration of treatment for Step 2

The graph shows that although the mean number of sessions attended during Step 2 is 3.41 (from Table 2), nearly a third of people only attend 1 session and the majority of people (80.6%) attend no more than 5 sessions.
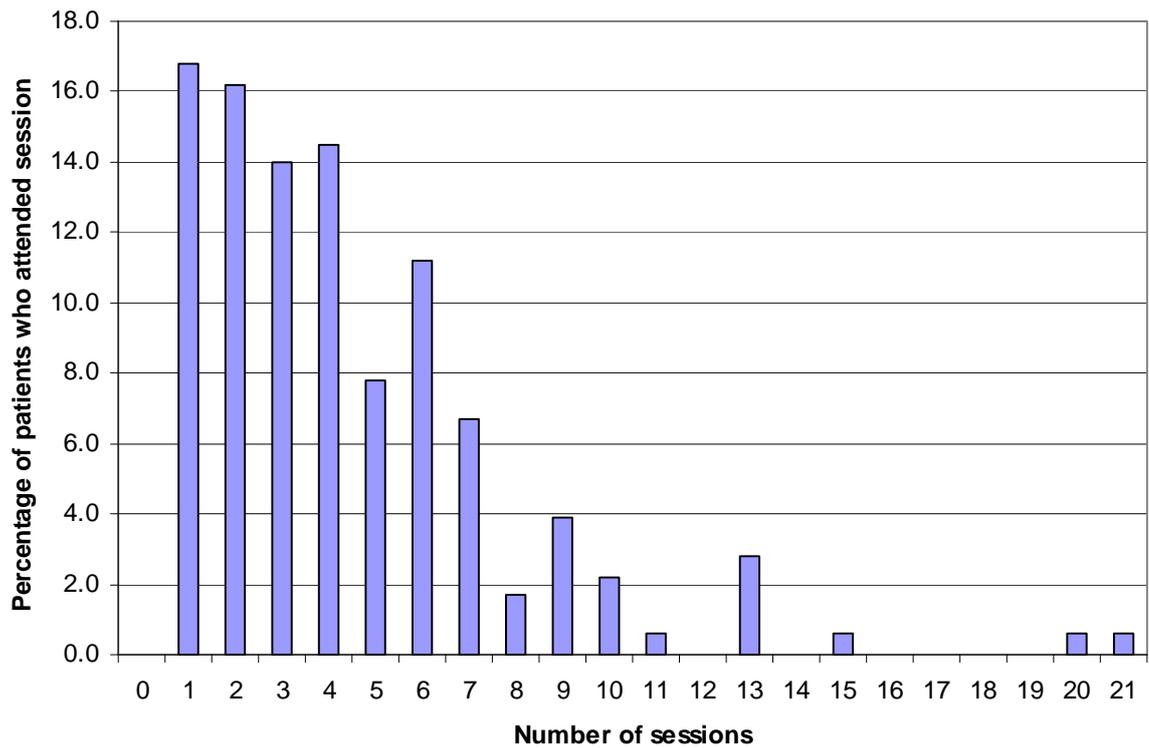
Graph 2: Duration of treatment for Step 3

For Step 3 duration of treatment data was only used from those patients who entered the system early in the data collection phase (those with a first appointment before 30th September 2007) so that all of those people would have been discharged by the end of data collection and we would get a full range of treatment durations. This was done to counterbalance those patients that were still in treatment at the end of data collection and therefore had shorter treatment durations. Therefore, 179 out of the 336 referred to the service are shown in the duration of treatment distribution.

The graph shows that nearly half of people (47%) only attend between 1 and 3 sessions and only 13% attend over 7 sessions.
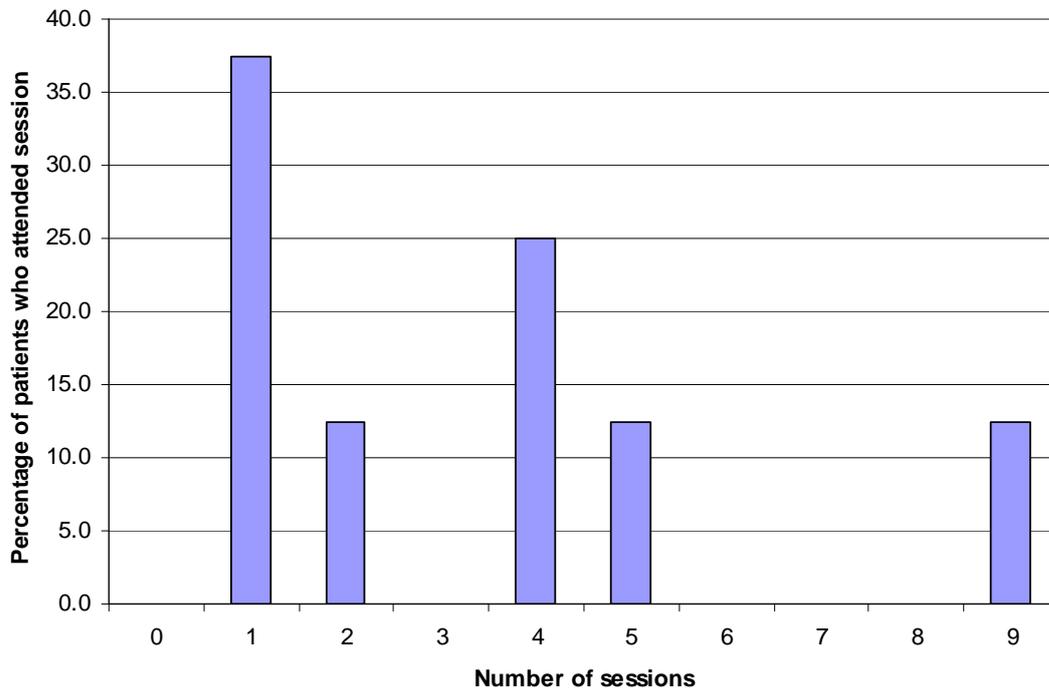
Graph 3: Duration of treatment for Step 4

Although the mean number of sessions attended during Step 4 is 3.38, this graph shows that over a third of people (37.5%) only attend one session and most attend between 1 and 5 (87.5%). Please note that only 16 people accessed Step 4 and completed treatment during the time of the study and so the 12.5% of people who had 9 sessions actually only equates to 2 patients.

Conclusions and Implications

We have now developed a computerised modelling tool which incorporates data from the Phase I site. Using the modelling tool and based on the data we have collected from your site, the table below shows how your site would run based on optimum demand-to-offered ratio of appointments and patient throughput.

Table 3: Modelling tool prediction of optimum appointments and patient throughput over a six month period for your service.

Activity	FROM CONFIGURATION TOOL	
	Suggested number of appointments per week	Approximate 6 month throughput with appointments as suggested and assuming system is always busy
Assessment	17	440
Step 2	8	60
Class (10 people)	1	40
Step 3	33	190
Psychology / Psychiatry	4	30
Unscheduled completion (withdrew & DNA/drop out)	N/A	120
Complete	N/A	265
Referred out	N/A	60
Referred up	N/A	5

The four sites used in Phase I of this project have redesigned their service to use a stepped care psychological therapy treatment model. The service redesign was designed to enable easy access to evidence-based treatments and delivery to large numbers of people with common mental health problems.

Overall findings from Phase 1 of the project indicate that there is a great range of duration of treatment for each part of the stepped care model with lots of individual variation. Feedback has highlighted clear benefits and pitfalls of the stepped care model.

Benefits of Stepped Care

Clinicians and managers have reported that the significant benefits of stepped care include:

- **Increased and timely access to treatment –** patients are receiving more help and faster, meaning that the stepped care treatment model is efficient and cost effective.
- **Better at meeting needs of commissioners and general practice –** stepped care gave increased capacity and access to primary care compared to traditional systems.
- **Structure of stepped care was a major benefit –** a clear, easy to understand, pathway ensured that clinicians were able to direct patients to an appropriate point in the treatment system in a consistent way.
- **Low intensity treatment is an important new alternative for many patients –** the system works well for patients who previously may not have accessed services or may need no more than a few treatment sessions.

Pitfalls of Stepped Care

Clinicians and managers reported some pitfalls when introducing stepped care and these need to be addressed in future implementations of systems.

- **Gaps between steps –** Stepped care is much more than the provision of a new set of low-intensity alternative treatments and there must be adequate provision of more intensive treatments for those who need stepping up. There is no point in very rapid access to a low intensity treatment if there is then a long waiting list for those needing high intensity treatments. Patients whose condition requires initial allocation to high-intensity treatment should not be given low-intensity treatment as a stop gap measure. Patients who require stepping up can become demoralised if they are 'held' at lower steps whilst receiving no benefit.
- ***Number of low-intensity sessions should be responsive to patient progress -*** The key to stepped care is that it should be self-correcting. Artificially limiting session numbers, for example by the rigid application of systems such as '2+1,' prevent low-intensity clinicians from adjusting the number of treatment sessions to individual patient needs. For example, a review of a patient's progress may indicate that the patient is beginning to recover with low-intensity treatment. If the patient would continue to benefit from more treatment at the same step it makes no sense to require a low-intensity clinician to terminate treatment or step the patient up by imposing an artificial session number limit in such a case.
- **Inadequate preparation and training of staff -** Stepped care will represent a change in working practices for existing members of staff in terms of specific clinical input, role, and relationships with other team members. It is essential that staff are properly prepared for the change through good communication and training.
- **Staff resistance to change -** Staff resistance, including ignoring the new service configuration, continuing to work in their 'old way' and refusing, or being unable to change their usual way of working may undermine or even intentionally subvert the new system.

- **Inconsistent adherence to the model -** To ensure a consistent and comprehensive service across your area it is essential to ensure that there is consistent implementation of the model.
- **Insufficient resourcing -** A stepped care model relies on adequate resourcing throughout. Lack of resources in any area of the model will impact on the whole system and the flow of patients through the system.
- **Explaining stepped care to GPs -** Although self-referral is an option, most patients will access stepped care through their GPs. It is vital that GPs are fully informed about the stepped care model and sympathetic to its aims and principles. 'Selling' stepped care to GPs is a vital aspect of model implementation.

There are some significant pitfalls which need to be anticipated and avoided when stepped care services are designed and implemented. When reconfiguring traditional services to stepped care models, commissioners, managers and service planners must ensure that there are adequate resources in **ALL** steps in the system, with no gaps between steps. Systems should be structured, but some flexibility in the timing of stepping decisions can be helpful in response to individual patients' needs. Most staff recognise that stepped care has benefits, but some can be resistant to change *per-se* whilst others may have specific difficulties with new roles. Experienced staff can feel devalued when asked to undertake roles which they consider as not recognising their existing skills. Staff need to be adequately, prepared, trained and motivated, and this motivation should be ongoing. Some monitoring of staff behaviour and clinical activity should be undertaken. Finally, communication with GPs is essential and should be undertaken frequently.

Stepped Care for Common Mental Health Problems

Phase I Report

Developing evidence based and acceptable stepped care systems in mental health care: an operational research project

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Contents

Introduction

This SDO funded research project is an observational study to examine the design and implementation of stepped care systems for psychological therapies. You have taken part in Phase I of the study in which stepped care systems have been (a) designed through stakeholder consensus exercises (b) implemented in a number of case study sites (c) assessed through quantitative and qualitative data collection in each site. The results of this extensive process and lessons learnt have been incorporated into a written manual with associated computer capacity planning tool.

This report is to give you a summary of the background of the project, the method used and results found in phase I of this study.

Background

The individual and public health burden of mental health problems is dominated by 'common mental health disorders' such as depression and anxiety. Estimates from around the globe suggest that around 16% of the adult population experience depression and anxiety in any one year, with common or 'high prevalence' mental health problems constituting 97% of the total population prevalence of mental health disorders. Somewhere between 1% - 3.5% of the adult population are likely to be diagnosed with a common mental health disorder annually.

Currently, patients with common mental health problems such as anxiety and depression experience limited availability of treatment choices. In particular, traditional psychological therapies services are characterised by relative inaccessibility and long patient waiting times. In the UK, the National Institute for Health and Clinical Excellence (NICE) has recommended organising the provision of evidence based treatments differently to improve their availability and effectiveness. The principle means suggested to do this is 'Stepped Care'. Stepped care is a system of delivering and monitoring treatments so that the most effective yet least resource-intensive treatment is delivered to patients first. This system allows scarce resources to be more efficiently delivered to provide accessible and affective treatments. It seeks to enhance the efficiency and volume of treatments delivered whilst retaining the effectiveness of traditional treatment approaches. However, such systems are complex and require considerable reconfiguration of existing services.

Phase I of this project aimed to collect evidence and methods to help reconfigure psychological treatment services within and across primary and secondary care to improve patient access, choice and implement national clinical guidelines.

Method

You were one of four NHS sites providing mental health care for people with common mental health problems that took part in Phase I of the project. During Phase I:

- **Stepped Care Systems were designed through stakeholder consensus exercises**. Stakeholders from each case study site were brought together in site specific workshops to explore options for the redesign of your service. Stakeholders from your site were asked to determine specific configurations and organisation of the stepped care system they wished to implement in your area. We used a consensus development technique called the 'constituency approach' to do so. A small number of people from your site were then formed into a project group to reflect the priorities identified by those who attended the workshop.
- **The stepped care model that your project group designed was implemented in your site.**
- **The stepped care model was assessed through quantitative and qualitative data.** Quantitative data included service structure, service processes, patient waiting times, number of patients entering the various steps in the services and how many sessions patients attended. Qualitative data was measured through patient satisfaction questionnaires and qualitative interviews with a sub sample of patients (and staff?) We cannot include site specific qualitative data will in this report as we need to preserve the anonymity of respondents. We will however be able to provide qualitative data from all four sites as a supplementary report.

We understand your chosen service redesign to be:

- A service in which all mental health referrals are channelled through the Primary Care Mental Health Team (PCMHT), with the exception of crisis or specialist referrals.
- Your service follows a stepped care model although there is the option to refer a patient direct to specialist services if this is deemed appropriate.
- Graduate workers are based in the PCMHT and are supervised by mental health workers.

Your service

Referrals are made either to a graduate worker-run clinic offering information, signposting and low-intensity interventions, or to mental health workers at the PCMHT. Patients can self-refer to the clinic or be referred by their GP to either option.

Initial Assessment is made by a graduate worker or mental health worker in clinics.

Step 2 interventions, which are provided by graduate workers and mental health workers, include short-term facilitated self-help, psycho-education, individualised problem identification and goal-setting. Psycho-education classes (e.g. stress management) are run by mental health workers and graduate workers together.

Step 3 interventions, provided by mental health workers, offer more intensive therapy, often CBT based, for up to six sessions, with the option of offering up to six additional sessions in a small proportion of cases.

Step 4 interventions are delivered by CMHTs, psychology and psychotherapy services working within the secondary care mental health trust.

Results

Data was collected from 1763 patients referred to your stepped care service from September 2006 to the end of December 2007.

The table below shows the number of patients who accessed each part of the stepped care service during the period of data collection.

There was no specific Step 5 (crisis team, self-harm liaison, in-patient admission etc) data collected for your site.

Table 1: Number of patients who accessed each part of your service

Activity	Number of patients
Referral	1644
Assessment	831
Step 2	776
Assessment 2	5
Step 3	298
Step 4	75

Step 4 Psychology (N = 75)
- 8% (6) → SC
- 9.3% (7) → UD
- 4% (3) → NA
- 78.7% (59) → OU/IT

Into Step 4:
- 9.4% (28)
- 2.2% (17)
- 3.6% (30)

Step 3 (N = 298)
- 31.9% (95) → SC
- 21.8% (65) → UD
- 5.4% (16) → NA
- 26.8% (80) → OU/IT

Into Step 3:
- 9% (70)
- 27.2% (226)
- 4.7% (14)
- 40% (2)

Assessment (N = 831)
- 4.5% (35)
- 32.1% (267)
- 9.8% (81) → SC
- 19.9% (165) → UD
- 0.2% (2) → NA
- 7.2% (60) → OU/IT

Step 2 (N = 776)
- 34.8% (270) → SC
- 45.9% (356) → UD
- 1.8% (14) → NA
- 1.2% (9) → OU/IT
- 0.6% (5)

Assessment 2 (N = 5)
- 40% (2) → SC
- 20% (1) → UD
- 0% → NA

Into Assessment: 48.4% (796)
Into Step 2: 30.1% (495)

Referral (N = 1644)
- 0.8% (13) → SC
- 20% (329) → UD
- 0.7% (11) → NA

5

Legend:
- Numbers in brackets = Actual numbers of patients — (~)
- Scheduled completion — SC
- Unscheduled discontinuation — UD
- Not appropriate/Other — NA
- Outcome unknown/In treatment — OU/IT

Patient Movement

The data shown above shows the percentages of patients from your service who moved from one part of your stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through your service. The average number of referrals to your service per week was 32.1.

The data shows that 48.4% of people referred were assessed and 30% were given Step 2 interventions straight away and around 20% had an unscheduled discontinuation. Around 47% of people referred to your service were either directly referred, were assessed and referred or were 'stepped down' to Step 2. Nearly 10% of those who had Step 2 interventions were stepped up to Step 3. Over a third of people completed Step 2, however, nearly 50% had an unscheduled discontinuation. Five people had a second assessment and two of these were stepped up to Step 3.

Of the total number of people referred to your service, 18% were assessed and then referred or were 'stepped up' to Step 3. Of those who had Step 3 interventions 9.4% were stepped up to step 4, around one third completed and 21.8% of people had a unscheduled discontinuation. Just over a quarter of people were either still in treatment at the end of data collection or their outcome was unknown.

Nearly 5% of the total number of people referred to your service were assessed and referred or 'stepped up' to Step 4. For this step, at the end of data collection, there are a large number of people (78.7%) who were still in treatment or their outcome was unknown. If these are removed from the data then 16 people accessed and completed Step 4 treatment. Over a third of these had a scheduled completion around 50% had an unscheduled discontinuation or were found to not be appropriate.

Demographics

Below are tables showing various demographic details of the patients that used your service. Please note that we have only used data from those patients who received an assessment (831 out of 1644) as most demographic information was collected at assessment and so was not available for those patients directly referred to services.

Gender (831)	
Male	289 (34.8%)
Female	500 (60.2%)

Identified Problem (831)	
Depression	145 (17.4%)
Anxiety	201 (24.2%)
Depression & Anxiety	170 (20.5%)
Other (e.g. PTSD, anger management, stress)	315 (37.9%)

Age (831)	
Average age = 36.5	
19 and under	56 (6.7%)
20 - 29	246 (29.6%)
30 - 39	223 (26.8%)
40 - 49	166 (20%)
50 - 59	92 (11.1%)
60 - 69	30 (3.6%)
70 +	18 (2.2%)

Sickness from work (831)	
Yes	156 (18.8%)
No	675 (81.2%)

Taking prescribed medication (831)	
Yes	395 (47.5%)
No	436 (52.5%)

Employment Status (831)	
Employed	466 (56.1%)
Unemployed	191 (23%)
Student	61 (7.3%)
Homemaker	45 (5.4%)
Retired	42 (5%)
Asylum Seeker	14 (1.7%)
Other (e.g. Long-term sick)	12 (1.5%)

Waiting Times

Below are the overall waiting times, as well as average waiting times by treatment step, from date of first referral to date of first appointment. As we have varying amounts of data for each step the number in brackets are the number of patients whose data was available for each step. Please be aware that only week days and not weekends are included as 'waiting days' and holidays (e.g. Christmas and Easter) have not been accounted for and therefore may still be included as 'waiting days'.

Average Waiting Times (923)	
Across all steps (923)	19.4 days
Step 2 (638)	17.9 days
Step 3 (239)	23 days
Step 4 (20)	25.3 days

Duration of Treatment

Data was collected about the percentage of patients who attended each number of sessions for each activity. Below is a summary table showing the average number of sessions that patients attended for each part of your service.

Table 2: Mean duration of treatment data for all clinical activities

Activity	Mean Duration of Treatment (sessions)
Assessment	1.13
Step 2	2.66
Step 3	4.43
Step 4	7.58

There was a wide range of length of stay data and so data has been displayed in graph format below.

Graph 1: Duration of treatment for assessment sessions
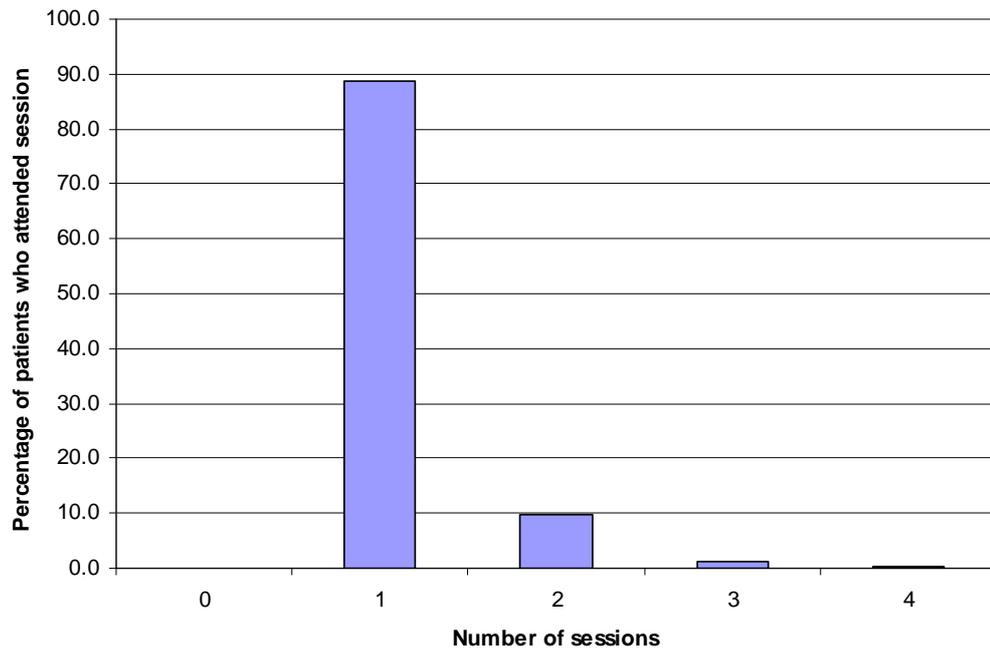
The graph shows that 88.6% of people attended one session of assessment, however, nearly 10% attended two and 1.5% (12 people) attended more than two.

Graph 2: Duration of treatment for Step 2
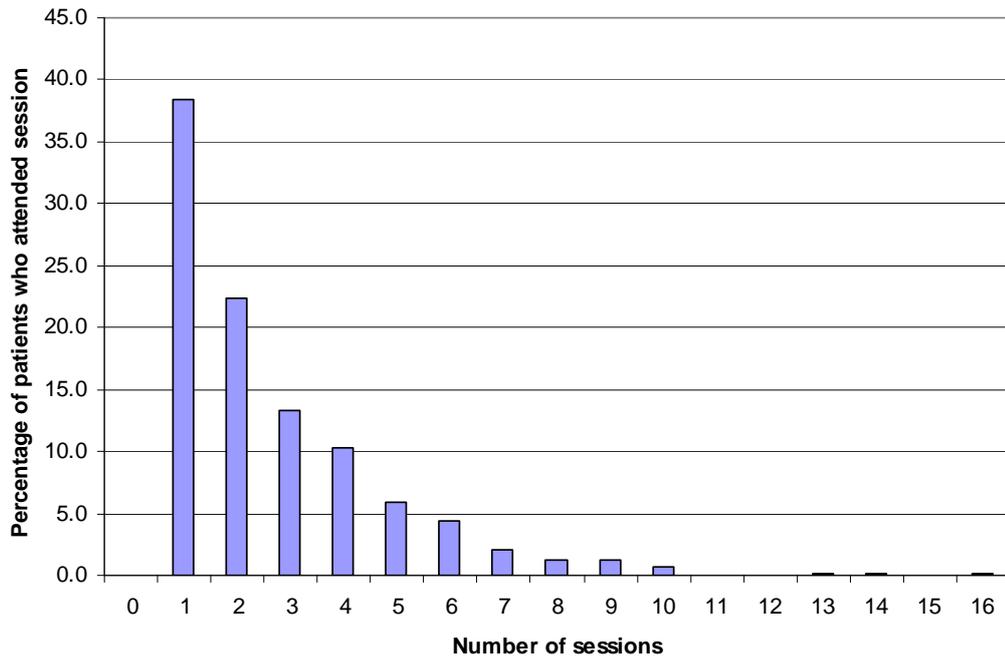
The graph shows that nearly all patients (94.7%) attend between one and six sessions, with 74.1% of people attending three sessions or less. Only 0.3% of patients attended more than ten sessions, this equates to only 2 people.

All patients who had assessment 2 attended only one session.

Graph 3: Duration of treatment for Step 3
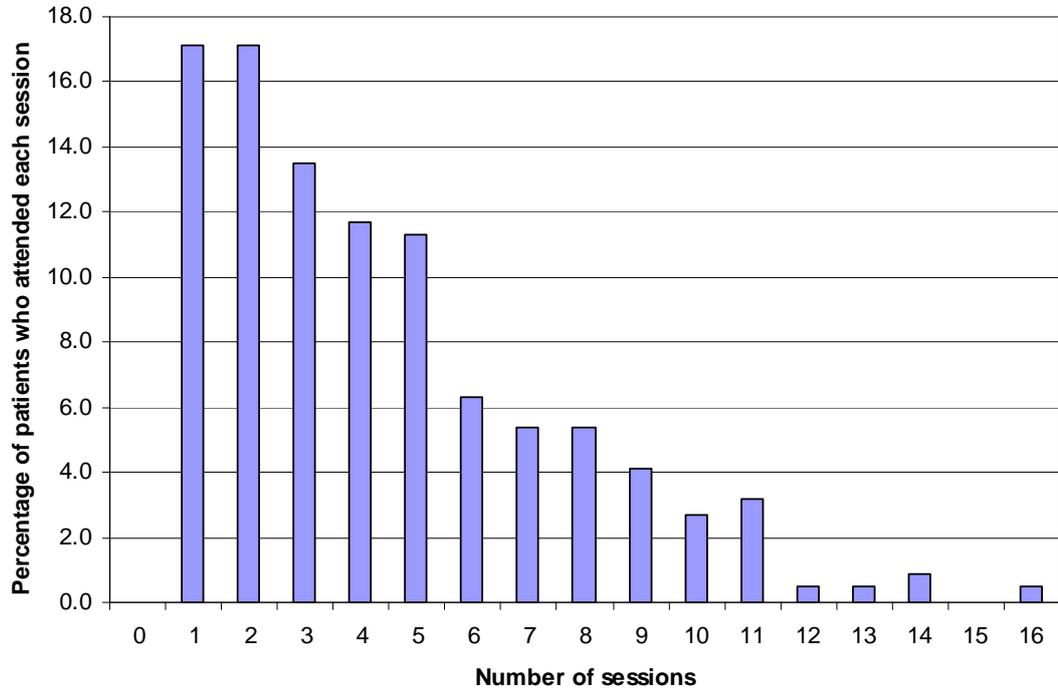
For Step 3 duration of treatment data was only used from those patients who entered the system early in the data collection phase (those with a first appointment before 31st May 2007) so that all of those people would have been discharged by the end of data collection and we would get a full range of treatment durations. This was done to counterbalance those patients that were still in treatment at the end of data collection and therefore had shorter treatment durations. Therefore, 218 out of the 298 people who were referred to the service are shown in the duration of treatment distribution.

