A new model for the delivery of psychiatric services for general hospital inpatients: The development and delivery of a psychiatric service model for older, acutely admitted general hospital inpatients.



Mark Toynbee
Exeter College
University of Oxford

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Declarations

This thesis is submitted to the Department of Psychiatry, University of Oxford, in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Psychiatry.

Supervision

My supervisors for this work were Dr Jane Walker, Senior Clinical Researcher & Honorary Consultant Psychiatrist, and Professor Michael Sharpe, Professor of Psychological Medicine.

Where the work was done

This work was carried out at the Department of Psychiatry, University of Oxford. Collaborating sites included the John Radcliffe Hospital (Oxford University Hospitals NHS Foundation Trust), the Royal Devon and Exeter Hospital NHS Foundation Trust, and Addenbrooke's Hospital (Cambridge University Hospitals Trust).

My contribution to the work

This thesis is my own work and has not been submitted for any other degree or professional qualification. Specifically, I was responsible for the following:

1. Leading and conducting the systematic review
2. Assisting the development of the new service model
3. Assisting the development of the service manual for the new model
4. Creating and developing the checklist for the delivery of the new model
5. Training and assessing clinicians in delivering the new model
6. Designing the process evaluation
7. Supervising data collection for the process evaluation
8. Conducting a proportion of the interviews and quantitative data collection
9. Leading and conducting the qualitative analysis of the delivery of the new model
10. Leading and conducting the quantitative analysis of the delivery of the new model
11. Writing the thesis

Assistance received

I received the assistance in carrying out the work from the following:

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List of Abbreviations

ASI	Anxiety Status Inventory
BAS-DEP	Brief Assessment Schedule Depression scale
BAS-OBS	Brief Assessment Schedule Organic Brain Syndrome scale
BI	Barthel Index
CGA	Comprehensive Geriatric Assessment
CGBRS	Crichton Geriatric Behavioural Rating Scale
CGIPI	Clinical Global Impression of Physical Illness
CI	Confidence interval
CINAHL	Cumulated Index to Nursing and Allied Health Literature
CMHT	Community Mental Health Team
DARE	Database of Abstracts of Reviews of Effects
DSM	Diagnostic and Statistical Manual of Mental Disorders
GAD	Generalised anxiety disorder
GDS	Geriatric Depression Scale
GHQ	General Health Questionnaire
GP	General practice
HoNOS65+	Health of the Nation Outcome Scale 65+
ICD	International Classification of Diseases
ICTRP	International Clinical Trials Registry Platform
MADRS	Montgomery-Asberg Depression Rating Scale
MDT	Multidisciplinary team
MGT	Multidisciplinary geriatric team
MIST	Medical Inpatient Screening Test
MMSE	Mini-mental state examination
MOCA-T	Montreal Cognitive Assessment - Telephone version
MRC	Medical Research Council
NICE	National Institute for Health and Care Excellence
NIHR	National Institute for Health Research
NHS	National Health Service
NHS EED	NHS Economic Evaluation Database
OMC	Orientation-Memory-Concentration test
PHQ	Patient Health Questionnaire
PIPM	Proactive Integrated Psychological Medicine
PPI	Patient and public involvement
QALW	Quality adjusted life week
QALY	Quality adjusted life year
RAID	Rapid Assessment Interface and Discharge
RCT	Randomised controlled trial
ROB	Risk of bias
SD	Standard deviation
SPMSQ	Short Portable Mental Status Questionnaire
WHO	World Health Organisation

Abstract

Background

Current psychiatric services for general hospital inpatients have limitations in meeting the needs of increasingly elderly and multimorbid populations. New service models are emerging, but lack evidence of effectiveness from randomised trials. I aimed to establish the evidence for current psychiatric services for general hospital inpatients, and develop, operationalise and deliver a new service model for delivery and evaluation in a randomised trial, The HOME Study.

Methods

A systematic review of randomised trials of psychiatric services for general hospital inpatients was completed. A new service model was developed by reviewing relevant literature, obtaining feedback from clinicians and patients, and iterative piloting. The new model was operationalised for consistent delivery in the trial. The delivery of the resultant model in the trial was evaluated using the RE-AIM framework.

Results

The systematic review identified eight eligible randomised trials. No trial reported evidence that the psychiatric service was more effective than usual care. A new psychiatric service model for older general hospital inpatients, Proactive Integrated Psychological Medicine (PIPM) was developed. The model was described in a service manual, and a checklist and quality assurance process were developed to maximise consistent delivery. PIPM was implemented in three hospitals in southern England, over two years. 1,373 (99%) of patients randomised to PIPM received the intervention. PIPM was delivered in accordance with the service manual, with six out of seven measures of concordance with the service manual over 94%. Interviews were conducted with patients (n = 26) and carers (n = 18), ward professionals (n = 55), and all PIPM clinicians (n = 15). Thematic analysis identified an appreciation of the increased psychiatric presence on the ward, common among all interviewee groups. However, PIPM clinicians and ward professionals

were concerned PIPM may blur professional responsibilities on the ward, potentially resulting in confusion for patients.

Conclusions

There is no randomised evidence that current psychiatric services for general hospital inpatients are effective. A new service model, PIPM, has been developed with clinicians and patients, based on the best available evidence. PIPM was delivered largely as intended in a large randomised trial, The HOME Study. The outcome of The HOME Study will provide further information on the effectiveness of PIPM and indicate the value of further implementation.

Chapter 1: Introduction and aims

1.1 Introduction

1.1.1 Psychiatric disorders in older general hospital inpatients

Psychiatric disorders are common in older general hospital inpatients i.e. those aged ≥65 years: overall two thirds are estimated to have at least one psychiatric disorder(1). Estimates of the prevalence of depression in this population are as high as 45%(2, 3). Reported rates of dementia are similar at 41%(4), and around one quarter of acutely admitted older adult patients suffer from delirium(4, 5). Anxiety disorders are less common, but the prevalence is still estimated at 7%(6). Psychiatric disorders commonly persist after discharge from hospital: whilst this is obviously the case for chronic disorders such as dementia, up to a third of older adult patients with delirium during their hospital stay have ongoing symptoms 1 month after discharge(7). The high prevalence of psychiatric disorders in older general hospital inpatients is a problem, as they are associated with poorer outcomes from medical treatment, greater healthcare costs(8), and longer hospital admissions(9-11).

Psychiatric disorders also contribute to the total number of conditions affecting older general hospital inpatients. Approximately two thirds of people ≥65 years have multimorbidity (i.e. two or more conditions occurring simultaneously), rising to over 80% at 85 years(12). Multimorbidity results in increasingly complex management requirements, especially when psychiatric disorders contribute to it.

The average age of general hospital inpatients in England has been rising progressively over recent decades(13). There are over two million unplanned admissions of people aged ≥65 years to NHS general hospitals each year, accounting for approximately 70% of emergency bed days(14). As rates of both psychiatric disorders and multimorbidity increase with age(7, 15), an

increasing proportion of general hospital work involves caring for acutely admitted, older, multimorbid patients, of whom many have comorbid psychiatric disorders.

1.1.2 Current psychiatric services for general hospital inpatients

Currently, the inpatient management of psychiatric disorders in general hospital inpatients is predominately coordinated and delivered by ward clinicians, including medical physicians, surgeons, nursing staff, and other hospital specialists. These clinicians can, in most hospitals, request specialist advice from psychiatric services when they deem it necessary(12, 16). However, there are a number of important limitations to how established psychiatric service models meet the needs of older patients(17).

Firstly, although some general hospitals have psychiatric services specifically for older adult inpatients, most offer general services for adults of all ages, and therefore may not meet the specific needs of this group.

Secondly, only a small proportion of inpatients with psychiatric needs are reviewed by specialist psychiatric services. This is because current services require patients to be referred by ward clinicians before they are assessed. Ward clinicians do not have specialist training in psychiatry, and are therefore unlikely to identify all patients who may benefit from psychiatric care(18). Further to this, psychiatric services usually have limited capacity, with a small number of clinicians covering large hospital populations. In turn, this mismatch between patient need and availability of psychiatric clinicians encourages high thresholds for both ward clinicians to make referrals, and psychiatric services for accepting them.

Thirdly, there is also a tendency for ward clinicians to make referrals late in a patient's admission, after their main presenting complaint has been addressed, limiting opportunities for the psychiatric service to affect patient care(19).

Fourthly, even when patients are seen and advice is provided by psychiatric services, the advised management recommendations are frequently not implemented by the referring team. This is particularly common when recommendations include complex changes to patient care, as is often the case for patients with multimorbidity(20). This failure to act on psychiatric recommendations may be due, in part, to the unfamiliarity of ward clinicians with recommended medications and management suggestions. This lack of familiarity is exacerbated by the physical and clinical separation of psychiatric services from the routine work of ward clinicians. For example, psychiatric assessments are typically isolated events during a patient's admission. Therefore, psychiatric clinicians spend relatively little time on any individual ward. In addition, in the UK, psychiatric services are mostly provided by a separate healthcare organisation which contributes to a lack of verbal and written communication between ward and psychiatric clinicians(21).

Finally, there is a lack of evidence for the effectiveness of psychiatric services for general hospital inpatients, including for older adults, as they are currently delivered. The guidance from the National Institute for Health and Care Excellence (NICE) on psychiatric services in acute secondary care settings references a small number of studies, which were mainly graded as "very low quality" using GRADE criteria (Grading of Recommendations, Assessment, Development and Evaluations)(22). Despite the lack of evidence of effectiveness, substantial resources are currently committed to delivering the current service models(23, 24).

1.1.3 New models of psychiatric services for general hospital inpatients

There has been increasing interest in the development of new psychiatric service models for adult general hospital inpatients to address the limitations described above. Clinicians at Yale New Haven Hospital have developed a 'proactive' psychiatric care model in recent years to address the failure of established services to see more than a small proportion of patients who might benefit from psychiatric input. They aimed to improve the identification of patients who may benefit from psychiatric services by introducing routine screening for psychiatric problems(25). Also in the US, a more 'integrated' psychiatric care model has been developed with psychiatrists taking joint responsibility for medical inpatients, to address the problem of psychiatric recommendations not being implemented. This 'integrated' service model aims to increase the influence of psychiatric intervention on patient care(26, 27).

In the UK, other new models, such as RAID (Rapid Assessment Interface and Discharge, i.e. early psychiatric assessment after presentation to the emergency department or ward)(24) and Core24 (continuous access to emergency psychiatric assessment)(28) have been developed to address the problem of late referrals. They are based on the idea that early completion of psychiatric assessment and actioning of the resultant management plan leads to better patient outcomes. The evidence-base for these newer models remains limited to a handful of before-and-after studies and non-randomised cost-effectiveness studies. More robust evaluations, including randomised controlled trials (RCTs), are therefore required.

1.1.4 A new service model designed specifically for older general hospital inpatients

None of the new models described above have been specifically designed to meet the needs of older general hospital inpatients, who are more likely to have multimorbidity and therefore complex needs and management requirements.

The models were all developed for a generally younger population of inpatients, particularly those attending acute hospitals with acute psychiatric presentations. For example, RAID and Core24 are used mainly for patients in emergency departments. Furthermore, the proactive and integrated models were developed in the US where the access and provision of healthcare differs greatly from that in the UK.

1.1.5 The HOME Study

The Psychological Medicine Research group, led by Professor Michael Sharpe and Dr Jane Walker, was awarded funding to evaluate a new psychiatric service model for older general hospital inpatients. The HOME Study had three interlinked components: (1) a two-arm, parallel-group pragmatic multi-centre randomised controlled superiority trial comparing a new service model added to usual care with usual care, (2) a linked health economic analysis, and (3) an embedded process evaluation(29).

An outline of the new service model to be evaluated was described in the funding application. My role was to develop and operationalise the model ready for use in the trial. The target population for the service model was older (aged ≥65 years), acutely admitted, general hospital inpatients. The inclusion and exclusion criteria for trial participants are listed in Table 1.1.

The primary outcome for the randomised trial was the number of days that participants spent in the general hospital in the 30 days following recruitment. This was chosen because unmet psychiatric co-morbidity in older general hospital inpatients has been associated with longer hospital stays, which have significant implications for healthcare services and patients. For instance, longer admissions are associated with greater cost burden and resource utilisation, and for patients, particularly those with multimorbidity, is associated with demoralisation, loss of

independence, and hospital acquired illness(30). In addition, this primary outcome was chosen, rather than length of index admission, because early discharge leading to swift re-admission would not be in the best interests of patients or services, and days in hospital is measured routinely by the NHS, increasing the chances of complete and objective data collection.

The secondary outcomes (including quality of life, independent functioning, symptoms of depression and anxiety, cognitive function, and experience of hospital stay) were chosen because they are outcomes that a psychiatric service model could reasonably be expected to affect.

Table 1.1 Inclusion and exclusion criteria for The HOME Study

Inclusion criteria	Exclusion criteria
• Patient aged 65 or over • Acutely admitted to a ward where the new service model was being delivered • Not expected to be discharged in the next two days • Not expected to die during admission • Able to speak or read English	• Moribund (likely to die before discharge) • Have been an inpatient for one week or more • Already enrolled in the study • Already referred to usual liaison psychiatry team • Do not speak or read English • Participation is clinically or practically inappropriate

1.1.6 The work reported in the thesis

I was a member of the Psychological Medicine Research team and a member of The HOME Study Trial Management Group. The work I undertook was:

(1) To complete a systematic review of randomised trials of psychiatric services for general hospital inpatients to inform The HOME Study and define the context to which the results will contribute.

(2) To develop the new service model from the brief outline in the funding application to a fully described service ready for delivery.

(3) To operationalise the new service model for delivery.

(4) To evaluate the delivery of the new service model during the trial.

This thesis reports on my work. This Chapter provides a background to the clinical problem to be addressed and the aims of the work. Chapter 2 describes the indication for a new systematic review and the methods used with the results reported and discussed in Chapters 3 and 4. The systematic review has been published(31), and the manuscript can be found in the Appendix (Additional Files). Chapter 5 describes the methods used to develop the service model. The final service model is described in Chapter 6 and discussed in Chapter 7. A description of the model has been published(32), and the manuscript can be found in the Appendix (Additional Files). The methods of the operationalisation of the model are reported in Chapter 8. The resulting service manual, checklist, and quality assurance process are described and discussed in Chapters 9 and 10. Chapter 11 describes the methods used to evaluate the delivery of the new service model in The HOME Study. The results of this evaluation are reported and discussed in Chapters 12 and 13. Finally, Chapter 14 discusses the results, strengths and weaknesses and potential implications of the work reported in this thesis.

1.2 Aims

The aims of this thesis were:

1.2.1 Aim 1

To summarise the evidence of effectiveness for psychiatric services for adult general hospital inpatients from randomised controlled trials using a systematic review of the published literature.

1.2.2 Aim 2

To develop a new psychiatric service model for older general hospital inpatients.

1.2.3 Aim 3

To operationalise the new psychiatric service model for delivery.

1.2.4 Aim 4

To evaluate the delivery of the new service model in the context of a randomised trial, The HOME Study.

Chapter 2: Systematic Review – Introduction and Methods

2.1 Introduction

As described in Chapter 1, psychiatric problems are common in older adult general hospital inpatients. Psychiatric services in general hospitals aim to address this psychiatric morbidity. There is some evidence that these services add value to the care of general hospital inpatients(33). However, randomised trials are required to properly evaluate the effectiveness of these services in improving specific outcomes(34, 35); further conclusions may be drawn based on systematic review of such trials. Whilst a small number of systematic reviews have been published on general hospital psychiatric services, none of them have adequately addressed the question of effectiveness at improving patient or hospital outcomes. The relevant systematic reviews either only included a subset of relevant trials(36-39), or combine evidence from randomised and non-randomised studies(33, 36, 38, 40). The HOME Study(29) is a current randomised trial of a new psychiatric service for older adult general hospital inpatients. Explicitly summarising and reviewing previous randomised trials of psychiatric services for general hospital inpatients will inform The HOME Study and define the context to which its results will add.

2.2 Aim of the systematic review

My aim was to summarise the evidence of effectiveness for psychiatric services for adult general hospital inpatients from randomised controlled trials using a systematic review of the published literature.

2.3 Methods

2.3.1 Research question

The standard format for defining the research question for a systematic review is the 'PICOS' format (P = population, I = intervention, C = comparator, O = outcome, S = study design)(41). The 'PICOS' components of the research question define both the scope and generalisability of the findings.

The target population for the review was adult general hospital inpatients. Although some hospitals have dedicated services for older adults, often defined as those aged 65 years or older, more often the same clinicians with the same training see all adult general hospital patients. Psychiatric services for adults and children are often distinct and provided by different clinicians with different specialist training. Consistent with how most general hospital psychiatric services are configured, adults were defined as those aged 16 or over. 'General hospital inpatients' were defined as people who had been admitted to medical and surgical wards in a general hospital.

The interventions to be included in the review were service models provided entirely by psychiatric professionals (i.e. psychiatrists, psychiatric nurses, psychologists, and/or other psychiatric allied health professionals). The service model also had to be predominately for inpatients: this distinction was included as general hospital psychiatric services often encompass both inpatient and outpatient work, and liaison psychiatry may also work in primary care.

This review focuses on *services* designed specifically for general hospital inpatients. Therefore, studies of single treatments, such as a specific drug or psychological treatments which do not constitute a service, were not included. Service models that were not entirely delivered by psychiatric professionals, for example geriatrician-led multi-disciplinary teams (MDTs) that included psychiatric input, were also not included.

Studies with any comparator service intervention were included. Where it exists, the comparator in studies of a new intervention is commonly the usual standard of care. This means that no participants in the study should be disadvantaged by taking part. It also means the findings are meaningful to both clinicians and funders in interpreting whether the new intervention is more effective than what is already in place. Trials where the comparator interventions were service models other than usual care, were also eligible for the review.

Studies with any quantified patient-related or hospital-related study outcome were included. A wide range of outcome measures have been used for evaluating psychiatric services in general hospitals, including length of stay and associated cost-effectiveness(42). Including a broad scope of outcome measures reduced the risk of excluding relevant studies.

This review only included randomised controlled trials (RCTs) as they are considered the best primary research method to investigate the effectiveness of an intervention(43): the causal relationship between intervention and outcome is tested, with potential biases and confounding factors minimised by randomly allocating participants to different groups. Unlike previous systematic reviews in this area, I aimed to exhaustively identify all RCTs involving psychiatric services for general hospital inpatients to comprehensively evaluate their effectiveness.

Combining the PICOS elements, as shown in Table 2.1, the final research question was: “Is there evidence of effectiveness from RCTs for psychiatric services for general hospital inpatients?”.

Table 2.1 'PICOS' for the research question for this systematic review

Population	Adult (≥16 years) general hospital inpatients
Intervention	Psychiatric service for general hospital inpatients, provided by suitably qualified psychiatric professionals
Comparator	Any comparator service, including usual care
Outcome	Any quantified outcome
Study	Randomised controlled trials

2.3.2 Information sources and search strategy

The research question included three concepts: 'general hospital inpatients', 'psychiatric services', and 'randomised controlled trials'. These concepts formed the basis for the search terms(44). In addition, the search terms employed by previous systematic reviews that had used the same or similar concepts were examined, including a recent systematic review that also searched for RCTs(45). To maximise the quality of the search, a specialist healthcare librarian helped to finalise the search terms including concept terms and direct words, and to optimise them for different databases(46). The final search terms are listed in the Appendix Table A.1 (and as part of the systematic review protocol in the Additional Files).

The aim of searching electronic article databases is to identify all the articles relevant to the research question, and to minimise the number of irrelevant articles found(44). Searching multiple databases does not necessarily result in extra relevant articles being identified(47). Therefore, a brief preliminary search was performed to estimate the size of the relevant literature and to identify key articles that could be used as quality markers of the search. It appeared that the literature was likely to be relatively small in terms of numbers of articles, and disparate in

terms of indexed databases. Therefore, a broad range of databases cataloguing scientific research were included in the search strategy, to minimise the risk of missing relevant articles.
Searches of the selected databases, using the final search terms, were initially run in 2018 and then updated in 2020. Systematic reviews can take many months to complete, but the relevance of a review is related to how up-to-date it is. Therefore, searches are often updated, as well as the analysis where necessary, as close to completion of the review as is practicable. When the search was updated in 2020, one of the databases, the WHO International Clinical Trials Registry Platform (ICTRP), was closed due to the global COVID-19 pandemic. None of the included articles from the 2018 search had been found only in the WHO ICTRP database. However, this does not exclude the possibility of missing eligible articles in an updated search that did not use the unavailable database. The main contributing registry to WHO ICTRP is ClinicalTrials.gov, run by the US National Library of Medicine, which indexes over a third of a million studies from over 200 countries. Therefore ClinicalTrials.gov was used in the 2020 search in lieu of WHO ICTRP.

2.3.3 Selection criteria

The selection criteria for articles identified in database searches reflect the research question: (1) the article described a randomised controlled trial; (2) the trial participants were general hospital inpatients aged 16 or over; and (3) the trial evaluated the effectiveness of a psychiatric service that delivered care predominantly during patients' hospital stay. To keep the search as comprehensive as possible no restrictions on language or date of publication were made.