The graph shows that for Step 3 there was a huge variation in the amount of sessions that people attended. The majority of people (70.7%) attended between one and five sessions and only 5.6% of people attend more than ten.

Graph 4: Duration of treatment for Step 4
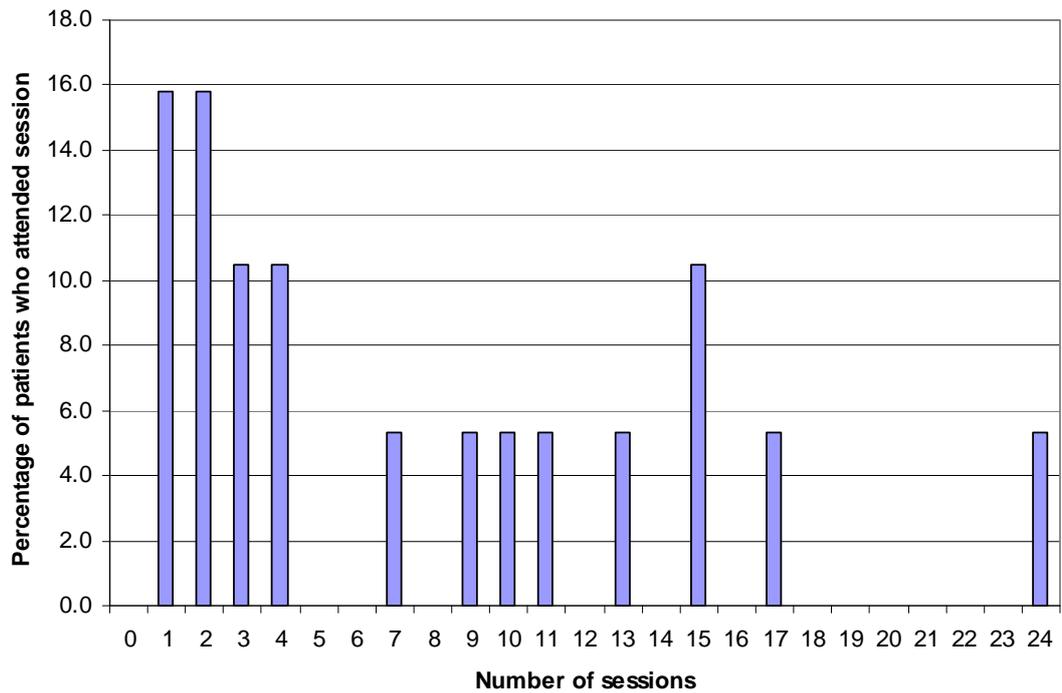
This graph shows that again there is a great variation in the number of sessions patients had during Step 4. Although, only 16 people in total accessed Step 4 of your service and completed treatment during the time of the study so around half of those people (52.6%) had between 1 and 4 sessions. 2 of the 16 people attended 15 sessions but for all of the other sessions shown as bars on the graph above only one person attended each session.

Conclusions and Implications

The table below shows, based on the data and average number of referrals per week we have collected from your site, how the modelling tool predicts your site would run based on optimum demand-to-offered ratio of appointments and patient throughput.

Table 3: Modelling tool prediction of optimum appointments and patient throughput over a six month period for your service.

Activity	FROM CONFIGURATION TOOL	
	Suggested number of appointments per week	Approximate 6 month throughput with appointments as suggested and assuming system is always busy
Referral	N/A	830
Assessment	18	435
Step 2	41	400
Step 3	27	155
Step 4 (Psychology)	13	45
Unscheduled completion	N/A	510
Scheduled discontinuation	N/A	285
Not appropriate / Other	N/A	35

PLEASE NOTE: Unscheduled discontinuations are high in part because of the number of people who never progress from a referral to an assessment (20% of the predicted 830 referrals over 6 months).

The four sites used in Phase I of this project have redesigned their service to use a stepped care psychological therapy treatment model. The service redesign was designed to enable easy access to evidence-based treatments and delivery to large numbers of people with common mental health problems.

Overall findings from Phase 1 of the project indicate that there is a great range of duration of treatment for each part of the stepped care model with lots of individual variation. Feedback has highlighted clear benefits and pitfalls of the stepped care model.

Benefits of Stepped Care

Clinicians and managers have reported that the significant benefits of stepped care include:

- **Increased and timely access to treatment –** patients are receiving more help and faster, meaning that the stepped care treatment model is efficient and cost effective.
- **Better at meeting needs of commissioners and general practice –** stepped care gave increased capacity and access to primary care compared to traditional systems.
- **Structure of stepped care was a major benefit –** a clear, easy to understand, pathway ensured that clinicians were able to direct patients to an appropriate point in the treatment system in a consistent way.
- **Low intensity treatment is an important new alternative for many patients –** the system works well for patients who previously may not have accessed services or may need no more than a few treatment sessions.

Pitfalls of Stepped Care

Clinicians and managers reported some pitfalls when introducing stepped care and these need to be addressed in future implementations of systems.

- **Gaps between steps –** Stepped care is much more than the provision of a new set of low-intensity alternative treatments and there must be adequate provision of more intensive treatments for those who need stepping up. There is no point in very rapid access to a low intensity treatment if there is then a long waiting list for those needing high intensity treatments. Patients whose condition requires initial allocation to high-intensity treatment should not be given low-intensity treatment as a stop gap measure. Patients who require stepping up can become demoralised if they are 'held' at lower steps whilst receiving no benefit.
- **Number of low-intensity sessions should be responsive to patient progress -** The key to stepped care is that it should be self-correcting. Artificially limiting session numbers, for example by the rigid application of systems such as '2+1,' prevent low-intensity clinicians from adjusting the number of treatment sessions to individual patient needs. For example, a review of a patient's progress may indicate that the patient is beginning to recover with low-intensity treatment. If the patient would continue to benefit from more treatment at the same step it makes no sense to require a low-intensity clinician to terminate treatment or step the patient up by imposing an artificial session number limit in such a case.
- **Inadequate preparation and training of staff -** Stepped care will represent a change in working practices for existing members of staff in terms of specific clinical input, role, and relationships with other team members. It is essential that staff are properly prepared for the change through good communication and training.

- **Staff resistance to change -** Staff resistance, including ignoring the new service configuration, continuing to work in their 'old way' and refusing, or being unable to change their usual way of working may undermine or even intentionally subvert the new system.
- **Inconsistent adherence to the model -** To ensure a consistent and comprehensive service across your area it is essential to ensure that there is consistent implementation of the model.
- **Insufficient resourcing -** A stepped care model relies on adequate resourcing throughout. Lack of resources in any area of the model will impact on the whole system and the flow of patients through the system.
- **Explaining stepped care to GPs -** Although self-referral is an option, most patients will access stepped care through their GPs. It is vital that GPs are fully informed about the stepped care model and sympathetic to its aims and principles. 'Selling' stepped care to GPs is a vital aspect of model implementation.

There are some significant pitfalls which need to be anticipated and avoided when stepped care services are designed and implemented. When reconfiguring traditional services to stepped care models, commissioners, managers and service planners must ensure that there are adequate resources in **ALL** steps in the system, with no gaps between steps. Systems should be structured, but some flexibility in the timing of stepping decisions can be helpful in response to individual patients' needs. Most staff recognise that stepped care has benefits, but some can be resistant to change *per-se* whilst others may have specific difficulties with new roles. Experienced staff can feel devalued when asked to undertake roles which they consider as not recognising their existing skills. Staff need to be adequately, prepared, trained and motivated, and this motivation should be ongoing. Some monitoring of staff behaviour and clinical activity should be undertaken. Finally, communication with GPs is essential and should be undertaken frequently.

Stepped Care for Common Mental Health Problems

Phase I Report

Developing evidence based and acceptable stepped care systems in mental health care: an operational research project

David Richards[1], Steve Gallivan[2], Lilian Owens[3], John Cape[2], Roger Paxton[4], David Tomson[5], Peter Bower[6], Simon Gilbody[7], Judy Leibowitz[2], Karina Lovell[6], Steve Pilling[2] ,Martin Utley[2]

[1]University of Exeter, [2]University College London, [3]CSIP, [4]Newcastle, North Tyneside and Northumberland NHS Trust, [5]Collingwood Surgery, [6]University of Manchester,[7]University of York

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Introduction

This SDO funded research project is an observational study to examine the design and implementation of stepped care systems for psychological therapies. You have taken part in Phase I of the study in which stepped care systems have been (a) designed through stakeholder consensus exercises (b) implemented in a number of case study sites (c) assessed through quantitative and qualitative data collection in each site. The results of this extensive process and lessons learnt have been incorporated into a written manual with associated computer capacity planning tool.

This report is to give you a summary of the background of the project, the method used and results found in phase I of this study.

Background

The individual and public health burden of mental health problems is dominated by 'common mental health disorders' such as depression and anxiety. Estimates from around the globe suggest that around 16% of the adult population experience depression and anxiety in any one year, with common or 'high prevalence' mental health problems constituting 97% of the total population prevalence of mental health disorders. Somewhere between 1% - 3.5% of the adult population are likely to be diagnosed with a common mental health disorder annually.

Currently, patients with common mental health problems such as anxiety and depression experience limited availability of treatment choices. In particular, traditional psychological therapies services are characterised by relative inaccessibility and long patient waiting times. In the UK, the National Institute for Health and Clinical Excellence (NICE) has recommended organising the provision of evidence based treatments differently to improve their availability and effectiveness. The principle means suggested to do this is 'Stepped Care'. Stepped care is a system of delivering and monitoring treatments so that the most effective yet least resource-intensive treatment is delivered to patients first. This system allows scarce resources to be more efficiently delivered to provide accessible and affective treatments. It seeks to enhance the efficiency and volume of treatments delivered whilst retaining the effectiveness of traditional treatment approaches. However, such systems are complex and require considerable reconfiguration of existing services.

Phase I of this project aimed to collect evidence and methods to help reconfigure psychological treatment services within and across primary and secondary care to improve patient access, choice and implement national clinical guidelines.

Method

You were one of four NHS sites providing mental health care for people with common mental health problems that took part in Phase I of the project. During Phase I:

- **Stepped Care Systems were designed through stakeholder consensus exercises**. Stakeholders from each case study site were brought together in site specific workshops to explore options for the redesign of your service. Stakeholders from your site were asked to determine specific configurations and organisation of the stepped care system they wished to implement in your area. We used a consensus development technique called the 'constituency approach' to do so. A small number of people from your site were then formed into a project group to reflect the priorities identified by those who attended the workshop.
- **The stepped care model that your project group designed was implemented in your site.**
- **The stepped care model was assessed through quantitative and qualitative data.** Quantitative data included service structure, service processes, patient waiting times, number of patients entering the various steps in the services and how many sessions patients attended. Qualitative data was measured through patient satisfaction questionnaires and qualitative interviews with a sub sample of patients (and staff?) We cannot include site specific qualitative data will in this report as we need to preserve the anonymity of respondents. We will however be able to provide qualitative data from all four sites as a supplementary report.

We understand your chosen service redesign to be:

- A service in which all referrals are seen using a triage service in 23 participating GP practices.
- Graduate workers are employed by and based in the primary care mental health team (PCMHT). The graduate worker service is well resourced and the PCMHT staff also work at Step 1 level within primary care.
- There is an 18 week limit on care within the stepped care model and patients who are thought to have a problem which is not resolvable within 18 weeks should be referred to specialist services.

Your service

Step 1 interventions focus on health promotion activities and initial assessment for patients with mild mental health problems, and longer-term monitoring and support for patients with severe mental illness.

Referrals to the stepped care service are made by GPs to the mental health worker providing the triage clinic in their practice.

Initial Assessment is undertaken by a senior mental health worker in a GP based triage clinic. Decisions may be made from the initial referral letter, sometimes consulting the patient by telephone. Where appropriate a face-to-face assessment will be arranged.

Step 2 interventions include psycho-education courses, cCBT, guided self-help, medication concordance and routine follow-up. Step 2 interventions are delivered by graduate workers, as well as other members of the team.

Results

Data was collected from 1185 patients referred to your stepped care service from September 2006 to the end of December 2007.

The table below shows the number of patients who accessed each part of the stepped care service during the period of data collection.

There is no Step 4 data included in these results as it was not available for most of 2007.

Table 1: Number of patients who accessed each part of your service

Activity	Number of patients
Assessment	1185
Step 1	607
Step 2	178
Step 3	40
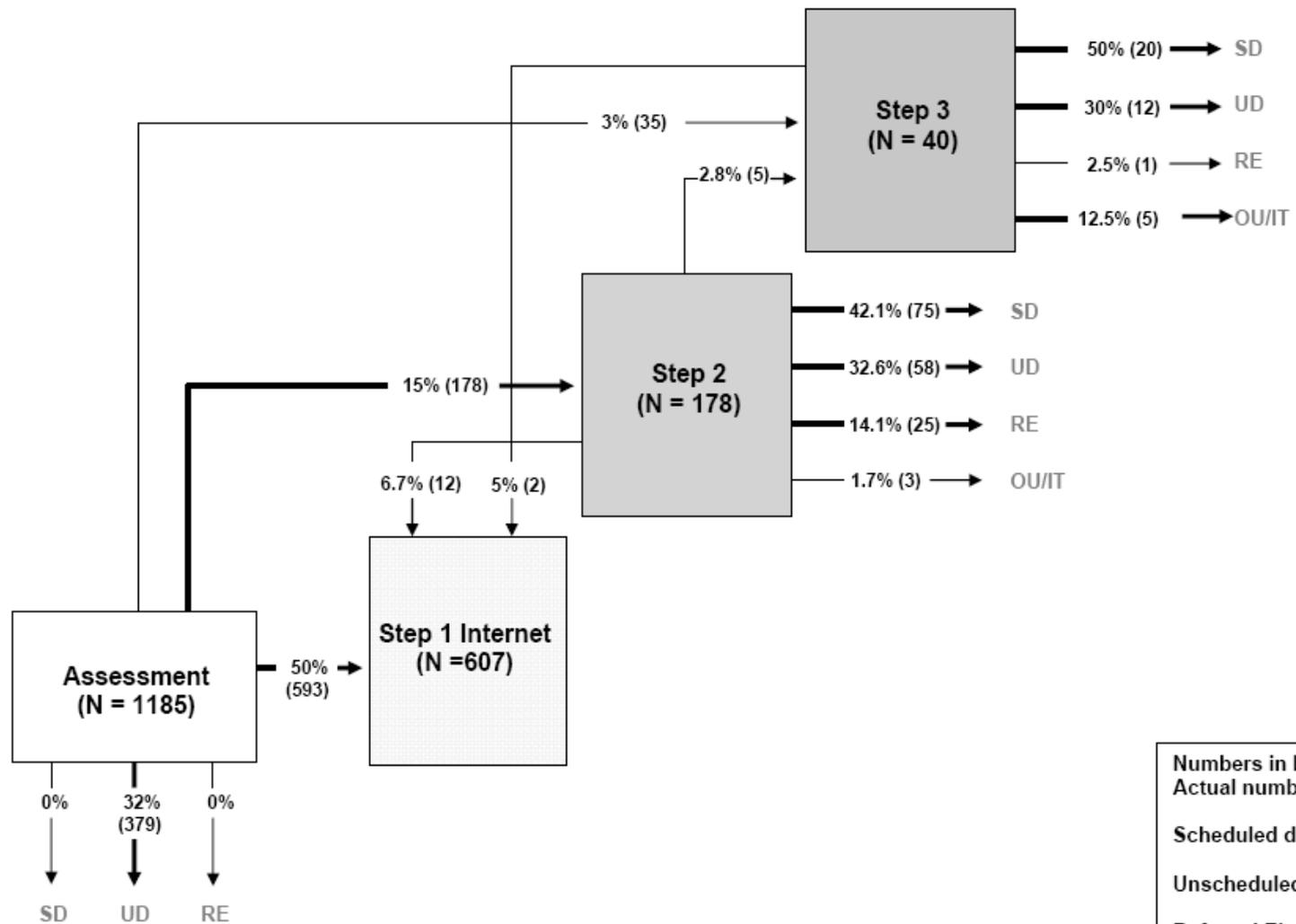
Step 3 (N = 40)	50% (20) → SD	
	30% (12) → UD	
3% (35) →	2.5% (1) → RE	
2.8% (5) →	12.5% (5) → OU/IT	

Step 2 (N = 178)	42.1% (75) → SD
15% (178) →	32.6% (58) → UD
	14.1% (25) → RE
6.7% (12) 5% (2)	1.7% (3) → OU/IT

Step 1 Internet (N =607)
Assessment (N = 1185) 50% (593) →

Assessment (N = 1185)

0%   32% (379)   0%

SD   UD   RE

Numbers in brackets =   (~)
Actual numbers of patients

Scheduled discontinuation   SD

Unscheduled discontinuation   UD

Referred Elsewhere   RE

Outcome unknown/In treatment   OU/IT

5

Patient Movement

The data shown above shows the percentages of patients from your service who moved from one part of your stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through your service. The average number of referrals to your service per week was 21.

The data shows that half of the people who were assessed moved straight on to step 1 – internet interventions, with only 15% of people starting with Step 2 interventions and only 3% starting on step 3 interventions. For all steps around a third of people had an unscheduled discontinuation. Steps 2 and 3 had high successful completion rates of 42.1% and 50% respectively.

Demographics

Below are tables showing various demographic details of the patients that used your service. Please note that we have only used data from those patients who received an assessment (806 out of 1185) as most demographic information was collected at assessment and so was not available for patients with an unscheduled discontinuation at assessment.

Ethnicity (806)	
White (English / European)	773 (96%)
Asian (Bangladeshi)	1 (0.1%)
Asian (Chinese)	2 (0.2%)
Asian (Indian)	4 (0.5%)
Black (African)	5 (0.6%)
Black (Caribbean)	19 (2.4%)
Other	2 (0.2%)

Sickness from work (806)	
Yes	206 (25.6%)
No	600 (74.4%)

Previously seen for anxiety/depression (806)	
Yes	326 (40.4%)
No	480 (59.6%)

Taking prescribed medication (806)	
Yes	525 (65.1%)
No	281 (34.9%)

Presenting Problem (806)	
Depression	247 (30.7%)
Anxiety	156 (19.3%)
Depression & Anxiety	138 (17.1%)
Other (e.g. eating disorder, anger problems, stress, OCD)	163 (20.2%)
No presenting problem – seen first for assessment	102 (12.7%)

Occupational Status (806)	
Full time paid employment >30 hrs per week	389 (48.2%)
Part time paid employment <30 hrs per week	73 (9.1%)
Self employed	1 (0.1%)
Unemployed	109 (13.5%)
Receiving sickness/incapacity/invalidity benefits	123 (15.3%)
Full time student	23 (2.9%)
Part time student	2 (0.3%)
Houseperson	50 (6.2%)
Retired	24 (2.9%)
Other	12 (1.5%)

Waiting Times

The average waiting time from date of first referral to date of assessment in your service was 16.5 days, and ranged from 1 day to 150 days. Please be aware that only week days and not weekends are included as 'waiting days' and holidays (e.g. Christmas and Easter) have not been accounted for and therefore may still be included as 'waiting days'.

Duration of Treatment

Data was collected about the percentage of patients who attended each number of sessions for each activity. Below is a summary table showing the average amount of sessions that patients attended for each part of the service. There is no length of stay data for Step 1 interventions as these interventions were independent and internet based.

Table 2: Mean length of stay data for all clinical activities

Activity	Mean Length of Stay (sessions)
Assessment	1
Step 2	4.28
Step 3	4.79

The table shows that patients attended on average 1 session of assessment. There was a wide range of length of stay data and so data has been displayed in graph format below.

Graph 1: Duration of treatment for Step 2
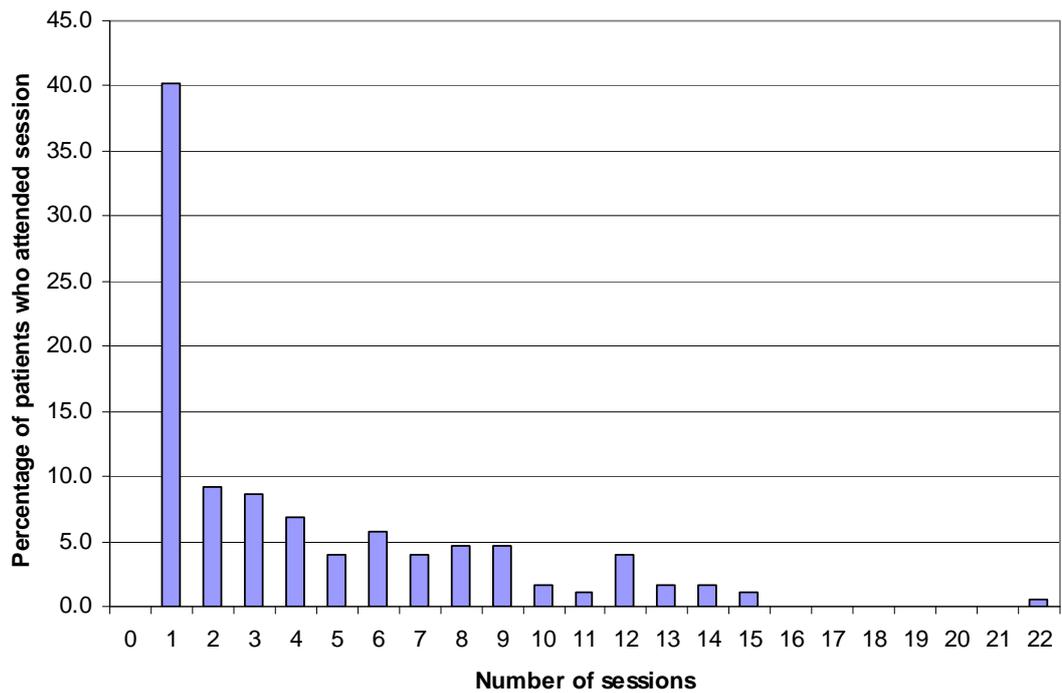
The graph shows that although the mean number of sessions attended during Step 2 is 4.28 (from Table 2), 40% of people only attend 1 session and the majority of people (68.9%) attend no more than 5 sessions.

Graph 2: Duration of treatment for Step 3
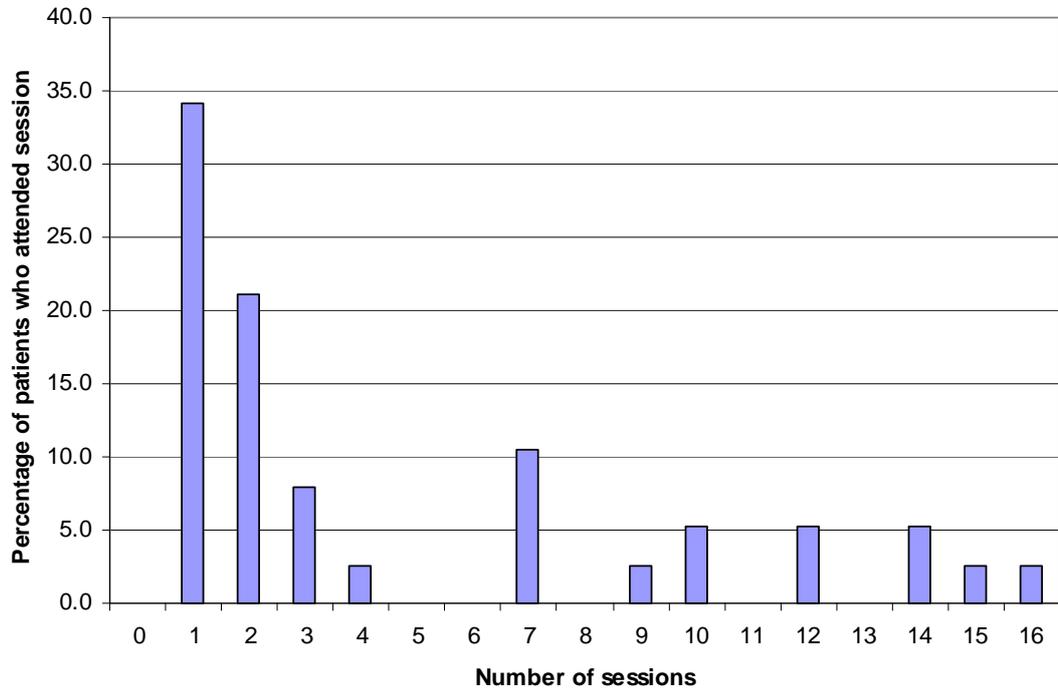
The graph shows that over a third of people (34.2%) only attend 1 session and approximately a third of people (34.2%) attend over 7 sessions. Although there are only 35 people who use step 3 interventions so only 12 people attended over 7 sessions and only 4 people attended 14-16.

Conclusions and Implications

The table below shows, based on the data and average number of referrals per week we have collected from your site, how the modelling tool predicts your site would run based on optimum demand-to-offered ratio of appointments and patient throughput.

Table 3: Modelling tool prediction of optimum appointments and patient throughput over a six month period for your service.

Activity	FROM CONFIGURATION TOOL	
	Suggested number of appointments per week	Approximate 6 month throughput with appointments as suggested and assuming system is always busy
Assessment	21	545
Step 2	13	80
Step 3	3	15
Unscheduled completion	N/A	205
Scheduled completion	N/A	45
Step 1 (Internet)	N/A	275
Referred elsewhere	N/A	15

The four sites used in Phase I of this project have redesigned their service to use a stepped care psychological therapy treatment model. The service redesign was designed to enable easy access to evidence-based treatments and delivery to large numbers of people with common mental health problems.

Overall findings from Phase 1 of the project indicate that there is a great range of duration of treatment for each part of the stepped care model with lots of individual variation. Feedback has highlighted clear benefits and pitfalls of the stepped care model.

Benefits of Stepped Care

Clinicians and managers have reported that the significant benefits of stepped care include:

- **Increased and timely access to treatment –** patients are receiving more help and faster, meaning that the stepped care treatment model is efficient and cost effective.
- **Better at meeting needs of commissioners and general practice –** stepped care gave increased capacity and access to primary care compared to traditional systems.
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Pitfalls of Stepped Care

Clinicians and managers reported some pitfalls when introducing stepped care and these need to be addressed in future implementations of systems.

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- **Inadequate preparation and training of staff -** Stepped care will represent a change in working practices for existing members of staff in terms of specific clinical input, role, and relationships with other team members. It is essential that staff are properly prepared for the change through good communication and training.
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- **Explaining stepped care to GPs -** Although self-referral is an option, most patients will access stepped care through their GPs. It is vital that GPs are fully informed about the stepped care model and sympathetic to its aims and principles. 'Selling' stepped care to GPs is a vital aspect of model implementation.

There are some significant pitfalls which need to be anticipated and avoided when stepped care services are designed and implemented. When reconfiguring traditional services to stepped care models, commissioners, managers and service planners must ensure that there are adequate resources in **ALL** steps in the system, with no gaps between steps. Systems should be structured, but some flexibility in the timing of stepping decisions can be helpful in response to individual patients' needs. Most staff recognise that stepped care has benefits, but some can be resistant to change *per-se* whilst others may have specific difficulties with new roles. Experienced staff can feel devalued when asked to undertake roles which they consider as not recognising their existing skills. Staff need to be adequately, prepared, trained and motivated, and this motivation should be ongoing. Some monitoring of staff behaviour and clinical activity should be undertaken. Finally, communication with GPs is essential and should be undertaken frequently.

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Method

You were one of four NHS sites providing mental health care for people with common mental health problems that took part in Phase I of the project. During Phase I:

- **Stepped Care Systems were designed through stakeholder consensus exercises**. Stakeholders from each case study site were brought together in site specific workshops to explore options for the redesign of your service. Stakeholders from your site were asked to determine specific configurations and organisation of the stepped care system they wished to implement in your area. We used a consensus development technique called the 'constituency approach' to do so. A small number of people from your site were then formed into a project group to reflect the priorities identified by those who attended the workshop.
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We understand your chosen service redesign to be:

- A stepped care model was implemented in GP practices that had chosen to have a graduate worker in their practice (60-70% of those in your area). As well as working in the stepped care system, graduate workers also had a role providing information and sign posting to community and voluntary organisations.
- In your service GP's retained the option to refer direct to the psychology service if they though it clinically appropriate.
- The low intensity interventions offered were based on the 2+1 model,   i.e. two sessions and then a three monthly review at which progress is assessed and stepping up may be an option. Although, in practice,   there has been some leeway in the number of Step 2 sessions offered and some graduate workers provide more sessions, including both   face-to-face and telephone work.

Your service

Referrals are made by staff based at the GP practice to the practice-based graduate worker.

An Initial Screening Phone Call is usually made by the graduate worker and at this point some patients may be referred elsewhere or immediately stepped up.

Initial Assessment is undertaken by the graduate worker, usually face-to-face, at the GP practice. Graduate workers are supervised by psychologists who are able to advise on assessment decisions. Patients will be referred direct to psychology or counselling (if available) if this is deemed appropriate either on clinical grounds or because the patient is not interested in any of the low intensity interventions, or if the GP has requested that they wish the patient to receive higher intensity interventions.

Step 2 interventions include facilitated self-help, books on prescription and cCBT which is delivered in a library setting, supervised by a graduate worker.

Results

Results are given both in terms of referrals to graduate mental health workers (GMHW) and also referrals to the Psychology Treatment and Assessment Team (PATS). Data was collected from 3936 patients in total (2399 records from GMHW database and 1537 from the PATS database) referred to your stepped care service from October 2006 to the end of March 2007.

Table 1: Number of patients who accessed each part of your GMHW service

Activity	Number of patients
Referral	2399
Assessment	1027
Step 2 Guided Self Help	300
Step 2 Community Links	87
Step 2 cCBT	77
Step 2 Guided Self Help and Community Links	125

Table 2: Number of patients who accessed each part of your PATS service

Activity	Number of patients
PATS Referral	1537
PATS Assessment	1491
PATS Individual Treatment	436

Patient Movement

The data shown above shows the percentages of patients from your service who moved from one part of your stepped care service to another, and the percentages completing or not completing each activity. The thicker lines indicate the main flow through your service. The average number of referrals to your service per week for GMHW was 40.4 and to PATS was 18.6.

The data shows that only 42.8% of people referred to GMHW were assessed. Of those assessed, nearly thirty percent were offered guided self help, just over 10% were offered community links and guided self help, around 10% were offered community link and another 10% cCBT. All Step 2 interventions had good scheduled completion rates, ranging from 53-75%, with cCBt having the highest completion rate. Unscheduled discontinuation rates for Step 2 ranged from 14% to 27%. Of the total number of patients who had step 2 interventions 27% were stepped up to PATS treatment (10% of the total number assessed).

Of those that were referred to the PATS service 97% were assessed with around a third of those having individual treatment. PATS individual treatment had a completion rate of 32.3% but a large proportion of people (47%) were still in treatment or their outcome was unknown at the end of the data collection period.

Demographics – GMHW referrals

Below are tables showing various demographic details of the patients that used your GMHW service. Please note that we have only used data from those patients who completed an assessment (834 out of 2399) as most demographic information was collected at assessment and so was not available for those patients who did not complete an assessment.

Gender (834)	
Male	272 (32.6%)
Female	562 (67.4%)

Identified Problem (834)	
Depression	307 (36.8%)
Anxiety	191 (22.9%)
Depression & Anxiety	251 (30.1%)
Other (e.g. PTSD, anger management, stress)	85 (10.2%)

Age (834) Average age = 37.1	
19 and under	25 (3%)
20 - 29	266 (31.9%)
30 - 39	231 (27.7%)
40 - 49	158 (19%)
50 - 59	98 (11.7%)
60 - 69	37 (4.4%)
70 +	19 (2.3%)

Employment Status (834)	
Employed	372 (44.6%)
Unemployed	83 (10%)
Student	82 (9.8%)
Homemaker	29 (3.5%)
Retired	47 (5.7%)
Receiving sickness/ incapacity benefits	153 (18.3%)
Other (e.g. Long-term sick)	68 (8.1%)

Previously seen for anxiety/depression (834)	
Yes	464 (55.6%)
No	370 (44.4%)

Waiting Times – GMHW referrals

Average waiting time from referral to date of assessment was 22.5 days and ranged from 1 to 181 days. Please be aware that only week days and not weekends are included as 'waiting days' and holidays (e.g. Christmas and Easter) have not been accounted for and therefore may still be included as 'waiting days'.

Demographics – PATS referrals

Below are tables showing various demographic details of the patients that used your PATS service. Please note that we have only used data from those patients who completed an assessment (1055 out of 1537) as most demographic information was collected at assessment and so was not available for those patients who did not complete an assessment.

Gender (1055)	
Male	419 (39.7%)
Female	636 (60.3%)

Age (1055) **Average age = 36.2**	
19 and under	18 (1.7%)
20 - 29	333 (31.6%)
30 - 39	331 (31.4%)
40 - 49	225 (21.3%)
50 - 59	107 (10.1%)
60 - 69	40 (3.8%)
70 +	1 (0.1%)

Sickness from work (1055)	
Yes	114 (10.8%)
No	941 (89.2%)

Identified Problem (1055)	
Depression	331 (31.4%)
Anxiety	213 (20.2%)
Depression & Anxiety	281 (26.6%)
Other (e.g. PTSD, anger management, stress)	230 (21.8%)

Employment Status (1055)	
Employed	568 (53.8%)
Unemployed	168 (15.9%)
Student	76 (7.2%)
Homemaker	57 (5.4%)
Retired	18 (1.7%)
Receiving sickness/ incapacity benefits	116 (11%)
Other (e.g. Long-term sick)	52 (5%)

Previously seen for anxiety/depression (1055)	
Yes	781 (74%)
No	274 (26%)

Ethnicity (1055)			
White (British)	351 (33.3%)	**Asian (Other)**	11 (1%)
White (Irish)	23 (2.2%)	**Black (African)**	14 (1.3%)
White (Other)	143 (13.5%)	**Black (Caribbean)**	22 (2.1%)
Asian (Bangladeshi)	8 (0.8%)	**Black (Other)**	17 (1.6%)
Asian (Indian)	4 (0.4%)	**Mixed**	27 (2.6%)
Asian (Pakistani)	3 (0.3%)	**Other**	35 (3.3%)
		Not stated	397 (37.6%)

Waiting Times – PATS referrals

Waiting times have not been calculated for PATS referral as there was a lack of data about dates of first assessment.

Duration of Treatment

Data was collected about the percentage of patients who attended each number of sessions for each activity. Below is a summary table showing the average number of sessions that patients attended for each part of your service.

Activity	Mean Length of Stay (sessions)
GMHW Assessment	1.25
GMHW Step 2 Guided Self Help	1.68
GMHW Step 2 Community Links	1.50
GMHW Step 2 cCBT	6.84
GMHW Step 2 Guided Self Help and Community Links	1.81
PATS Assessment	1.13
PATS Individual Treatment	6.80

Table 3: Mean duration of treatment for all clinical activities

The table shows that patients attended on average 1 session of assessment. There was a wide range of length of stay data and so data has been displayed in graph format below, firstly those patients seen by Graduate Mental Health Workers and then those seen by the PATs team

Graph 1: Duration of treatment for GMHW assessment sessions
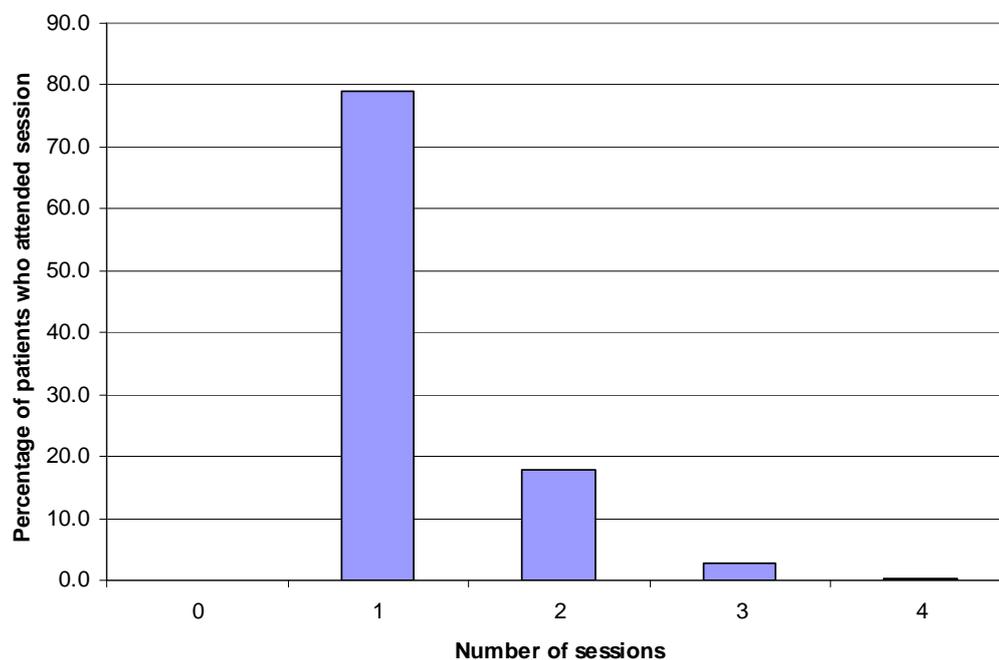
The graph shows that 79% of people attended one session of assessment, 17.9% attended two and 3.1% attended three or four.

Graph 2: Duration of treatment for Step 2 – Guided Self Help
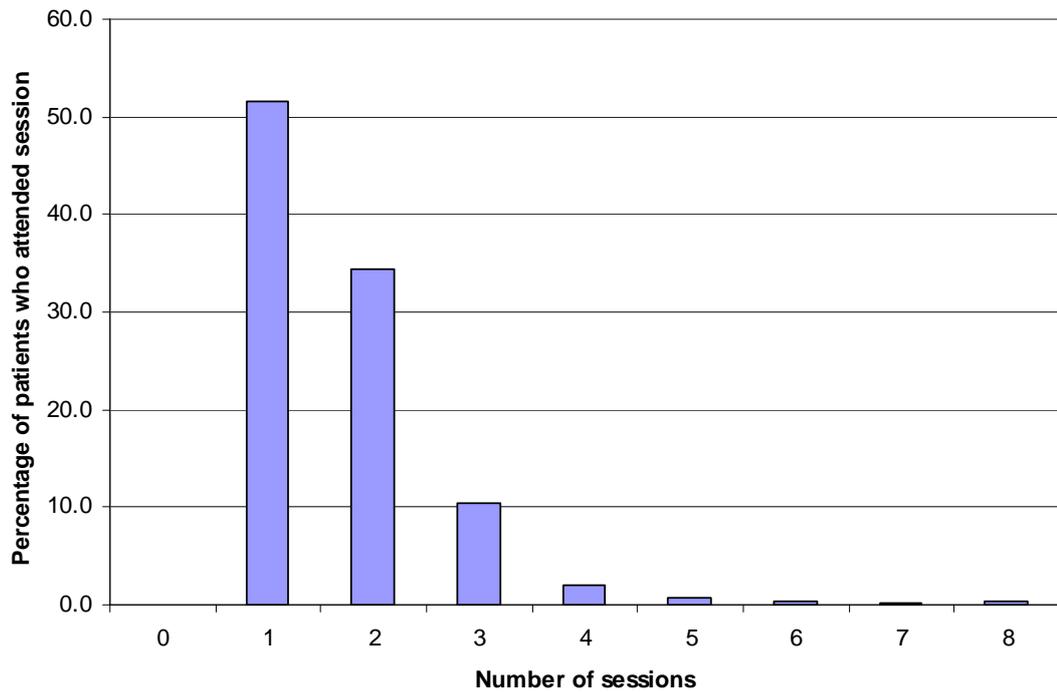
The graph shows that over half of patients (51.6%) of people attend only one session and nearly all patients (96.5%) attend between one and three sessions. Only 1.5% of patients attended more than four sessions, this equates to only 5 people.

Graph 3: Duration of treatment for Step 2 – Community Links
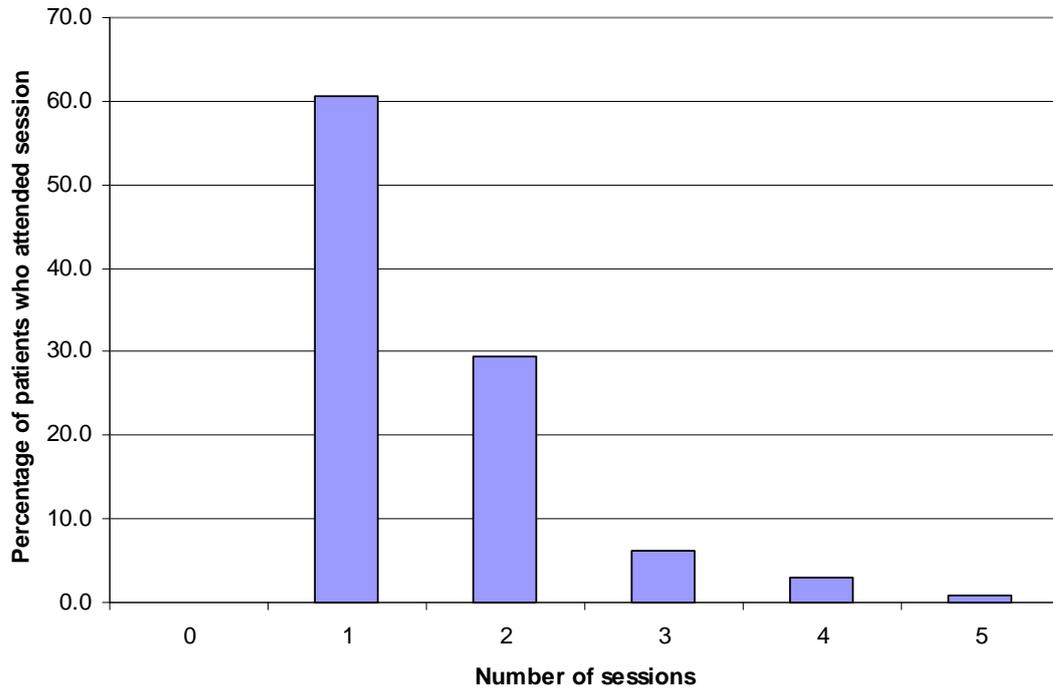
The graph shows that the majority of people attended between one and two sessions (90.1%) with only 9 people (out of 87) attending more than three sessions.
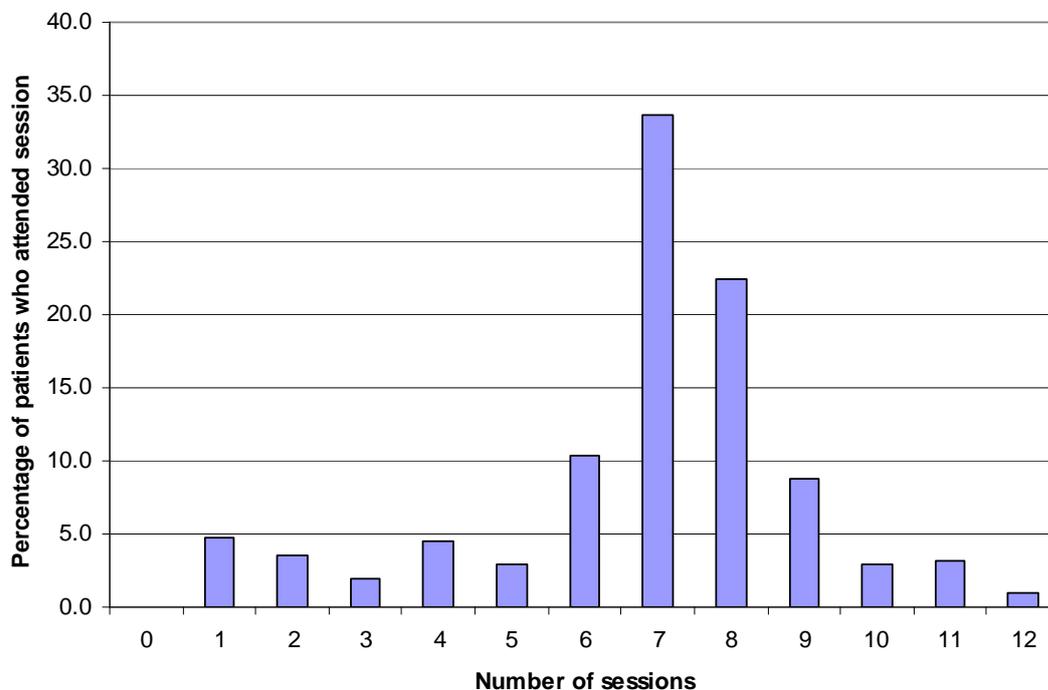
Graph 4: Duration of treatment for Step 2 – cCBT

This graph shows that again there is a great variation in the number of sessions patients used cCBT. The majority of people used between six and nine sessions (75.3%).

Graph 5: Duration of treatment for Step 2 – Guided Self Help and Community Links
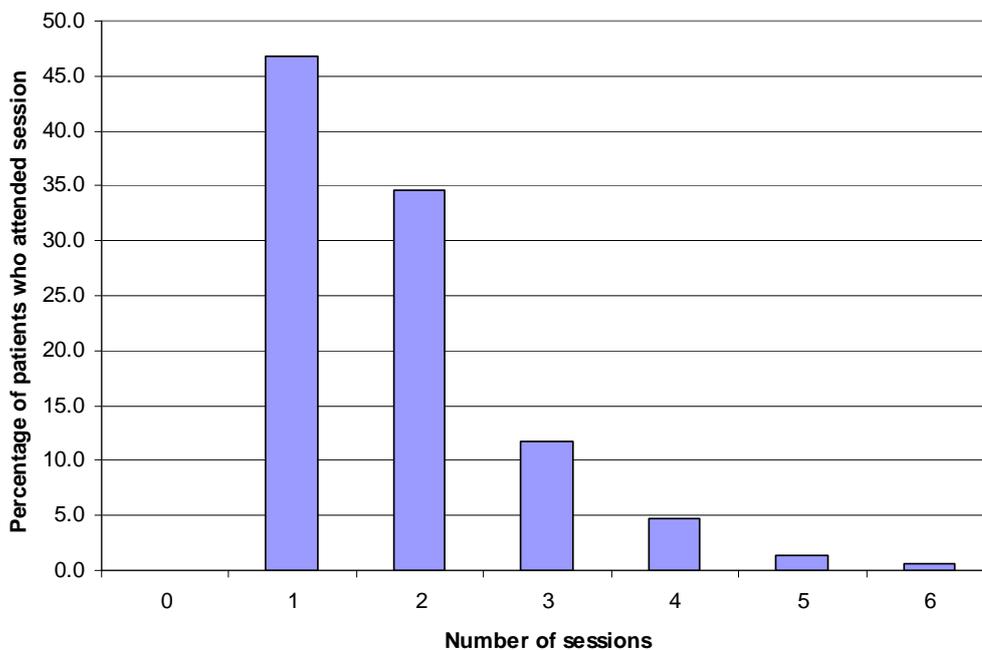
This graph shows that the majority of people attended between one and three sessions (93.2%). Only 3 people out of 125 used five sessions or more.

Graph 6: Duration of treatment for PATs assessment sessions
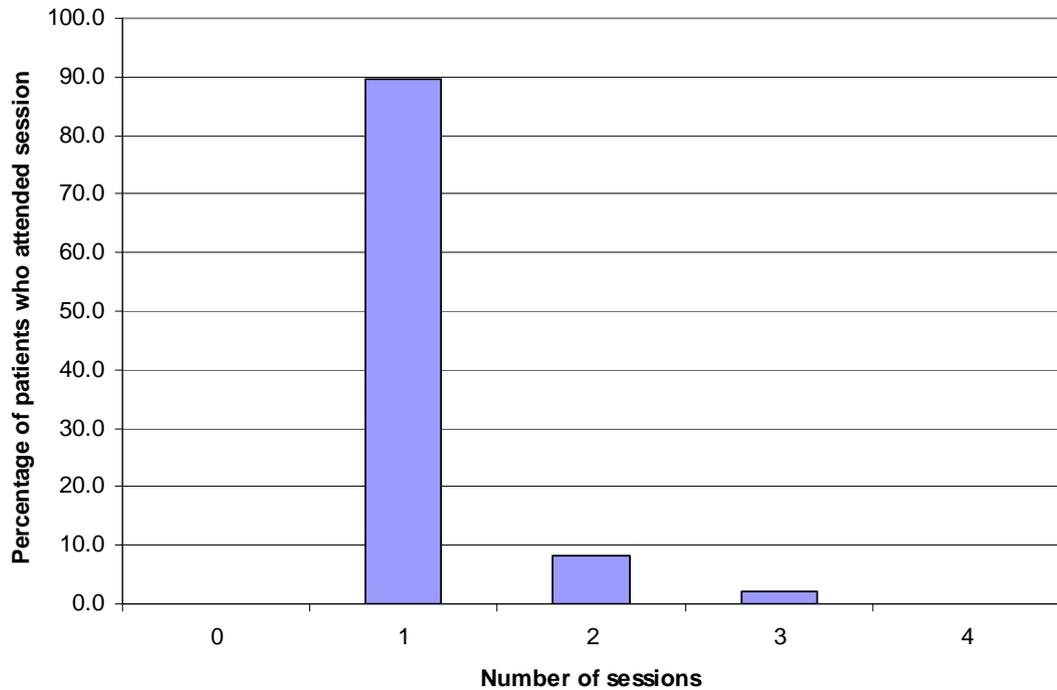
The majority of people (89.6%) only attend one PATS assessment session however 10.4% use two or more, with 1363 people in total this equates to 136 people.

Graph 7: Duration of treatment for PATS individual treatment sessions
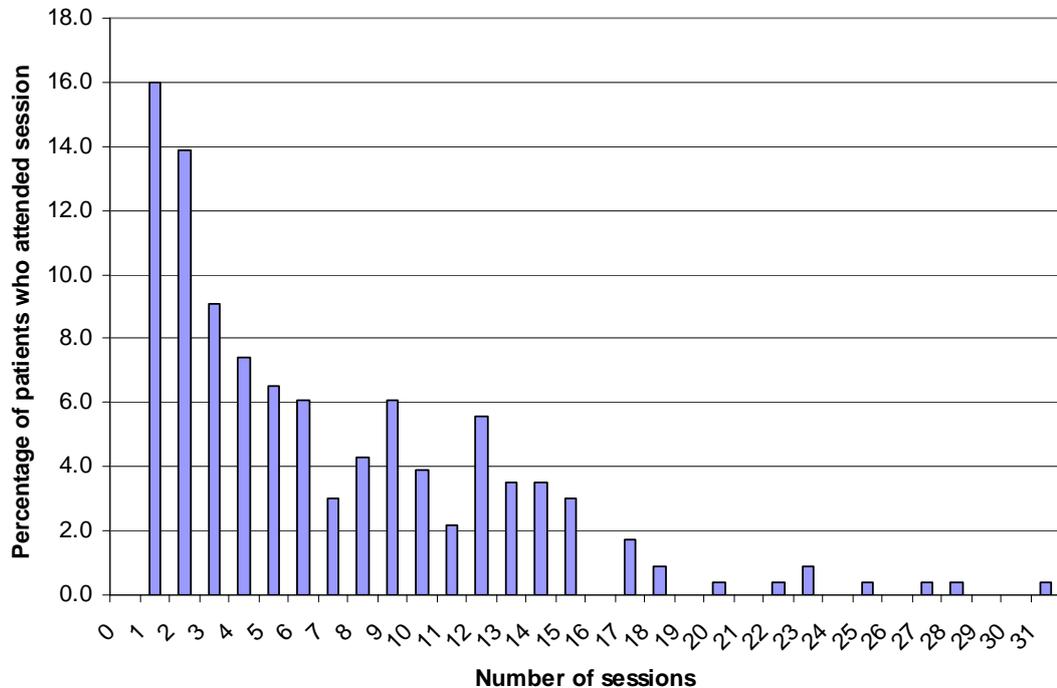
For PATS treatment data records were only used for those patients who entered the system early in the data collection phase (those with a first appointment before 31st May 2007) so that all of those people would have been discharged by the end of data collection and we would get a full range of treatment durations. This was done to counterbalance those patients that were still in treatment at the end of data collection and therefore had shorter treatment durations. This leaves 231 records for PATS treatment

There is a huge variation in the different number of PATS treatment session that patients attended. Sixty two percent of patients attended between one and seven sessions but over a third of patients take more. 3.3% of patients attended over 20 sessions, this equates to 8 out of 231 people treated.