2.3.4 Screening and eligibility assessment

The search results of the different databases were combined, de-duplicated, and saved in EndNote X8. To reduce possible bias, two reviewers (me and another researcher) independently screened each of the articles identified in the searches for relevance(44). The full texts of the

potentially relevant articles were then assessed independently by two reviewers (me and another researcher) against the selection criteria. Each article was coded as either meeting the selection criteria, or not: reasons for exclusion were also recorded. A third reviewer independently reviewed all articles where there was disagreement. Only primary articles were included, i.e. not systematic reviews or conference abstracts. Previous systematic reviews and conference abstracts were also coded and used to search for relevant primary articles. Additionally, the reference lists of these systematic reviews were screened for relevant articles, and a search was made for any articles associated with each conference abstract.

2.3.5 Citation search and grey literature

As well as the literature search described above, two reviewers (me and another researcher, again to minimise possible bias) independently screened the reference lists of included articles, and the articles that cite the included articles. This was to identify any other potentially eligible articles. Full texts of articles identified by this screening were then reviewed against the eligibility criteria by two reviewers (me and another researcher).

Although most relevant articles are likely to be found in the original search, some relevant literature may be missed, especially in areas which have diverse index and search terms. A citation search can be enhanced by also reviewing the articles included in relevant systematic reviews identified in the original search. This strategy is however time-consuming and is potentially low-yield(48).

To maximise the reproducibility of the methods, the search was limited to published literature; grey literature was not searched. Evaluation of grey literature is difficult to perform in a systematic and reproducible manner (even if the methods are transparent), and the yield for trials of services (e.g. as compared to medications) is likely to be low(49).

2.3.6 Risk of bias assessment

As the quality of summarised results is dependent on the validity and reliability of included articles, systematic reviewers need to consider the quality and potential biases in the articles they include. Decisions regarding the risk of bias in an article ultimately involve some subjectivity however tools are available to help reviewers make their decisions transparently using reproducible criteria. For this systematic review the original Cochrane Risk of Bias tool (RoB1)(50) was used to assess the risk of bias of each article. At least two researchers (me and another researcher) assessed each included article independently. Discrepancies in scoring were resolved through discussion with the research team.

The Cochrane Risk of Bias 2.0 tool (RoB2) was considered as an alternative: RoB2 is the second version of Cochrane's recommended tool for assessing risk of bias in RCTs. It is recommended by Cochrane for systematic reviews of individually randomised, parallel group trials, cluster randomised trials, and cross-over trials(44). Compared to RoB1, the RoB2 tool is designed to reduce subjectivity in assessments and increase the comparability across studies of individual outcomes. Both tools use similar domains, with similar potential outcomes, categorised as 'low risk', 'unclear risk', and 'high risk'. However, unlike the RoB2, the RoB1 can be used for multiple trial designs and give an indication of overall risk of bias of a study, rather than outcome-specific risk of bias. Given the variation in study designs and outcomes in the studies included in this systematic review, the RoB1 tool (2005, updated in 2010)(50) was more practical.

2.3.7 Data extraction and analysis

To maximise the accuracy and completeness of data collection, a standardised form was created, then independently piloted by me and other members of the review team researchers, and modified accordingly e.g. to simplify the categories. Three reviewers (me, and two others) independently extracted the following data from each of the included studies: trial aims, participants, interventions (psychiatric service and comparator), and outcomes and results (benefits and harms). The data collection form is in the Appendix (Additional Files) as part of the systematic review protocol.

To minimise the chances of the analysis being led by the results, rather than the research question, the analysis plan was prospectively designed. We planned for the findings to be summarised in a table and in a narrative synthesis. If the studies were sufficiently similar, then a meta-analysis of aggregate data would be conducted. To be sufficiently similar trials would need to have used a similar study design, in a similar population, and used the same outcome, measured and reported in the same way.

2.3.8 Protocol and registration

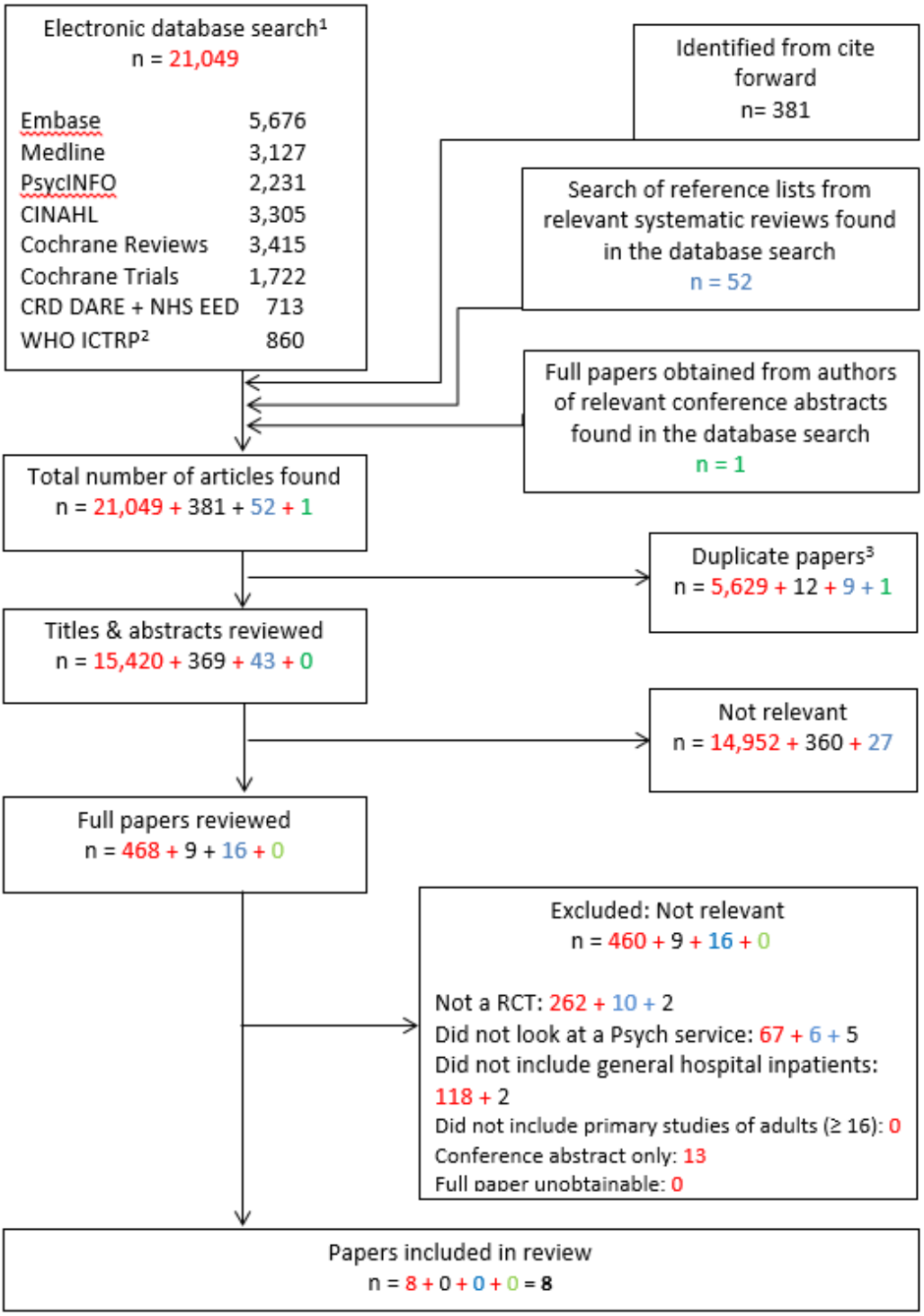
A protocol summarising the aim, selection criteria, information sources, search terms, study selection and data extraction processes, risk of bias assessment plan, and data synthesis plan was written (see Appendix, Additional Files). The protocol was prospectively registered with Prospero (CRD42019120827), a registry of systematic reviews of human and animal studies held by the University of York. Prospective registration of the protocol enables others to identify any changes in analysis from those stipulated in the protocol, and any selective reporting(44). As the systematic review process can take many months, registration also aims to reduce unintended duplication by other researchers in performing the same review or answering the same research question.

Chapter 3: Systematic Review - Results

3.1 Literature overview

A total of 21,049 articles were identified via electronic database searches, and a further 434 from citation searches and conference abstracts (Figure 3.1). 5,651 of these were duplicates, leaving 15,832 unique titles and abstracts: after screening 15,339 were deemed not to be relevant, leaving 493 articles for full paper review. 485 did not meet the selection criteria: 274 were not randomised controlled trials (RCTs), 78 did not include a psychiatric service as defined in the inclusion criteria, 120 were not focused on general hospital inpatients, and 13 were conference abstracts only. The remaining eight articles, reporting eight separate trials, met all the selection criteria and were included in the systematic review.

Figure 3.1 Systematic review flowchart



1. Embase, Medline, PsycINFO, CINAHL, Cochrane Reviews, Cochrane Trials, CRD DARE + NHS EED, WHO ICTRP databases searched in August 2018, search updated in April 2020, both by Elinor Harris, Bodleian Health Care Libraries, University of Oxford.
2. WHO ICTRP searched in August 2018, offline in April 2020 due to covid pandemic, clinicaltrials.gov searched in lieu.
3. Duplicates of the same paper due to searching multiple databases, cite forward, reviews, and reference lists.

CINAHL = Cumulative Index to Nursing and Allied Health Literature, CRD DARE = Centre for Reviews and Dissemination Database of Abstracts of Reviews of Effects, NHS EED = National Health Service Economic Evaluation Database, WHO ICTRP = World Health Organisation International Clinical Trials Registry Platform, RCT = Randomised Controlled Trial

3.2 Characteristics of trials included in the review

The eight trials included in the review were generally small: sample sizes ranged from 47 to 509; median 114 participants. The most recent study was published in 2007 and the earliest in 1991. All studies were conducted in single centres, with 4 in the UK(51-54), 2 in the US(55, 56), 1 in Canada(57), and 1 in The Netherlands(58).

Patients were recruited into trials from a range of medical, surgical, and obstetric and gynaecological wards, as described in Table 3.1. All eight trials included patients that had been identified through screening as having a potential need for psychiatric intervention: seven trials selected patients who had scored above a threshold on one or more psychiatric symptom scales(51-55, 57, 58) and the remaining trial recruited patients who had been deemed by the clinical team to require a 'sitter' for one-to-one observation due to suicidal, confusion-related or unpredictable behaviour(56).

Four trials excluded patients with cognitive impairment at the point of eligibility assessment(52, 54, 55, 58). A different three trials excluded patients at risk of self-harm or suicide(51-53). Three trials also excluded patients who were already receiving psychiatric care, or had done so in the previous month(53, 57, 58).

Six trials aimed to enrol patients soon after admission(51-55, 57), one enrolled patients only after they had been in hospital for at least 17 days(58), and in the remaining trial enrolment was not related to length of stay but depended on requiring a 'sitter'(56). Six trials excluded patients who were severely physically unwell or were admitted to the Intensive Care Unit(51-53, 55, 57, 58). Four trials only included geriatric patients or patients aged 65 years and older(51, 52, 54, 57), the other four included adults (≥18 where reported) of any age(53, 55, 56, 58). Three of the trials that included only older patients excluded patients with severe sensory impairment (not clearly defined in the trials)(51, 52, 54).

In the psychiatric services evaluated in the trials, psychiatrists(53-55, 57, 58) or psychiatric liaison nurses(51, 52, 56) provided direct patient assessments and management recommendations to be actioned by ward teams. All of the services included a general psychiatric assessment: two trials evaluated services with a specific emphasis on depressive symptoms(52, 54), and one on the need for a 'sitter'(56). One trial assessed inter-assessor reliability for psychiatric diagnoses by having a second psychiatrist assess a subset of patients(58). The five psychiatrist-led psychiatric services did not routinely follow-up patients after the initial assessment, and recommendations were made but could be termed, "if required"(53-55, 57, 58). The three nurse-led services included planned regular follow-up and direct interventions such as medication advice, non-pharmacological management of psychiatric symptoms, education about psychiatric disorders, and liaising with community services(51, 52, 56).

None of the trials published trial-specific service manuals. However, two of the trials of nurse-led services referenced an established psychiatric-nursing model(51) and general standards of psychiatric nurse-led services(56) respectively. The third nurse-led service mentioned supervision from a local community mental health team for older adults(52).

All the trials compared a psychiatric service with usual care. In all cases usual care included the possibility of referral of individual patients for a psychiatric opinion. However, three trials excluded patients seen by usual care psychiatry from their analysis(56-58). In one trial the researchers also compared the psychiatric service and usual care with another model in which the physicians responsible for the patient were given the patients psychiatric screening score (used to assess eligibility for the trial)(53).

Only four trials had clearly pre-specified primary outcomes as shown in Table 3.1(51, 52, 54, 55). The outcome measures used in the trials included: psychiatric symptoms (depression, anxiety, cognitive function), health and social functioning, quality of life, psychiatric 'caseness' (i.e. whether the participant met criteria for a psychiatric diagnosis), participant satisfaction with care,

independent functioning, length of stay, readmission to hospital, medications prescribed, medical procedures, nursing observations, reported incidents, and health service costs. There was no common primary outcome across all eight trials. Six trials reported on length of stay but used different measures(51, 54-58). Five reported on mortality, each at different time points(51-54, 56).

Table 3.1 Characteristics of the trials included in systematic review

Study	Design	Patient characteristics	Sample size, age and sex	Psychiatric service and clinicians	Comparator(s)	Outcomes	Results
Baldwin (2004) UK(51)	Single centre 2 arm parallel group RCT	Medical inpatients aged ≥ 65. Screened positive for depression (GDS-4 ≥ 2) and/or confusion (OMC > 10) at day 3-5 post-admission. Excluded if acute risk of self-harm, unable to complete research schedules, discharged within 3 days of admission.	N = 153 Mean (SD) age 80·3 (7·3) years. 64% female.	N = 77 (66 seen by service, 59 analysed as 18 lost to follow-up) Assessment, direct interventions (e.g. problem-solving), and liaison support (e.g. staff education about mental disorder and sign-posting to services). Given over maximum of 6 weeks (number of visits not reported). Referenced American Nurses Association standards of psychiatric consultation-liaison nursing practice. Delivered by psychiatric nurse.	N = 76 (61 analysed as 15 lost to follow-up) Usual care including referral to local old age psychiatry if required (number referred not available).	Primary: HoNOS65+ at 6-8 weeks. Others: GDS-30 score and MMSE score at 6-8 weeks. Length of stay. Proportion prescribed psychotropic medication on discharge. Readmissions and deaths within 3 months.	Primary outcome: No significant difference. Other outcomes: Mean GDS-30 score lower in participants allocated to psychiatry service than those allocated to usual care. Adjusted mean difference -2·0 (95%CI -4·0 to -0·1), p = 0·043. No other significant differences.
Cole (1991) Canada(57)	Single centre 2 arm parallel group RCT	General hospital inpatients aged ≥ 65 referred to hospital's Multidisciplinary Geriatric Team (MGT).	N = 80 Mean age 83 years.	N = 41 (38 seen by service, 35 analysed) Assessment (interviews with patient, family and staff) within 2 days of referral to MGT leading	N = 39 (28 analysed) Usual care (9 referred to psychiatry)*	Primary: Not specified. Others: SPMSQ, ASI, GDS and CGBRS at 2, 4	All outcomes: No significant differences.

		Screened positive for confusion (SPMSQ ≥ 3), depression (GDS ≥ 52) or anxiety (ASI ≥ 50) on referral to MGT. Excluded if seen by psychiatry in the last month, admitted to intensive care unit, unable to speak English or French.	72% female.	to psychiatric diagnoses and treatment recommendations (summarised in notes and often discussed with Multidisciplinary Geriatric Team). Reassessment at least once per week for at least 8 weeks where appropriate (mean follow-up visits 2·6). Delivered by psychiatrist.		and 8 weeks. Length of hospital stay.	
Cullum (2007) UK(52)	Single centre 2 arm parallel group RCT	Medical inpatients aged ≥ 65. Screened positive for depression (GDS-15 ≥ 8) at day 3-6 post-admission. Excluded if severe dysphasia or deafness, too physically unwell or confused, alcohol dependent, expressing suicidal ideas.	N = 121 Psychiatric service group: Mean (SD) age 79·7 (7·94) years, 53% female. Usual care group: Mean (SD) age 80·1 (8·07) years, 64% female.	N = 62 (46 seen by service, 41 analysed) Assessment (psychological and social needs and need for antidepressant medication), support for carers, liaison with other services to arrange depression care. Follow-up every 2-3 weeks for maximum of 12 weeks (42 followed up). Delivered by psychiatric nurse.	N = 59 (45 analysed) Usual care including referral to psychiatry if required (3 referred).	Primary: Presence of ICD-10 defined depressive disorder and change in GDS-15 from baseline to 16 weeks. Others: QALW and patient satisfaction with care at 16 weeks.	Primary outcomes: No significant differences. Other outcomes: 93% of participants allocated to the psychiatry service were 'very satisfied' or 'highly satisfied' with the service they received compared with 67% of those allocated to usual care. Adjusted Odds Ratio = 7·7 (95% CI 1·9 to 31·4), p < 0·01. No other significant differences.

Gater (1998) UK(53)	Single centre 3 arm parallel group RCT	Medical inpatients. Screened positive for probable psychiatric illness (GHQ-28 ≥ 10). Excluded if already receiving psychiatric care, admitted following self-harm, severe physical illness, language difficulties.	N = 209 Psychiatric service group: Mean (SD) age 55 (17) years, 57% female. 'Physician informed' group: Mean (SD) age 50 (19) years, 64% female. Usual care group: Mean (SD) age 49 (19) years, 62% female.	N = 68 (68 seen by service, cost outcomes 58 analysed, other outcomes 47 analysed) Assessment within 48 hours of admission, detailed recommendations in medical notes and discussions with medical, nursing or social work staff. Follow-up as required ('small number'). Delivered by psychiatrist.	N = 70 (cost outcomes 61 analysed, other outcomes 50 analysed) 'Physician informed': GHQ-28 form pinned in notes for medical staff to act on as they wished, including referral to psychiatry if appropriate (approx. 16% referred). N = 71 (cost outcomes 63 analysed, other outcomes 56 analysed) Usual care including referral to psychiatry if required (approx. 16% referred).	Primary: Not specified. Others: Healthcare costs, psychiatric 'caseness', subjective health status, QALY, and health service costs at 6 months.	All outcomes: Total costs for the psychiatric service group were not significantly different from usual care.
Levenson (1992) USA(55)	Single centre cluster RCT	Medical inpatients. Screened positive for anxiety, depression, confusion or pain (high MIST scores) in fist 24-48 hours from admission.	N = 509 participants, 5 clusters (ward teams) Psychiatric service group: Mean (SD) age 47·8 (16·9) years, 46% female.	N = 256 (158 seen by service, cost outcomes 256 analysed) Assessment (chart review, patient interview, contact with clinical team and family as appropriate, average 1.3 hrs), consultation note, including DSM-III	N = 253 (cost outcomes 253 analysed) Usual care including referral to psychiatry if required (20 referred).	Primary: Length of stay and healthcare costs. Other: Physical functioning, depression and	Primary outcomes: No significant differences. Other outcomes: No significant differences.

		Excluded if too physically unwell for interview, unable to give consent, unable to speak English.	Usual care group: Mean (SD) age 47·7 (17·5) years, 53% female.	diagnosis. Follow-up as required (18 followed up, average 1·5 visits, 0.7 hrs). Delivered by six psychiatrists.		anxiety at 3 months.	
Meesters (1991) The Netherlands(58)	Single centre 2 arm parallel group RCT	Medical and orthopaedic inpatients, in hospital for ≥ 17 days. Screened positive for psychiatric symptoms (GHQ-28 ≥ 9). Excluded if severe illness, language barrier, cognitively impaired, already seen by psychiatric consultation service.	N = 70 Mean age not reported, % female not reported.	N = 36 (29 seen by service, 20 analysed) Assessment (diagnostic interview & assessment of need for psychiatric intervention) within 3 days of allocation, and follow-up as required (number not reported). Delivered by psychiatrist.	N = 34 (8 analysed) Usual care (3 referred to psychiatry)*.	Primary: Not specified. Others: GHQ-28 at discharge, number of medical procedures during hospital stay, length of stay, prescription of psychotropic or analgesic during hospital stay.	All outcomes: No significant differences.
Shah (2001) UK(54)	Single centre 2 arm parallel group RCT	Geriatric medicine inpatients. Screened positive for depression (GDS >11 and BAS-DEP ≥ 7), aimed to screen	N = 47 Median age (range) 85 (67-97) years.	N = 19 (19 seen by service, 14 analysed) Diagnostic assessment within 24 hours of allocation and management advice.	N = 28 (17 analysed) Usual care (2 referred to psychiatry)	Primary: Change in BAS-DEP and MADRS at 10 weeks. Others:	Primary outcomes: No significant differences. Other outcomes: No significant differences.

		within 5 days of admission. Excluded if severe cognitive or sensory impairment.	Psychiatric service group: 74% female, usual care group: 46% female.	Delivered by psychiatrist.		Change in GDS, BAS-OBS, Barthel Index and CGIPI score at 10 weeks and 1 year. Change in BAS-DEP and MADRS at 1 year. Length of hospital stay.	
Talley (1990) USA(56)	Single centre 2 arm parallel group RCT	Medical, surgical, obstetric or gynaecological inpatients. Assigned a sitter (due to suicidal behaviour, falls, confusion-related or unpredictable behaviour) for at least 1 shift on 2 consecutive days.	N = 107 analysed Mean age not reported. 40% female.	N = 47 analysed Assessment (reason for sitter request, chart review, liaison with nursing team and patient interview) as soon as possible after 2nd sitter day, nursing team education, direct behavioural interventions. Follow-up as required (number not reported). Delivered by psychiatric nurse.	N = 60 analysed Usual care (number referred to psychiatry unknown)*.	Primary: Not specified. Others: Length of hospital stay, number of sitter shifts, number of nursing observations documented and number of incident reports.	All outcomes: No significant differences.