Conclusions and Implications

We have now developed a computerised modelling tool which incorporates data from the Phase I site. Using the modelling tool and based on the data we have collected from your site, the table below shows how your site would run based on optimum demand-to-offered ratio of appointments and patient throughput.

Table 4: Modelling tool prediction of optimum appointments and patient throughput over a six month period for your service.

Activity	FROM CONFIGURATION TOOL	
	Suggested number of appointments per week	Approximate 6 month throughput with appointments as suggested and assuming system is always busy
Referral	N/A	1040
Assessment	21	440
Guided self help	8	125
Community links	2	35
CCBT	9	35
Guided Self Help & Com links	4	55
PATS new referrals (not from GMHW)	N/A	495
PATS assessment	23	535
PATS indiv treatment	44	160
Unsch. Completion (refused & drop out)	N/A	875
Scheduled completion	N/A	490
Counsellor	N/A	20
Not appropr. / other	N/A	130

PLEASE NOTE: Unscheduled discontinuations are high in part because of the number of people who never progress from a GMHW referral to an assessment (34.9% of the 2399).

The four sites used in Phase I of this project have redesigned their service to use a stepped care psychological therapy treatment model. The service redesign was designed to enable easy access to evidence-based treatments and delivery to large numbers of people with common mental health problems.

Overall findings from Phase 1 of the project indicate that there is a great range of duration of treatment for each part of the stepped care model with lots of individual variation. Feedback has highlighted clear benefits and pitfalls of the stepped care model.

Benefits of Stepped Care

Clinicians and managers have reported that the significant benefits of stepped care include:

- **Increased and timely access to treatment –** patients are receiving more help and faster, meaning that the stepped care treatment model is efficient and cost effective.
- **Better at meeting needs of commissioners and general practice –** stepped care gave increased capacity and access to primary care compared to traditional systems.
- **Structure of stepped care was a major benefit –** a clear, easy to understand, pathway ensured that clinicians were able to direct patients to an appropriate point in the treatment system in a consistent way.
- **Low intensity treatment is an important new alternative for many patients –** the system works well for patients who previously may not have accessed services or may need no more than a few treatment sessions.

Pitfalls of Stepped Care

Clinicians and managers reported some pitfalls when introducing stepped care and these need to be addressed in future implementations of systems.

- **Gaps between steps –** Stepped care is much more than the provision of a new set of low-intensity alternative treatments and there must be adequate provision of

more intensive treatments for those who need stepping up. There is no point in very rapid access to a low intensity treatment if there is then a long waiting list for those needing high intensity treatments. Patients whose condition requires initial allocation to high-intensity treatment should not be given low-intensity treatment as a stop gap measure. Patients who require stepping up can become demoralised if they are 'held' at lower steps whilst receiving no benefit.

- ***Number of low-intensity sessions should be responsive to patient progress -*** The key to stepped care is that it should be self-correcting. Artificially limiting session numbers, for example by the rigid application of systems such as '2+1,' prevent low-intensity clinicians from adjusting the number of treatment sessions to individual patient needs. For example, a review of a patient's progress may indicate that the patient is beginning to recover with low-intensity treatment. If the patient would continue to benefit from more treatment at the same step it makes no sense to require a low-intensity clinician to terminate treatment or step the patient up by imposing an artificial session number limit in such a case.

- **Inadequate preparation and training of staff -** Stepped care will represent a change in working practices for existing members of staff in terms of specific clinical input, role, and relationships with other team members. It is essential that staff are properly prepared for the change through good communication and training.
- **Staff resistance to change -** Staff resistance, including ignoring the new service configuration, continuing to work in their 'old way' and refusing, or being unable to change their usual way of working may undermine or even intentionally subvert the new system.
- **Inconsistent adherence to the model -** To ensure a consistent and comprehensive service across your area it is essential to ensure that there is consistent implementation of the model.
- **Insufficient resourcing -** A stepped care model relies on adequate resourcing throughout. Lack of resources in any area of the model will impact on the whole system and the flow of patients through the system.
- **Explaining stepped care to GPs -** Although self-referral is an option, most patients will access stepped care through their GPs. It is vital that GPs are fully informed about the stepped care model and sympathetic to its aims and principles. 'Selling' stepped care to GPs is a vital aspect of model implementation.

There are some significant pitfalls which need to be anticipated and avoided when stepped care services are designed and implemented. When reconfiguring traditional services to stepped care models, commissioners, managers and service planners must ensure that there are adequate resources in **ALL** steps in the system, with no gaps between steps. Systems should be structured, but some flexibility in the timing of stepping decisions can be helpful in response to individual patients' needs. Most staff recognise that stepped care has benefits, but some can be resistant to change *per-se* whilst others may have specific difficulties with new roles. Experienced staff can feel devalued when asked to undertake roles which they consider as not recognising their existing skills. Staff need to be adequately, prepared, trained and motivated, and this motivation should be ongoing. Some

monitoring of staff behaviour and clinical activity should be undertaken. Finally, communication with GPs is essential and should be undertaken frequently.

Appendix 3: Reconfiguration tool and manual

Please find reconfiguration tool attached as an electronic file.

Stepped Care for Common Mental Health Problems

Reconfiguration Guide and Modelling Tool

Contents

Reconfiguration Manual

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Modelling Tool Instructions

Appendix

Reconfiguration Manual

1.   Introduction

Anxiety and depression are very common and extremely burdensome for individuals, their families and society.

Traditional psychological therapy services are characterised by inflexibility, relative inaccessibility and long patient waiting times. In an attempt to improve the current situation, NICE guidelines advise that services are organised using a 'Stepped Care' system. Such systems are complex and require considerable reconfiguration of existing services.

The manual and service modelling tool will assist those that commission, plan, manage and deliver mental health services who are seeking evidence and methods to help them reconfigure psychological treatment services within and across primary and secondary care to improve patient access, choice and implement national clinical guidelines. In particular, this evidence-based manual and modelling tool aims to:

- give you clear guidance on the benefits of stepped care

- outline pitfalls to look out for when implementing stepped care

- clarify the essential decisions you will have to make

- offer guidance on managing the pitfalls

- allow you to assess a range of stepped care configuration options, defined by your own service needs

- enable you to alter your service design to maximise its performance

- allow you to check your service's performance with other designs

2.   Background

The individual and public health burden of mental health problems is dominated by 'common mental health disorders' such as depression and anxiety. Prevalence estimates from around the globe suggest that around 16% of the adult population experience depression and anxiety in any one year, with common or 'high prevalence' mental health problems constituting 97% of the total population prevalence of mental health disorders. Somewhere between 1% - 3.5% of the adult population are likely to be diagnosed with a common mental health disorder annually.

Mental health services are expected to meet a number of goals:

1   *Access*: services should be routinely available to meet patient needs

2   *Effectiveness*: services should improve health status, wider function and quality of life through the provision of evidence-based treatments of proven worth

3   *Efficiency*: resources should be distributed so as to maximize health gains to society

4   *Equity*: resources should be distributed fairly across the population at large

5   *Patient-centred*: services should be 'closely congruent with, and responsive to patients' wants, needs and preferences'.

Most health systems worldwide struggle to provide a comprehensive service, particularly non-pharmacological treatments, for people with common mental health problems. This is despite the fact that most people say they would like to receive talking treatments. In general, access is poor, efficiency is compromised and equity is threatened.

Improving access to psychological therapies for people with common mental health problems such as anxiety and depression will make a significant impact on distress and disability. Accordingly, 'Improving patient access by reducing the number of queues' and 'Optimizing patient flow through service bottlenecks' are two of the '10 High Impact Changes' identified by the UK NHS Modernisation Agency as leading to a significant improvement in patient and staff experience, clinical outcomes and service delivery. Furthermore, Improving Access to Psychological Therapy is a priority programme for the Care Services Improvement Partnership, (CSIP) as outlined in the National Service Framework (NSF) five year review (2004).

Currently, for most people with depression the choice of treatment is restricted to pharmacotherapy with some limited availability of practice counselling. Only one per cent of people receive an evidence-based psychological treatment as recommended by NICE (Office of National Statistics, 2000). Unsurprisingly, patients themselves report seeking alternative treatment choices to the pharmacological ones that are routinely offered. The development of evidence based psychological treatments such as Cognitive Behavioural Therapy (CBT) has demonstrated that such treatments could lead to outcomes equivalent to pharmacotherapy for many patients. At the moment, however, due to a lack of trained personnel and the inflexibility of traditional organisational delivery systems, there is often poor access to psychological treatments in terms of critical access dimensions such as service availability and utilisation.

In the UK, the National Institute for Health and Clinical Excellence (NICE) has recommended organising the provision of evidence based treatments differently to improve their availability and effectiveness. The principle means suggested to do this is 'Stepped Care'. However, questions remain on the optimal model for stepped care and it's acceptability to patients and professionals. This manual and service modelling tool aims to assist with the many of the unknowns, including, the required balance of workers and skills operating at the different steps in a stepped care system and the patient flows through each step.

3.   What is Stepped Care?

Stepped care is a system of delivering and monitoring treatments so that the most effective yet least resource-intensive treatment is delivered to patients first. This system allows scarce resources to be more efficiently delivered to provide accessible and affective treatments. It seeks to enhance the efficiency and volume of treatments delivered whilst retaining the effectiveness of traditional treatment approaches. It is based on the accepted proposition that it is as harmful to over-treat as under-treat common mental health disorders.

Stepped care has two fundamental principles.

- Principle 1: treatments delivered should always be the 'least restrictive'. The burden on patients should be as low as possible whilst achieving a positive clinical outcome. This principle is usually interpreted as providing low intensity 'minimal interventions' to a proportion of patients in the first instance, before providing more intensive treatment to those who do not improve with the first step.

- Principle 2: stepped care should be self-correcting. This refers to the systematic scheduled review of patient outcomes to assist in clinical decision making, often using validated outcome tools such as symptom schedules in this process, so that patients may be stepped up to more intensive treatment if required.

Low-Intensity Treatments*

The aim of Low-intensity Interventions is to:

1. Increase patient access and/or speed of access to evidence-based treatments
2. Increase the choice of evidence-based treatments available to patients
3. Increase service flexibility, responsivity and capacity
4. Increase the cost-effectiveness of services

Low intensity CBT interventions refer to interventions that require fewer resources than the traditional individual therapy model in terms of:

1. The amount of time the clinician is in contact with the patient - whether this is reduced through seeing more than one patient at the same time (i.e., short-term CBT groups), or seeing them for fewer/shorter sessions with or without support materials (i.e., self-help books, computerised CBT etc.), or not seeing them at all (i.e. stand-alone, non-therapist guided interventions); and/or

2. Often using people without formal health professional or therapy qualifications (e.g. paraprofessionals, peer supporters etc.) to deliver treatment; these people will have been specifically trained to deliver low intensity interventions; and/or

3. Use of less intense content (self-paced, own time, bite-size pieces)

Low Intensity interventions aim to communicate key therapeutic principles (e.g. ideas about self-management) in accessible ways, and to deliver content in a variety of flexible delivery formats, which maximise the opportunity for patient choice. These may include face-to-face, internet-based, email, groups, CD-ROMS, SMS, phone-based delivery methods. The content may constitute a treatment intervention in itself (e.g. behavioural activation, internet-based therapy, guided CBT), may support or promote an intervention (e.g. motivational enhancement, 'ten-minute CBT' GP consultations, advice clinics), or may be preventative of treatment interventions (preventive/educational programs).

Bennett-Levy, J., Richards, D.A., Farrand, P., Christensen, H., Griffiths, K., Kavanagh, D., Klein, B., Lau, M., Proudfoot, J., White, J. and Williams, C. eds. (2010). *The Oxford Guide to Low Intensity CBT Interventions.* Oxford, Oxford University Press (in press)

High-Intensity Treatments

High-intensity treatments refer to evidence based interventions such as cognitive behaviour therapy (CBT) of 12-20 sessions in length, Interpersonal Therapy (IPT), couples therapy, and other treatments recommended in the appropriate NICE Guidelines. High-intensity treatments are delivered by workers qualified and experienced in mental health care who have undergone additional specific training in high-intensity interventions.

4.   The Specific Structure of Stepped Care

Individual stepped care systems will occupy a place on a continuum ranging from purely stepped systems – where all patients receive a low-intensity treatment and only those that fail to improve are 'stepped up' – to stratified or matched systems where patients are assessed and allocated to different treatment intensities depending on factors identified on initial assessment. In practice, most systems will be a combination of the two. The NICE guidelines for depression (NICE, 2007a), for example, outline what looks like a stratified system – matching recommended treatments against depression severity levels – but in actual fact state that they expect patients to have experience of previous steps before accessing 'higher' ones.

There are generally two decision points in stepped care (see figure below). Firstly, after an initial assessment, the 'stratification decision point' directs a patient to low- or high-intensity treatment. Secondly, after a period of low-intensity treatment, the 'stepping decision point' is the point at which the decision is made to cease treatment or step a patient up to high-intensity treatment.
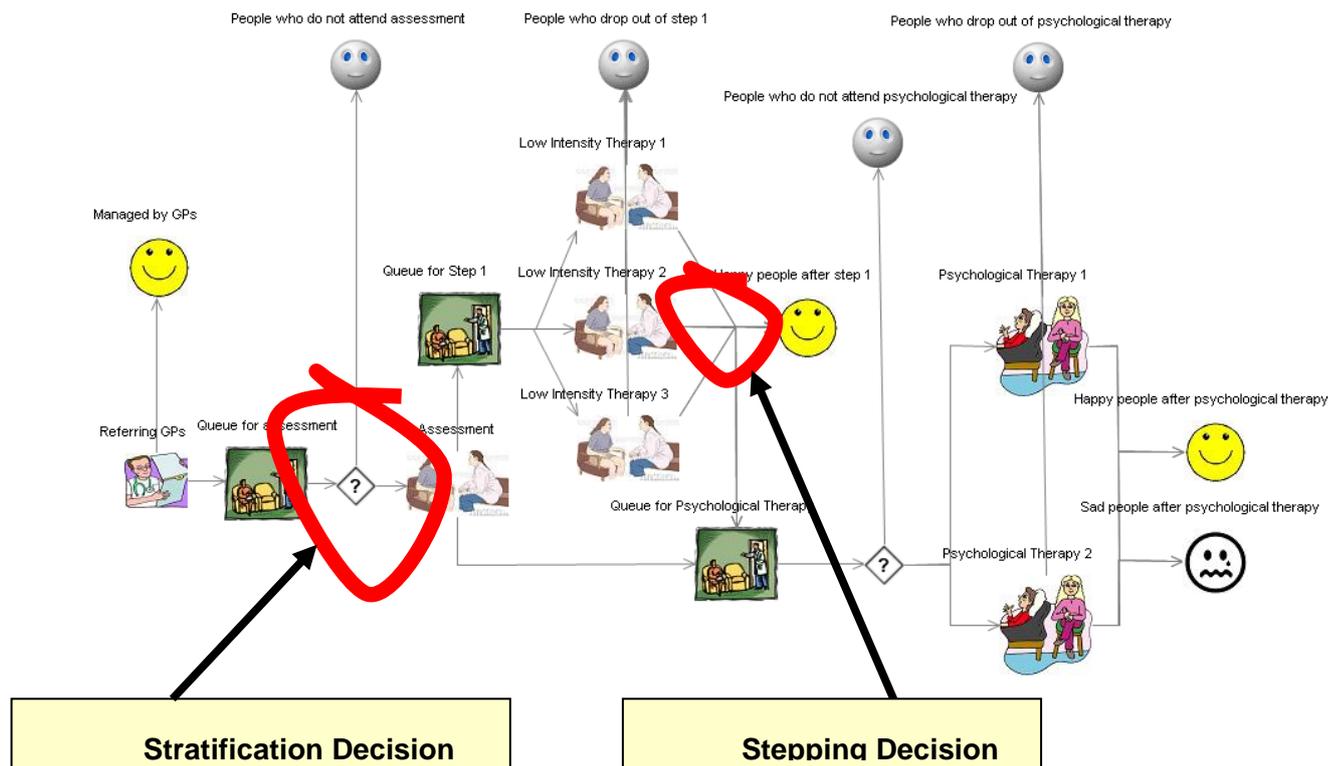
Patient flows through stepped care systems will be critically affected by decisions taken at these two points.

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5.   The Benefits of Stepped Care

What do People think about Stepped Care?

Patients, staff and managers all report significant benefits from stepped care, whether receiving, delivering or managing services.

- Clinicians, patients and managers report that **increased and timely access** to treatment is an advantage of this way of working.

  "I think loads of people are getting help that they didn't used to get before. So that's been good. Lots of people are getting more access to psychological therapies than they ever used to, and that's a good thing." Clinician

  "I could actually get in contact with somebody swiftly, so there wasn't going to be a huge waiting list, that he [the GP] *felt it was appropriate, that he'd had good reports I think from, from other patients."* Patient

  "One of the advantages of having stepped care is that people can get something pretty fast." Clinician

  "It surprised us how really good and how quick it was there for us." Patient

- Managers regard stepped care as better meeting the **needs of commissioners and general practice** than traditional systems

  "It was empowering, it was useful, it was what primary care wanted. Certainly from a PCT commissioning point of view it was exactly what commissioners were wanting and it certainly was what GPs and primary care practitioners were wanting." Manager

  "It was wholly about increasing capacity and access in primary care." Manager

  "We spent an awful lot of time looking outside of traditional mental health services." Manager

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- Patients, workers and GPs consider the **structure** of stepped care to be a major benefit.

"I think from my point of view as a clinician it's a really good framework to operate within. It's always very safe to deliver patient care in that way." Clinician

"It's sort of like a series of sieves where you know the idea is that you're captured at an appropriate point in the treatment system." Patient

"As far as this [GP] practice is concerned it feels like there's a consistent pathway, there's clarity about the pathway and people are following it and it works and it's easy and people feel better afterwards, so you know…..tick, tick, ticks in all boxes." General Practitioner

"I think the stepped care system is good. I can only talk for me, but it makes me

- The provision of **low-intensity treatment** is regarded as an important new alternative for many patients

"The good thing is that you do see people who otherwise would not have accessed the service and people who wouldn't need more than a few sessions and it does work really well for them, they're not being given more than they need and that's really good." Clinician

"I think it was just the job because a psychiatrist seemed a bit heavy. On the other hand if it had been less and I hadn't had anybody to talk to at all, I just think I would have gone into depression and have got a lot worse." Patient

"These are people that have got common mental health problems fairly simple that we can see and deal with within 3 or 4 weeks of them being seen by the GP with the problem. In the old days they would have been on a waiting list for a year waiting for a service that was much more intense than they really needed." Manager

6. Managing likely pitfalls when introducing Stepped Care

There are some significant pitfalls which need to be anticipated and avoided when stepped care services are designed and implemented. When reconfiguring traditional services to stepped care models, commissioners, managers and service planners must ensure that there are adequate resources in **ALL** steps in the system, with no gaps between steps. Systems should be structured, but some flexibility in the timing of stepping decisions can be helpful in response to individual patients' needs. Most staff recognise that stepped care has benefits, but some can be resistant to change *per-se* whilst others may have specific difficulties with new roles. Experienced staff can feel devalued when asked to undertake roles which they consider as not recognising their existing skills. Staff need to be adequately, prepared, trained and motivated, and this motivation should be ongoing. Some monitoring of staff behaviour and clinical activity should be undertaken. Finally, communication with GPs is essential and should be undertaken frequently.

- **Gaps between steps**: stepped care is much more than the provision of a new set of low-intensity alternative treatments.

There must be adequate provision of more intensive treatment at higher steps for patients who need stepping up. There is no point in very rapid access to low-intensity treatment if there is then a long waiting list for those needing high-intensity treatments. Patients whose condition requires initial allocation to high-intensity treatment should not be given low-intensity treatment as a stop gap measure. Patients who require stepping up can become demoralised if they are 'held' at lower steps whilst receiving no benefit.

> *"So, yes it is stepped care. It is very stepped. It is a big bloody leap in between teams. Instead of it being fluid and flowing and connected, there is no connection." Clinician*
>
> *"We're still holding people, we've still got the six month waiting list and that block [at Step 4] seems to be, for me, feels like its jeopardising the whole project." Clinician*

The number of low-intensity sessions available should be **responsive** to patient progress**.**

The key to stepped care is that it should be self-correcting. Artificially limiting session numbers, for example by the rigid application of systems such as '2+1,' prevent low-intensity clinicians from adjusting the number of treatment sessions to individual patient needs. For example, a review of a patient's progress may indicate that the patient is beginning to recover with low-intensity treatment. If the patient would continue to benefit from more treatment at the same step it makes no sense to require a low-intensity clinician to terminate treatment or step the patient up by imposing an artificial session number limit in such a case.

"With the way the system's set up at the moment, it leaves a real hole for people, people who need more than that eight sessions, that, … there are a lot of people who by the time you get to the eighth session they're actually doing really, really well but they've only actually clicked into working say at the sixth session or something and so you do feel very much as though you are leaving them in the lurch and they'll probably just come back again even though they were making really good progress." Clinician

- **Inadequate preparation** and training of staff.

Stepped care will represent a change in working practices for existing members of staff in terms of specific clinical input, role, and relationships with other team members. It is essential that staff are properly prepared for the change through good communication and training.

"Most of the problems have been lack of explanation of what the project actually entailed… to be honest, it wasn't very clear at the outset." Clinician

"There was no induction for us as a team. We left one job on the Friday and started in this job on the Monday and started running with very, very little management supervision or input and just being told to get on with it." Clinician

"I don't really feel I've got the competence to do Step 2 work because we've had no training in it. Maybe there's an expectation that because you've got a certain level of training then you can just move across [to Step 2 work]. But it's very different." Clinician

- Staff **resistance to change**

    Staff resistance, including ignoring the new service configuration, continuing to work in their 'old way' and refusing, or being unable to change their usual way of working may undermine or even intentionally subvert the new system.

    "They wanted me to do [CBT training]. *I'm really sorry, I refused. I refused point blank."* Clinician

    "And basically numerous people in the team have said well I just talk quicker, you know we're trying to do the same thing as we do in step 3 in our step 2 work." Clinician

    "I trained to do mental health interventions. It suits me. I've invested a lot of time in training and yet I'm being asked to spend a large part of my time doing step 2 work and I suppose I have resisted that, for personal reasons." Clinician

    "When you do try to put some sort of consistent structure to it, although in theory people might say it sounds good, in practice it's not necessarily followed." Clinician

- **Inconsistent adherence** to the model

    To ensure a standard and comprehensive service across your area it is essential to ensure that there is consistent implementation of the model.

    "My understanding of stepped care is that it should be the least intervention offered first, to be stepped up appropriately. Now, again we've got this big bottleneck at step three of face-to-face clients and I would suggest that's because the stepped care model isn't being used as it should." Clinician

    "They all [teams] *seem to have their own ways of working and I think this is one of the difficulties in trying to have a true stepped care system, when people in different localities are working completely different."* Clinician

    "Really getting that message across that teams have to work in a particular way and actually having someone who's taking responsibility for it, ensuring that its happening would cause a lot of resentment but at the same time, I think, mean better implementation of the system." Clinician

- **Insufficient resourcing**

A stepped care model relies on adequate resourcing throughout. Lack of resources in any area of the model will impact on the whole system and the flow of patients through the system.

> *"In an adequately staffed system then the stepped care system is a very good and logical one to work within. But if there are shortages in any of those steps then it can make for complications, perhaps a shortage of adequately trained people who are able to provide the step four psychological interventions particularly and perhaps the step three."* Clinician

> *".. until* [date] *at the step four they had the enormous blockage. To my mind it feels as though that big lump of need has been moved down a step, because now the graduate workers have a six month waiting list."* Clinician

> [Psychological therapies] *"closed their waiting lists, but they had instruction to do that, because their waiting lists were about a year to be assessed and over a year to be seen."* Clinician

- **Explaining stepped care to GPs**

Although self-referral is an option, most patients are likely to access stepped care through their GPs. It is vital that GPs are fully informed about the stepped care model and sympathetic to its aims and principles. 'Selling' stepped care to GPs is a vital aspect of model implementation.

> *"You try and go to practice meetings, but it's difficult with the demands of our job and I think you have to keep letting them* [GPs] *know and there's always new GPs coming in, there's locums, so I think it's something that we have to keep pushing."* Clinician

> *"I think the other kind of barrier is that the graduate workers are all working in those surgeries that are already most psychologically minded because they're the surgeries that wanted the graduate workers. So what you're left with is a kind of a large group of GP's who are not very interested, who may be working single-handedly in small practices, and therefore can't afford to have a graduate worker. So how do you get all those other GPs into the system to deliver stepped care?"* Clinician

> *"I think, a small barrier, but not much of a barrier really, would have been the GPs not knowing about the difference between these options. But they're getting more of a knowledge about the difference." Clinician*

7. Implementing Stepped Care: The Reconfiguration Process

In order to implement a stepped care service you must make a series of critical decisions. In consultation with those that use, commission, plan, manage and deliver services, you will need to:

- decide where the specific system model you design sits in terms of the continuum between stratified and stepped decision making
- decide which treatments your service will provide and at which step they will be delivered
- understand how you wish patients to access the stepped care service
- decide who will screen, assess and treat patients at each step
- design systems that manage the interface between steps, particularly where treatments are delivered by different provider organisations or clinicians
- prepare, train and supervise staff for the new system
- put in place a system to audit the treatments being delivered.
- inform GPs, other referrers and other members of the health and social care community, including potential patients, about the new arrangements

The following boxes walk you through this process.

What model of stepped care do you want to implement?

Turn to the instructions for the modelling tool (page 17). Install and open the tool and work through the exercises. Once you are familiar with the tool, experiment with different proportions of patients being allocated to initial and subsequent steps (within the patient movement section of the tool). You will see that altering the number of patients initially allocated to different steps and the proportion of patients stepped up to high intensity treatment changes the capacity of the system to manage referrals. If you then alter the number of appointment slots available at each step you can optimise your system's ability to manage volume.

What treatments will go into each step?

Consult the relevant clinical guidelines, your preferred model and seek the advice of others delivering stepped care services. Decide what kinds of evidence based treatments you will need. Make decisions as to how these will be delivered – guided self-help, computerised delivery, telephone case management, high intensity CBT. Consider how many appointment slots will be needed for each type of treatment. Then consider how many, and what type of staff you will need to deliver the required number of appointments in your chosen model.

How will patients access the stepped care service?

Decide what the entry points to your service will be. Will all patients enter through one single point of entry? Will this be shared with patients accessing specialist mental health services for serious mental health problems such as psychosis or will primary care patients with common mental health problems access care through a separate route? Can some patients bypass low-intensity treatment and access higher steps via direct referral from GPs and other referrers? All these decisions will significantly affect the performance of your stepped care system.

Who will screen, assess and treat patients at each step?

Determine the roles of different staff in your workforce. For example, if you decide that all newly referred patients should be assessed by highly qualified staff, you will need to ensure that these staff are released from some of their other duties delivering treatment to patients. Will there be a triage system? Who will deliver the treatments in each step once patients have been assessed? You will also need to review the competences of existing staff and match these against the treatments you wish to include in your model. For example, although new training programmes are being commissioned, at the moment staff with high-intensity CBT competences are quite rare. Are their training needs ones which you can plan to remedy?

How will you manage the interfaces between steps and between the stepped care service and other services?

One of the biggest pitfalls in setting up a stepped care system is that the different steps may not link together. How will you prevent patients having to wait between steps? Who will make the decision to step up if necessary? You will need to set up systems of routine data collection and mechanisms whereby that data will be used by clinical workers and their supervisors to inform clinical decision making. If steps are delivered by different providers, you will have to set up liaison systems so that patients are not burdened by multiple assessments and letters from different services. Finally, how will you manage the interface between services such as the Citizens Advice Bureau or employment services and your service.

How will you prepare staff?

The preparation of staff is quite simply the one critical factor that could make or break your stepped care system. Stepped care is such a change for staff that inadequate preparation will undoubtedly seriously jeopardise success. How will you brief staff on your new model? How will you manage the process of change including reducing their anxieties? You will need to distinguish briefing from training. Training will include instruction on new models of data collection, clinical decision making and clinical delivery, as well as identifying and remedying any

> **How will you communicate your system to GPs, other referrers and potential patients?**
>
> Although you will have involved consumer and provider agencies in your design work, other busy stakeholders will only express interest once the start date draws near. You will need to decide how the change will be communicated. Will you use workshops, leaflets and/or other communication systems? Can you identify 'champions' to help you spread the word around the provider and consumer environment? Whatever systems you use, be prepared for there to be initial confusion and for the communication process to require more resource than you might initially plan for.

Modelling Tool Instructions

8.   Installation and starting guide

This section is a step-by-step guide explaining how to use the modeling tool. Firstly, the tool and it's capabilities are generally explored through example scenarios and then you are shown how to create a scenario based on your own service needs.

Installation

1.   The reconfiguration software tool requires two files to run (both included on your CD), an Excel spreadsheet (ReconfigTool16) and an Access database (ReconfigData16). You will never have to access the database directly, all the work will be done through the spreadsheet file (ReconfigTool15).

2.   Double click on the CD drive to show you the contents of the CD. Copy (right click on file and click 'copy') the two files named 'ReconfigTool16' and 'ReconfigData16' and paste them into the SAME folder somewhere on your computer.

4.   To start the application, go to the folder that you saved the files in and double click on the spreadsheet file (ReconfigTool16).

5.   When you open this file, Excel may warn you that the file contains macros, which in turn, could contain computer viruses. This is a generic warning that is raised every time there is an attempt to open a spreadsheet containing macros.

6.   You will need to click the "Enable Macros" button in order to use the tool. Do not worry, there are no hidden viruses in this application. If all goes well, a screen will appear welcoming you to the software tool.

7.   If you do not get a warning message, and the software tool does not seem to be working, go to the "Tools" menu of Excel, click "Macro", then select "Security...". In the Security window that comes up, click the "Security Level" tab, then select "Medium", then click OK. Then re-open the spreadsheet. When you receive a warning message about how some macros may contain viruses, click "Enable Macros".

8.   If any of the above options are not available to you in Excel, then please contact the IT helpdesk of your organisation.

9.   This software tool requires Microsoft Office 2003, Service Pack 3 preferably running on Microsoft Windows XP, version 2002 Professional, Service Pack 3 operating software. Although, the tool has been tested on earlier versions of Windows and Office, unexpected behaviour may arise on different platforms.

10. Please ensure with your IT department that you are running Microsoft Office 2003, Service Pack 3 (SP3). For more information and for downloading the Service Pack 3 from Microsoft please refer to the following website: http://office.microsoft.com/en-gb/downloads/

Getting Started

The Welcome screen will appear with a description of the tool and the cell colour coding conventions as shown below:

For ease of future reference, the Welcome box is replicated in Box A below.

🖰 When you have read through the introduction, click **Continue** to move on to the 'scenario information' display.

Box A: Welcome to the Mental Health Service Reconfiguration Software tool

9. Explore the pilot site scenarios

When you have clicked **Continue**, the following screen will appear:
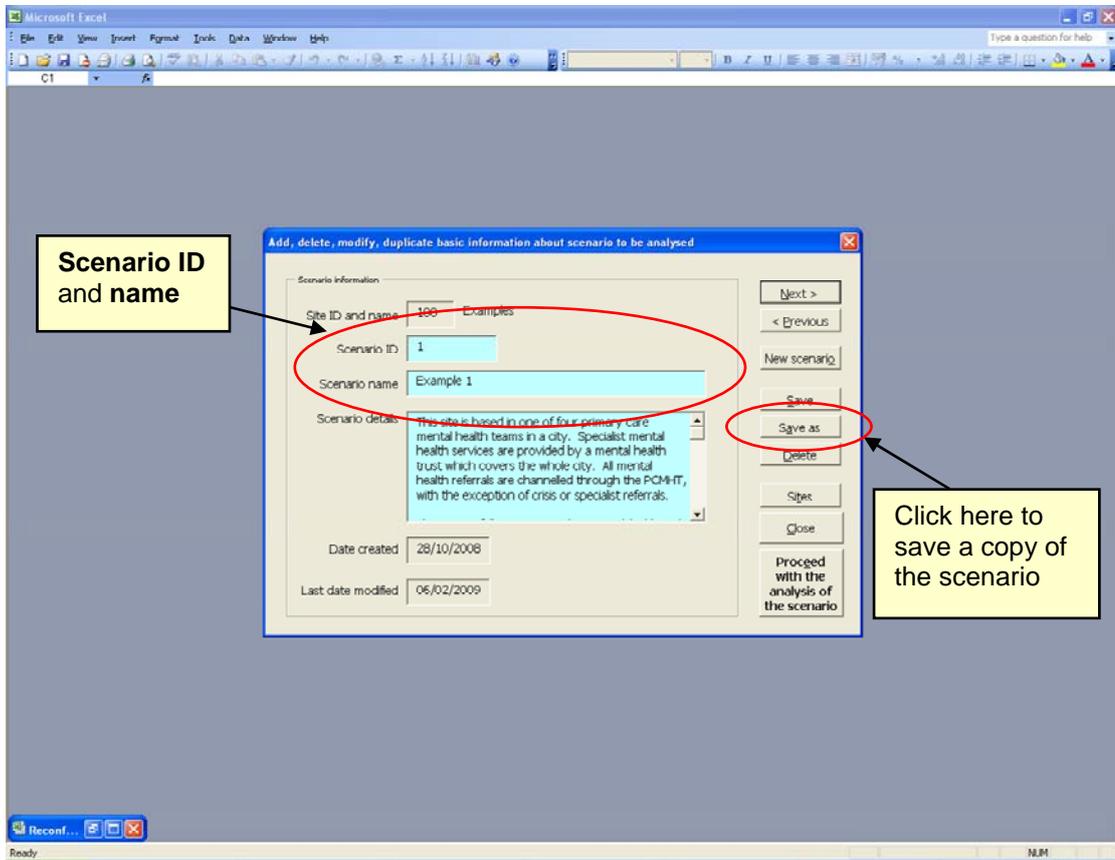
The **Scenario Information** dialogue box contains the profiles of the four pilot study sites. Any scenarios which you create can be saved here also.

Please note: IAPT site data is not shown in the scenario information box but is available within the tool in the 'analogous pilot sites activity' section. Doncaster IAPT site details assessment and low intensity data and Newham IAPT site high intensity data. Neither of these are 'complete' example sites, although you can use the data to easily model combinations of low and high intensity treatments.

For a detailed description of each pilot site please see Appendix 1 at the back of this manual.

Use the **Next >** and **<Previous** buttons to navigate between the different scenarios saved.

🖰 Click the **Next >** button until you find the scenario with the Scenario ID 1 and named Example 1.

🖰 Click **Save as** and enter a new scenario ID, for example, **'Scenario 1 test'**.   Then press **OK**. A message will tell you that the scenario is successfully saved. This allows you to make changes to the copied scenario and ensures that the original example scenario is not changed.

🖰 Click the **Next >** button until you find the scenario with the ID you have chosen, i.e. in this example 'Scenario 1 test'.

🖰 Click **Proceed with the analysis of the scenario** to open the spreadsheet containing the profile for this scenario.

The following screen will appear. This screen describes the stepped care service in one of the four pilot sites.

Identifying data for the selected scenario: Site ID, Site name, Scenario name etc.

Index: Index number given to clinical activity – these boxes are dark blue indicating they are automatically entered by the model.
Activities: Interventions provided by the services and potential end points.
Type: Description of type of activity i.e. referral, assessment etc.

New referrals, Appointments available etc: These variables can be changed according to your own service.

Analogous pilot site activity: This relates to real life data collected in the four pilot and two IAPT demonstration sites. When you choose the scenario that most resembles your service, these data will form the basis of the modelling exercise.

The labels indicate what various parts of the spreadsheet mean.

The data in the columns and rows below give information on the types of activities provided in the service.

Using data provided by the pilot sites it is possible to model the likely outcomes in terms of waiting lists and waiting times in respect of various combinations of clinical inputs and patient pathways.

In Section 10 of this manual, we will be exploring how changes in available appointments and patient pathways affect the model.

Clinical activity or End point Names

In the selected scenario there are six Clinical Activities listed: Referral, Assessment, Low Intensity, Assessment 2, High intensity, and Psychology and three potential End points: Unscheduled discontinuation, Scheduled completion, Not appropriate/Other.

Type

These columns describe the type of activity as one of the following options: REF/Referral, ASM/Assessment, TRE/Individual Treatment, ENP/End point

New referrals per week

The data show that this service receives on average 32.1 referrals per week.

Appointments available per week

The data in these rows show the number of appointments available at each level of service.

Course length (weeks) and Max Class Size

These columns are only completed for sites which provide classes or group work.

Activity Duration

Let's look at the first Clinical Activity listed in row 12, 'Initial Assessment'.

🖱 Click on the second row under the heading Analogous pilot site activity, which contains **PS1,2**, to reveal the following **Analogous Pilot Site Activity** box.

🖱 Click on **Duration** to bring up the **Activity duration** dialogue box for **Pilot Site 1 – Initial Assessment**
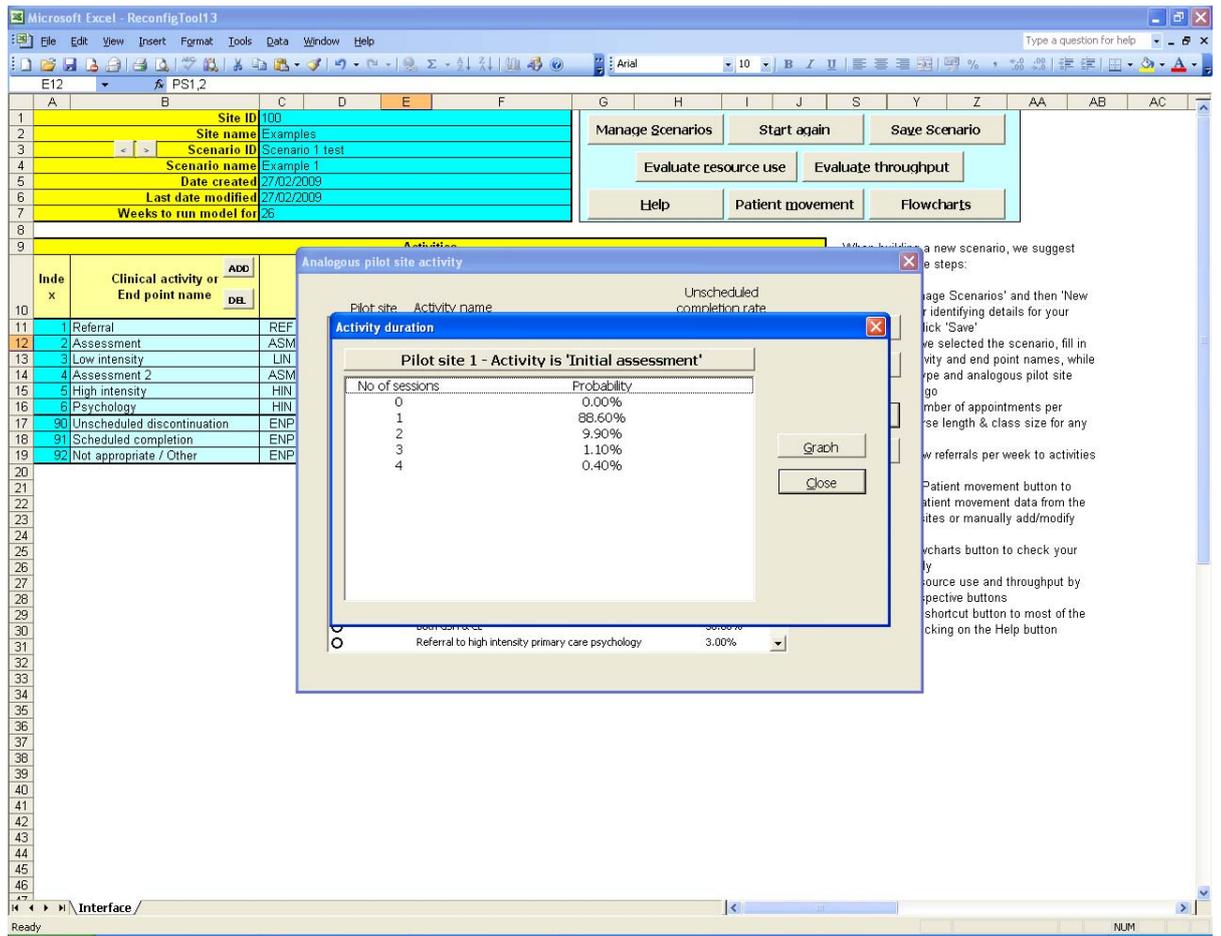
The **Activity duration** dialogue box shows the percentage of patients who attended each number of sessions of that activity.

In the case of **Pilot Site 1, Initial Assessment** the number of attended sessions runs from 1-4 with 88.6% of patients attending one session, 9.9% of patients attending two sessions, 1.1% of patients attending 3 sessions and 0.4% of patients attending four sessions.

🖱 Click **Graph** to see these data in a graph format, as shown below.
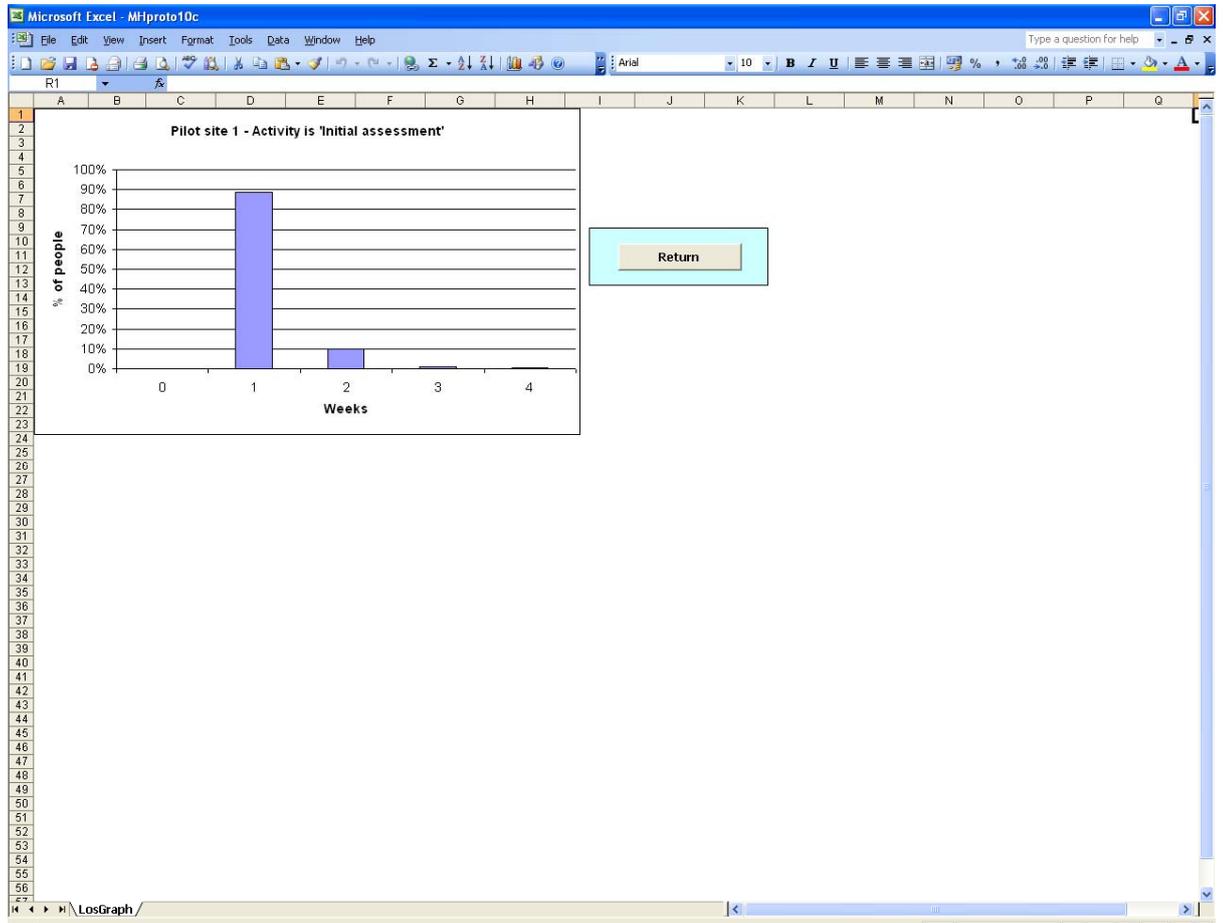
🖱 Click **Return** to return to the **Activity Duration Box**.

🖱 Click **Close** to return to the **Analogous Pilot Site Activity Box**.

🖱 Click **Close** to return to the main screen.

Now move down to the third row in the Clinical Activity column, **Low Intensity.**

🖰   Click on the third box down in the Analogous pilot site activity column, **PS1,3** to open the **Analogous Pilot Site Activity Box**

🖰   Click **Duration** to view the proportion of patients in Pilot Site 1 attending different numbers of sessions at Step 2 – Low Intensity, as shown below.

🖱 Click **Graph** to see these data in the form of a graph, as shown below.
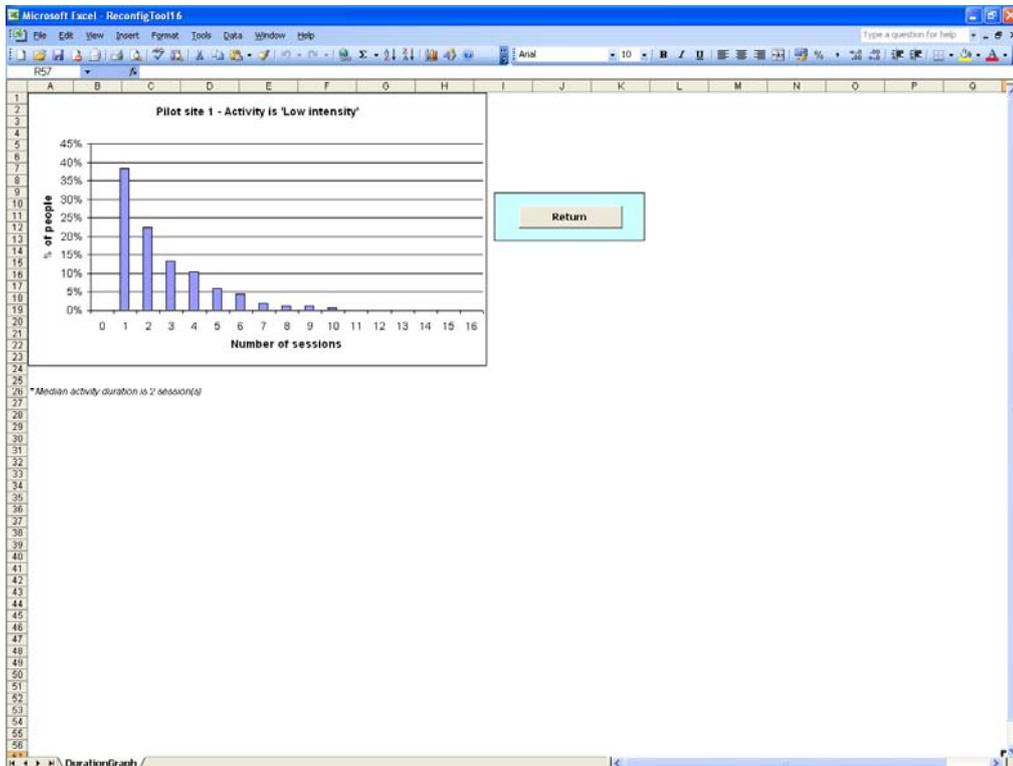
You will see that the number of sessions attended at Low Intensity treatment ranges from 1 – 16, with 38% attending one session, 22% two sessions, 13% three sessions etc.

🖱 Click **Return** to return to the **Activity Duration Box**.

To view the other Pilot Site Duration datasets:

🖱 Select Pilot Site 2 Low intensity by clicking the radio button ⭘ next to that heading.

🖱 Click **Duration** button to view the duration of treatment of patients receiving low intensity treatment in Pilot Site 2.

🖱 After looking at the duration datasets choose which analogous pilot site dataset you would like to use, select it with the radio button and press **select**.

🖱 Click **Close** to return to the **Analogous Pilot Site Activity Box**.

Repeat for any of the other clinical activities listed.

You will be able to select the duration of treatment patterns which best reflect your service scenario.

🖰　　Click **Close** to return to the main screen.

Patient Movement

🖰　　To look at the movement of patients click the [**Patient movement**] button in the menu in the top right hand corner of the spreadsheet.

These data show estimated percentages of patients moving from one Clinical Activity to another, and the percentages achieving each anticipated End Point.

In this example, looking at the columns headed **From** and **To** we see that the proportion of patients moving from Assessment to Low Intensity is 35%, from Assessment to High Intensity is 29%, from Assessment to Psychology is 4%, 21% were an unscheduled discontinuation, and 11% were a scheduled completion.

Note that all patients must be accounted for, so that the percentages of patients moving from each Clinical activity must total 100. The remaining column tells you what percentage of patients are not accounted for yet.

If you try to run the model (evaluate resource use or throughput, as described below) with fewer or more than 100% of patients accounted for, an error message like the one shown below will be displayed specifying which activity does not add up to 100%. If this appears go back to the patient movement spreadsheet and adjust the percentages so that they add up to 100.

Using the model

The data presented on the spreadsheet describe what the service looks like. However the buttons in the top right-hand corner of the spreadsheet allow you to use the data to create flowcharts of patient pathways and to model the data in order to observe how your service would perform over a six month period.

Flowcharts

First let's have a look at the Flowcharts to see how patients move through this scenario over a six month period.

Click [Flowcharts] in the top right hand box of the spreadsheet. The following **Inflows and Outflows per Activity** box will appear.

Click on the **Next>** and **<Previous** buttons to track the flow of patients through the service.

Click Close to return to the main screen.

Evaluating the scenario

The two buttons [Evaluate resource use] and [Evaluate throughput] provide two sets of estimated data based on the selected scenario.

Evaluation of resource use

The Evaluation resource use part of the programme calculates the number of appointments per week that should be offered for each Clinical Activity included in the service scenario.

🖱 Click [Evaluate resource use] to open the following screen.