* Participants referred to psychiatry were excluded from the analysis

ASI = Anxiety Status Inventory, **BAS-DEP** = Brief Assessment Schedule Depression scale, **BAS-OBS** = Brief Assessment Schedule Organic Brain Syndrome scale, **CGBRS** = Crichton Geriatric Behavioural Rating Scale, **CGIPI** = Clinical Global Impression of Physical Illness, **CI** = Confidence Interval, **DSM** = Diagnostic and Statistical Manual of Mental Disorders, **GDS** = Geriatric Depression Scale, **GHQ-28** = General Health Questionnaire 28, **HoNOS65+** = Health of the Nation Outcome Scale, **ICD** = International Classification of Diseases, **MADRS** = Montgomery-Asberg Depression Rating Scale, **MGT** = Multidisciplinary Geriatric Team, **MIST** = Medical Inpatient Screening Test, **MMSE** = Mini-Mental State Examination, **OMC** = Orientation-Memory-Concentration test, **QALW** = Quality Adjusted Life Week, **QALY** = Quality Adjusted Life Year, **RCT** = Randomised Controlled Trial, **SD** = Standard Deviation, **SPMSQ** = Short Portable Mental Status Questionnaire

3.3 Findings of the trials included in the review

None of the eight trials offered convincing evidence that the psychiatric service(s) assessed were more effective than usual care. The substantial heterogeneity in the characteristics of the participants in the trials, the interventions, and the outcomes, as shown in Table 3.2, did not permit meaningful meta-analysis of their findings.

Two of the eight trials reported a statistically significant difference between treatment arms on a single outcome. Baldwin et al(51) found that participants allocated to the psychiatric service had a lower mean score on the Geriatric Depression Scale-30 (GDS-30) compared to the usual care group at 6-8 weeks from entry into the trial. Cullum et al(52) found that more participants allocated to the psychiatric service were satisfied with their hospital care than those allocated to usual care. Other trials found statistically significant differences in some secondary outcomes in initial analyses, but the significance of the differences disappeared after adjustment.

Five trials used change in symptoms of depression as an outcome measure(51-54, 57). Three of the five used the GDS-30: Baldwin et al(51) reported mean score (with standard deviation) at 6-8 weeks; Cole et al(57) reported mean score (without standard deviation) on a different version of the GDS-30 (scored from 30-120 rather than 0-30) at 2, 4, and 8 weeks; Shah et al(54) reported GDS-30 score, at 10 weeks and 1 year. Although there are methods for deriving missing standard deviations(59) (not reported in Cole et al(57)) it was not possible to reliably convert the scores of the 30-120 scoring system to 0-30 or vice versa. Shah et al(54) only reported the median and range so again it was not possible to compare scores to the other two trials. The other two trials that reported change in depressive symptoms used change in Global Depression Score 15 (GDS-15)(52) and change in percentage of participants with a depressive disorder diagnosis(53) respectively.

Length of stay was reported by six trials(51, 54-58). However, as with depressive symptoms, none of the relevant trials defined and measured it in similar enough ways to be combined. Baldwin et al(51) reported mean length of index admission (with standard deviation) in both arms. Cole et al(57) and

Talley et al(56) reported the same, but without standard deviation. Levenson et al(55) also reported mean length of index admission (with standard deviation) however they used a cluster cross-over study design unlike Baldwin et al(51) and Cole at al(57) who used parallel groups. Meesters et al(58) reported mean extra days in hospital from allocation, which was not reported by any of the other studies.

Table 3.2 Outcomes reported in the trials included in the systematic review

	STUDY							
OUTCOME • **Measures**	**Baldwin(51)** **N = 153**	**Cole(57)** **N = 80**	**Cullum(52)** **N = 121**	**Gater(53)** **N = 209**	**Levenson(55)** **N = 509**	**Meesters(58)** **N = 70**	**Shah(54)** **N = 47**	**Talley(56)** **N = 107**
Depression • Depressive diagnosis • Geriatric Depression Scale (GDS) • Brief Assessment Scale for depression (BAS-Dep) • Montgomery-Asberg Depression Rating Scale (MADRS)	Mean score on GDS 30 (scored 0-30) Measured at 6-8 weeks Mean, standard deviation, N in each arm	**Primary outcome** Mean score on GDS-30 (scored 30-120) Measured at 2, 4, 8 weeks Mean score in each arm	**Primary outcome** Depressive disorder diagnosis using Geriatric Mental State exam Measured at 16w % with depressive disorder diagnosis in each arm, n Mean reduction in GDS-15 score (scored 0-15) Measured at 16w Mean, standard deviation	Depressive illness diagnosis using Psychiatric Assessment Schedule Measured at 6 months % with depressive illness diagnosis in each arm			**Primary outcome** Median score on GDS-30 (scored 0-30) Measured at 10w and 1year Median change, range Median score on BAS-DEP (scored 0-24) Measured at 10w and 1year Median change, range Median score on MADRS (scored 0-60) Measured at 10w and 1year Median change, range	

Anxiety • Anxiety Severity Index (ASI)		Mean score on ASI (scored 20-80) Measured at 2, 4, and 8 weeks Mean score in each arm		Anxiety neurosis illness diagnosis using Psychiatric Assessment Schedule Measured at 6 months % with anxiety neurosis diagnosis in each arm				
Cognitive Impairment • Mini Mental State Examination (MMSE) • Short Portable Mental Status Questionnaire (SPMSQ) • Brief Assessment Scale for organic brain syndrome (BAS-OBS)	Mean score on MMSE (scored 0-30) Measured at 6-8 weeks Mean, standard deviation, N in each arm	Mean score on SPMSQ (scored 0-10) Measured at 2, 4, and 8 weeks Mean score in each arm					Median score on BAS-OBS (scored 0-8) Measured at 10w and 1year Median change, range	
General psychiatric symptoms • Health of the Nation Outcome Scale 65+ (HoNOS65+) • Psychiatric Assessment Schedule (PAS) • General Hospital Questionnaire (GHQ-28)	** Primary outcome** Mean HoNOS65+ score (scored 0-48) Measured at 6-8 weeks Mean, standard deviation, N in each arm			Psychiatric illness diagnosis using Psychiatric Assessment Schedule Measured at 6 months % with psychiatric illness diagnosis in each arm		**Primary outcome** Mean score on GHQ-28 (scored 0-28) Measured at discharge Mean score, n, in each arm		

Function • Crichton Geriatric Behavioral Rating Scale (CGBRS) • Barthel Index		Mean score on CGBRS (scored 10-50) Measured at 2, 4, and 8 weeks Mean score in each arm					Median score on modified BI (scored 0-20) Measured at 10w and 1year Median change, range	
Morbidity • Clinical Global Impression of Physical Illness (CGIPI)							Median score on CGIPI (scored 1-7) Measured at 10w and 1year Median change, range	
Quality of Life • Quality Adjusted Life Weeks (QALW) • Quality Adjust Life Year (QALY)			Mean number of QALWs in study period Measured at 16w Mean, standard deviation, N in each arm	Median number of QALYs Measured at 6months Median, 95%CI				
Patient satisfaction			Patient satisfaction (scored 1-4, score of 1 or 2 = not satisfied, 3, 4 = satisfied) Measured at 16w % satisfied in each arm, n					
Mortality	Percentage dead at 3 months % dead in each group at 3 months Proportion dead (No. dead/Total) at 3 months in each arm		Percentage dead at 16w N in each arm with odds ratio and 95%CI.	Total died at 6m but not broken down by arm			Total died at 10w and 1year but not broken down by arm	Number dead in each arm during admission

Length of stay	Mean length of index hospital stay (days) Mean, standard deviation, N in each arm	Mean length of index hospital stay (days) Mean score in each arm			**Primary outcome** Mean length of index hospital stay (days) Mean, standard deviation in each arm Mean length of cumulative days in hospital in 6 months (days) Mean, standard deviation in each arm	Mean length of additional days in hospital (days) Measured at discharge from entry into trial Mean, n	Median length of index hospital stay (days) Median, range in each arm	Mean length of index hospital stay (days) Mean, N, in each arm
Readmission	Percentage readmitted by 3 months % readmitted in each group Proportion readmitted (No. readmitted/total) in each arm				Mean number of readmissions by 6 months Mean, standard deviation, in each arm Mean time to readmission (days) Mean, standard deviation in each arm			
Medications	Percentage prescribed psychotropic on discharge from index admission % prescribed psychotropic Proportion prescribed psychotropic in each arm					Psychotropic medication prescribed during study period P value of comparison		

Interventions during admission					Mean number of procedures during index admission Mean, standard deviation, N in each arm	No figures reported - "No significant difference"		**Primary outcome** Mean number of sitter shifts during index admission Mean, N in each arm Mean number of observations per sitter shift during index admission Mean, N in each arm
Costs				**Primary outcome** Mean cost offset in total health care costs and productivity loss in £ Measured at 6m Mean, 95%CI in each intervention arm (control arm as reference)	Mean cumulative cost in $ Measured at 6m Mean, standard deviation, N for each arm Mean cumulative charges in $ Measured at 6m Mean, standard deviation, N for each arm			
Yellow indicates primary outcome stated by authors or used in sample size calculations. Orange indicates primary outcome inferred from trial aims. Pale yellow indicates outcome reported in study.								

3.4 Risk of bias

Risk of bias assessment, summarised in Table 3.3**,** was undertaken for the primary outcomes indicated in Table 3.2 using the Cochrane Risk of Bias (RoB1) tool(50).

Selection bias refers to a systematic difference between the study participants and the target population of the study. When the sequence generation and allocation methods in the articles in this review were described they were judged low risk of selection(51, 52, 57). However, in most of the articles the descriptions of the allocation methods were short, and no published protocols were identified, leaving risk of selection bias unclear. The level of methodological reporting is consistent with accepted standards at the time of publication of most of the articles, as although the CONSORT guidelines were first published in the mid-1990s(60), widespread adoption was slow.

Participants and/or researchers having knowledge of group allocation can lead to performance bias. In trials of services, blinding the clinicians delivering the service and the participants to allocation is difficult. The service of interest could theoretically be compared to a sham service, but this raises practical and ethical issues. None of the included trials attempted to use a sham service and many of the outcomes reported were patient rated, so the risk of performance bias was high throughout.

Detection bias refers to the risk of outcome assessors acting differently if they know the group allocation. Similarly, to the assessment of selection bias, the included articles either described a low risk method of outcome measurement or the description was too short leading to a judgement of 'unclear'.

Systematic differences in completeness of outcome data between trial groups can lead to attrition bias. Two of the included articles analysed on a per-protocol rather than intention-to-treat basis, excluding patients allocated to the psychiatric service if they did not receive it, and patients allocated to usual care if they were referred to psychiatry, increasing the risk of attrition bias(57, 58). Incomplete reporting or reporting outcomes not pre-specified risks reporting bias. As with the

selection and detection bias assessments, the descriptions were either adequate or short and incomplete.

Table 3.3 Risk of bias assessments of articles included in systematic review

Study	Selection Bias		Performance Bias	Detection Bias	Attrition Bias	Reporting Bias
	Random sequence generation	Allocation concealment	Blinding of participants and clinicians	Blinding of outcome assessors	Incomplete outcome data	Selective reporting
Baldwin 2004(51)	low	low	high	low	low	low
Cole 1991(57)	low	unclear	high	low	high	unclear
Cullum 2007(52)	low	low	high	low	low	low
Gater 1998(53)	unclear	unclear	high	unclear	low	unclear
Levenson 1992(55)	unclear	unclear	high	unclear	low	low
Meesters 1991(58)	unclear	unclear	high	unclear	high	unclear
Shah 2001(54)	unclear	unclear	high	low	low	low
Talley 1990(56)	unclear	unclear	high	unclear	unclear	unclear

Chapter 4: Systematic Review - Discussion

4.1 Main findings

The aim of this systematic review was to determine the effectiveness of psychiatric services for general hospital inpatients using a systematic review of randomised controlled trials (RCTs). Only eight articles were found that met the selection criteria. Although this is a low number, the comprehensiveness of the search strategy makes it unlikely that relevant trials were not included. It is also important to note that all eight trials were published in a 16-year period from 1991: no studies were published more recently than 2007 which may call into question their relevance to contemporary services. All eight trials compared population-based psychiatric services (i.e. seeing all patients in the intervention arms) with referral-based services (usual medical care with the possibility of referral to a psychiatric service based on assessment made by the clinical team). None of the trials reported convincing evidence that any of the services were more effective than usual care alone.

4.2 Strengths and limitations of the systematic review

My review has several strengths: the article search was systematic and included studies using clearly defined criteria to minimise selection bias. A healthcare librarian was involved in the search strategy to minimise the risk of missing relevant articles. Comprehensiveness of the search was increased by using inclusive search terms and databases, and not limiting searches by date or language. Only published articles were included, increasing the transparency and potential reproducibility of the search process. In particular, a clear and reproducible definition of psychiatric services was used.

My review also has several limitations: only trials of services for adult patients were included, so the findings may not be generalisable to services specifically for older adults or children. Similarly, psychiatric services for outpatients were not included, and neither were psychiatric services not exclusively provided by psychiatric clinicians which may also limit generalisability of the findings. The grey literature was not searched; therefore, relevant studies could have potentially been missed. Finally, it was not possible to combine the data from the trials in a meta-analysis because of substantial clinical and methodological heterogeneity amongst the included trials.

4.3 Discussion of findings

Considering the trials together, 41 different outcome measures were used at nine different time points, with significant differences found in only two outcomes, neither of which were designated primary outcomes. There are two main possible explanations for these findings as discussed below: Either some, or all, of the psychiatric services evaluated were actually more effective than usual medical care alone, but methodological limitations in the trials made them unable to detect a positive difference. Alternatively, the services assessed were truly no more effective than usual care alone.

4.3.1 Methodological limitations of the trials

The trials had a number of methodological limitations that may have reduced their ability to detect a difference between the experimental groups. Firstly, the trials recruited patients who screened positive for, often relatively minor, psychiatric problems, and excluded patients with severe cognitive impairment, sensory impairment, and suicidal thoughts. This is likely to have simplified the conduct of trials, but the resultant patient population was unlikely to benefit from the addition of psychiatry to usual care. This is because trial patient populations were less severely unwell than patients routinely seen by psychiatric clinicians.

Secondly, it is unclear how the services were implemented as the articles do not describe delivery in detail, for example by presenting service manuals or quality assurance procedures. Thirdly, there is a risk of contamination, as in all the trials, patients in the usual care arm could also be referred to usual psychiatry services. The number of patients that are reported to have been referred is small, but exclusion of these patients from the trial analysis does not adequately address this problem. As most trials randomised on an individual basis, rather than by ward, the ward clinicians would be responsible for patients in both the intervention and the usual care arms. They may therefore have

gained knowledge in regard to psychiatric management, either implicitly (e.g. through implementing psychiatric recommendations) or explicitly (e.g. through education and training which was often included in nurse-led services). In practice, the concordance of clinical management with psychiatric recommendations was noted to be generally poor and therefore unlikely to affect the care of other patients. Finally, the trials generally had small sample sizes, with limited power to detect a difference between trial groups: only two trials achieved their pre-specified power targets(51, 57).

4.3.2 Limitations of the psychiatric service models

An alternative explanation of the findings is that the psychiatric services evaluated were ineffective. All the evaluated services focussed on assessing the patient and then making recommendations to ward physicians. However we know that recommendations by psychiatric services are not consistently followed by ward teams, even when patients have been specifically referred for psychiatric assessment(33). Psychiatric recommendations for patients that have not been specifically referred by the ward team, as was the case in all trials in this review, are even less likely to be actioned: low concordance with the psychiatric service recommendations was reported by half of the included trials(54-57). One trial reported that concordance with psychiatric recommendations made by the service under evaluation was lower than with recommendations made for usual care patients referred to psychiatry(55). Another trial reported good concordance with psychotropic drug prescription recommendations, but that little psychiatric diagnostic or management information was included in discharge summaries(53). Three of the trial services were delivered by psychiatric nurses and one of these trials specifically reported ward nursing staff reluctance, and at times refusal, to follow the psychiatric nurse's recommendations(56). This reluctance of ward staff to action psychiatric nurse-led management plans could have also been a factor in trials evaluating other nurse-led services. The small number of services that took steps to ensure their recommendations were implemented do not appear to have done this intensively.

4.3.3 Other literature

No previous systematic review has adequately addressed the question of effectiveness of psychiatric services for general hospital inpatients using randomised trials. However, I did identify seven systematic reviews with related aims. Table 4.1 summarises the aim, included studies, and conclusions of each of the seven reviews(22, 33, 36-40). A review in 2003(40) looked at published models of psychiatric services for general hospitals. They found 18, mainly descriptive studies, with no clear consensus on which service models were effective and which outcomes should be used to assess effectiveness. In the same year Andreoli et al looked at cost-effectiveness of psychiatric services in general hospitals as demonstrated by randomised trials(37). Only two eligible randomised trials were found(55, 61), neither of which showed evidence of cost-effectiveness for the intervention service. One of the two trials was included in this review(55); the other described itself as a randomised trial but used alternate allocation(61).

Wood and Wand published a comprehensive review on the effectiveness of psychiatric services that covered entire general hospitals(33). They identified forty studies which mostly used observational and/or qualitative methods. Wood and Wand were able to identify five measures of effectiveness used in the studies they included; cost-effectiveness, concordance with psychiatric plans, staff feedback, patient feedback, and follow-up outcomes. There was some evidence for cost-effectiveness when the psychiatric service was involved early in admission. Concordance by ward teams with psychiatric plans varied, with greater concordance when the plan was for inpatient investigations, and poorer concordance when the plan included diagnoses and suggestions for outpatient management.

NICE published guidance on psychiatric services for patients with acute medical and psychiatric problems in general hospitals based on a review of published randomised trials(22). Their review was broader than this review in that it included services not solely provided by mental health clinicians, however they found only seven eligible studies: all had notable methodological

limitations, and the guidance concluded that there was little evidence in the literature for the services they identified. In contrast, a review of psychiatric services focused on depressive and anxiety symptoms in both general hospital inpatients and outpatients in 2019 found small to medium reductions in depressive and anxiety symptoms attributable to the psychiatric services(39).

A recent systematic review performed in 2019 investigating the effect of 'proactive' psychiatric services for general hospital inpatients on hospital length of stay found mainly non-randomised studies(36). The authors concluded there was promising evidence that proactive services shorten time in hospital for patients and called for further randomised trials. A similar review of 'integrated' psychiatric services for general hospital inpatients in 2014 found only four studies(38). A variety of outcomes were used but similarly the authors felt there was some preliminary evidence for integrated services improving patient outcomes.

Overall, these reviews concluded that psychiatric services for general hospital inpatients may shorten length of stay, are valued by patients and ward staff, and may reduce depression and anxiety. However, they also noted that none of the studies included were sufficiently methodologically robust to allow clear conclusions to be drawn.

Table 4.1 Systematic reviews of psychiatric services for general hospitals

Review	Studies included	Reviewers' conclusions
Andreoli, et al 2003(37) A systematic review of studies of the cost-effectiveness of mental health consultation-liaison interventions in general hospitals	2 RCTs that had evaluated the cost-effectiveness of psychiatric consultation-liaison interventions.	The inclusion of only two clinical trials and the low quality of these studies made it impossible to form any conclusions about the cost-effectiveness of consultation-liaison psychiatry interventions.
Callaghan,et al 2003(40) A review of research on the structure, process and outcome of liaison mental health services	17 evaluative studies (including 1 RCT) that had described outcomes of liaison mental health services.	It is unclear what model of liaison working is most effective in promoting client and staff outcomes and the cost-effectiveness of services is unclear.
Hussain, et al 2014(38) Integrated models of care for medical inpatients with psychiatric disorders: A systematic review	2 RCTs and 1 interrupted time-series study and 1 controlled before-and-after study that had evaluated integrated models of care (combining psychiatric and medical specialties within a single service).	There was some preliminary evidence that integrated models of care may improve outcomes for medical inpatients with psychiatric disorders.
Oldham, et al 2019(36) A systematic review of proactive psychiatric consultation on hospital length of stay	2 RCTs, 1 non-randomised trial and 9 naturalistic studies that had evaluated the effect of proactive psychiatric consultation-liaison services on hospital length of stay	Proactive models of consultation-liaison psychiatry appear to reduce length of stay.
Stein, et al 2020(39) Psychiatric and Psychosomatic Consultation-Liaison Services in General Hospitals: A	38 RCTs that had evaluated the effects of a range of interventions on depression and anxiety for general hospital inpatients and outpatients.	There were small to medium effects on depression and anxiety.