The **Planning summary** box describes how the service is operating using the data incorporated in the spreadsheet in collaboration with the pilot study site data which was selected in column **Analogous pilot site activity.**

In this model the numbers of appointments offered per week were:
- **Assessment   16**
- **Low intensity   40**
- **Assessment 2   1**
- **High intensity   25**
- **Psychology   10**

If you click the **Apt.calculator** button then the following screen appears:
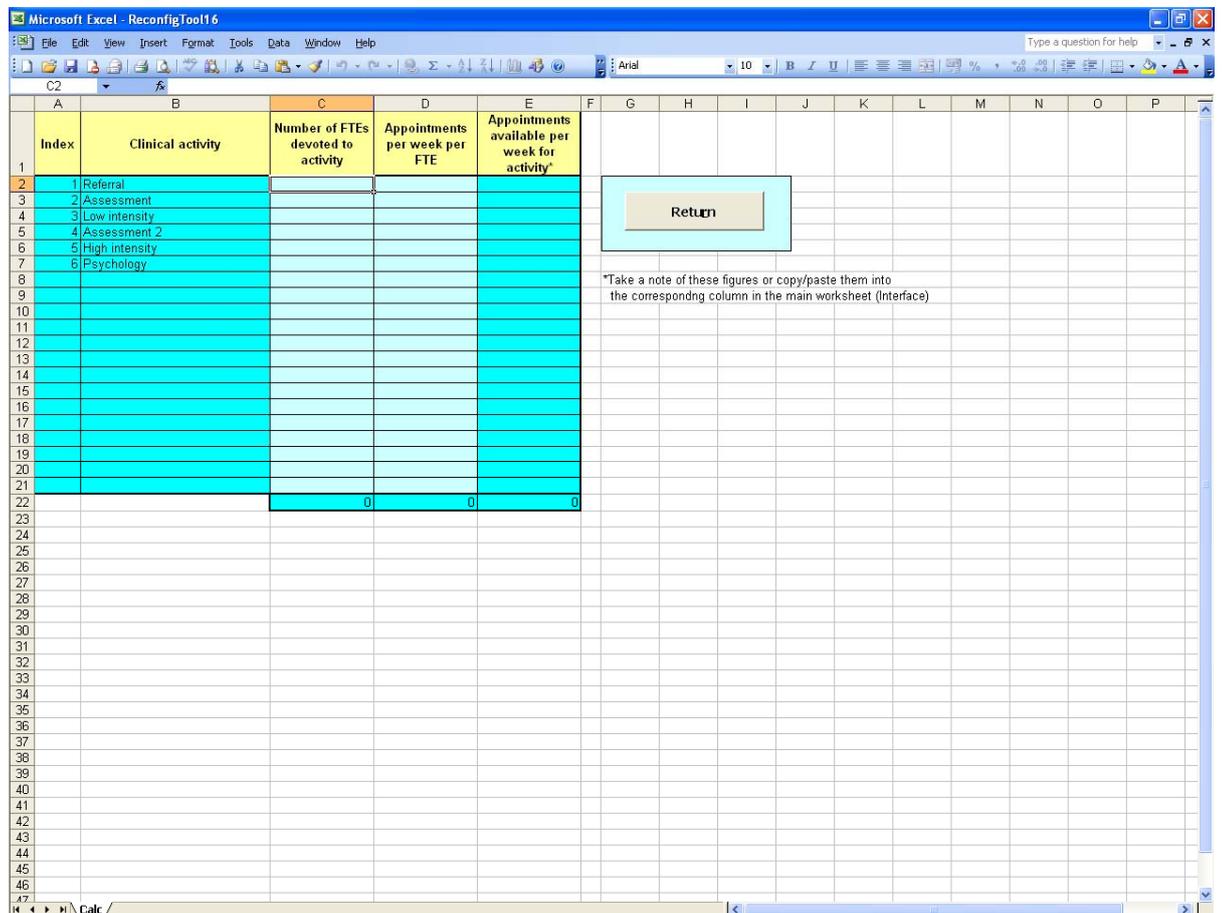
This allows you to calculate the number of appointments available per week for each activity given the number of full time equivalents (FTEs) and the number of appointments per FTE.

Expected weekly demand for appointments shows the expected weekly demand for appointment on the basis of the information in the spreadsheet and expected patient movement between Clinical Activities as reflected in the analogous pilot site activity data.

The model uses these data to assess **Ratio of demand to appointments offered**, where 100% means that there are roughly enough appointments for the likely demand, more than 100% shows a potential shortfall in capacity while less than 100% hints to potential excess capacity.

The model also calculates the **Number of appointments suggested**. This is presented as a range of numbers to allow for fluctuations in supply and demand during the course of the modelling period and the inherent uncertainty in the input parameters.

In this model we can see that:

1. the number of Assessment appointments offered is less than the expected weekly demand and that the ratio of demand to appointments offered is 114%. The model suggests there should be about 18 - 25 appointments for this clinical activity, compared with 16 being offered.
2. the number of Low intensity appointments is lower than required, and that the ratio of demand to appointments offered is 103%.The number of appointments suggested is 41 to 50, compared with 40 which are currently offered.
3. the number of Assessment 2 appointments is probably higher than required and the ratio of demand to appointments offered is 15%   The number of appointments suggested is 0, compared with 1 which is being offered.
4. the number of High intensity appointments is lower than required, and that the ratio of demand to appointments offered is 108%.The number of appointments suggested is 27 to 35, compared with 25 which are currently being offered.
5. the number of Psychology appointments is lower than required, and that the ratio of demand to appointments offered is 131%.The number of appointments suggested is 13 to 20, compared with 10 which are currently being offered.

The red message at the bottom of the screen "NOTE - Demand greatly outstrips supply in at least one of the clinical activities." appears when any of the figures in the "Ratio of demand to appointments offered" column exceed 120%:

In the next section we will see how this modelling process can be used to establish the optimum level of clinical inputs (appointments offered for each Clinical Activity) by also taking into account the potential increase in waiting list size and waiting times.

🖰   Click **Close** to return to the main screen.

Evaluation of throughput

🖰   Click the [Evaluate throughput] button in the top right hand corner of the screen.

This brings up a **Summary of system performance over a 6 month period** box showing how the service described in this scenario would perform over a six month period.

It gives **Expected throughput**, **Expected increase in waiting list size** and **Expected increase in waiting times**.

The results show that 830 patients will have a Referral appointment during the six month period, 360 - 375 will have an Assessment appointment, 375 – 410 will have Low intensity clinical treatments, 25 will have an Assessment 2 appointment, 135 – 150 will receive High intensity sessions and 30 – 40 will have psychology appointments.

The table also shows expected increases in waiting list sizes over a period of six months of up to 35 – 70 for assessment appointments, 0 - 15 for Low intensity appointments, 0 - 25 for High intensity and 0 – 15 for Psychology.

The model also calculated expected *increase* in waiting times (not final absolute value) over the six month period. If your service already has waiting lists, you should expect to add about as much as indicated by these two figures. The opposite is not indicated,

i.e., a potential decrease in size and times will not be indicated by a negative value. This example shows the increase in waiting time as 5 weeks for assessment, 0 - 5 weeks for High intensity and 0 - 10 weeks for Psychology.

The note in red on 'Clinical activity and throughput' in this box comes up whenever the data for a particular scenario (arrivals, appointment offered, patient movement etc.) result in a system that isn't running to full capacity (i.e. not all appointments are filled). Therefore, the estimated throughput is an overestimate based on all appointments being filled.

Results are given in ranges to allow for variations in patient flows into and through the system.

🖱   Click **Close** to return to the main screen.

The results given in the **Planning summary** and **Summary of system performance over a 6 month period** enable service planners to establish the optimum balance of clinical inputs and patient pathways for their individual service. Ideally all ratio of 'demand to appointments offered' would be as close to 100% as possible.

In the next section you will adjust the data in one of the scenarios in the model to see how changing the levels of service (number of appointments available for different clinical activities) will bring about changes in waiting times and waiting lists.

10. Exercise: exploring how changes in service configuration affect waiting lists and waiting times

In this section you will explore the impact of changes in service configuration on waiting lists and waiting times by manipulating the activity data in a fictional scenario.

🖱 On the main screen click [Manage Scenarios] in the top right hand corner box

🖱 On the **Scenario Information** box, click **Next>** until you come to the scenario called **Example 4.**

🖱 Click **Save as** and save it under a different title.

🖱 Find the scenario name you chose and click **Proceed with the analysis of the scenario** to open the selected scenario.

Following the instructions above, run the **Evaluation resource use** and **Evaluate throughput** models to examine how this scenario might be improved.

Evaluate resource use example

How closely does demand reflect the number of appointments offered?

How closely do the number of appointments suggested relate to the actual number of appointments offered per week?

Evaluate throughput example

How big is the expected increase in waiting list for each Clinical Activity over the next 6 months?

How long is the expected increase in waiting times over the next 6 months?

To what extent do these projected waiting lists and waiting times meet the targets for your service?

🖱 Amend the **Activities** data by changing the **Appointments available per week** data.

Run the **Evaluate resource use** and **Evaluate throughput models** again to see if an improved model can be developed.

How might changes in clinical inputs be achieved?

What are the implications for service planning and delivery?

🖱 Choose a different **Analogous pilot site activity** dataset to see how changes in patient lengths of stay at different points in the system affect the results of the modelling process.

🖱 Close all boxes and return to the main screen.

To explore a different scenario

You can repeat this exercise with the other scenarios.

🖱 On the main screen click **Manage Scenarios** in the top right hand corner box

🖱 On the **Scenario Information** box, click **Next>** until you come to the scenario called **Example 3.**

🖱 Click **Save as** and save it under a different title.

🖱 Find the scenario name you chose and click **Proceed with the analysis of the scenario** to open the selected scenario.

You can also navigate between scenarios using the buttons indicated on the diagram below.

11.   Create a scenario for your own service

When building a scenario to model your own new service we suggest you use the following steps. This is described in more detail, step-by-step, in the following pages.

Process Summary

i)   click on 'manage scenarios' and 'new scenario', enter identifying details for your scenario and click 'save'

ii)   once you have selected your scenario, enter how many clinical activities and end points you require – this can be modified at a later stage by adding and deleting clinical activities and end points

iii)   fill in the clinical activity and end point names, and define the type of activity

iv)   for each clinical activity and end point select which analogous pilot site length of stay data you would like to model your service on

v)   enter the number of appointments per week, course length & class size for any classes

vi)   enter the new referrals per week to activities that have any

vii)   click on the 'Patient movement' button to either import patient movement data from the selected pilot sites (click 'pilot site rates – all') or manually add/modify them. You must ensure that all totals add up to 100

viii) use the Flowcharts button to check your scenario visually

ix)   evaluate resource use and throughput by clicking the respective buttons. If you an error message is shown here it is generally because there is something wrong with the patient movement data entered, follow the error instructions and change your patient movement data accordingly

x)   find helpful shortcut buttons to most of the functions by clicking on the 'Help' button

Creating sites

The tool allows for different sites to be created. One site may contain many different scenarios. For example, all example scenarios have been from one site (100) called 'Examples', which is the current working site.

You are now going to create your own scenario by entering the data for your own service into a spreadsheet and use the **Evaluate resource use** and **Evaluate throughput models** to see how your service will run for a six month period.

For this exercise we will be using site '99' as this has been specifically created as a test site to allow you to build your own 'first' scenario. Once you have tried this you may then want to create your own site as shown on page 50.

On the main screen click **Manage Scenarios** in the top right hand corner box

🖑   On the **Scenario Information** box, click **Sites.**

🖑   Use the **next** and **previous** buttons to find the site with **site ID '99'** and named **Teaching and Learning site**.

🖑   Click the **check box** next to working site to make this the working site

🖑   Click **Save** to save the site

🖱️ The tool will restart and a message will tell you that the selected site has no scenarios. Click **OK** and the **scenario information** box will be displayed.

🖱️ The scenario ID and description boxes are blank for you to enter the identifying details for your scenario.

🖱️ Once you have done this click **Save** and then **OK.**

🖱️ Find the scenario you have just created and click **Proceed with the analysis of the scenario.**

This opens up a **Setting up the scenario** box.

The tool then asks you set up the number of Clinical Activities and End Points to be included in the new scenario.

The parameters which you select can be amended at a later stage.

🖱️ For the time being, click **OK** to set up 3 Clinical Activities and **OK** again to set up 2 End Points. These can be changed as you enter your service data into the spreadsheet.
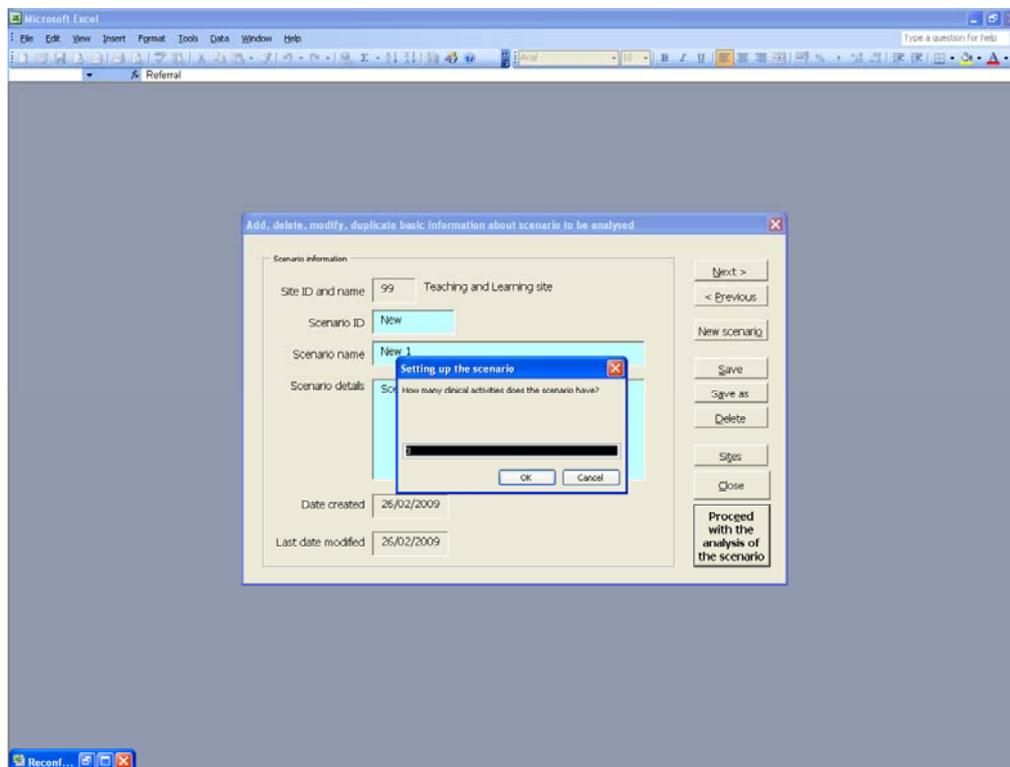
A series of boxes similar to that above then guides you through step-by-step inputting of your scenario i.e. number and type of clinical activities, choosing analogous pilot sites, number of referrals expected, number of appointments available per week etc.

If you would prefer not to use the wizard then press **'cancel'** AFTER you have entered the clinical activities and end points and follow the instructions below to enter your scenario on the blank spreadsheet.

It is now time to enter details about your service activities into the blank spreadsheet.

Remember that the light blue boxes are for you to use

The darker blue boxes will be completed automatically.

Enter data in the Activities box

First enter the Clinical Activities which you will be providing in your service.

Please note: 'Unscheduled completion' is shown as the default end point for all new scenarios but you may change this as you wish to something that may better fit your service – e.g. unscheduled discontinuation, discharged, completed etc. A message may tell you that the cell is protected, if this happens then go to the 'Tools' menu on the toolbar at the top of the page, click on 'protection' and then select 'unprotect sheet'.

Clinical activity or End point Name

This will be the first point of access to the service, probably Referral or Assessment.

In the first row under the heading Clinical activity or End point Name, enter the name in use in your service.

Click on the box to the right.

This brings up a dialogue box called **Select Care Step**.

Select the radio button ◯ next to **REF referral.**

Click on **Select**.
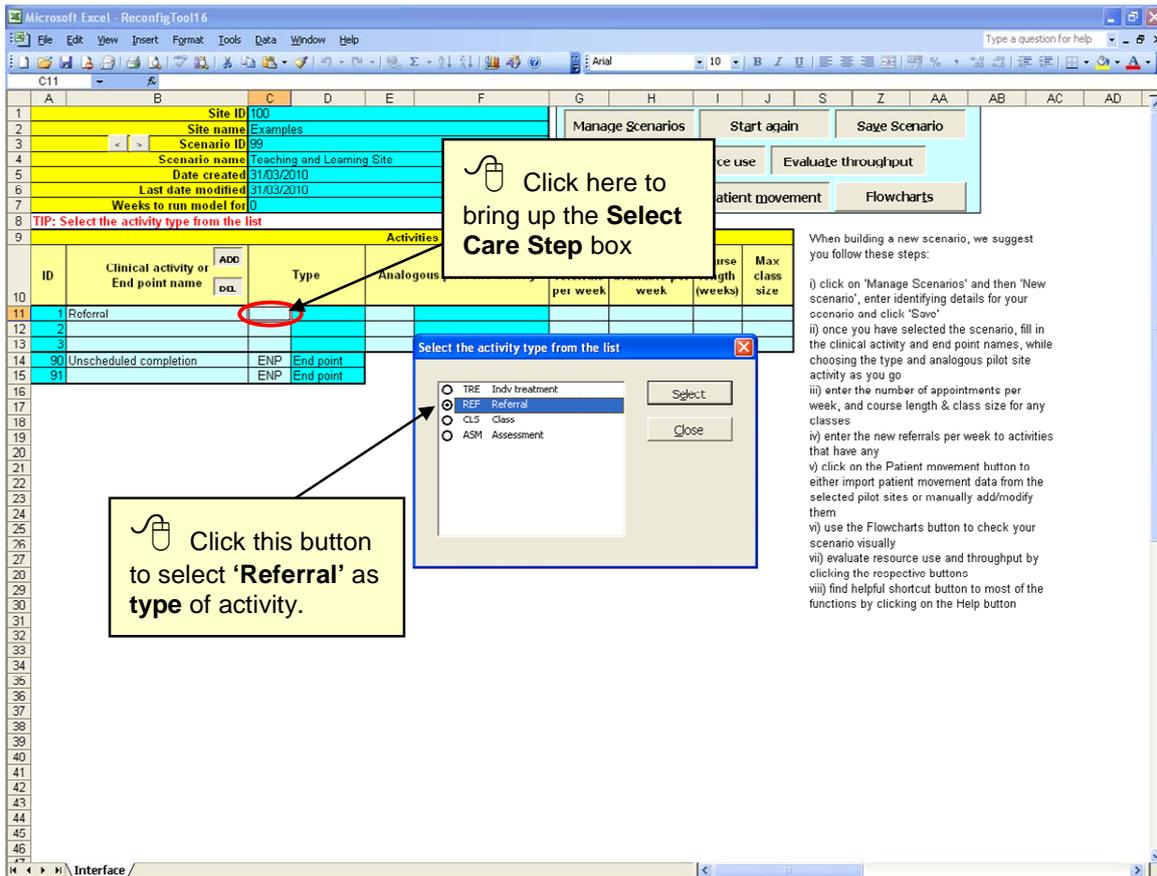
The two boxes in Row 1 under **Type** will now read **REF Referral**

Repeat this process until all of your clinical activities and end points are named and are defined in the 'type' column.

🖰 Click in the light blue box in the **Analogous pilot activity** column and the dialogue box will open.

Use the **Duration** button to see the distributions in each of the Pilot Sites (as described in Section 9 – Activity Duration above).

Select the Pilot Site Screening button which is most appropriate for your service. You can 'mix and match' between pilot sites – i.e Referral and assessment can be analogous pilot site 1, low intensity could be Doncaster IAPT site and high intensity could be Newham IAPT site.

New referrals per week

Enter the number of new referrals you expect to receive each week.

Appointments available per week

Enter the number of appointments available for each activity.

Course length

Enter the number of sessions for courses or group work, where applicable.

Maximum class size

Enter 1 for individual appointments. In the case of a class or group, enter the maximum available places.

Repeat this process for two more Clinical Activities.

Your spreadsheet should now look similar to the one shown below.

If you have more than three Clinical Activities, you will need to add another row as follows:

🖱 Click the **Add** button in the **Clinical activity or End point Name** cell. A new box 'Add a new activity' opens which tells you to enter 1 for a new Clinical Activity.

🖱 Enter 1 and click OK.

To delete Activities or End points:

🖱 Click on the activity or endpoint you wish to delete and remove the name from the cell so that the cell is left blank.

🖱 Click on the **Save Scenario** box.

🖱️   Click **Yes**

🖱️   Click **OK**

Entering **patient movement** data

🖱️   To enter the movement of patients click the [Patient movement] button in the menu in the top right hand corner of the spreadsheet.

These columns show the expected movement of patients from one Clinical Activity to the next or to an End point. All percentages will be at 0. You need to enter estimated percentages of patients moving from one Clinical Activity to another, and the percentages achieving each anticipated End Point according to your own service.

You can change the percentages to more accurately reflect your service but **you must ensure that the percentages for each clinical activity (i.e each row) add up to 100**.

It is not possible to evaluate a scenario if you have altered the rate of patients going to "Unscheduled discontinuation" end point compared to the analogous pilot site activity (as that would rendered the pilot site activity duration irrelevant). All percentages in the 'total' column should be 100.

🖰   When you are finished click   Save and return

If the percentages are incorrect you will get an error message like the one below, you need to go back and change the percentages so that they add up to 100.

Now, run the **Evaluate resource use** and the **Evaluate throughput models** to see how your service would perform over a six month period.

Which activities are meeting expected demanded, which are over-supplied, which are under-supplied?

How many more patients will be waiting for treatment at the end of a 6 month period and for how long extra for each activity?

What changes might you make to enhance performance and outcomes?

Think about the availability of your workforce.

Would it be possible to provide any more appointments for interventions which are under-resourced?

How long will each appointment take?

What grade of worker would be providing each intervention?

Creating your own site

Through the Manage Scenario screen and Sites button, you can create a new site (e.g. My PCT) and declare it as the 'Working site'. All the scenarios created thereafter will belong to the 'My PCT' site. You may create as many sites as you wish to.

To do this on the main screen click **Manage Scenarios** in the top right hand corner box

🖰   On the **Scenario Information** box, click **Sites.**

🖱 Name your site and click on the tick box next to **working site** to make this your working site.

🖱 Click **Save** to save the site

🖱 The tool will restart and the **scenario information** box will be displayed.

From here you can follow the instructions above and create as many different scenarios as you wish within the site.

HELP!

If you have any problems then some answers to common problems are provided
when you click the [Help] button.

Appendix to the Reconfiguration Manual

1.   Example Scenarios

These pilot sites feature in the modelling tool and the data collected during the pilot study are the basis of the modelling tool.

Site 1

This site is based in one of four primary care mental health teams in a city. Specialist mental health services are provided by a mental health trust which covers the whole city. All mental health referrals are channelled through the PCMHT, with the exception of crisis or specialist referrals.

The service follows a stepped care model, although there is the option to refer a patient direct to specialist services if this is deemed appropriate. Graduate workers/ Low Intensity workers are based in the PCMHT and supervised by mental health workers.

Referrals are made either to a graduate worker-run clinic offering information, signposting and low-intensity interventions, or to mental health workers at the PCMHT. Patients can self-refer to the clinic or be referred by their GP to either option.

Initial Assessment is made by a graduate worker or mental health worker in clinics.

Step 2 interventions, which are provided by graduate workers and mental health workers, include short-term facilitated self-help, psycho-education, individualised problem identification and goal-setting. Psycho-education classes (eg stress management) are run by mental health workers and graduate workers together.

Step 3 interventions, provided by mental health workers, offer more intensive therapy, often CBT based, for up to six sessions, with the option of offering up to six additional sessions in a small proportion of cases.

Step 4 interventions are delivered by CMHTs, psychology and psychotherapy services working within the secondary care mental health trust.

Step 5 interventions are delivered by experienced mental health practitioners working within the mental health trust and include crisis resolution teams and work aimed at avoiding hospital admission.

Site 2

Site 2 comprises two mixed urban/rural areas of a large county-wide mental health trust, covering a large geographical area. All mental health referrals are received by the stepped care service, with the exception of crisis referrals.

Graduate workers are employed by the Trust, but are attached to specific GP practices. There is a shortage of graduate workers in the service (fewer than 50% of available posts were filled during the data collection period) and some areas do not have any access to graduate worker inputs. Step 2 interventions are therefore unavailable in those areas.

Counselling is included as a Step 3 intervention, although very few GP practices have a practice-based counsellor, and access to counselling is therefore limited.

Referrals to the service are made by GPs to mental health practitioners who act as the entry point to stepped care. On receipt of the referral the mental health practitioner makes an initial decision to refer the patient back to the GP or to another service (eg the voluntary sector), offers an initial assessment for stepped care or makes a direct referral to the most appropriate point within the stepped care system.

Initial Assessment is undertaken by a mental health practitioner and patients are referred to the most appropriate level within the stepped care system. Unless contra-indicated the patient will be referred to a low-intensity intervention first.

Step 2 interventions are run by graduate workers and include guided self-help and CBT-based stress management classes, supported by other qualified staff. One-to-one guided self-help sessions tend to be one hour sessions for up to 8 weeks.

Step 3 interventions comprise short-term evidence-based psychological interventions delivered by a mental health practitioner or practice-based counsellor, where available.

Step 4 interventions are complex evidence-based psychological interventions delivered by psychological services, CMHT or the psychiatric service.

Step 5 interventions include crisis teams, self-harm liaison and in-patient admission by specialist clinical teams.

Site 3

Site 3 is based in a primary care mental health team which has been merged with three other local PCMHTs. The stepped care service is currently being re-organised and rolled out across the Trust. The model described below is the service as originally set-out during the data collection phase of this project. The area is mixed urban/rural.

The model is a stepped care model based on a triage service accepting referrals in 23 participating GP practices. Graduate workers are employed by and based in the primary care mental health team. This site has a well-resourced graduate worker service. PCMHT staff also work at Step 1 level within primary care.

There is an 18 week limit on care within the stepped care model and patients who are thought to have a problem which is not resolvable within 18 weeks are referred to specialist services.

Step 1 interventions focus on health promotion activities and initial assessment for patients with mild mental health problems, and longer-term monitoring and support for patients with severe mental illness.

Referrals to the stepped care service are made by GPs to the mental health worker providing the triage clinic in their practice.

Initial Assessment is undertaken by an senior mental health worker in a GP based triage clinic. Decisions may be made from the initial referral letter, sometimes consulting the patient by telephone. Where appropriate a face-to-face assessment will be arranged.

Step 2 interventions include psycho-education courses, cCBT, guided self-help, medication concordance and routine follow-up. Step 2 interventions are delivered by graduate workers, as well as other members of the team.

Step 3 interventions are delivered by graduate workers (who have undertaken specific training to deliver CBT-based therapy) and senior mental health workers. The options include face-to-face CBT, and group work eg anxiety management, anger management and OCD workshops.

Site 4

This site is an inner city mental health trust and its associated primary care trusts. The stepped care model only includes GP practices who have chosen to have a graduate worker in their practice. This accounts for something like 60-70% of GP practices in the area. As well as working in the stepped care service, graduate workers also have a role providing information and sign-posting to community and voluntary organisations.

In this model GPs retain the option to refer direct to the psychology service if they think it is clinically appropriate. The low-intensity interventions offered are based on the 2+1 model, ie 2 sessions and then a 3 monthly review at which progress is assessed and stepping up may be an option. In practice there has been some leeway in the number of Step 2 sessions offered and some graduate workers provide more sessions, including both face-to-face and telephone work.

Referrals are made by staff based at the GP practice to the practice-based graduate worker.

An Initial Screening Phone Call is usually made by the graduate worker and at this point some patients may be referred elsewhere or immediately stepped up.

Initial Assessment is undertaken by the graduate worker, usually face-to-face, at the GP practice. Graduate workers are supervised by psychologists who are able to advise on assessment decisions. Patients will be referred direct to psychology or counselling (if available) if this is deemed appropriate either on clinical grounds or because the patient is not interested in any of the low intensity interventions, or if the GP has requested that they wish the patient to receive higher intensity interventions.

Step 2 interventions include facilitated self-help, books on prescription and cCBT which is delivered in a library setting, supervised by a graduate worker.

Step 3 and Step 4 interventions are referral to psychology, which may be practice-based, and to counselling where available.

Doncaster IAPT site – Assessment and Low Intensity

The Doncaster demonstration site was set up by a wide ranging partnership of health (PCT and specialist mental health trust), employment agencies (Job Centre+ and condition management programmes), the voluntary sector (such as Mind), the business community (coordinated by the Doncaster Chamber of Commerce) and vigorous representation from patients.

Within the partnership, the IAPT Doncaster clinical model is a 'stepped' version of stepped care where low- and high-intensity CBT is delivered by a mixture of case managers and therapists using collaborative care as the organisational delivery model. All patients with depression, and most patients with anxiety disorders, are allocated to a low-intensity treatment programme as the default first step. Most clinical contact between case managers delivering low-intensity CBT is conducted on the telephone following a first face-to-face assessment session, usually conducted by case managers. Scheduled reviews of treatment outcome are automated via a bespoke IT system which alerts case managers and supervisors to review cases at least every four weeks. Clinical decision-making is facilitated by sessional outcome measures and scheduled clinical case management supervision.

Low-intensity treatments for depression and anxiety include a bespoke written 'Recovery Programme for Depression' and commercially available written materials for anxiety disorders. Computerised CBT is also available for those patients who choose to use it. For patients who choose not to accept the CBT treatment model offered, other services such as counseling and voluntary sector provision are available via signposting. Case managers also assist patients with pharmacological treatment via medication support, although prescribing decisions rest with the patient's GP.

Patients are stepped up to **high-intensity CBT** if a clinical review detects a lack of improvement and the patient wishes a more intensive treatment. A small number of patients are allocated directly to high-intensity treatment where no evidence based low-intensity alternative is available, for example for patients with post-traumatic stress disorder.

The data included in the modeling tool includes only those patients seen in the assessment and low-intensity part of the service.

Newham IAPT site - High-Intensity

The Newham demonstration site consists of a cognitive behavioural therapy (CBT) service created from scratch in mid-2006 plus a linked employment service. The associated employment service is provided by Mental Health Matters and operates side-by-side with the CBT service. Employment coaches help patients to gain employment or resolve employment problems. A broad range of common mental health conditions (depression and all the anxiety disorders) are covered; only those with very severe conditions – like psychosis – are not eligible for the IAPT. People with a severe drug or alcohol problem, which precludes them from participating fully in the therapy process, are also excluded.

The CBT service delivers three steps of intervention:

Step 2a: Low-Intensity Therapy including computerised CBT, guided self-help, group psychoeducation, generally delivered by assistant therapists

Step 2b: High-Intensity Therapy in the form of brief CBT (individual and group), delivered by CBT therapists

The data included in the modeling tool includes only those patients seen in the high-intensity steps 2b and 3 combined.

Developing evidence based and acceptable stepped care systems in mental health care: an operational research project

David Richards[1], Steve Gallivan[2], Lilian Owens[3], John Cape[2], Roger Paxton[4], David Tomson[5], Peter Bower[6], Simon Gilbody[7], Judy Leibowitz[2], Karina Lovell[6], Steve Pilling[2], Martin Utley[2]

Appendix 4: Interview topic guides

INTRODUCTION

Introduce self; Introduce project

"*In this study we are trying to help the NHS plan patient care so that psychological therapy can be offered as a choice to more patients. As part of this project we have created a reconfiguration tool that service managers and other members of staff can use to help them plan and run their services. You have been selected for this project because we want to know your views about the reconfiguration tool and manual that you have been using.*"

Give information sheet, explain text, answer any questions and obtain written consent if patient wishes to continue with the interview.

Start Audiotape Recording

Could ask you to just tell me your job title and role you have within your service?

"*I would like to ask you a few questions about the reconfiguration tool and manual that you have been using*"

Firstly, why did you want to get involved with the project?

[this question is about the **context** behind the interviewees self-selection]

- *Prompts: Tell us about any plans to redesign your service. Why were you doing this? What was driving your need to change your service?*

[keep probing and following leads until you are satisfied you know what was happening **around** the interviewees use of the tool]

Secondly, how did you use the tool?

[this question is about the **mechanisms** used]
- *Prompts: What did you do? Who did it – were other people involved? Where did you use the tool? How many times did you open it?*

Can you please describe your overall experience of using the tool and manual?

[this question asks for an un-influenced overview. From this drill down into more detail]
- *Prompts: how easy/hard was it to get to grips with? What do you think about it visually?*

The manual *– lets start with the first part which talks about reconfiguring your current system, and benefits and pitfalls of stepped care.*
- *Prompts: what did you think of it? What did you think of its clarity? It's ease of understanding? Could it be improved?*

And how about the second part, the reconfiguration tool instructions?
- *Prompts: what did you think of it? What did you think of its clarity? It's ease of understanding? What did you think of the screenshots? Did you use them? Could it be improved?*

The tool itself *- How did you install and run the tool?*
- *Prompts: Could you install it yourself or did you have to get someone else (e.g. from your IT department) to help? Did you have any problems getting the tool up and running?*

Did you use the exercises in the manual to help you get used to using the tool?
- *Prompt: If No, how did you use it then?*

How about the pilot site data, did you use any of those?
- *Prompts:* If yes*: tell me more about this. Which sites did you use? Did you find that any of the pilot sites' data was similar to your service? Did you change any of the patient movement data to more closely match your own site? What did you think of the pilot site descriptions?*
- If No: *was there a reason you did not use these? What did you do instead?*

There was a flowchart option on the tool so that you could visually see how the system you were designing would look

- *Prompts: Did you use this option? If yes: tell me more about this. How did you use it?*
- If No: *was there a reason you did not use it? What did you do instead?*

What did you think about using the evaluation of throughput and resource use buttons?
- *Prompt: Prompts: Did you use this option? If yes: tell me more about this. How did you use it? Did you go back and change the design of your service to incorporate those outputs? Did you manage to find your 'optimum' service?*
- If No: *was there a reason you did not use it? What did you do instead?*

Did you use the tool to create your own scenario?
- *Prompt: If yes, how did you find this? Was it easy/hard to do? Were there difficulties doing this? How did you overcome them? Did you solve them yourself or did you get some help? If so, from whom?*
- If No: *what did you do instead? Did you just use the example ones? Did you come across any problems that stopped you doing this? What were they?*

So now, I'm going to ask you to evaluate the manual and tool as a whole package -how useful would you say it was in the planning of your service?

[this question tells us about the **outcome** of the project]

To what extent do you think your actual service design has been influenced by the information you gained from using the tool and reading the manual?

Have you used any similar tools within your service?
- *Prompt: Can you think of any differences or similarities or advantages/disadvantages of this tool compared with others?*

Do you have any suggestions for improvement that could be made to either the manual and/or the tool?

Do you have any other comments?

THANK YOU FOR YOUR TIME

Staff Interview Topic Guide

INTRODUCTION

Introduce self; Introduce project

"*In this study we are trying to help the NHS plan patient care so that psychological therapy can be offered as a choice to more patients. As part of this project we have created a reconfiguration tool that service managers and other members of staff can use to help them plan and run their services. You have been selected for this project because we want to know your views about why the reconfiguration tool and manual have been difficult to use.*"

Give information sheet, explain text, answer any questions and obtain written consent if patient wishes to continue with the interview.

Start Audiotape Recording

Could ask you to just tell me your job title and role you have within your service?

"*I would like to ask you a few questions about the reconfiguration tool and manual that you have been using*"

Firstly, why did you want to get involved with the project?

[this question is about the **context** behind the interviewees self-selection]

- *Prompts: Tell us about any plans to redesign your service. Why were you doing this? What was driving your need to change your service?*

[keep probing and following leads until you are satisfied you know what was happening **around** the interviewees use of the tool]

Secondly, why did you not manage to use the tool?

[this question is about the **mechanisms** used]
- *Prompts: Lack of time? Not enough staff? Looked too difficult?Not appropriate for service? IAPT prescription – service already planned out so don't need the tool?*

Have you used any similar tools within your service?

Do you have any suggestions for improvement that could be made to either the manual and/or the tool?

Do you have any other comments?

THANK YOU FOR YOUR TIME

SDO Funded Research Study 'Developing evidence based and acceptable stepped care systems in mental health care: an operational research study'

Reconfiguration tool user group

Date: Monday 2nd November 2009

Room: 026, Washington Singer

Time: 09.30-13.00

TOPIC GUIDE:

- What are the service design issues that you have faced? When did you face them?
- How did you go around solving them?
- How did you use the tool? When did you use the tool (in terms of your reconfiguration process)?
- What were the problems you had?
- Suggestions – general and specific.

INTRODUCTION

Introduce self; Introduce project

"*We are now coming towards the end of this study evaluating the reconfiguration tool that you have been using. Last month we held a user group in which some users gave detailed feedback about the tool and the context within which is was used. We have some main themes from this that we would like to explore with you and see how your experiences compare.*"

Obtain verbal consent to record interview.

Start Audiotape Recording

"*Firstly we asked people at the user group to tell us about the context in which they used the tool.* "

[this question is about the **context** behind the interviewees using the tool]

IAPT was a main theme in terms of context, for example, some people found IAPT and it's timescales to be a rollercoaster, others found IAPT, and the constraints that went with it, to be useful in terms of implementing a stronger stepped care model.

- *Prompts: Does this theme resonate with you? If so, how?*

Most services are already established and so are trying to implement and integrate IAPT into the system that is already there.

- *Prompts: Does this theme resonate with you? If so, how?*

Users told us that they wanted to use the tool for a variety of reasons including reporting, curiosity and planning.

[this question is about the **mechanisms** used]

Some used the tool to compare their own service to the pilot sites
- *Prompts: Does this theme resonate with you? If so, how?*

Some tried to use their own data (from IAPTUS, PCMIS and similar packages) to evaluate their service and plan for the future by looking at the effect of different staffing levels on their throughput and waiting times.
- *Prompts: Does this theme resonate with you? If so, how?*

Some tried to use the tool to create reports for commissioners
- *Prompts: Does this theme resonate with you? If so, how?*

- ***The tool itself –***

Users liked the tool and thought it was a good idea, however, they identified some key elements that stopped them using the tool:

Users said that the first part of the manual was very useful and provided a concise summary of their own experiences. Some users, however, said that without training they gave up.

- *Prompts: Does this theme resonate with you? If so, how? Suggested video tutorial/workshop?*

Some users said that there were specific bits of the tool that they wished were clearer. Visually some users said that the tool interface wasn't very intuitive.

- *Prompts: Does this theme resonate with you? If so, how? At what point did it not work for you?*

Some users did not like the fact that the unscheduled discontinuation rates were fixed and so for some people this did not match their service.

- *Prompts: Does this theme resonate with you? If so, how? At what point did it not work for you?*

Some users tried to model their whole pathway but found that they were unable to (e.g. outpatient care)

- *Prompts: Does this theme resonate with you? If so, how? At what point did it not work for you?*

Users whose services were running concurrent classes or clinical activites (for example, patients attending individual therapy and a group) found this difficult to model in the tool

- *Prompts: Does this theme resonate with you? If so, how? At what point did it not work for you?*

Users said that they would like the tool to be more interactive. Some suggestions were more explanation on the screen to tell you what information you need to put in, and a video tutorial or something similar to show you how to do things.

- *Prompts: Does this theme resonate with you? If so, how? At what point did it not work for you?*

Do you have any other comments?

THANK YOU FOR YOUR TIME

Appendix 5: Analytical methods for calculating the distribution of the occupancy of each state within a multi-state flow system.

Analytical methods for calculating the distribution of the occupancy of each state within a multi-state flow system.

Martin Utley, Steve Gallivan, Christina Pagel, University College London

David Richards, University of York

Abstract

We present analytical techniques for estimating the time-varying occupancy of each state within any multi-state flow system that can be represented as a particular type of directed graph called a rooted directed tree. Such systems have a single point of entry from which each other state within the system can be reached by exactly one directed path. The discrete time model presented incorporates the use of time-varying and general distributions for the number of individuals entering the system and of general sojourn time distributions for each state. We illustrate the use of such analysis in the context of the delivery of mental health services in the community for people with common mental health problems and then discuss the possibility of adapting these methods with relation to systems that have a structure more complex than that of a rooted directed tree.

1. Introduction

In this paper we discuss an extension of analytical methods developed for estimating capacity requirements within a single hospital environment (Gallivan et al, 2002; Utley et al, 2003; Gallivan and Utley, 2005) for use in the analysis of certain processes that involve individuals spending time in a number of different states comprising a system. The analysis presented is intended to be generic and a single state within such a system may relate to, for example, a particular physical location, a particular activity or therapy, a particular health condition or some combination of the three. Alternatively, within this framework individual states need not have any physical significance whatever. The analysis presented here is limited to cases where the set of directed paths that can be taken by a person through the system concerned combine to form a rooted directed tree - essentially a system with one point of entry (the root vertex) from which each other state is accessible by exactly one directed path (see figure 1). The possibility of adapting the analysis for use in describing systems that seemingly have other structures is considered in the discussion.

The development of analytical stochastic compartmental models to describe multi-state processes related to health and health care is by no means novel and there is a large literature concerning such models, which we do not intend to review here. The approaches adopted include queueing models such as that given in Worthington (1991) and, of particular relevance to the work presented here in terms of the structure of the system studied and the clinical context, the

network queuing model related to the provision of care for serious mental health problems in the US (Koizumi et al 2005). Gallivan et al (2006) give an introduction to a form of stochastic compartmental modelling called patient progress modelling championed by Jackson in the context of clinical trials (see for example (Jackson and Aspden, 1979; Jackson *et al.*, 1981). Other, related, work is based on the use of Coxian phase-type distributions to describe multi-state patient flow processes (see for example McClean & Millard (1993), Marshall et al (2002) and Taylor et al (2000)). Within many of these approaches, use is made of "dummy" or "virtual" states or phases for which the distribution of time spent in each state (the sojourn time) has a simple parameterised form. The number of such states and the exponent for each is chosen to give a composite sojourn time that best fits that observed for the physical process of interest. In our approach, each state has a general, albeit discrete, sojourn time distribution, obviating the necessity of such a fitting process. That said, the methods presented could in principle be used in conjunction with parameterised sojourn time distributions (full discussion of this is beyond the scope of the current paper). Additionally, the analytical framework presented enables one to model circumstances in which the destination on leaving a given state is dependent on sojourn time.

Our analysis is presented in two sections. Firstly, we derive the probability of a person being in a particular state within the system at a specified point in time after entering the system. We then use this analysis to derive the time-varying distribution of occupancy of each state within the system given the time-varying

distribution of the number of individuals entering the system, building on previous results relating to occupancy of a single state system (Utley et al 2003).

2   *Assumptions and notation*

Our analysis concerns health care processes where individuals move between a number of distinct 'states' usually with some variability in the time spent within each (the sojourn time). Depending on the context, these states could correspond to physical locations within a hospital, distinct stages of a disease, receipt of a particular therapy or perhaps some combinations of many such physical attributes. That said, the states within the system need not have any physical interpretation whatever. In modelling terms, these states are regarded as vertices of a directed graph, transitions from one state to another corresponding to directed edges. The use of such graphs enables one to specify all the various 'patient pathways' that can be followed by individuals. Within this paper we restrict attention to the case where such graphs take the form of a rooted directed tree with a finite number of vertices.

There is an algorithm that can be used to index a rooted directed tree in such a way that there is no directed path from any vertex to a vertex with a lower index (see appendix A).

Consider a process that involves a patient moving through such a system of states. At any given time, an individual within the system occupies exactly one state. The occupancy of each state has a lower bound of zero but, for our analysis, we make the assumption that there is no upper limit to the number of people that can occupy any given state. In the context of a system in which certain states relate to the use of a resource that is, in reality, limited, this assumption may seem odd. However, it allows one to calculate the distribution of "demand" at each state within the system and this approach can be used to generate useful insight concerning the behaviour of a system that has capacity constraints (see for example Gallivan et al 2002). Another key assumption in our analysis is that the lengths of time that different individuals stay in a given state are treated as independently distributed.

2.1 The system

We consider a system of N states indexed i. As stated above, the system is assumed to be a rooted directed tree, with the root vertex corresponding to the state at which individuals enter the system. As a consequence of the algorithm described in Appendix A, the root vertex has index $i=1$.

A key feature of a system of states that can be represented as a rooted directed tree is that each state other than that corresponding to the root vertex can only be entered from one other state. For $1 < i \leq N$, let the state from which an

individual can enter state i be denoted f_i, mnemonically the state that **f**eeds state i.

2.2   *The movement of an individual between states*

Our analysis is based on the assumption that, having entered a given state, a person will occupy that state for a whole number of time units. We employ three time frames: time since the start of the modelled period of interest, time since an individual enters the system at state 1 and time since an individual enters a particular state.

Letters of the Greek alphabet are used to denote probabilities; integer valued random variables are represented by lower case letters of the English alphabet , the corresponding upper case letter denoting the respective probability generating function (see appendix B). We first introduce variables that reflect probabilities of certain conditions and events that are defined with respect to the time at which an individual first enters the system:

let $\alpha_{i,t}$ denote the probability that a person enters state i, t time units after entering state 1;

let $\rho_{i,t}$ denote the probability that a person occupies state i, t time units after entering state 1;

define the random binary variable $x_{i,t}$ where $x_{i,t} = 1$ if an individual is in state i, t time units after entering state 1 and $x_{i,t} = 0$ otherwise;

let $X_{i,t}(s)$ denote the probability generating function that describes the probability distribution of $x_{i,t}$.

We next introduce variables that reflect probabilities for certain other conditions and events, which are defined with respect to the time at which an individual enters a particular state.

let $\theta_{i,b}$ denote the probability that a person is still in state i, b time units after entering it. This state-persistence probability is used to reflect the sojourn time distribution for state i;

let $\phi_{i,j,b}$ denote the probability that a person leaves state i and enters state j after being in state i for b time units. These variables are referred to as the transfer probabilities and reflect that, within the systems considered, the destination state on leaving a given state may be stochastic and dependent on the sojourn time.

2.3   Arrivals to the system and state occupancies

The variables defined in section 2.2 are used to characterise the movement of an individual though the system. To calculate state occupancies associated with more than one person, we introduce the following variables, defined with respect to the start of the modelled period:

let the number of people entering state 1 (the root vertex) from outside the system, v time units after the start of the modelled period, be denoted by the integer valued random variable h_v. Recall that no person enters the system at any state other than state 1.

let $H_v(s)$ denote the probability generating function that describes the probability distribution of h_v;

let h_v have expectation and variance $E(h_v)$ and $Var(h_v)$ respectively;

let the integer valued random variable $u_{i,v}$ be the number of people that occupy state i, v time units after the start of the modelled period;

let $U_{i,v}(s)$ denote the probability generating function that describes the probability distribution of $u_{i,v}$.

---

3   *ANALYSIS*

3.1   The probability of an individual occupying a given state at a

particular time

In this section we present how the state persistence probabilities $\{\theta_{i,b}\}$ and the

transfer probabilities $\{\phi_{i,j,b}\}$ are used to model the movement of an individual

through the system. The analysis employed to derive the probability, $\rho_{i,t}$, that

an individual occupies a particular state at a particular time after entering the

system is based on calculating and then summing the probabilities for each and

every distinct combination of events that result in this eventuality.

As a preparatory step, we note that the values of the variables $\phi_{i,j,b}$ are constrained

such that

$$\phi_{i,j,0} = 0 \qquad\qquad 1 \le i \le N,\ 1 \le j \le N,$$

(1)

$$\phi_{i,i,b} = 0 \qquad\qquad 1 \le i \le N,\ b > 0,$$

(2)

$$\phi_{i,j,b} = 0 \qquad\qquad 2 \le i \le N, \quad 1 \le j \le N-1, \quad i > j, \quad b > 0,$$

(3)

$$\sum_{j=i+1}^{N} \phi_{i,j,b} = \theta_{i,(b-1)} - \theta_{i,b} \qquad\qquad 1 \le i \le N, \, b > 0.$$

(4)

Equations (1) and (2) reflect that, within the model presented, individuals cannot leave a state at the same moment they enter it and cannot leave a state to re-enter that same state. Equation (3) reflects the condition that an individual cannot move from any state to a state with a lower index. Equation (4) reflects the relationship between the transfer probabilities and the state-persistence probabilities and the fact that an individual only leaves a state for another state within the system. The summation in equation (4) is over all possible states that an individual can enter directly after leaving state i.

From the definitions of $\{\alpha_{i,t}\}$ and $\{\phi_{i,j,b}\}$ given in section 2, the joint probability of a person entering state f_k, $(t\text{-}b)$ time units after entering state 1 and then leaving state f_k for state $k > f_k$, b time units later is given by the product $\alpha_{f_k,(t-b)}\phi_{f_k,k,b}$. Summing over possible times of entry to state f_k, the combined probability that an individual enters state k, t time units after entering state 1, is given by

$$\alpha_{k,t} = \sum_{b=0}^{t} \alpha_{f_k,(t-b)} \phi_{f_k,k,b} \qquad\qquad 2 \le k \le N, \, t \ge 0,$$

(5)

where we recall that the probabilities $\{\phi_{i,j,0}\}$ are defined but set to zero (equation (1)).

Noting that, by definition, $\alpha_{1,0} = 1$ and that, once a person has left a state, they cannot re-enter that state at any point, completes the set of recurrence relations

$$\alpha_{1,0} = 1$$

$$\alpha_{1,t} = 0 \qquad\qquad\qquad\qquad\qquad\qquad t > 0$$

$$\alpha_{k,t} = \sum_{b=0}^{t} \alpha_{f_k,(t-b)} \phi_{f_k,k,b} \qquad\qquad 2 \le k \le N, \quad t \ge 0.$$

(6)

We now consider the probability $\rho_{i,t}$ that a person occupies a unit of capacity within a given state i at some time t after entering state 1. From the definitions of $\{\alpha_{i,t}\}$ and $\{\theta_{i,b}\}$, the joint probability that an individual enters state i, t-b time units after entering the system at state 1 and still occupies this state b time

units later is given by $\alpha_{i,(t-b)}\theta_{i,b}$. Summing over possible times of entry to state i, we have

$$\rho_{i,t} = \sum_{b=0}^{t} \alpha_{i,(t-b)}\theta_{i,b} \qquad\qquad 1 \le i \le N, \; t \ge 0.$$

(7)

where $\alpha_{i,t}$ is given by (6).

3.2   Occupancy

The analysis in the previous section gives the probability that an individual is in a given state at a specified point in time after entering the system. In this section, we present how this can be used, along with the time-varying distribution of arrivals, to give the distribution of the occupancy of a state at a particular time after the start of the modelled period. For this we use standard results relating to probability generating functions and build on results relating to single state systems given in Utley et al (2003).

We first note that the occupation or otherwise of state i by an individual, t time units after that individual enters state 1, is a single Bernoulli trial with probability $\rho_{i,t}$. That is to say:

$$X_{i,t}(s) = (1 - \rho_{i,t}) + \rho_{i,t}s \qquad\qquad 1 \le i \le N,\, t \ge 0,$$

(8)

$$E(x_{i,t}) = \rho_{i,t} \qquad\qquad 1 \le i \le N,\, t \ge 0,$$

(9)

and

$$Var(x_{i,t}) = \rho_{i,t}(1 - \rho_{i,t}) \qquad\qquad 1 \le i \le N, \quad t \ge 0.$$

(10)

Consider $u_{i,T}$, the occupancy of state *i, T* time units into the modelled period. Recall that the number of people entering state 1 on day *(T-t)* is denoted by the integer valued random variable $h_{(T-t)}$, the distribution of which is described by the probability generating function $H_{(T-t)}(s)$. Analysis similar to that in Utley et al (2003) can be used to show that $U_{i,T}(s)$, the probability generating function that describes the probability distribution of $u_{i,T}$, is given by

$$U_{i,T}(s) = \prod_{t=0}^{T} H_{(T-t)}(X_{i,t}(s)) \qquad\qquad 1 \le i \le N,\, T \ge 0.$$

(11)

Using the standard results associated with probability generating functions given in appendix B, we can write the expectation and variance of $u_{i,T}$ as

$$E(u_{i,T}) = \sum_{t=0}^{T} E(h_{(T-t)})E(x_{i,t}) = \sum_{t=0}^{T} E(h_{(T-t)})\rho_{i,t} \qquad 1 \le i \le N,\ T \ge 0,$$

(12)

and

$$Var(u_{i,T}) = \sum_{t=0}^{T} E(h_{(T-t)})Var(x_{i,t}) + E^2(x_{i,t})Var(h_{(T-t)})$$

$$= \sum_{t=0}^{T} E(h_{(T-t)})\rho_{i,t}(1-\rho_{i,t}) + \rho_{i,t}^2 Var(h_{(T-t)})$$

$$1 \le i \le N,\ T \ge 0,$$

(13)

where $\rho_{i,t}$ is given by (7).