Systematic Review and Meta-Analysis of Effects on Symptoms of Depression and Anxiety		
Wood and Wand 2014(33) The effectiveness of consultation-liaison psychiatry in the general hospital setting: A systematic review	2 RCTs, 1 before-and-after study, 34 observational studies (including 9 questionnaire studies) and 3 qualitative interview studies that had evaluated hospital-based consultation-liaison psychiatry services.	There was some evidence that consultation-liaison psychiatry services are cost-effective and reduce length of stay. Many studies were methodologically flawed.
NICE 2018(22) Do acute psychiatric services improve outcomes for patients with mental health disturbance presenting with an acute medical emergency?	7 RCTs, 5 of which were included in my systematic review, 1 geriatrician-led service, 1 mixed psychiatrist-geriatrician service	Low quality evidence that liaison psychiatry may provide a benefit in reduced length of stay and increase time to next hospitalisation. Very low quality evidence of improved patient/carer satisfaction, reduced quality of life, and increased mortality, with liaison psychiatry.
NICE = National Institute for Health and Care Excellence **RCT** = Randomised Controlled Trial		

4.4 Implications of findings

4.4.1 Implications for future research

The lack of evidence from randomised studies for the effectiveness of the psychiatric services that currently exist in most general hospitals indicates a need for more research. Randomised trials remain the gold standard for determining effectiveness in directly improving patient care. It is particularly notable that no trials have been published for over ten years, especially given the increase in prominence and funding that 'liaison services' have had in the UK in particular in that time(62). The lack of trials may reflect a loss of confidence following the publication of a series of 'negative' trials. It may also reflect the difficulty of conducting randomised trials in general hospital settings. However, there is growing recognition of the need for new psychiatric service models and there have been a number of 'positive' non-randomised studies suggesting that newer service models may be effective. These developments justify a new generation of trials. Lessons from this review suggest that these future trials should recruit large samples of patients with unmet psychiatric needs, test clearly defined services, and focus on outcomes that are amenable to change by psychiatric services operating on general hospital wards.

Given these difficulties in conducting large randomised trials, and the limitations in generalising results to real-world practice, consideration should also be given to other research methodologies. For example, the growing use of electronic medical records (EMRs) in the UK, already well established in the US, provides opportunities for observational studies, hypothesis generation, feasibility assessments, and performance improvement(63). EMRs allow large amounts of data to be collected and linked to other data sets and can reduce the need for inefficient duplication of data collection. EMRs also allow for real-time evaluation of performance against outcome criteria (for example, percentage of patients seen by psychiatric team within target time from referral).

However, there are difficulties in using EMRs in research. The quality of some of the data is likely to be lower than for data collected purely for research purposes in terms of both accuracy and completeness. There are also a large number of EMRs, which code and store data in different ways, leading to problems in combing data from different systems. It is notable that a recent national survey of psychiatric services for general hospitals in the UK still relies on self-reporting and interviews rather than examination of patient level data from EMRs(16), something that may be helpful in the future.

4.4.2 Implications for the new service model and The HOME Study

None of the identified trials found a difference between their interventions and usual care. Potential lessons to draw from this can be split into implications for how a new service model should be designed, and implications for future RCTs, such as The HOME Study.

In terms of service design, the trials identified mainly evaluated consultation models (i.e. the service focused on giving advice with limited scope for actioning their advice). This supports the idea that the new model should include direct delivery of care, rather than leave the psychiatric recommendations to the ward team to action. Half of the services were designed for adults in general, and half for older adults. The only two trials with any positive outcomes(51, 52), both in secondary outcomes, were designed for older adults. This is consistent with older adults having a higher prevalence of psychiatric morbidity, as discussed in Chapter 1, and therefore services designed for older adults might be more likely to be effective in trials. It is difficult to take further lessons from the systematic review results due to the general lack of clear description of the services evaluated or their implementation. This emphasizes the importance of a clear description of the new service in The HOME Study, for example in a publishable service manual, and thorough evaluation of its implementation.

In terms of trial design, the trials were relatively restrictive in their target populations, tending to exclude sicker patients (for example, those with cognitive impairment or suicidal ideation) who may have disproportionately benefited from increased psychiatric input. Therefore, the broader inclusion criteria for The HOME Study not only maximised potential generalisability but potentially included participants more likely to benefit from the new service. Although the trials used a variety of outcomes, six of the eight reported length of stay (albeit reported in different measures), making it the commonest outcome used. The primary outcome of The HOME Study is the number of days spent in hospital in the 30 days after randomisation, which includes length of stay and accounts for early re-admission. Whilst direct comparisons will not be possible, time in hospital remains an important metric and is consistent with previous literature.

Cluster randomisation by ward, similar to Levenson et al(55), was considered for The HOME Study but individual randomisation was chosen, consistent with the other seven trials: the main reasons were that no clearly appropriate natural clusters were evident (the organisation of wards varies substantially between hospitals and over time), and ward-based randomisation might influence decisions on which ward a patient is admitted to. There was also a lack of consideration of why the trials resulted in the outcomes they did in the articles, which is consistent with trial reporting at the time of publication. For example, the services in the trials included in the systematic review lacked any reported measures of fidelity of delivery, making the reported results difficult to interpret. These findings influenced the data collection strategy for The HOME Study process evaluation, including highlighting the need to measure, and report, what was delivered in terms of the new service that was evaluated (see Chapter 9 for full details).

4.4.3 Implications for care and policy

Despite the lack of randomised evidence, provision of psychiatric services to general hospital inpatients is increasing(62). Whilst this is a welcome development, the pursuit of evidence for the effectiveness of different ways of delivering these services should continue. Committing significant resources to service models of unproven effectiveness, especially in resource-limited settings, is hard to justify. The successes in improving care for medical patients with psychiatric comorbidities in medical outpatient and primary care settings, as demonstrated by the strong evidence of effectiveness of collaborative care models, is encouraging(64, 65). Combined with the scale of need, this success should spur on efforts to also improve psychiatric care for general hospital inpatients by developing, and rigorously evaluating, new service models.

Chapter 5: Development of a new psychiatric service model for older general hospital inpatient - Introduction and Methods

5.1 Introduction

5.1.1 Development of new interventions

The development of a new intervention can be defined as the process from the initial idea for the intervention up until the point where it is "reasonably expected to have a worthwhile effect"(66). The ultimate goals for a newly developed intervention are that it proves effective, cost-effective, acceptable to those delivering and receiving it, and is widely taken up into routine practice.

5.1.2 Complex interventions

Complex interventions are interventions with multiple components that interact with each other and with the context within which they are set(66). They may require behavioural change from healthcare professionals, patients, or both, and often aim to affect multiple outcomes, at different organisational levels(66). This definition can be applied to many different healthcare interventions as few interventions do not have some element of complexity. However, much of the literature on complex interventions focuses on the development and evaluation of new healthcare services.

Psychiatric services for general hospital inpatients have many components to address the diversity of presentations, referrals, and contexts within which they are set. Different components might include assessing patients, talking to families and carers, making diagnoses, suggesting management changes, providing psychological therapy, liaising with hospital and community colleagues, and working with multiple organisations within healthcare, social care, and the third sector. Any change in how these services are delivered requires adaptation from psychiatric professionals, as well as multiple other professional groups, including physicians, nursing staff, and therapists, and

adjustments at different organisational levels. Therefore, developing a new psychiatric service model for older general hospital inpatients can be thought of as developing a new complex intervention.

5.1.3 Guidelines for complex intervention development

To aid complex intervention development there is an increasing amount of generic guidance available(66-69). Researchers have also published guidance on specific aspects of complex intervention development, including on optimising interventions for their target populations(70), improving the development of interventions that require changes in healthcare professionals' behaviour(71), and establishing criteria for improved reporting of development processes(72). One review looked to categorise the growing literature and found eight separate approaches to intervention development, grouped by the underlying approach rationale(73). For example 'partnership-based' approaches where the target population contributes to decision-making during the development process(74), and 'implementation-based' approaches, where the focus of development is on maximising real-world effectiveness(75).

Unfortunately, despite the quantity of guidance there is no clear evidence for which development approaches result in effective interventions(73). For example, developing a new complex intervention based on 'partnership-based' approaches such as co-production appears to be no more likely to produce an effective intervention than any other approach(76). Similarly, using a 'theory-based' approach is no more likely to be successful than non-theory-based development(77). Whilst absence of evidence does not mean these approaches are not effective, it does imply that there is no single ideal approach. This might explain in part why a review of intervention development studies found that half did not appear to use one of the published approaches, using de-novo or self-selected actions instead(78). Similarly, in a qualitative study of the perspectives of developers on successful development, few of the respondents reported using a formal development approach, rather they generally reported using pragmatic approaches(79). Whilst pragmatic development

might be more straightforward for developers, if processes are not clearly reported there is a risk that the intervention will be less accessible to other researchers or implementers, making reproducibility of outcomes or adoption of the intervention less achievable.

5.1.4 Development of a new psychiatric service model for older general hospital inpatients

The starting point of the development process for the new service model was the initial outline described in The HOME Study funding application. This brief outline was based on the 'proactive consultation service model' developed at Yale, in the US(25, 80). In this model, all acute medical admissions are 'proactively' assessed by a psychiatrist for potential problems that may benefit from psychiatric intervention. The initial model in the funding application therefore had the following components: 1) brief assessment of all patients by a psychiatrist; 2) formulation of a specific plan to address the identified problems in order to facilitate discharge; 3) proactive progress reviews and communication with ward staff and community professionals as required; and 4) follow-up call made to the patient or carer one week after discharge to ensure implementation of the post-discharge care plan.

The process of developing this initial outline into a service model that could reasonably be expected to have a worthwhile effect was informed by guidelines and used an iterative process of literature review, discussions with patients, carers and clinicians, and piloting.

5.2 Aim

The aim was to develop a new psychiatric service model for older general hospital inpatients.

Specifically, to develop the brief outline to a fully described model ready for delivery.

5.3 Methods

The development process involved reviewing the relevant literature, discussions with patients, carers and clinicians, and piloting. Data relevant to each of these were gathered simultaneously and informed the ongoing development process. However, for clarity, each method is described separately.

5.3.1 Reviewing the relevant literature

The main objective of reviewing the literature was to summarise relevant descriptions of the proactive consultation service model and similar service models, including which of their features would be useful for the new model.

Literature reviews exist on a spectrum from narrative reviews without specific search or analysis plans to systematic reviews with rigorous, pre-specified methodology(81). Narrative reviews combine and interpret information from a range of sources(82). A lack of pre-specified methodology and focused research question can potentially lead to "cherry-picking" to confirm pre-conceived ideas. However, the flexibility of a narrative review can be utilised when the aim is to identify useful information for complex intervention development, which by definition is broad and diverse in nature.

I had already undertaken a systematic review of previous randomised trials of psychiatric services for general hospital inpatients (see Chapters 2-4). Undertaking a further narrative review allowed me to evaluate a wider range of sources and information, including evidence that might contradict aspects of a proposed new intervention(67), and literature on psychiatric service models that have not been evaluated in randomised trials(83).

5.3.1.1 Information sources and search strategy

Google Scholar was the primary database used because this searches a wide variety of disciplines and sources. To broaden the search, the reference lists of key publications in each area were reviewed. I also asked experts in the field, including lead authors of some of the main articles, to suggest relevant publications.

5.3.1.2 Selection criteria

I selected articles, following screening of the title and abstract or because of expert recommendation, that were about: (1) the proactive consultation service model and similar models of psychiatric services for general hospital inpatients (such as the integrated models from the US, and RAID (Rapid Assessment, Interface and Discharge) and Core24 models from the UK), (2) the collaborative care model (a similar model for outpatients), and (3) the comprehensive geriatric assessment (a model for physicians caring for older general hospital inpatients). To ensure the search strategy was as comprehensive as possible, no restrictions on date of publication were made when using Google Scholar, however only English language articles were selected. A range of literature was considered including primary studies, reviews, commentaries and guidelines.

5.3.1.3 Citation search and grey literature

To identify further potentially relevant publications, I screened the reference lists of relevant articles. I also screened articles that cite relevant articles using the Google Scholar 'Cited by' function. To maximise the breadth of the search, grey literature, in general defined as articles not published by academic publishers was also reviewed using Google Scholar(84).

5.3.2 Discussions with patients, carers and clinicians

The objective of discussions with patients, carers and clinicians was to ensure that appropriate refinements were made to make the service model feasible and acceptable.

There are a number of ways to seek the views and opinions of patients, carers and clinicians about a potential new service model, including surveys(85), interviews(86, 87), and group discussions(88). Surveys can be sent to a relatively large number of potential participants but generally have low response rates and points of interest cannot be explored in more detail(85). Interviews allow deeper exploration but are more time consuming and likely to result in a narrower range of views being obtained(87). Group discussions are a more efficient method of obtaining the views of a range of people than one-to-one interviews, and unlike surveys, allow the researchers to explore opinions. The group format can be particularly helpful where there might be a perceived power imbalance between "expert researcher" who is invested in their service model, and "lay" PPI panel member in a one-to-one setting(89). However, group discussions do not allow for deep exploration of individual opinions. I chose to use group discussions as the most useful and practical way to explore patients', carers' and clinicians' views of the new model.

5.3.2.1 Sample

It is important to consider the composition of the group as this affects the interaction and discussion, and therefore the findings(90). The discussion and interactions will be affected by a range of actual and perceived factors, including age and professional background(91). Therefore, I organised two groups for the discussions. The first group comprised patients and carers. These were older people who had experienced an acute general hospital admission or had cared for someone with this experience. These patients and carers were The HOME Study Patient Public Involvement (PPI) panel. The second group was clinicians with experience of working with older adults in a

general hospital setting. I wanted the previous experiences of the participants in each group to be broadly similar, so as to encourage a more informal atmosphere and more openness in discussion(92).

Similarly it is important to consider the size of the group: too small and the benefits of the group interaction are lost, too large and the discussion can become superficial and dominated by a subset of the participants(91). By having two groups, I also aimed to keep the size of the groups within a range more conducive for involving all participants in the discussion.

5.3.2.2 Setting

The groups met for the discussions at a central Oxford location, near the bus and train stations to improve accessibility.

The setting can contribute to the quality of the discussion, with participants feeling more or less comfortable, or able to voice their true opinions in certain circumstances(91). Therefore, the meetings were not held at the university department or hospital where the attendees may have felt less comfortable than the researchers would have. For all the meetings, private meeting rooms were arranged to minimise potential distractions. Materials for the meeting, including name tags, paper and pens, and copies of the initial model, were provided.

5.3.2.3 Timing

Meetings were scheduled to last approximately 60 minutes. This was to allow time for discussions to "warm up", without becoming tiring for participants(91).

5.3.2.4 Data collection and analysis

At the meetings I or another member of the research team presented the initial version of the model (summarised earlier in the chapter in section 5.1.4) and then guided the discussion, using open-ended questions to promote conversation between participants. I and other research team members observing the meetings took contemporaneous notes(91). Participants were also asked to leave any notes they had taken that they felt might be useful. All the notes were then reviewed in detail by me and another member of the research team to familiarise ourselves with the content before summarising them. The summarised notes were discussed by the research team, and moderated by me, Professor Sharpe, and Dr Walker, with a view to developing the model as appropriate.

5.3.3 Piloting

The objective of piloting was to get practical experience of the new model and identify aspects of it that required further development and refinement.

Piloting is an essential part of the development process, allowing developers to get practical experience of delivering the intervention, and make refinements prior to evaluation(66). There are no alternatives to piloting in getting practical experience, although how much of the new intervention is piloted and in what context, can vary(93). Inadequate piloting increases the risk of the intervention proving ineffective or infeasible to deliver(94).

5.3.3.1 Sample

The initial pilot involved consultant psychiatrists from one psychiatric service (Psychological Medicine Service, Oxford University Hospitals). The second and third pilots involved the clinicians (both consultant psychiatrists and other mental healthcare professionals) who would be delivering the new service model in The HOME Study.

5.3.3.2 Settings

Initial piloting took place on acute medical wards at the Horton General Hospital (Banbury). Horton General Hospital was chosen as an averaged sized (250 beds) NHS district general hospital. The second and third pilots were done at the sites where the final model would be delivered in The HOME Study; the John Radcliffe Hospital (Oxford), Addenbrooke's Hospital (Cambridge), and The Royal Devon and Exeter Hospital (Exeter).

5.3.3.3 Timings

Three pilots were held during the development process, with meetings with the piloting clinician's in between. This allowed the evolving model to be discussed and potential changes made before further piloting.

5.3.3.4 Data collection and analysis

Three pilots were completed to develop the new service model (see Table 5.1). In the initial pilot, the consultant psychiatrists were asked to follow the brief outline from the funding application described in section 5.1.4 when seeing patients. The consultants were then asked to complete data collection sheets summarising how long they spent with each patient, the problems their

assessments identified, and what interventions they undertook. The consultants were also asked to comment on their experiences of following the brief outline. For the second pilot, the clinicians were asked to pilot a more proscriptive version of the new model updated based on information from the first pilot, initial findings from the literature review, and discussions with the patient and carer group and clinician group. The piloting clinicians were asked to complete a pilot feedback form; an example is shown in Figure 5.1. I collated the information on the feedback forms and reviewed them in detail before summarising them. The summarised notes were then discussed with the piloting clinicians at the meetings in between the pilots where further contemporaneous notes were taken. I then discussed these notes with Professor Sharpe and Dr Walker, which fed into the next iteration of the model.

For the third pilot, the clinicians were asked to pilot a further refined version of the new model. This version was based on feedback from the second pilot and discussions with the piloting clinicians. As with the second pilot, the clinicians were all asked to complete a feedback form. Again, I collated the information on the feedback forms, reviewed them in detail, summarised them and discussed the findings with the piloting clinicians at the meetings where further contemporaneous notes were taken. I then discussed these notes with Professor Sharpe and Dr Walker, which fed into the final version of the model.

Table 5.1 Summary of the three cycles of piloting the evolving new service model

Pilot	Setting	Clinicians involved	Main focus
Initial pilot	Horton General Hospital	Consultant psychiatrists from Psychological Medicine team, Oxford University Hospitals.	Practicality of delivering the brief outline model in an NHS context
Second pilot	Addenbrooke's Hospital (Cambridge), Royal Devon and Exeter Hospital (Exeter), John Radcliffe Hospital (Oxford)	Clinicians who would be delivering PIPM in the HOME Study.	Refining evolving model
Third pilot	Addenbrooke's Hospital (Cambridge), Royal Devon and Exeter Hospital (Exeter), John Radcliffe Hospital (Oxford)	Clinicians who would be delivering PIPM in the HOME Study.	Finalising the model

Figure 5.1 Pilot feedback form completed by piloting clinicians

The HOME Study Pilot Feedback Form

			Day		Month		Year			
1	Date of pilot	From					2	0		
		To					2	0		

2	Location		
3	Consultant	FORENAME	SURNAME
4	Assistant	FORENAME	SURNAME

Pilot type		Yes (Y) / No (N)	Feedback
6	Screening		
7	Eligibility		
8	Baseline		
9	Consent		
10	Brief Assessment		
11	Brief Assessment f/u		
12	Full Assessment		
13	Formulation and Plan		
14	Daily follow up		
15	Discharge		

1

The HOME Study Pilot Feedback Form

Actions	
13	

2

Chapter 6: Development of a new psychiatric service model for older general hospital inpatient - Results

6.1 Findings

6.1.1 Findings from the literature review

6.1.1.1 Proactive psychiatric care models

The proactive psychiatric care model was developed by clinicians in Yale New Haven Hospital in the US to improve the identification of general hospital inpatients who may benefit from psychiatric services(25). The main innovation was to briefly assess all new adult admissions to general medical wards for 'active psychiatric problems', particularly those problems considered likely to increase the length of stay. Clinicians with psychiatric expertise systematically assessed all new patients instead of relying on ward clinicians to identify and refer them(25, 80). More recently, the proactive concept has been extended to also include the proactive delivery of care(95-97). This means psychiatrists become members of the multidisciplinary team (MDT) and actively participate in management decisions and delivery.

All studies of proactive psychiatric services for general hospital inpatients published to date have been small, single-centre, non-randomised studies. The initial studies that took place in New Haven found the model was feasible and acceptable(25, 80). The medical teams valued the ease of communication that came with daily contact with the psychiatric team, including both formal and informal case discussions. The psychiatrists picked up higher rates of active psychiatric problems than the medical, surgical, and nursing teams. Because assessments were performed soon after admission, patients with active problems had psychiatric assessments earlier than equivalent patients under standard care. Although the psychiatrists saw more patients, and earlier in their

admissions, contact with individual patients was still relatively short (e.g. 5-10 minutes), in part due to time constraints on the psychiatrist to assess large numbers of patients. These studies suggested a potential for proactive services to reduce length of admission. A recent review of studies of proactive models also reported reductions in length of stay with potential cost-effectiveness benefits but identified no robust randomised trials(36).

Useful features of the proactive psychiatric care model that are relevant for the new model include the feasibility of assessing patients proactively and reaching a greater proportion of patients in need, demonstration of the utility of targeting populations with a high prevalence of psychiatric problems, and the potential to increase concordance with recommendations for psychiatric management.

There are also a number of features of the proactive psychiatric care model that would be less useful when considering the new model. These include; continuing to miss some patients who could benefit from psychiatric input, increased resource demands, inefficiency in populations with a low prevalence of psychiatric problems, and a failure to adequately resolve the problem of poor concordance with psychiatric recommendations(36). Although the proactive psychiatry service model has been found to be feasible and acceptable in US settings, differences in UK healthcare delivery mean these findings may not be transferrable. In addition, findings from these studies related to general adult hospital admissions of all ages and may not meet the needs of older adults.

6.1.1.2 Integrated psychiatric care models

The integrated psychiatric care model, also developed initially in the US, aims to increase the influence of psychiatrists on patient care, in part by improving concordance with management recommendations. Integrated models range from enhanced 'liaison' services with a psychiatrist regularly contributing to discussions at MDT meetings, to psychiatrists sharing full clinical responsibility for patients and delivering interventions directly to them(26, 27). Integration into

teams allows the psychiatrist to have ongoing involvement in patient care and to directly influence the overall care plan(27).

A 2014 review of integrated models of care, where psychiatrists were co-located and shared clinical responsibility for patients with the medical team, identified and discussed four relevant studies(38). The models appeared feasible and acceptable to both patients and ward clinicians. They also reported reductions in psychiatric symptoms and length of stay. However only two of the four studies were randomised(51, 98), and the intervention in one of the randomised studies was geriatrician-led rather than psychiatrist-led(98). There have subsequently been a small number of further studies with similar results(26, 27): the model appears acceptable and feasible, but effectiveness is still unclear.

Useful features of the integrated psychiatric care model when considering the new model include; the feasibility of sharing clinical responsibility with the ward team and providing ongoing involvement in care throughout admission.

Less useful features of the integrated psychiatric care model when considering the new model include; the lack of a systematic process for identifying all patients who might benefit from psychiatric intervention, and the resource burden of the provision of more highly trained psychiatric specialists.

6.1.1.3 Psychiatric service models in NHS general hospitals

There are two main emerging, and increasingly widely used, models for psychiatric services in general hospitals in the UK: The Rapid Assessment, Interface, and Discharge (RAID)(24) and Core24 models(99). Both these models are based on the idea that emergency psychiatric services should be available for all general hospital patients in a timely manner. Reviewing the relevant literature I identified limited evidence, mainly in non-randomised cost-effectiveness analyses, for either

model(23). The original paper describing RAID was a before-and-after study showing a reduction in average length of stay and readmissions after RAID was implemented compared to before. The majority of the reductions were on elderly care wards, whilst two-thirds of the patients were under 65years old(24). A further before-and-after study in east London found similar reductions in length of stay but found the effect limited by their clinicians only being referred a small number of the patients with psychiatric conditions in their hospitals(100). The evidence of the Core24 model, a similar service providing assessments following referrals for psychiatric 'emergencies' 24 hours a day, similarly comprised of a before-and-after study that found a reduction in length of stay(99).

The main useful feature of the RAID and Core24 models is that their increasing use indicates that it is already generally accepted by NHS Trusts that there should be greater availability of psychiatric services for general hospital patients(23). The literature also reinforces the importance of focusing on older patients, and that referral based services see only a small percentage of patients with psychiatric conditions in acute hospitals(100).
Less useful features of both models include; a reliance on referrals to identify potential patients, and that they only provide assessments with limited or no follow-up involvement in care.

6.1.1.4 Collaborative care models

In primary care and outpatient settings, the collaborative care model has been used with the aim of improving the management of psychiatric disorders by integrating psychiatric professionals into clinical teams(64, 101, 102). Two of the main innovations of collaborative care are: (1) the addition of care managers delivering direct care under psychiatric supervision, thus increasing the scope of the psychiatrist's influence, and (2) a treat-to-target strategy, in which the regular review of progress towards a clear goal informs management plans. The care managers are often social workers or mental health nurses who have received specific training in working in the collaborative care model.

They have regular patient contact, and work with the psychiatrist and primary care providers to deliver agreed treatment plans. Collaborative care models have been found to be effective in a range of populations, including patients with depression and chronic illness(101), patients with Alzheimer disease(103), and patients with depression and cancer(64, 104).

Useful features of the collaborative care model relevant to the new model include the use of an additional healthcare worker to increase the scope of the psychiatrists' input, having a focused goal for the service, and working toward that goal systematically.

Less useful features of the collaborative care model when considering the new model and applying it to a general hospital inpatient population include: (1) the lack of a systematic process for identifying all patients who might benefit from collaborative care, and (2) the lack of evidence for its use for general hospital inpatients.

6.1.1.5 Comprehensive Geriatric Assessment

The Comprehensive Geriatric Assessment (CGA) is a widely used model for the assessment of older, complex, multi-morbid patients by specialists (i.e. geriatricians). It is based on the concept that older patients with complex care needs benefit from receiving specialist assessment and management recommendations. To increase the number of patients who can benefit from specialists, of whom numbers are limited, the management plans made by specialists can guide the care subsequently delivered by the other clinicians or teams. The CGA model is more effective when the specialist recommendations are actioned(105), and for acutely admitted patients, where the potential to improve overall management is greatest(106). This is consistent with findings in other settings that the effectiveness of initial patient assessments is greater when undertaken specifically by senior clinicians(107).

Useful features of the CGA model when considering the new model include the importance of a senior assessor for the new service model, and the ability to provide specialist assessments for a greater number of patients. Less useful features to consider include high resource demands and poor concordance with recommendations.

6.1.1.6 Influence of the literature review on the new service model

Based on the literature review the following aspects of the initial model were kept:

- To proactively assess all patients
- To have a specialist conduct the initial assessment

Based on the literature review the following changes were made to the initial model:

- To proactively follow-up all patients, rather than just as required
- To explicitly share clinical responsibility with the ward team
- To have an additional clinician ("care manager") to increase the reach of the service
- For the progress reviews to be focused on the specific goal of discharge from hospital ("treat-to-target")

6.1.2 Findings from group discussion with patients, carers and clinicians

The attendees of the group discussions were seven patients and carers in one group and 14 clinicians with experience in working with multimorbid, older, general hospital inpatients (e.g. liaison psychiatrists, geriatricians, physiotherapists, palliative care experts, and researchers) in another (see Table 6.1).

Table 6.1 Summary of patients, carers and clinicians

Patients and carers	Clinicians
3 with carer experience 3 with patient experience 1 member of previous PPI panel	8 Liaison psychiatrists 2 Physiotherapists 1 Geriatrician 1 Palliative care doctor 1 Ambulatory care doctor 1 General Practitioner

6.1.2.1 Views of the patients and carers

The discussions with the patients and carers indicated broad acceptance of the initial model. Both patients and carers were particularly positive about two aspects: (1) the opportunity for the patients and carers to share wider worries and concerns, rather than just the reason for admission; (2) the chance for the patients and carers to have regular contact with the same healthcare professionals. The main concern about the model was the follow-up phone call. It was felt a phone call to older patients, many of whom would have poor memory, might cause confusion or distress. It was also felt that a clear and pre-agreed plan for the post-discharge follow-up call, including times to call, phone numbers to contact, and who to speak to when calling, would help with this. The group was also concerned that some patients might be confused as to why a psychiatrist was seeing them, if they did not have an explicit psychiatric disorder. On further discussion it was agreed that by undertaking a broad assessment and addressing the patients' potential concerns about seeing a psychiatrist early on would de-emphasise the focus on potential psychiatric symptoms and would likely be more acceptable to patients.

6.1.2.2 Views of clinicians

The clinicians were positive about the basic principles of the new model, i.e. that early and ongoing involvement of psychiatric professionals could positively affect patient care. There were two main additional ideas that arose from discussions with the clinicians: (1) to broaden the focus of the initial assessment from psychosocial to biopsychosocial with the aim of fully utilise the skills of the psychiatrists and address the needs of the multimorbid target population (i.e. acutely admitted patients aged 65 and over); and (2) to consider the evolution of problems facing each patient over the course of their admission. Early in admissions, the focus is usually on acute medical problems. As these problems are managed, the duration spent in the hospital environment increases, and particularly as inpatients are largely sedentary, problems with mobility and discharge start to predominate. For this reason, the clinicians felt it was important for the new model to be involved throughout the patient's admission and to reassess for problems regularly, rather than just focusing on implementing the initial plan.

6.1.2.3 Influence of the group discussions on the new service model

The findings from the group discussions led to three main changes to the initial model:

- The scope of the initial assessment was expanded from psychosocial to explicitly biopsychosocial.
- The follow-up during admission would include daily contact with patients where appropriate, and include explicit regular re-assessment throughout the admission.
- The post-discharge follow-up telephone call would be pre-arranged with the patient or carer before discharge.

6.1.3 Findings from piloting

6.1.3.1 Initial pilot

The initial pilot focused on the practicalities of delivering the brief outline model (see Chapter 5, section 5.1.4) in an NHS context. Consultant psychiatrists from the Oxford University Hospitals Psychological Medicine Service delivered the brief model to patients at the Horton General Hospital. 41 patients were briefly assessed (mean time taken 7.2 minutes, standard deviation 4.0) by five different consultant psychiatrists. Examples of problems identified by the screening included confusion, disruptive behaviour, multimorbidity, and complicated capacity decisions. The types of interventions the consultants delivered included proactive capacity assessments, obtaining collateral information from family members, and facilitating early consideration of discharge planning. The different psychiatrists approached assessments in different ways, for example prioritising alcohol histories or completing in depth cognitive assessments.

The consultants reported that they felt early intervention (before care packages for the patients were suspended, and before management trajectories set) and close liaison with other services (for example, occupational therapists and social workers) would be important for the new model. The consultants also agreed that the new service should focus on frail elderly patients (where there was most need) rather than all adults as in the US model. A final suggestion the consultants had was that having a social worker or occupational therapist on the team would be helpful to expand the reach of the service and because of the specialist skills in supporting patients with problems outside of a narrow medical model. This reflected the findings from the literature review, especially from collaborative care literature.

The initial pilot confirmed that the initial model was deliverable in an NHS context, and that early, proactive involvement in patient care appeared to be useful. It also identified that considering a wider range of professional backgrounds for the new service team (i.e. not only psychiatrists or mental health nurses) could be useful. The initial pilot also found variations in the focus of

assessments between different psychiatrists. This led to the main change to the evolving model following the initial pilot, which was the development of a predefined set of problem categories to be assessed in every patient to reduce inconsistency across assessing clinicians.

6.1.3.2 Second pilot

The second pilot was focused on testing the evolving model following the initial pilot, group discussions and initial literature review. The model for the second pilot included a full biopsychosocial assessment, followed by ongoing involvement in care including regular re-assessment, and a follow-up call after discharge.

The clinicians delivering the new model were the clinicians who would be delivering the final model in The Home Study. They felt the broader biopsychosocial categories was beneficial to their assessments. The piloting clinicians' main concern was about the follow-up phone call. Specifically, they were unclear who would be responsible for managing any problems identified once the patient had been discharged. The main change following the second pilot was therefore the removal of the post-discharge phone call and replacing it with more comprehensive communication with the patient's general practice (GP) and community services, at the point of discharge.

6.1.3.3 Third pilot

The third pilot focused on finalising the new model following further literature review and feedback from the previous pilot. This included a full biopsychosocial assessment, an associated action plan for any problems identified in the assessment, daily follow-up by the delivering clinicians including a weekly consultant review, and routine entry in the patient's hospital discharge letter. Patients were again seen at each of the proposed trial sites but more patients were seen in Oxford (30) than the other sites (10 in total across Cambridge and Exeter). Ward staff were reportedly happy with the psychiatric team's presence.

The clinicians delivering the model found reviewing patients daily helped them identify emerging problems earlier. The clinicians also felt more involved in the patient's care and that their management plans were more likely to be actioned. The clinicians found the remote assessment of patients inefficient, adding little to their management plans and that it was more efficient to review patient's records on the ward at the same time as assessing the patients. The piloting clinicians also found it difficult to influence care if the initial management plan had already been decided by the ward clinicians before they had the opportunity to review the patient. This was particularly the case for plans involving discharge destinations as the initial decision by the ward MDT was hard to change, regardless of the patient's evolving needs. To address this, the piloting clinicians started to regularly attend board rounds and other MDT meetings, and had been actively seeking out discussions with ward therapists, who were particularly involved in discharge destination decisions.

Two final changes to the model resulted from the third pilot:

- Removing the remote assessment component, meaning the initial patient assessment became a full biopsychosocial assessment of both notes and the patient, taking approximately 30 minutes, on the ward.
- Greater emphasis was placed on the psychiatric clinicians delivering the new model participating in the multi-disciplinary team (MDT) discussions of other ward staff as early in the admission as possible.

Figure 6.1 Summary of initial and final model

Initial model		Final model
Brief assessment of all patients by a psychiatrist		Comprehensive consultant-led biopsychosocial assessment of all patients
Formulation of a specific plan to address the identified problems in order to facilitate discharge		Formulation of a specific plan to address the identified problems in order to facilitate discharge
Proactive progress reviews and communication with ward staff and community professionals as required		Daily progress reviews and contact with ward staff; weekly reassessments; constant updating of action plan
Follow-up call to the patient or care giver one week after discharge to ensure the post-discharge care plan is being implemented		Effective discharge and appropriate communication of aftercare requirements

6.2 Final Model

6.2.1 Proactive Integrated Psychological Medicine

The result of the service model development process was Proactive Integrated Psychological Medicine (PIPM). The prefix of PIPM, 'PI-', reflects the two major influences on its structure; 'proactive' and 'integrated' services. The suffix of PIPM, '-PM', reflects the fact the new service is for general hospital inpatients and is a development of current Psychological Medicine service models.

This is a new model of psychiatric services for older general hospital inpatients based on seven principles of care (see Table 6.2); these principles include core aspects of both the proactive and integrated psychiatric service models as well as additional principles to overcome the limitations of the current psychiatric service models. Each principle applies throughout PIPM but specifically underlie the four stages of its delivery which are discussed below in detail. A peer-reviewed description of PIPM has been published(32), a copy of the manuscript is available in the Appendix (Additional Files).

Table 6.2 The seven principles of PIPM

1	Proactive	PIPM clinicians see all allocated patients for assessment and active intervention.
2	Prompt	PIPM clinicians see patients as soon as possible after admission.
3	Comprehensive	PIPM uses a comprehensive biopsychosocial perspective.
4	Focused	PIPM has a clear focus – to help patients get home and stay home.
5	Integrated	PIPM clinicians are members of the patient's extended medical team.
6	Intensive	PIPM interventions are delivered assertively and intensively with active follow-up.
7	Systematic	PIPM is systematically delivered according to the manual and checklist.

6.2.2 Seven principles of PIPM

6.2.2.1 Taking a proactive approach

PIPM is designed for older, acutely admitted, general hospital patients, a population with high rates of psychiatric morbidity which may be better served using a population-based, rather than a referral-based, model. This means that PIPM clinicians proactively assess the psychiatric needs of all patients in the relevant hospital wards. This contrasts with traditional psychiatric services, which rely on other clinical teams recognising psychiatric problems and making a referral. The proactive approach of PIPM therefore aims to increase the proportion of general hospital inpatients who might benefit from psychiatric input that are identified and treated.

6.2.2.2 Providing care promptly

PIPM clinicians assess patients as soon as possible after their admission to the ward. Early involvement in care allows psychiatric aspects of the patient's management to be prioritised and made part of their overall initial treatment plan. This contrasts with traditional psychiatry services who tend to see patients later in their admission and whose recommendations may be seen merely as supplements to an already well-established management plan.

6.2.2.3 Making a comprehensive biopsychosocial assessment

The PIPM assessment aims to identify all problems for which psychiatric intervention might be useful from a comprehensive biopsychosocial perspective. This comprehensive approach is unlike traditional general hospital psychiatric services which tend to focus solely on diagnosing psychiatric disorder and answering a specific referral request.

6.2.2.4 Focussing on a clear goal

The PIPM service model is focused on identifying and managing problems that are most likely to either impede the patient's discharge, or to lead to early readmission. A major goal of caring for older multimorbid patients is to avoid spending more time in hospital than necessary. The longer older patients are in hospital the higher the risk of deconditioning, nosocomial infection, and poorer long-term outcomes(108). Equally, premature discharge can increase the risk of early readmission which might have been avoided with adequate management in the initial admission. Focusing on optimising care that can be delivered during the admission and avoiding prolonged inpatient stays differs from traditional psychiatric services, which typically focuses on addressing the questions posed by the referring clinicians, which are variable in their objectives.

6.2.2.5 Integrating with the ward team

PIPM clinicians work as integrated members of the patient's ward team. This includes maintaining a permanent presence on the ward, attending rounds and MDT meetings, and having real-time shop floor discussions, rather than ad hoc visits to the ward. These activities are intended to achieve the ongoing integration of the psychiatric perspective into the patient's overall care. This approach contrasts with usual psychiatry practice, where psychiatrists are typically visitors from a separate department, and often organisation.

6.2.2.6 Providing intensive interventions

The clinicians providing PIPM ensure that their recommendations are delivered with adequate intensity, including where needed, active delivery of treatments to the patient themselves. This differs from the usual approach of only recommending actions with the expectation that they will be carried out by other clinicians. As PIPM sees patients proactively (i.e. without being referred by the

ward team) continuing to be actively involved in delivery of care after the initial assessment is of particular importance.

6.2.2.7 Ensuring the systematic delivery of psychiatric care

PIPM is delivered systematically according to the service model, throughout the patient's admission. This systematic approach differs from the typically somewhat 'ad hoc' nature of traditional psychiatry service delivery, as demonstrated in the initial pilot, and ensures that the planned actions are rigorously implemented, and progress monitored.

6.2.3 PIPM team

The initial comprehensive assessment is led by a consultant psychiatrist with experience of working in general hospitals. However, in order to maximise the number of patients the psychiatrist can support, they are aided by one or more assisting clinicians. These may be trainee doctors, nurses, occupational therapists, social workers or other appropriately qualified clinicians with experience in the psychiatry of the medically ill. They work under the consultant psychiatrist's direct supervision and as part of the wider ward team.

6.2.3.1 Consultant Psychiatrist

Consistent with the Comprehensive Geriatric Assessment (CGA) model and evidence for the importance of early senior assessment, PIPM is led at each site by a specialist, in this case a consultant psychiatrist, who has specific experience working with older people in a general hospital setting. Experience from piloting, as well as evidence from the literature review, was that senior input in the model was essential: consultants can provide an assertive senior opinion when needed to achieve change in the patient's management or to provide reassurance to the rest of the ward team.

6.2.3.2 Assisting Clinician

Learning from the Collaborative Care Model, there is an assisting clinician to help increase the reach of the service. Like the consultant, the assisting clinician must be capable of working confidently with older people in the general hospital setting. The assisting clinician supports with the initial assessment, coordinates delivery of the management plan, and leads the daily follow-up. The assisting clinician re-assesses patients during the daily follow-up and liaises with relatives, medical

staff and community colleagues. They also work with the medical team to ensure any appropriate information and instruction is included in the hospital discharge summary.

6.2.3.3 Coordination of care

The PIPM clinicians meet at least once each working day to discuss the patients and coordinate the day's jobs. Coordination with the patients' medical, nursing and therapy team members is also essential and should occur as frequently as necessary.

6.2.4 Stages of PIPM delivery

6.2.4.1 Stage 1: The biopsychosocial assessment

PIPM starts with a comprehensive biopsychosocial assessment of the patient. This includes direct patient assessment and review of the medical notes, conversations with other members of the ward team and, where relevant, family members and carers. In addition, primary care and community mental health providers are contacted where necessary. The consultant psychiatrist leads direct patient assessment. Many of the problems reported by older patients on acute medical wards have substantial psychosocial complexity, making consultant psychiatrists particularly well equipped to identify and delineate them. The assistant coordinates further information gathering. The result is a comprehensive list of the patient's problems. The problem list is then reviewed by the PIPM team to prioritise those that are likely to lengthen hospital stay or lead to early readmission, and therefore require active management in hospital. The problems that can be managed after discharge from hospital are recorded for communication to, and later management by, out-of-hospital services.