If the expected occupancy of a given state is large, then in circumstances where there is appreciable variability in sojourn time, the distribution of occupancy can, due to the central limit theorem, be approximated using the normal distribution with mean and variance given by (12) and (13) respectively. Alternatively, if $\{H_v(s)\}$ are specified, the exact distribution of $u_{i,T}$ can be obtained from the probability generating function given in equation (11).

4 Illustrative example

We illustrate the use of the analysis outlined in the previous section in the context of a project being conducted by the authors, led by DR, concerned with the delivery in the community of services for people with common mental health problems such as anxiety and depression (for a more detailed description of the project see NHS Service Delivery and Organisation 2008). Such services are being reconfigured in many parts of the UK, introducing a system called "stepped care" based on the use of both low and high intensity therapy dependent on patients' needs. One of the aims of our project is to provide participating sites with insight concerning capacity requirements associated with the new structures of services.

The illustrative example given is drawn from work done with one UK service, which will remain anonymous. For a single patient, the system can be considered to consist of seven states as follows

1 patient in low-intensity therapy

2 patient in high-intensity therapy

3 patient left system - inappropriate referral

4 patient left system - dropped-out from low-intensity therapy

5 patient left system - completed low-intensity therapy

6 patient left system - dropped out from high-intensity therapy

7 patient left system - completed high-intensity therapy

Some of the parameter values (for example arrival rates, the sojourn time distributions $\{\theta_{1,b}\}$ and $\{\theta_{2,b}\}$ for the two non-absorbing states and the sojourn time dependent transfer probabilities $\{\phi_{1,2,b}\}$, $\{\phi_{1,3,b}\}$, $\{\phi_{1,4,b}\}$ and $\{\phi_{1,5,b}\}$) used in this illustrative case study have been derived from data routinely collected by the service in electronic format. Where parameter values were not available from these data (for instance the sojourn time dependent transfer probabilities $\{\phi_{2,6,b}\}$ and $\{\phi_{2,7,b}\}$) we have used estimates provided by a leading UK mental health researcher (DR) in conjunction with $\{\theta_{2,b}\}$. A summary of the case study and the data used in our illustrative analysis is given at figure 2.

In figure 3a we present estimates for the expectation and standard deviation of the time-varying occupancy of each state within the system over the first year of operation. In addition to the actual levels of occupancy, of particular interest to the service concerned was the large degree of variability in the number of patients expected to be in low-intensity therapy at steady state (as indicated by the size of the standard deviation compared to the expected occupancy) and the estimated time it will take for the number of patients in high-intensity therapy to reach steady state. The increase with time in the number of people leaving the system due to the referral being deemed inappropriate or because they "drop-

out" prior to the completion of therapy is initially more rapid than the increase in the number of people that leave low-intensity therapy having completed the treatment. Figure 3b illustrates this effect, which has the consequence that early audit of the outcomes for patients leaving the system will give an unduly pessimistic view. When these findings were presented to the service there was a broad acceptance of the face-validity of the numerical results and several comments were made that the insight concerning early performance of the service would be valuable to other new services since this effect had caused the service problems with external stake-holders as well as undermining staff morale.

5.   Discussion

We have developed analytical techniques for estimating the occupancy of each state within any multi-state flow system that can be represented as a rooted directed tree. The discrete-time model employed allows use of a general and time-varying distribution for the number of arrivals to the system and of general distributions for the sojourn time in each state, which distinguishes the approach from standard Markov models. Another useful feature of the analysis, and one that further distinguishes our work from standard Markov models, is that one can model systems in which the destination upon leaving a state is stochastic and dependent on the time spent in that state.   For instance, in the illustrative analysis presented, this feature of the model was used to reflect the fact that the longer an individual stayed in low-intensity therapy for anxiety or depression,

the less likely he or she is to "drop-out" of treatment. It is relatively straightforward to extend the methods presented to account for different groups of people having different sojourn time distributions for any or all states, so long as the arrival patterns for different groups can be viewed as independent. Potential applications of this modelling framework include use in planning capacity for acute settings, modelling the progression of certain diseases, modelling health status at a population level and many others.

One limitation of the work presented is that no consideration is given to the joint distribution of the occupancies of more than one state. Clearly, given that the states are mutually exclusive and that total number of people within the system is capped by the sum of the arrivals, the occupancies of different states cannot be considered independent. In applications where the joint distribution of state occupancies are of interest, we speculate that methods based on a weighted combination of multinomial distributions might be fruitful. Another limitation is that, as is often the case when using data-derived general distributions for sojourn times, say, it is not clear to what extent one should "smooth" the data. It can be seen from figure 1 that we did not smooth the data related to state-persistence probabilities.

Whilst the analysis presented in this paper is limited to the case of a system of states that can be represented by a rooted directed tree, it would seem possible to use similar methods in other contexts. Consider, for instance, any system for which the arrival of different groups of individuals can be viewed as

independent and where the potential pathways taken by each such group through the system can be represented as a, potentially distinct, rooted directed tree (see figures 1c and 1d). In this context, the time-varying occupancy of a given state by different groups could be calculated using the methods presented, treated as independent and the summed to give the overall distribution of occupancy for that state. Careful attention would need to be paid to the labelling of states in this process. For systems in which the potential paths taken by a group of individuals include cycles, more care is required. However,by introducing more states and revising the definition of each state to incorporate the path taken to reach that state, the methods presented here could be used as a basis for an analysis of occupancy in such a context (see figures 1e and 1f). A detailed discussion of these potential adaptations is beyond the scope of this paper and will be the subject of future work.

Appendix A

For a rooted directed tree with n vertices, assign the index n to the vertex at the end of the directed path with the largest number of edges, breaking ties arbitrarily. Deleting this vertex gives a rooted directed tree with n-1 vertices. This process can be repeated iteratively until all the vertices of the graph are indexed.

Appendix B

Let y be a non-negative integer valued random variable where $\text{Prob}(y = i) = w_i$. The probability generating function $Y(s)$ associated with y is defined as

$$Y(s) = \sum_{i=0}^{\infty} w_i s^i, \qquad\qquad 0 \le s < 1.$$

(B1)

The parameter s is a dummy variable used only to define the generating function and has no physical significance.

Suppose that k is a random non-negative integer valued random variable with probability generating function $K(s)$. If the random variable z is the sum of k independent random variables each having the same distribution as y, then $Z(s)$, the probability generating function for z, is given by

$$Z(s) = K(Y(s))$$

(B2)

Further, the expectation and variance of z are given by:

$$E(z) = E(k)E(y)$$

(B3)

and

$$Var(z) = E(k)Var(y) + E^2(y)Var(k)$$

(B4)

The probability generating function *C(s)* for *c*, the sum of two independent random variables *a* and *b* that have generating functions *A(s)* and *B(s)* is given by:

$$C(s) = A(s)B(s).$$
(B5)

The expectation and variance of *c* are given by

$$E(c) = E(a) + E(b)$$
(B6)

and

$$Var(c) = Var(a) + Var(b).$$
(B7)

For proofs of these standard results see, for example, Cooper (1981).

REFERENCES

Cooper RB. (1981) Introduction to Queueing Theory, Edward Arnold, London.

Gallivan S, Utley M, Treasure T, Valencia O. (2002) Booked inpatient admissions and capacity: a mathematical modelling study. British Medical Journal. 324: 280-282.

Gallivan S, Utley M. (2005) Modelling admission booking of elective in-patients into a treatment centre. IMA Journal of Management Mathematics. 16: 305-315.

Jackson RRP, Aspden P (1979) Treatment evaluation – a modelling approach with application to acute myeloid leukaemia. Journal of the Operational Research Society, 30:11-22.

Jackson RRP, McKay VL, Malpas JS (1981) Patient progress modelling and results in Wilm's tumour. Omega, 9(5):527-536.

Koizumi, N., Kuno, E., and Smith, T.E. (2005) Modeling Patients Flows Using a Queueing Network with Blocking, Health Care Management Science, 8:49-60

Marshall AH., McClean SI., Shapcott CM. and Millard PH. (2002). Modelling Patient Duration of Stay to Facilitate Resource Management of Geriatric Hospitals, *Health Care Management Science,* 5**:** 313-319.

McClean SI and Millard PH (1993), Modelling In-Patient Bed Usage Behaviour in a Department of Geriatric Medicine, *Methods Inform. Med.* 32**,** 79-81.

NHS Service Delivery and Organistation (2008), Evaluating models - Developing evidence-based and acceptable stepped care schemes in mental health care: An operational research project**;** www.sdo.lshtm.ac.uk/sdo1092005.html, accessed 17.01.2008.

Taylor, G. J., McClean, S. I. and Millard, P. H. (2000). Stochastic models of geriatric patient bed occupancy behaviour. *Journal of the Royal Statistical Society A.* **163,** 39-48.

Utley M, Gallivan S, Treasure T, Valencia O. (2003) Analytical methods for calculating the capacity required to operate an effective booked admissions policy for elective inpatient services. Health Care Management Science. 6: 97-104.

Worthington DJ (1991), Hospital waiting list management models. *Journal of the Operational Research Society*, 42:833-43.
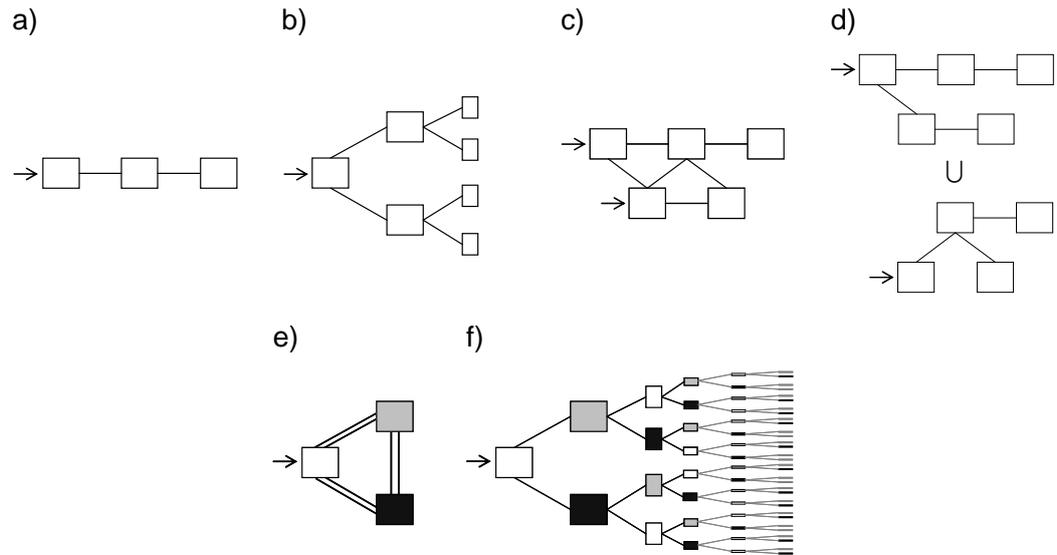
Figure 1   Six graphs that represent different forms of system, each composed of multiple states. In each case, individuals enter the system at the vertex(ices) indicated by an arrow. Single lines indicate that a directed edge exists from the vertex on the left to the vertex on the right. Double lines indicate that a non-directed edge exists between the two vertices. Graphs a) and b) are rooted directed trees. Figure c) is not a rooted directed tree but can be considered as the union of two distinct rooted directed trees as shown in d). The system represented by graph e) contains a cycle but can be represented by a rooted directed tree with a large number of states such as that depicted in figure f).

Illustrative example of analysis - input data:
stepped care for common mental health problems
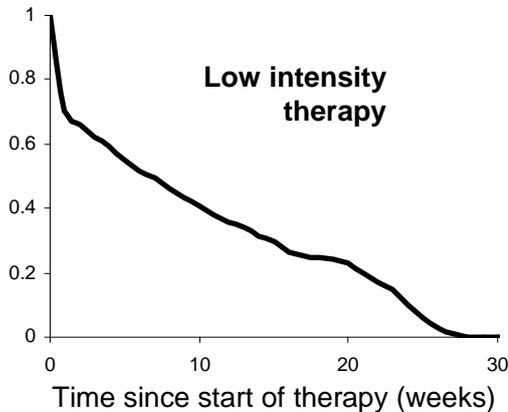
Service structure
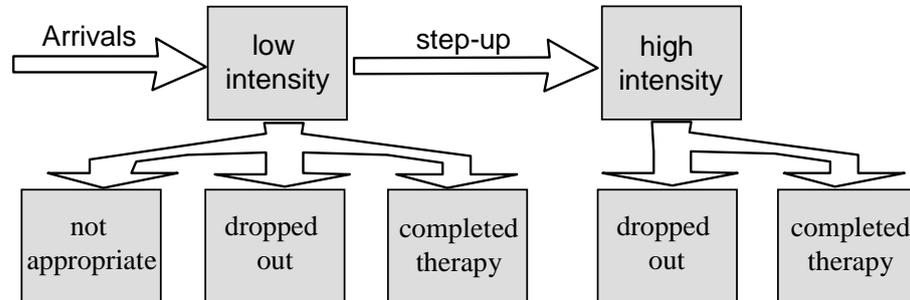
Unit of time - 1 week.   *Modelled period* - 52 weeks

Arrivals

mean $E(g_d) = 70$

variance $Var(g_d) = 729$ each week *d*

Persistence probabilities
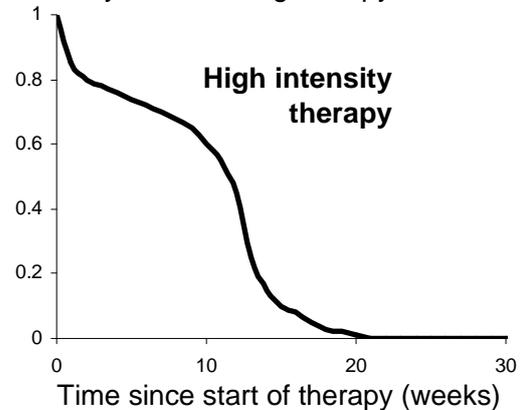
Figure 2   Key features of the mental health case-study used to illustrate
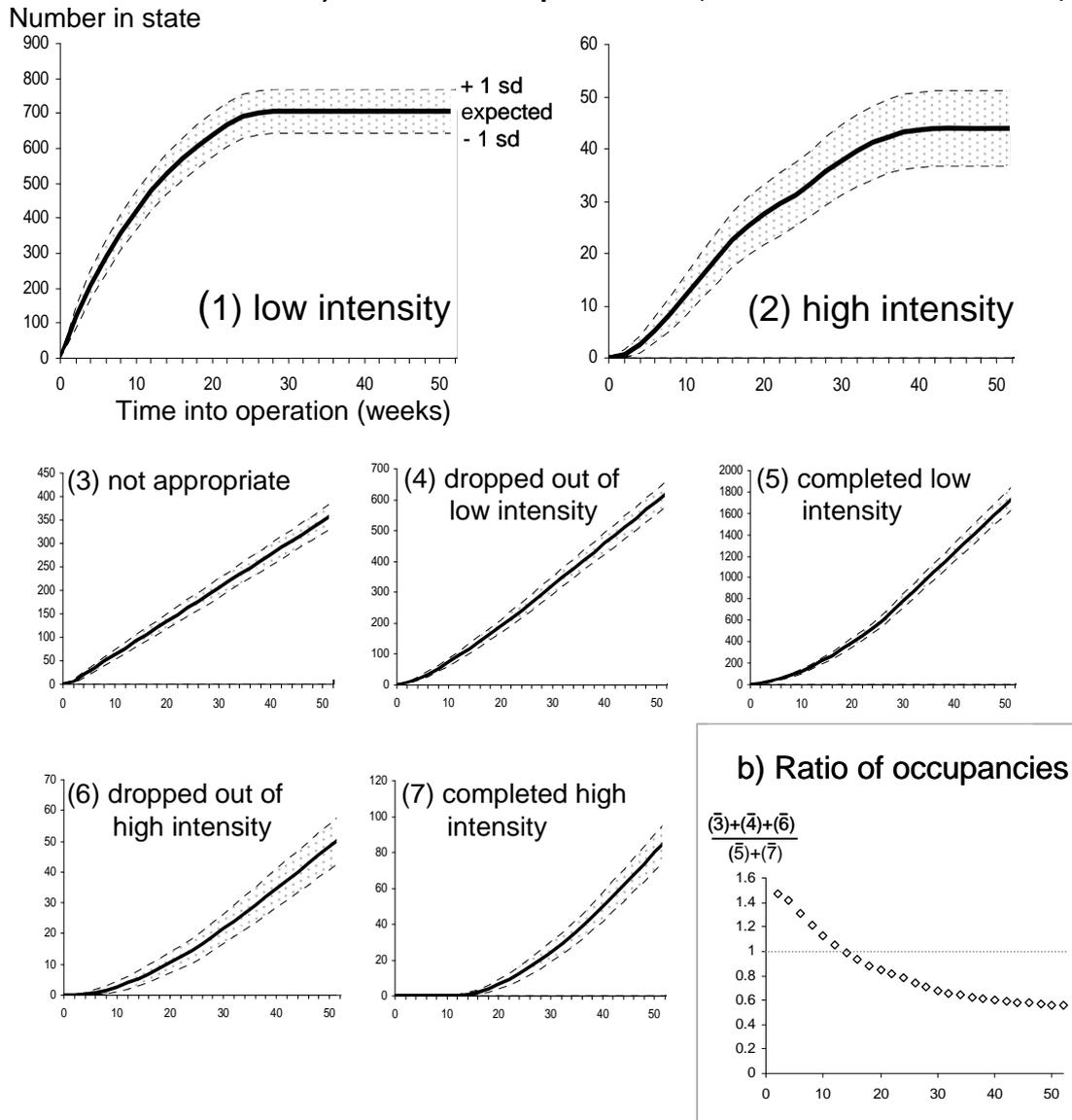the analysis.

Figure 3 Model output concerning the time-varying occupancy of different states comprising the system for the provision of mental health services.

Appendix 6 Mathematical Appendix

Mathematical model to estimate throughput

The approach used is complementary to traditional queueing theory and is most suited where traffic intensity is equal to or greater than 1. Additionally, this analysis is not dependent on the arrival or duration of treatment distribution.

A1.1 A single treatment slot

Assumptions

Our treatment slot is a time slot in a diary (e.g. a therapy session) and we assume that patients are treated in discrete sessions. We further assume that a patient takes at least 1 session to be treated, and that at the start of the modeled period there is no patient currently in the middle of their treatment (i.e. at $t=0$ the time slot is either empty or a patient has just started their treatment). We assume that durations of treatment of different patients are independent of one another.

Notation

For $x \geq 1$, let p_x denote the probability that a patient's treatment time is exactly x time units.

For $x \geq 1$, let s_x denote the probability that a patient's treatment time is strictly longer than x time units.

For $i \geq 1, t \geq 1$ let $r_{i,t}$ be the probability that exactly i patients have completed their treatment and that no other patient has started their treatment by time t.

For $i \geq 1, T \geq 1$, let $f_{i,T}$ be the probability that at time T exactly *i* people have completed their treatment. Note that another patient may have started.

The distribution for the number of people who have completed treatment by time T

We begin by considering $r_{1,t}$, the probability that by time $t \geq 1$ exactly one person has arrived and left and no one else has yet started.

$$r_{1,t} = p_t \qquad\qquad (1)$$

We can then define $r_{i,t}$ iteratively:

$$r_{i,t} = \sum_{k=1}^{t} r_{i-1,k} r_{1,t-k} = \sum_{k=1}^{t} r_{i-1,k} p_{t-k} \qquad\qquad (2)$$

Thus we have defined the probability that at some time *t*, *i* people have been treated and no one else has yet started. To relax this latter condition, we now consider $f_{i,T}$, the probability that at some time *T*, exactly *i* people have completed their treatment. We use $r_{i,k}$ to calculate this and for a given time *T*:

$$f_{i,T} = \sum_{k=1}^{T} r_{i,k} s_{T-k} \qquad\qquad (3)$$

A1.2 A network of units

We now extend the concept of a single treatment slot to a network of units that can be thought of as representing a given system.

A step in a general network

Notation

Consider a treatment slot of type *i*. Note that in this analysis, states outside the network (e.g. 'treatment completed') are treated as a special type of treatment slot. There are a constant number, N_i, of each type of treatment *i*.

In a given time period, define the random variable X_i as the number of people who have left a treatment slot of type *i*. The expectation and variance of this number are $E(X_i)$ and $Var(X_i)$, and we assume that these quantities are well-defined.

Let α_{ij} be the probability that a person leaving a treatment slot of type *i* goes to a treatment slot of type *j*.

Let λ_i be the Poisson arrival rate from outside the system to the treatment slot of type *i* for a given time period.

Define $B(p)$ as the Bernouilli distribution with parameter *p*, where $0 \leq p \leq 1$.

Define $G_Y(s)$ as the generating function associated with a probability distribution Y.

General results from probability theory

For a constant number N_i of independent random variables X_i,

$$E\left(\sum_{k=1}^{N_i} X_i\right) = \sum_{k=1}^{N_i} E(X_i) = N_i E(X_i), \tag{4}$$

$$Var\left(\sum_{k=1}^{N_i} X_i\right) = \sum_{k=1}^{N_i} Var(X_i) = N_i Var(X_i) \tag{5}$$

If a positive integer valued distribution Z has generating function $G_Z(s)$ and a distribution Y has generating function $G_Y(s)$ then the distribution $W = \sum_{k=1}^{Z} Y$ has generating function:

$$G_W(s) = G_Z(G_Y(s)). \tag{6}$$

Additionally the expectation and variance of Y are given by:

$$E(Y) = G'_Y(1), \tag{7}$$

$$Var(Y) = G''_Y(1) + E(Y) - E^2(Y). \tag{8}$$

A1.3 Flows through a general network

Consider a step in a general network. Here we consider flows in and out of a constant number, N_j, of units of capacity of type j. In this 'always full' system, people arriving at a treatment slot of type j will first enter a queue of unlimited size. The number of people in a

queue waiting to enter a treatment slot of type j is denoted Q_j. In what follows, we assume that there is no balking (a reasonable assumption in the context of mental health treatments), but balking could be added into the system by specifying a maximum queue size. Flows into the queue for units of capacity of type j can come from other units of capacity of type $i \neq j$ or from outside the system.

Inputs from a treatment slot of type i

For each person leaving a particular treatment slot of type i, we can think of their destination as a Bernouilli trial, where they will arrive at the queue for a treatment slot of type j with probability α_{ij}. Over the given time period, we thus have a random number X_i of Bernouilli trials. If W_{ij} represents the total number of people who have arrived at the queue for a treatment slot of type j from a particular treatment slot of type i over the given time period, then:

$$W_{ij} = \sum_{k=1}^{X_i} B_k(\alpha_{ij}) \tag{9}$$

Using the standard results in section 2.2 we obtain the following equations:

$$E(W_{ij}) = \alpha_{ij} E(X_i) \tag{10}$$

$$Var(W_{ij}) == \alpha_{ij}^2 Var(X_i) + \alpha_{ij}(1-\alpha_{ij})E(X_i) \tag{11}$$

Equations (10) and (11) give the expectation and variance for the total number of people who have arrived at the queue for a

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treatment slot of type j from a particular treatment slot of type i over the given time period. However, we have a block of N_i units of capacity of type i so we use equations (4) and (5) to derive the total number of people, Y_{ij}, who arrive at the queue for a treatment slot of type j from the block of units of capacity of type i over the given time period:

$$E(Y_{ij}) = N_i \alpha_{ij} E(X_i) \tag{12}$$

$$Var(Y_{ij}) = N_i (\alpha_{ij}^2 Var(X_i) + \alpha_{ij}(1 - \alpha_{ij})E(X_i)) \tag{13}$$

Thus the total expected input into state j is

$$E(in) = \sum_{i \neq j} \alpha_{ij} N_i E(X_i) + \lambda_j \tag{14}$$

where the sum is over all different types of treatment slot i. Note that α_{ij} can equal zero.

The total variance of the input to the queue for units of capacity of type j is

$$Var(in) = \sum_{i \neq j} \left(\alpha_{ij}^2 N_i Var(X_i) + \alpha_{ij}(1 - \alpha_{ij}) N_i E(X_i) \right) + \lambda_j \tag{15}$$

Since the network is always full, the output from units of capacity of type j is not dependent on the input into the queue. Thus the expected output from units of capacity of type j is

$$E(out) = N_j E(X_j), \tag{16}$$

$$Var(out) = N_j Var(X_j) \tag{17}$$

Note that for a special treatment slot, called say *M*, corresponding to a person that has left the system, $X_M = 0$, since no one leaves this state. Note also that for this special state, there is no queue, since capacity is essentially unlimited.

We are now in a position to consider the expectation and variance of the change queue size Q_j over the period *T*:

$$E(\Delta Q_j) = \sum_{i \neq j} \alpha_{ij} N_i E(X_i) + \lambda_j - N_j E(X_j),$$ (17)

$$Var(\Delta Q_j) = \sum_{i \neq j} \left(\alpha_{ij}^2 N_i Var(X_i) + \alpha_{ij}(1 - \alpha_{ij}) N_i E(X_i) \right) + \lambda_j + N_j Var(X_j).$$ (18)

For a patient waiting to receive treatment for a mental health problem, waiting time in a queue is more likely to be of concern than the actual number of people waiting. Let μ_j represent the mean number of sessions required to treat a patient in a unit capacity of type *j*. We can estimate the change in waiting time, ΔP_j for an individual arriving in the queue Q_j as:

$$\Delta P_j = \frac{E(\Delta Q_j)\mu_j}{N_j}.$$ (19)

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Addendum:

This document is an output from a research project that was commissioned by the Service Delivery and Organisation (SDO) programme, and managed by the National Coordinating Centre for the Service Delivery and Organisation (NCCSDO), based at the London School of Hygiene & Tropical Medicine.

The management of the SDO programme has now transferred to the National Institute for Health Research Evaluations, Trials and Studies Coordinating Centre (NETSCC) based at the University of Southampton. Although NETSCC, SDO has conducted the editorial review of this document, we had no involvement in the commissioning, and therefore may not be able to comment on the background of this document. Should you have any queries please contact sdo@southampton.ac.uk.