6.2.4.2 Stage 2: Formulation of the action plan

Once the prioritised problem list is complete, the psychiatrist creates a focused action plan. For each category where a relevant problem has been identified a specific action point is described. For example, if the patients' psychotropic medication regime was contributing to acute confusion, the plan would be to rationalise the medications immediately. The plan is discussed and agreed with the rest of the ward team, the patient (where appropriate), and when necessary also with the patient's family (or carers). The aim is to integrate a psychiatric perspective on the patient's problems from early in the admission and agree a coordinated approach to their management. The final agreed action plan is clearly documented in the patient's medical records.

6.2.4.3 Stage 3: Implementation of the action plan

Variable implementation of psychiatric management plans by ward teams is a consistent finding in the literature and an inherent problem with traditional psychiatric service models. In PIPM, implementation of the agreed action plan is mainly the responsibility of the assisting clinician, working under the supervision of the consultant psychiatrist. The assisting clinician reviews the patient's progress every working day and gathers and shares any new information. They also work as a member of the ward team and may attend rounds and MDT meetings. The consultant psychiatrist and assisting clinician briefly discuss each patient's progress daily. As PIPM aims to see patients early in their admission and problems often evolve over time, the consultant psychiatrist undertakes a full review of each patient's progress each week, including a consultation if required, to ensure that the action plan remains appropriate.

6.2.4.4 Stage 4: Discharge from hospital

The PIPM clinicians review the patient's case prior to their discharge from hospital and ensure that any remaining problems are clearly communicated to their out-of-hospital care providers. Many patients will not have access to expert psychosocial assessment in the community, so it is particularly important that information gathered during the admission is communicated appropriately and that the patient's care is optimised prior to discharge. As the PIPM clinicians are integrated into the wider ward team this would normally be done by including the relevant information in the patient's summative hospital discharge summary. However, if the problems are particularly complex or urgent, direct communication with the primary care physician or community psychiatrists by letter or telephone may be required.

Chapter 7: Development of a new psychiatric service model for older general hospital inpatient - Discussion

7.1 Summary of findings from the development process

7.1.1 The new model – Proactive Integrated Psychological Medicine

The initial motivation for the new model - Proactive Integrated Psychological Medicine (PIPM) - was to address limitations in current psychiatric services in meeting the needs of older, multimorbid, general hospital inpatients. The development process of the new model resulted in the determination of seven key principles to meet this need (see Table 7.1). The differences between a traditional psychiatry service model for general hospital inpatients and the new PIPM service model are shown in Table 7.2.

Table 7.1 The seven principles of PIPM and their main influences

Principle	Main influences
Proactive	Proactive psychiatric care model
Prompt	Literature review, group discussions, piloting
Comprehensive	Comprehensive Geriatric Assessment, group discussions
Focused	Systematic review, literature review, piloting
Integrated	Integrated psychiatric care model
Intensive	Systematic review, group discussions
Systematic	Piloting

Table 7.2 Differences between the traditional general hospital psychiatry service model and the new Proactive Integrated Psychological (PIPM) service model

	Traditional General Hospital Psychiatry Service Model	**Proactive Integrated Psychological Medicine Service Model**
Which general hospital inpatients are seen by psychiatry?	A minority of referred inpatients are seen	**Proactively** assesses all inpatients on the relevant ward
When is psychiatric care provided?	Often late in the hospital stay	**Promptly** from the time of admission to ward
What is the perspective of care?	Identification of psychiatric illness	A **comprehensive** biopsychosocial approach
What is the goal of psychiatric care?	Various, often dependent on the referrer's perspective and experience	**Focused** on minimising unnecessary time in hospital (both delayed discharge and early readmission)
How does psychiatry contribute to care?	Offers advice to the clinical team	**Intensive** ongoing direct intervention as part of the clinical team
What is the relationship between psychiatry and the medical team?	Psychiatry is a separate service that provides consultations and advice	Psychiatry is an **integrated** part of the medical team with shared patient responsibility
How is psychiatric care delivered?	On an 'ad hoc' basis	**Systematically** according to service manual and workbook

7.1.2 Changes to the initial model

The main changes to the initial model are summarised in Table 7.3. The initial brief assessment of all patients was replaced by every patient receiving a full biopsychosocial assessment. Follow-up involvement was increased to daily reviews and weekly consultant re-assessments. Finally, the follow-up phone call was dropped in favour of a clear discharge plan integrated into the normal hospital discharge summary, with additional contact with community services on an individual basis.

The development process also shaped the structure of delivery of the new model. It was decided that the consultant psychiatrist should lead the initial assessment in the new model. There is some evidence that the most experienced clinicians available should lead initial assessments of complex patients. However, considering the financial implications, involving highly trained clinicians in all

aspects of patient care would be an inefficient use of resources. Therefore, an assistant (similar to the care manager role used effectively in the collaborative care model) was incorporated to extend the reach of the psychiatrist and thereby reduce costs.

Table 7.3 The main changes to the initial model

Initial model	**Final model**
1. Brief assessment of all patients • 5-10mins brief assessment • further assessment only if problem identified	1. Biopsychosocial assessment • comprehensive for each patient • no brief assessment
2. Specific plan to address problems identified in Stage 1 in order to facilitate discharge • plan agreed in collaboration with patient, carers, staff, and GP • focused on psychosocial problem	2. Action plan • plan agreed in collaboration with patient, carers, staff, and GP • focused on all problems identified in initial assessment as unnecessarily prolonging admission or increasing risk of early readmission
3. Proactive progress reviews and communication with ward staff • regular review • adjust management plan as necessary	3. Follow-up • daily review • weekly consultant review with adjustment of management plan as necessary
4. Follow-up post-discharge • telephone call to patient or carer one week after discharge to check post-discharge plan is being implemented	4. Discharge • discharge plan integrated with hospital discharge plan • direct contact with community professionals as required

7.2 Strengths and limitations of the development process

7.2.1 Strengths of the development process

There were a number of strengths to the development process. It was consistent with widely accepted development guidelines, including the Medical Research Council guidance on developing complex interventions(66). A wide range of literature was reviewed to inform the process. Input was sought from clinicians with experience of working with older adults in a general hospital setting and people with personal experiences as patients or carers for patients via group discussions. A strength of the group discussions conducted was the external (to the research team) feedback on the developing model. This helped to assess face validity and acceptability. The group format allowed participants to share opinions they might not in a one-to-one discussion with a researcher developing the model. Group discussions can also led to efficient feedback on new ideas and consensus reaching(91), for example in the decision to broaden the focus of PIPM assessment from psychosocial to biopsychosocial.

A strength of the piloting process was its iterative nature, with later pilots building on the findings from previous ones. Another strength is that the piloting took place at all of the sites that the new model would be delivered in the trial, and by the same clinicians who would be delivering it. Feedback was collected on all pilots, using a standardised form for later iterations. Meetings with the piloting clinicians were held to discuss the findings and potential changes to the service model. Also, the model has been made publically available for external scrutiny and to prompt further evaluation(32).

7.2.2 Limitations of the development process

There are also limitations to the overall process, and to the individual methods. A limitation of literature reviews is as it lacked a systematic search method and inclusion/exclusion criteria, there is potential for bias in the findings. There was also a potential for missed findings based on the broad remit, limiting my ability to fully explore all potentially relevant areas in depth.

The group discussions were not focus groups where the discussion and interaction between the participants is explored in depth(92). Therefore, potential deeper analysis and insights that could have been gained from a focus group methodology were not available. Consistent with this is another limitation of the group discussions, the lack of audio-recording of the sessions to allow for deeper analysis of the discussions and group dynamics. This also meant that exemplar or noteworthy quotes were not able to be re-produced.

The sampling of the group discussions was another limitation as broader inclusion of participants may have meant more comprehensive feedback was obtained, or a wider range of perspectives pertaining to the new model. No nursing or occupational therapists with experience of working with older adults in general hospitals were present and psychiatrists were potentially over-represented compared to other professional backgrounds. Similarly, the small numbers of patients and carers included reduced the potential to establish wider opinions. Dominance of individual members of group discussions can led to others feeling unable to contribute, or a “consensus” that does not accurately reflect the positions of all those present(89). Whilst the research team members had experience in seeking feedback, and input was actively sought from each participant, they did not all have specific training in moderating focus groups and incomplete data collection cannot be ruled out.

Another limitation of the group discussions was the lack of iteration; further versions of the new service model were not taken back to the original discussion groups. Whilst this was due to resource limitations, and potential difficulties in reconvening groups, including changes in circumstance and

individual's overtime, and practical issues(109), other ways of obtaining further feedback, such as follow-up telephone calls or video conferencing to discuss specific changes, could have been attempted.

A limitation of the piloting process was the inconsistencies in the volume of piloting across sites, leading to more feedback being gathered from Oxford than other sites, despite efforts for equal periods of piloting. This potentially influenced the model to be 'Oxford-centric', that is to say more influenced by the practical experiences of piloting in the John Radcliffe than at the other sites.

Another weakness of piloting was not involving a wider range of professionals from the relevant wards. Piloting took place on busy NHS wards, where The HOME Study was planned to be delivered, therefore the general ward staff (other than the piloting clinicians) had little time to invest in piloting. Whilst the piloting clinicians were talking to the other staff daily and able to get informal feedback, lack of formal involvement meant that important voices were missing. Similarly, lack of formal feedback from the patients who received care from the piloting clinicians is another weakness and could have identified issues with acceptability or the model. The patients in the pilots were not research participants and obtaining feedback from them would have required further planning and approvals. However, as with the ward staff, it meant an important perspective was missing from the piloting.

7.3 Potential limitations of the new model

Increasing the number of patients seen by the psychiatric service by proactively assessing everyone necessarily increases costs, at least initially. A central idea behind PIPM is that the upfront cost of greater and earlier identification of potential problems is offset by improved care and reduced costs in the longer term, but this remains to be established in practice. Another potential limitation of a proactive, population-based, approach is that patients are seen by psychiatrists routinely, rather than for an identified reason, which may result in uncertainty or concern for patients, as highlighted by the patient and carer group discussion.

The idea of providing prompt care is to inform patient management plans from as early in the admission as possible, however there is a potential for extra actions to complicate initial patient care, especially if the reason for admission was not directly related to psychosocial issues.

An increase in the comprehensiveness of the assessment risks increasing the burden on both patients (e.g., longer, more involved assessments) and PIPM (e.g., increased time commitment).

A potential limitation of focusing on minimising unnecessary time in hospital is a reduced focus on potential problems for the patient that are not acutely affecting the length of admission. As this differs from traditional psychiatric services, the delivering clinicians might find this shift difficult. Similarly, there is a potential for patients feeling 'pushed out'. Hospitals are often seen as more than places for acute medical care, but as places of support, company, and respite, with the risks of prolonged general hospital stays not always appreciated.

Integrating the PIPM clinicians into the ward team aims to address some of the potential limitations listed above. However, achieving integration between clinicians at a ward level without further integration at an organisational level, potentially increases the amount of documentation that the PIPM team members have to complete (for example, for records in both general hospital and mental health organisations).

Potential limitations to having a consultant psychiatrist assess all patients include the cost of funding senior clinicians, and availability given that psychiatric services in general hospitals are already often working beyond their capacities. Similarly, the main limitations of having an assisting clinician in the PIPM model are again cost and availability. Although the cost of the professionals eligible for the assistant role are lower than for a consultant, more assistant clinician time is required as they are responsible for the day-to-day delivery of the service. As with consultant liaison psychiatrists with experience working with older patients in general hospitals, associated clinicians who could fulfil the assistant role are in short supply(16). The PIPM clinicians need to be able to meet regularly, with such meetings requiring appropriate space, another additional cost to the model.

7.4 Comparison with other new models

PIPM has been designed for acutely admitted older adults within NHS university hospitals, but was initially inspired by the proactive model from Yale(25, 80). There are other models for psychiatric services for adults (rather than just older adults) in general hospitals that have been developed from the Yale model (see Table 7.4). Each model involves proactively screening or assessing patients, often using a systematic process, rather than waiting for referrals. Like PIPM, they tend to focus on issues that are likely to prolong admissions, which in practice in their setting often means undiagnosed or untreated psychiatric disorders. This is likely to be due in part to differences in funding of in-hospital services. For example, the proactive psychiatric service in a US hospital may not be funded to provide a broad assessment and management plan, but focused on diagnosable psychiatric disorders. Similarly, none of the US models provide routine daily (intense) input as has been developed in PIPM: this is also likely to be due to how the services are funded.

Table 7.4 Differences between other new models for psychiatric services[a]

	Yale	Dartmouth	Johns Hopkins	Cedars-Sinai	Oxford
Date	2008+	2014+	2016+	2017+	2018+
Setting	1,500+ bed hospital	400+ bed hospital with major trauma centre	1,100+ bed hospital	850+ bed hospital	Three NHS university hospitals
Usual care	Co-located, referral based	Co-located, referral based	Co-located, referral based	Co-located, referral based	Integrated, population based
Principles	• Proactive • Comprehensive • Focused • Systematic • Intensive • Integrated + Collaborative	• Proactive • Comprehensive • Focused • Systematic • Intensive • Integrated + Collaborative	• Proactive • Comprehensive • Focused • Systematic • Intensive • Integrated + Collaborative	• Proactive • Comprehensive • Focused • Systematic • Intensive • Integrated + Collaborative	• Proactive • Comprehensive • Focused • Systematic • Intensive • Integrated + Collaborative
Model	Proactive, multidisciplinary consultation-liaison psychiatry team Behavioural Intervention Team (**BIT**)	Proactive, multidisciplinary consultation-liaison psychiatry team with focus on major mental illness Behavioural Intervention Team (**BIT)**	Proactive Hospital Program for Psychiatric Services (**PHIPPS**) Team screen every admission for psychiatric or behavioural needs.	Cedars-Sinai Psychiatric Consultation Identification Score (**CS-PCI**) Consultant psychiatrist attends rounds, meetings, screens new patients, and identifies high-risk patients.	Proactive Integrated Psychological Medicine (**PIPM**) Broad biopsychosocial intervention.

[a] Personal communications

7.4 Implications for future work/care and policy

The PIPM model described here includes its underlying principles and the stages of delivery. Publishing a description of the model allows for greater scrutiny and helps others consider delivering PIPM or an adapted version themselves, promoting further development and evaluation of psychiatric services for general hospital inpatients. The next step for the PIPM model is operationalisation for delivery, as discussed in Chapters 8-10.

Chapter 8: Preparing Proactive Integrated Psychological Medicine (PIPM) for delivery - Introduction and methods

8.1 Introduction

8.1.1 Delivering a newly developed intervention

Once a new intervention, such as Proactive Integrated Psychological Medicine (PIPM), has been developed, it should be evaluated to help the developers, wider stakeholders, and policy-makers assess its effectiveness and identify potential improvements(94). Randomised controlled trials (RCTs), such as The HOME Study, are recognised to be the most robust method of evaluating the effectivenss of new interventions(94). This is because, when conducted appropriately, RCTs can suggest a causal relationship, or lack of one, between the trial intervention and chosen outcome(s) by randomly distributing all other potential modifiers (known and unknown) of the pre-specified outcome across all arms(43). Consistent delivery of the intervention as intended by the developers is an essential part of a well conducted RCT, as this helps maximise the internal validity of the results(94, 110). How consistent the delivery of an intervention is with the developers' intentions is also referred to as "intervention fidelity"(111) or "program integrity"(112).

Delivering complex interventions consistently with the developer's intentions is particularly challenging, especially if the intervention has multiple components, and is being delivered by different people and in different settings(113). PIPM is comprised of multiple components from different models, and was designed to be delivered by different people and in different settings. If PIPM is not delivered consistently in The HOME Study it will not be possible to conclude whether it is truly effective, irrespective of the trial results. Therefore, it is important to maximise the consistency, i.e. the fidelity of PIPM implementation with what was intended. Furthermore, if PIPM is found to be effective in The HOME Study people may want to implement it into their clinical practice and it will be important to have established methods of delivering PIPM consistently ready. Therefore,

developing methods for maximising implementation fidelity is important for both The HOME Study and potential implementation into routine practice post-evaluation.

8.1.2 Maximising the fidelity of PIPM implementation

There are many different methods for maximising implementation fidelity, and they can be split into two broad categories; (1) methods to prepare for consistent delivery of the intervention as intended (for example, a service manual or set of standardised procedures and providing training) and (2) methods for monitoring and maintaining the intended level of delivery, also known as quality assurance(113) (for example, assessing delivery using direct observation, or self-report checklists(113, 114)). The overall process of maximising consistent delivery of a new intervention, such as PIPM, can be referred to as 'operationalisation'(115, 116).

8.1.2.1 Preparing to maximise fidelity of PIPM implementation

Written guidelines provide an objective standard for intervention delivery(43). When describing how to deliver an intervention, guidelines are often called 'service manuals'; these provide a reference of what is intended to be delivered for both those delivering the intervention and those assessing and evaluating the delivery. It was therefore important to produce a service manual containing a clear description of how to deliver PIPM; a process which I led and coordinated.

A further way of promoting implementation fidelity is to use a checklist(117, 118). Checklists are increasingly used in medicine, especially in protocol driven areas such as critical care and anaesthesia(119). However, there are drawbacks to the use of checklists, as they can over simplify management, duplicate work making processes less efficient, and can provide false reassurance of procedures being followed when incorrectly implemented(120). PIPM involves a number of components that traditional liaison psychiatry services do not, and there was concern that the

delivering clinicians would have difficulty delivering it consistently according to the intended model: therefore, to improve consistent completion of new tasks I chose to create a checklist to aid implementation fidelity.

Service manuals and checklists alone are not enough to maximise consistent delivery, training those delivering the new intervention is required as well. Evaluators of trials of new service models look at what training those delivering the new service received as part of their evaluations(94). Although PIPM was developed from existing models, its components are not all regularly delivered by existing NHS psychiatric teams, necessitating the need for specific training. I therefore identified the need to train all the prospective clinicians who would be delivering PIPM in The HOME Study in how to deliver PIPM according to the protocol, and how to use the service manual and checklist as intended.

8.1.2.2 Quality assurance

In addition to developing tools to maximise implementation fidelity (e.g. a service manual and checklist and training those who will deliver the new intervention), the quality of the delivery must be maintained throughout a trial(43).

Preparation and training is insufficient if there is no mechanism for assessing the quality of the delivery. Therefore, it was necessary to develop and embed a process of assessment to ensure PIPM clinicians were able to deliver PIPM as intended. This could have been achieved by asking the PIPM clinicians to familiarise themselves with the service manual and checklist and 'self-certify' that they were confident their practice was consistent with the intended processes. However, this would increase the risk of inconsistent delivery between clinicians and would lack objective evidence on whether the clinicians were delivering PIPM appropriately. A more objective process was to have members of the research team, i.e. the developers of PIPM, assess the ability of the clinicians to

deliver PIPM according to the service manual and use the checklist against pre-specified criteria. I identified that this would be more likely to improve implementation fidelity, despite greater resource requirements, and therefore chose this as the approach to assessment.

Finally, the quality of implementation fidelity must then be maintained throughout the trial. To facilitate this I considered asking those delivering PIPM to self-report what they were delivering, which has the advantage of potentially accounting for every instance of delivery(113). However, the main disadvantage of self-reporting is the risk of bias. Another option I considered was audio or video recording delivery of PIPM, methods which have been used to monitor quality in other trials of complex interventions(121). Advantages of recording examples of delivery include all members of the delivery team being able to watch or listen to the recording, with the aim of promoting consistency. In addition, recordings give an opportunity for independent assessment of delivery without the restrictions and disadvantages of the assessors being present in person during delivery. However, in an acute ward setting I was concerned there would be both practical and ethical problems (for example, consent and the difficulty in recording only those individuals who consented) with audio or video recording. I also considered direct observation of PIPM delivery. The frequency of observation was important to consider as there was the risk that too frequently observing the clinical service over multiple services throughout the trial would be impractical and inefficient. The act of observing, either by recording or direct observation, can affect what is actually delivered, known as the Hawthorne effect(122). Therefore, techniques for maintaining the quality of the delivery without materially affecting the delivery of outcomes were important to consider. Considering the possible approaches to assessment, I decided to use direct observation of delivery by members of the research team with real-time assessment to avoid the practical and ethical problems of recording delivery, even though it would not allow the wider team (other members of the research team or others delivering the intervention) to observe directly. To minimise potential Hawthorne effects, I decided on a lower frequency of direct observations and re-assessments (every 6 months). To compensate for this low frequency of direct observation and for the wider team not

being able to directly observe other clinicians delivery of PIPM via recordings, especially at other sites, I decided to have regular meetings to discuss delivery together; video-conferencing was used as this allows team-members across different sites to participate(121).

8.2 Aim

The aim was to prepare PIPM for consistent delivery by developing a service manual and checklist to guide delivery, training for delivery and a quality assurance process to maintain delivery as intended.

8.3 Methods

8.3.1 Piloting

Piloting was used to obtain practical experience using the service manual and checklist for delivery, the training methods (including role plays and small group teaching), and quality assurance process (including weekly video-conferencing, and assessment of delivery), and identify aspects that required further development and refinement. Video-conference calls were held throughout the process. In-person meetings were held between each pilot to discuss findings from the previous one and plan for the next one. These in-person meetings also allowed for piloting of different teaching methods. Three pilots of the service manual and checklist were conducted, comprising the second two pilots described in Chapter 5 and a further pilot focused entirely on operationalisation. For clarity, the specific aspects of the methods focused on maximising implementation fidelity are described here; for the general description of the piloting methods, see Chapter 5.

8.3.1.1 Sample

All of the clinicians who would initially be delivering PIPM in The HOME Study (both consultant psychiatrists and other mental healthcare professionals) were involved in piloting of the service manual and checklist, the teaching methods and quality assurance process.

8.3.1.2 Settings and Timings

Three pilots of the guidelines took place where PIPM would be delivered in The HOME Study; the John Radcliffe Hospital (Oxford), Addenbrooke's Hospital (Cambridge), and The Royal Devon and Exeter Hospital (Exeter). These were each followed by in-person meetings in Oxford. Regular video-conference meetings were also held throughout the process.

8.3.1.3 Data Collection and analysis

An initial version of the service manual was drafted from the description of the model reported in Chapter 6 with the help of Professor Sharpe and Dr Walker. I then also drafted an initial version of the checklist based on the draft service manual. For the first pilot these initial versions of the service manual and checklist were given to the delivering clinicians. They were asked to read both, and then deliver PIPM according the service manual and to complete a checklist for each patient they saw, adding notes where they felt appropriate. The piloting clinicians were also asked to complete a feedback form including a summary of how they found the current version of the service manual and suggested amendments. I collected, collated and summarised all the checklists and feedback forms. The resultant summaries were discussed with the piloting clinicians and research team at an in-person meeting following the initial pilot. The piloting clinicians were also asked to provide further feedback verbally, and to discuss amongst themselves the strengths and weaknesses of the initial version of the service manual and checklist. Contemporaneous notes were taken by the research team members in attendance. These notes were then discussed by me, Professor Sharpe and Dr Walker and fed into the next iterations of the service manual and checklist. The process was repeated in full for the second and third pilots.

As the post-pilot meetings were attended by all the delivering clinicians, they were also used to deliver training sessions on how to deliver PIPM. A range of training methods were used and I sought informal verbal feedback from the clinicians and trainers (members of the research team) on what was effective and what required improvement. Didactic teaching was used only to describe the background to the trial and as a short introduction to the teaching sessions, rather than how PIPM should be delivered, as retention rates from didactic teaching in adult learners is thought to be poor(123). Instead, I sent the clinicians the current versions of the service manual and checklist before the teaching sessions and asked them to familiarise themselves with them, in line with adult learning theory of the importance of self-directed learning(124). Similarly, at the teaching session's I

facilitated small group teaching, with an emphasis on the active contribution from the clinicians, also in line with accepted medical education practices(125). I also decided to include role plays at each teaching session as it is well established in psychiatric education and was therefore likely to be familiar to the PIPM clinicians(126), and due to successful use of role play by the research team in training clinicians to deliver new interventions(121). To facilitate the role plays, videos of research team members role playing were recorded to be shown to the clinicians as part of the training process as both examples and to generate discussion. The role plays allowed the clinicians the opportunity for self-assessment and to get constructive feedback from the other clinicians and the research team, another well-established principle in medical education(125). The content of the role plays was informed by the service manual and checklist and by a concern raised in the patient and carer discussions (see Chapter 6, section 6.2.1) about patients being confused to see a psychiatrist without being referred.

Part of the developing quality assurance process was for each clinician to pass an assessment of their delivery of PIPM. Therefore, assessment criteria had to be developed and piloted. I drafted, with help from other research team members, an assessment sheet based on the initial version of the service manual, with a list of criteria to be observed by, or discussed with, the assessor. Members of the research team then directly observed each clinician delivering PIPM at each site during the second and third pilots, and tested the assessment sheet. The research team members made notes on the strengths and weaknesses of the initial version of the quality assurance sheet and then discussed these as a group, making amendments after the second pilot and re-testing it at the third pilot. Final changes were made following discussions after the third pilot.

Preliminary video-conference meetings were held from the beginning of the preparation process. This involved trialling different formats, lengths of meetings, and frequencies of meetings responding to feedback from the delivering clinicians and discussions between myself and Professor Sharpe.

Chapter 9: Preparing Proactive Integrated Psychological Medicine (PIPM) for delivery – Results

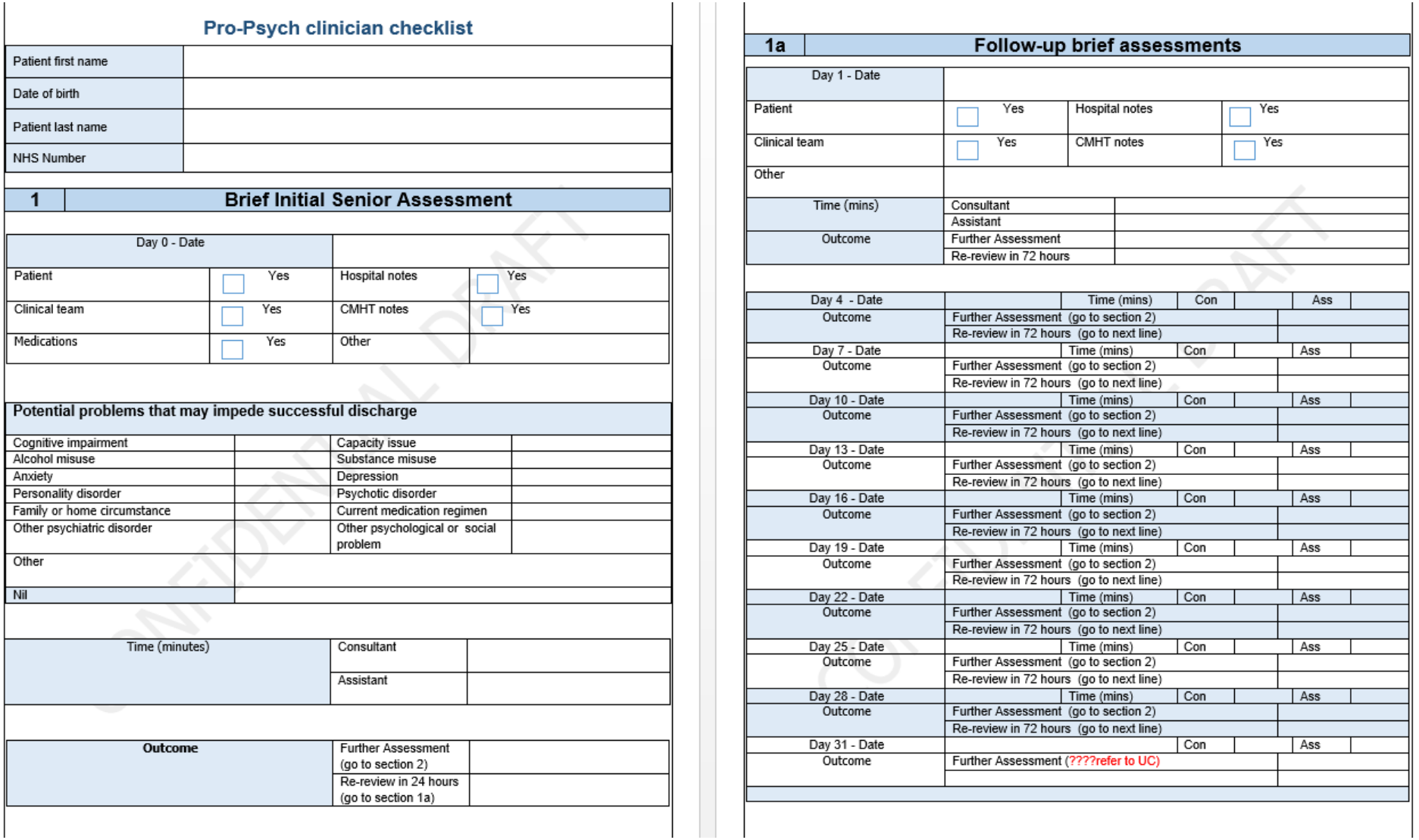
9.1 Findings

9.1.1 First pilot and meeting

The service manual was found to be clear and useable by the delivering clinicians during the first pilot. The main change suggested at the post-pilot meeting was to condense the guidance for each of the four stages of PIPM to a single page for each, as opposed to being spread over multiple pages as in the initial version which was considered to have reduced the clarity of the guidance.
Unlike the initial version of the service manual, the initial version of the checklist (see Figure 9.1) used at the first pilot was felt to be difficult to use and un-intuitive by the delivering clinicians. One of the agreed changes at the post-pilot meeting was to spread the checklist out over more pages to improve accessibility. The initial design had focused on trying to fit the entire checklist on as few pages as possible, under the assumption that this would make it easier for the clinicians to use. In practice, the clinicians found this, relatively condensed version, hard to follow. Another agreed change was to add more 'white space' for the clinicians to make notes as a clinical aide memoire.

A short didactic introductory lecture was given to start the teaching session at the post-pilot meeting. This was followed by role plays informed by the service manual and discussion with patients and carers. Firstly, videos of research team member's role playing were shown and discussed, then attendees took part in the role plays. Attendees reported finding the introductory lecture informative and useful in setting out the planned teaching schedule. They were less comfortable with the role plays, and reported feeling uncomfortable being observed by the entire group. I decided to split the group up into smaller groups for role playing at the next sessions.

Figure 9.1 First two pages of the checklist used during the first pilot, which the clinicians found difficult to use



Pro-Psych clinician checklist

Patient first name	
Date of birth	
Patient last name	
NHS Number	

1 Brief Initial Senior Assessment

Day 0 - Date			
Patient	☐ Yes	Hospital notes	☐ Yes
Clinical team	☐ Yes	CMHT notes	☐ Yes
Medications	☐ Yes	Other	

Potential problems that may impede successful discharge

Cognitive impairment		Capacity issue	
Alcohol misuse		Substance misuse	
Anxiety		Depression	
Personality disorder		Psychotic disorder	
Family or home circumstance		Current medication regimen	
Other psychiatric disorder		Other psychological or social problem	
Other			
Nil			

Time (minutes)		
	Consultant	
	Assistant	

Outcome		
	Further Assessment (go to section 2)	
	Re-review in 24 hours (go to section 1a)	

1a Follow-up brief assessments

Day 1 - Date			
Patient	☐ Yes	Hospital notes	☐ Yes
Clinical team	☐ Yes	CMHT notes	☐ Yes
Other			
Time (mins)	Consultant		
	Assistant		
Outcome	Further Assessment		
	Re-review in 72 hours		

Day 4 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 7 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 10 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 13 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 16 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 19 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 22 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 25 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 28 - Date		Time (mins)	Con		Ass	
Outcome	Further Assessment (go to section 2)					
	Re-review in 72 hours (go to next line)					
Day 31 - Date			Con		Ass	
Outcome	Further Assessment (????refer to UC)					

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9.1.2 Second pilot and meeting

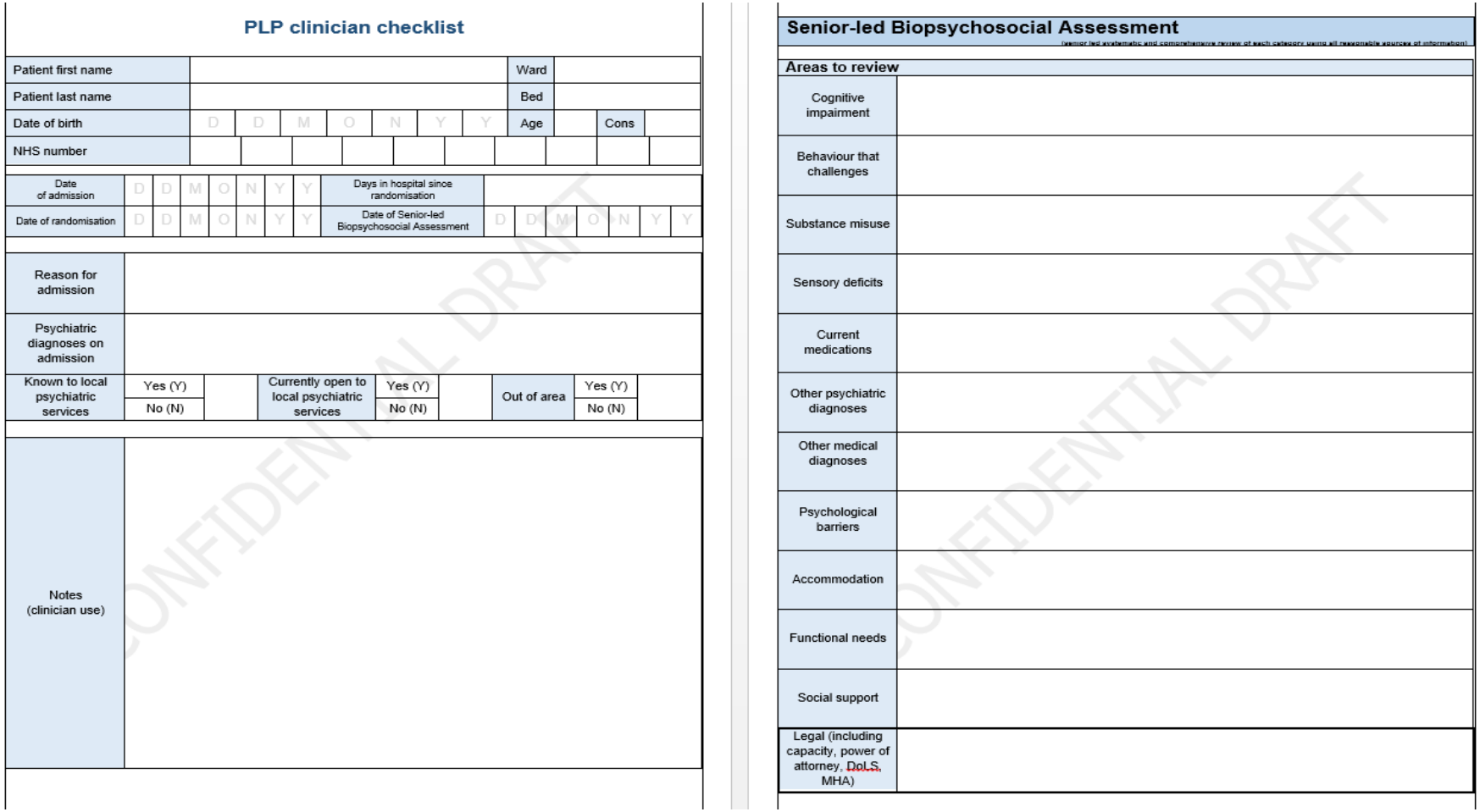
No major changes were recommended to be made to the service manual following the second pilot. However, some minor changes to wording were made to reduce ambiguity based on clinician feedback.

The updated version of the checklist was reported to be clearer, and more intuitive, with better use of white space. However, piloting clinicians also reported that the extra simplicity had come at the cost of adequate prompts. For example, the page of the checklist aiming to prompt the "senior-led biopsychosocial assessment" did not contain the different sources of information that the service manual suggested clinicians should utilise (see Figure 9.2). Reviewing the completed checklists revealed that the weekly consultant reviews were inconsistently completed. Discussion at the post-pilot meeting indicated that this was in part due to the clinicians not remembering it was an essential component of the PIPM model, so an extra prompt was added to the checklist.

Small group sessions were used at the post-pilot teaching for both teaching and role plays. The clinicians were asked to assess their own performance and got feedback from both peers and a research team member. The clinicians reported finding this more helpful than role plays in front of the larger group.

During the second pilot the wording of some of the assessment criteria were found to be ambiguous. For example, it was not clear to those testing the assessment sheets which criteria required direct observation and which required discussion between the clinician and the assessor. The sheet was updated to make the required assessment type (direct observation or discussion) explicit for each criteria.

Figure 9.2 First two pages of the checklist used during the second operationalisation pilot cycle



PLP clinician checklist

Patient first name		Ward	
Patient last name		Bed	
Date of birth	D D M O N Y Y	Age	Cons
NHS number			

Date of admission	D D M O N Y Y	Days in hospital since randomisation	
Date of randomisation	D D M O N Y Y	Date of Senior-led Biopsychosocial Assessment	D D M O N Y Y

Reason for admission							
Psychiatric diagnoses on admission							
Known to local psychiatric services	Yes (Y) / No (N)		Currently open to local psychiatric services	Yes (Y) / No (N)		Out of area	Yes (Y) / No (N)
Notes (clinician use)							

Senior-led Biopsychosocial Assessment

(senior led systematic and comprehensive review of each category using all reasonable sources of information)

Areas to review	
Cognitive impairment	
Behaviour that challenges	
Substance misuse	
Sensory deficits	
Current medications	
Other psychiatric diagnoses	
Other medical diagnoses	
Psychological barriers	
Accommodation	
Functional needs	
Social support	
Legal (including capacity, power of attorney, DoLS, MHA)	

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PLP = Proactive Liaison Psychiatry, this was the working name for PIPM at sites where the usual care service was called 'liaison psychiatry' (Exeter and Cambridge)

9.1.3 Third pilot and meeting

The third and final operationalisation pilot focused on finalising the service manual and checklist. No further changes were suggested to be made to the service manual. The updated version of the checklist was reported to be a more comprehensive prompt for the clinicians. However, piloting clinicians still felt that the checklist could be expanded further as they found the checklist "too busy" and they reported finding it difficult to focus on individual tasks when more than one stage was on a single sheet as seen in Figure 9.3. They found an added prompt for the weekly consultant re-assessment added following the second pilot helpful (see Figure 9.4). The teaching followed the same format as the previous teaching session which had received positive feedback. The updated quality assessment sheet was also found to be practical and only minor changes to wording were suggested.

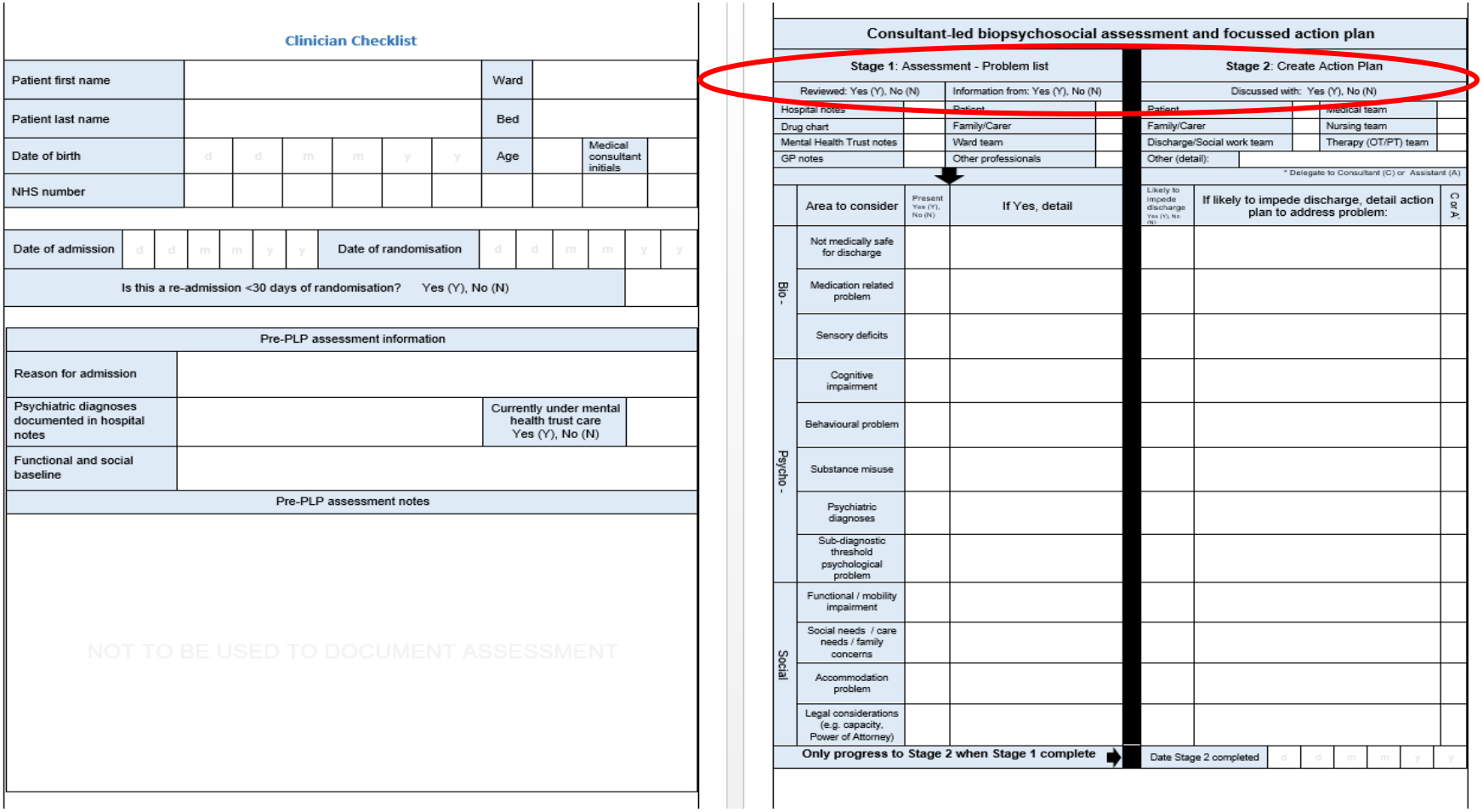
9.1.4 Video-conferencing

Initially, the video-conference calls had been ad hoc and tended to only be between clinicians from one site and myself. However, as soon as the piloting started the clinicians started contacting me daily with multiple questions relating to delivery, with very similar questions arising independently at each site. Therefore, I decided that a regular meeting to discuss such issues with me and the other clinicians would be more useful and efficient than me having similar individual conversations with different PIPM clinicians. I realised this would also give the clinicians a chance to talk to each other directly about PIPM delivery problems. Therefore, weekly video-conference calls were scheduled with all clinicians across all sites, and me and Professor Sharpe via Zoom. This was to allow for more timely discussion of problems related to PIPM delivery. It was decided to include all sites as issues at one site were likely to occur at the others and group discussions would be more efficient and promote consistent responses. Different lengths of meeting were trialled, and based on feedback

from attendees, it was identified that meetings of approximately 30-45 minutes in length were long enough to discuss problems in adequate depth without participants losing focus.

Figure 9.3 First two pages of the checklist used during the third pilot

The red line indicates the area the clinicians felt was "too busy", and it was decided to spread over two pages.



Clinician Checklist

Patient first name		Ward	
Patient last name		Bed	
Date of birth	d d m m y y	Age	Medical consultant initials
NHS number			

Date of admission	d d m m y y	Date of randomisation	d d m m y y

Is this a re-admission <30 days of randomisation? Yes (Y), No (N)

Pre-PLP assessment information

Reason for admission			
Psychiatric diagnoses documented in hospital notes		Currently under mental health trust care Yes (Y), No (N)	
Functional and social baseline			

Pre-PLP assessment notes

NOT TO BE USED TO DOCUMENT ASSESSMENT

Consultant-led biopsychosocial assessment and focussed action plan

Stage 1: Assessment - Problem list			Stage 2: Create Action Plan		
Reviewed: Yes (Y), No (N)		Information from: Yes (Y), No (N)	Discussed with: Yes (Y), No (N)		
Hospital notes		Patient	Patient		Medical team
Drug chart		Family/Carer	Family/Carer		Nursing team
Mental Health Trust notes		Ward team	Discharge/Social work team		Therapy (OT/PT) team
GP notes		Other professionals	Other (detail):		

* Delegate to Consultant (C) or Assistant (A)

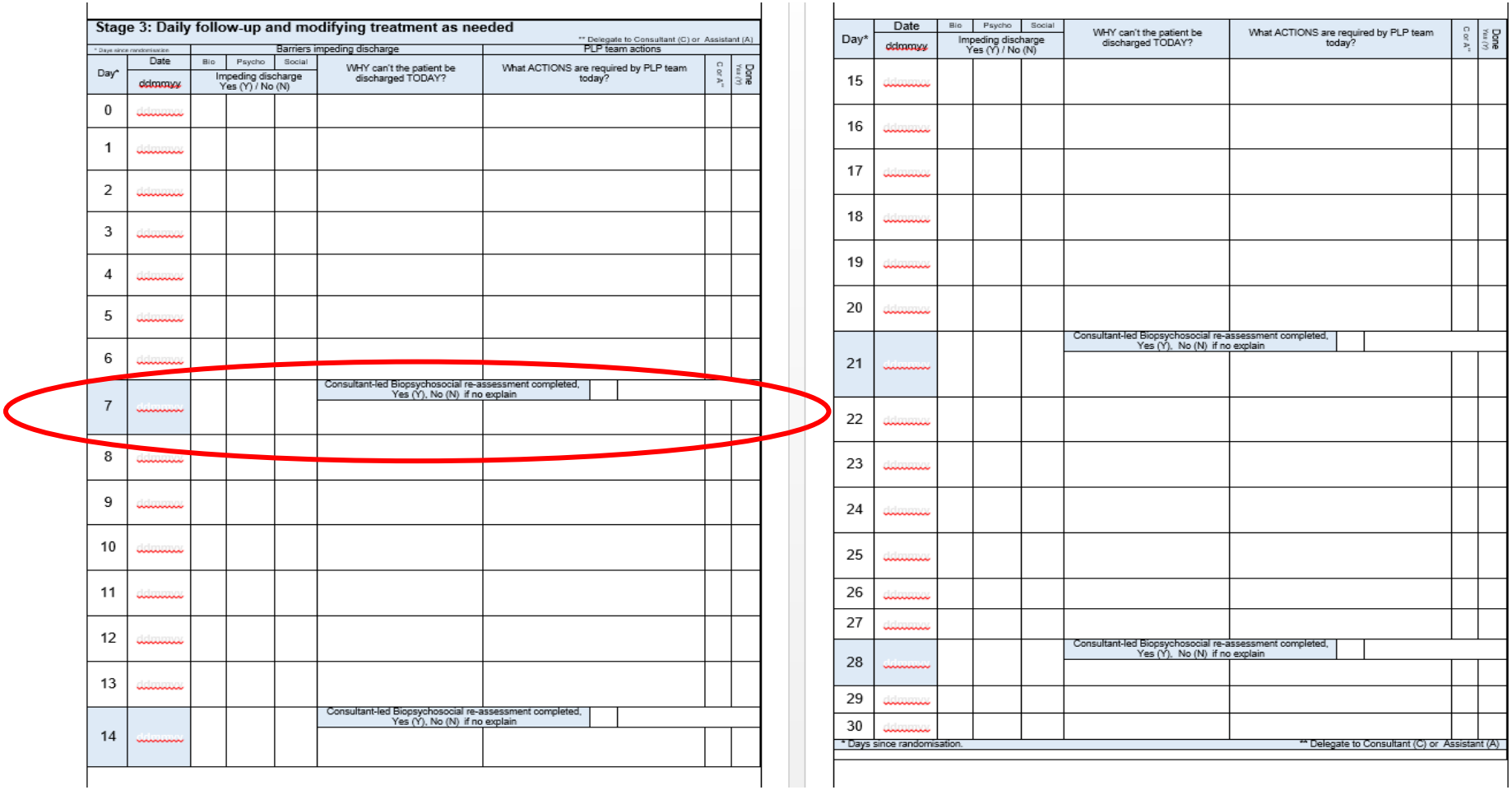
	Area to consider	Present Yes (Y), No (N)	If Yes, detail	Likely to impede discharge Yes (Y), No (N)	If likely to impede discharge, detail action plan to address problem:	C or A
Bio -	Not medically safe for discharge					
	Medication related problem					
	Sensory deficits					
Psycho -	Cognitive impairment					
	Behavioural problem					
	Substance misuse					
	Psychiatric diagnoses					
	Sub-diagnostic threshold psychological problem					
Social	Functional / mobility impairment					
	Social needs / care needs / family concerns					
	Accommodation problem					
	Legal considerations (e.g. capacity, Power of Attorney)					

Only progress to Stage 2 when Stage 1 complete → Date Stage 2 completed d d m m y y

PLP = Proactive Liaison Psychiatry, this was the working name for PIPM at sites where the usual care service was called 'liaison psychiatry' (Exeter and Cambridge)

Figure 9.4 Two pages of the checklist used during the third operationalisation pilot cycle

The red line indicates the extra prompt added to remind the PIPM clinicians to undertake a consultant-led re-assessment every seven days and to document any reason why this was not possible.



Stage 3: Daily follow-up and modifying treatment as needed

* Days since randomisation. ** Delegate to Consultant (C) or Assistant (A)

Day*	Date ddmmyy	Barriers impeding discharge: Bio	Psycho	Social (Impeding discharge Yes (Y) / No (N))	WHY can't the patient be discharged TODAY?	PLP team actions: What ACTIONS are required by PLP team today?	C or A**	Done Yes (Y)
0	ddmmyy							
1	ddmmyy							
2	ddmmyy							
3	ddmmyy							
4	ddmmyy							
5	ddmmyy							
6	ddmmyy							
7	ddmmyy				Consultant-led Biopsychosocial re-assessment completed, Yes (Y), No (N) if no explain			
8	ddmmyy							
9	ddmmyy							
10	ddmmyy							
11	ddmmyy							
12	ddmmyy							
13	ddmmyy							
14	ddmmyy				Consultant-led Biopsychosocial re-assessment completed, Yes (Y), No (N) if no explain			

Day*	Date ddmmyy	Impeding discharge Yes (Y) / No (N): Bio	Psycho	Social	WHY can't the patient be discharged TODAY?	What ACTIONS are required by PLP team today?	C or A**	Done Yes (Y)
15	ddmmyy							
16	ddmmyy							
17	ddmmyy							
18	ddmmyy							
19	ddmmyy							
20	ddmmyy							
21	ddmmyy				Consultant-led Biopsychosocial re-assessment completed, Yes (Y), No (N) if no explain			
22	ddmmyy							
23	ddmmyy							
24	ddmmyy							
25	ddmmyy							
26	ddmmyy							
27	ddmmyy							
28	ddmmyy				Consultant-led Biopsychosocial re-assessment completed, Yes (Y), No (N) if no explain			
29	ddmmyy							
30	ddmmyy							

* Days since randomisation. ** Delegate to Consultant (C) or Assistant (A)

PLP = Proactive Liaison Psychiatry, this was the working name for PIPM at sites where the usual care service was called 'liaison psychiatry' (Exeter and Cambridge)

9.2 Final documents

The result of the feedback and adaptations identified through piloting and meetings, as described above, was the development of the final versions of the service manual and checklist. Copies of the service manual and checklist are provided in the Appendix (Additional Files).

9.2.1 Service manual

The service manual was designed for clinicians delivering PIPM and aimed to define and explain how PIPM should be delivered in The HOME Study. It is a 26-page document that lays out the seven principles underlying PIPM, how PIPM compares to current practice, the clinical roles within PIPM, the focus of PIPM, how PIPM should be delivered, how the quality of delivery will be assured, and important "do's and don'ts" for the PIPM clinicians, as well as 'frequently asked questions' about PIPM. It was designed to be used both in training and as a day-to-day reference during delivery. The service manual will be made available to other professionals to allow others to scrutinise and potentially adapt and implement a similar model for their own service. The different sections of the service manual are described below.

9.2.1.1 Principles

To orientate the reader to PIPM, the first section of the service manual is a description of the seven underlying principles (see Chapter 6). A sentence explaining each principle was included, but kept brief for clarity.

9.2.1.2 PIPM compared with current practice

The next section sets out how PIPM compares to and differs from current service models for psychiatric care for older general hospital inpatients. One of the key differences is that PIPM is a population-based model, rather than a referral-based model, on the assumption that most acutely admitted older general hospital inpatients will benefit from dedicated biopsychosocial care.

9.2.1.3 PIPM clinician roles and focus

The requirements for each of the two clinical roles (consultant and assisting clinician) are listed and a definition is provided of how they should work together. Similarly, the focus of PIPM, i.e. to identify and address problems that may impede the patient's safe and timely discharge or lead to early readmission, is outlined. To guide the PIPM clinicians in assessing patients for these problems in a structured manner, twelve 'problem categories' are defined with example problems and solutions. For example, one category is 'cognitive impairment', which was defined as "any cognitive impairment acute or chronic". An example problem is given, e.g. "hypoactive delirium on a background of previously undiagnosed cognitive impairment". Then a potential solution is provided, e.g. "assess for dementia, delirium, both or neither, then clarify the diagnosis with medical team, ensuring active early management of delirium where identified".

9.2.1.4 Delivery of PIPM

How PIPM should be delivered in practice is then laid out, divided into the four stages (see chapter 6, section 6.4.3), each on a single page, which improved clarity as suggested in feedback from piloting. The same structure is used for each stage: "Title", "Aim", "Delivered by", "Timing", "Anticipated Time Required", "Actions", and "Outcomes", to make it easier to understand and remember. The Stage 1 page is provided as an example in Figure 9.5. Bullet points were used rather

than prose to make quick reference easier. Specific practical guidance, like the expected time that each stage should take the clinician to complete, is given to guide delivery and promote consistency.

Figure 9.5 The delivery instructions for Stage 1 of PIPM in the PIPM service manual

PIPM SERVICE DELIVERY

STAGE 1: COMPLETE A CONSULTANT-LED COMPREHENSIVE BIOPSYCHOSOCIAL ASSESSMENT AND PROBLEM LIST

AIM

- To actively seek evidence of ANY current or potential biomedical, psychiatric, psychological or social problems. N.B. the default is to find something.

Think: "what problems does this patient have - in biological, psychological and social domains?"

DELIVERED BY

- The PIPM consultant supported by the assisting clinician.

TIMING

- As soon as possible after randomisation to PIPM (≤ one working day).

ANTICIPATED TIME REQUIRED

- Average 40 minutes, range 20 to 60 minutes.

ACTIONS

- Always listen and talk to the patient.
- Always review relevant acute trust clinical notes.
- Always speak to the nurses, therapists and doctors (and discharge coordinators if relevant).
- Always review medical treatment especially psychotropic drugs – access acute trust system if electronic patient records.
- Always find out if the patient is known to local mental health services by accessing the relevant records system.
- Consider speaking to GP/family/carer/other informants.
- Identify from the problem list those likely to impede discharge, and/or increase risk of early readmission.

OUTCOMES

- Comprehensive and systematic biopsychosocial assessment.
- Problem list covering all of the following areas:
  - ***Bio:*** not medically safe for discharge; medication related problems; sensory deficits.
  - ***Psycho:*** cognitive impairment; behavioural problem(s); substance misuse; other psychiatric diagnoses; other sub-diagnostic threshold psychological problem(s).
  - ***Social:*** functional/mobility impairment(s); social needs/care needs/family concerns; accommodation problem(s); legal considerations.

9.2.1.5 Training, supervision and quality assurance

The training, supervision and quality assurance procedures (see 'Quality assurance' section later in this Chapter) are summarised in the service manual. This acts as both a definition of what is required to deliver PIPM as intended, and as a reminder of the additional expectations PIPM clinicians were required to meet (e.g. to attend weekly peer-supervision via video-conference).

9.2.1.6 Important do's and don'ts and frequently asked questions for PIPM clinicians

Whilst the service manual was purposefully kept brief to increase accessibility and encourage use, repetition to emphasise key points was included. The "do's and don'ts" section (see Table 9.1) reflected the difficulties piloting clinicians reported having experienced in delivering PIPM, and potential problems highlighted in discussions with patients and carers. For example, the manual reminds clinicians to 'elicit problems in all biological, psychological, and social domains – not just one of these'.

Similarly, the frequently asked questions were based on the experience of piloting clinicians and the results of discussion with the patients and carers. They include questions such as "I don't have a psychiatric problem, why are you seeing me/my relative?" and example responses.

Table 9.1 Important Do's and Don'ts for PIPM clinicians listed in the service manual

Do	• Remember that you are delivering a new model of care; not your old one! • Be proactive in both the assessment and management of the patient • Elicit problems in all biological, psychological and social domains – not just one of these • Identify problems that may impede prompt discharge or lead to early readmission • Provide robust intensive interventions for these problems • Remember that problems and targets of intervention may evolve over time • Work closely with the medical team, nurses and associated health professionals • Keep on going - actively managing the patient from admission to discharge
Don't	• Revert to your usual liaison psychiatric practice • Jump on one problem without considering the whole list • Only consider mental illness • Forget to talk to nurses and relatives • Let your input dwindle over the duration of the admission • Act without close collaboration with other staff caring for the patient • Try to treat problems in hospital that could be treated post discharge • Focus on problems which cannot affect the discharge date • Encourage referral to liaison psychiatry or treat patients allocated to usual care

9.2.1.7 Usual care in The HOME Study

The service manual was designed to facilitate delivery of PIPM in The HOME Study. It was therefore important to include information on usual care as the comparator arm, and in particular to provide advice for the PIPM clinicians in minimising contamination (i.e. patients in usual care receiving elements of PIPM). This section of the service manual describes how "All patients receiving usual care will have the usual medical and nursing care that they would receive if they were not taking part in the trial". It also describes how changing usual care for patients not randomised to PIPM would be 'contamination' in terms of The HOME Study(127). Guidance on minimising contamination is given, including for the clinicians delivering PIPM not to deliver usual care on the same wards, and explanations of why PIPM delivery has been randomised which could be given to ward staff at their request.

9.2.1.8 Completing the checklist

The checklist is described in the next section: it is a tool to provide the PIPM clinician with a structured approach to delivery and reminders of what is required of them. This section of the service manual described how to complete the checklist.

9.2.1.9 Summary of key publications

A brief summary of key publications relating to the US proactive model, the original inspiration for PIPM, was also included to give the PIPM clinicians a reference for the background of the new service they were delivering(25, 80).

9.2.1.10 References for completing biopsychosocial assessment and action plan

Descriptions of each category to be considered in the biopsychosocial assessment and action plan are included to guide clinicians in the content of each category for reference during PIPM training and delivery. The definitions in the service manual also include example problems and solutions. The training included a focus on turning any identified problem into an action plan. Treating-to-target, i.e. having a specific and explicit treatment goal, is a key feature of the collaborative care model, which has been found to be effective in a variety of community and outpatient settings (see Chapter 6, section 6.1.4).

Examples of the definitions, potential problems, solutions and action plans are shown in Tables 9.2, 9.3, and 9.4. For example, 'Cognitive impairment' is 'acute or chronic cognitive impairment'. An example problem is given as a patient with delirium and possible dementia: this may be impeding discharge due to the patient being suspicious of nursing staff and refusing medication. The

suggested action plan includes working with medical team to treat delirium and gathering information from family to assess usual cognitive function.

Table 9.2 Examples of types of problems in the 'biological' domain and example actions

	Problem category	**Category description**	**Example**		
			Problem	**Impediment to discharge**	**Action plan**
Biological	Not medically safe for discharge	Active medical conditions (acute or chronic) requiring urgent treatment in the general hospital.	Patient has severe pneumonia.	Need for intravenous antibiotics.	Check with the medical team how soon they can start to give the antibiotics orally and plan for discharge that day.
	Medication-related problems	Non-concordance, polypharmacy, side-effects, physician concerns. *N.B. Not restricted to psycho-active medications*	Patient admitted after a fall. Usual antidepressant prescription stopped by medical team.	Patient has become severely anxious and is reluctant to mobilise in case they fall again.	Discuss risks and benefits of restarting antidepressant medication with medical team. Restart or switch to a different drug to reduce anxiety, allowing mobilisation and prompt discharge.
	Sensory deficits	Sensory impairment that affects the patient's orientation, ability to engage with care or interactions with staff.	Patient's hearing aids and spectacles have been left at home.	Patient's cognitive function and need for care after discharge are both difficult for the ward team to assess.	Work with the ward team to resolve impairments (e.g. find hearing aid) and assist with cognitive testing to ensure best discharge destination can be decided promptly.

Table 9.3 Examples of problems in the 'psychological' domain and example actions

	Problem category	Category description	Example		
			Problem	**Impediment to discharge**	**Action plan**
Psychological	Cognitive impairment	Acute or chronic cognitive impairment.	Patient has delirium and possible dementia.	Patient is suspicious of nursing staff and refuses medications.	Work with medical team to treat delirium. Gather information from family to assess usual cognitive function. Ensure an appropriate early discharge plan.
	Behavioural problems	Any patient behaviour that affects their care.	Patient with dementia shouts at staff telling them to leave him alone.	Ward staff are unable to assess patient's symptoms and are avoiding the patient.	Educate the ward staff about behaviours in dementia. Advise on engaging the patient in care so that symptoms can be assessed and treated promptly.
	Substance misuse	Misuse of any substance.	Patient has smoked cigarettes for 20 years, does not want to stop.	Patient is agitated on ward and unable to engage with rehabilitation.	Advise on nicotine replacement to allow rehabilitation. Ensure the planned post-discharge destination allows smoking.
	Psychiatric diagnoses	Psychiatric conditions other than delirium and dementia.	Patient has depression and is negative about discharge home.	Staff avoid spending time with patient, leading to slow discharge planning.	Advise on antidepressant medication, educate ward staff about depression and provide behavioural activation to treat depression and engage patient in planning for early discharge.
	Sub-diagnostic threshold psychological problems	Psychiatric or psychological problems that do not meet diagnostic criteria.	Patient is anxious about being in cramped places.	Patient reluctant to have a scan to investigate abdominal pain; scan is repeatedly deferred, delaying discharge.	Discuss pros and cons of scan, and other options, with patient and medical team to ensure a decision and prevent further delays to discharge.

Table 9.4 Examples of types of problems in the 'social' domain and example actions

	Problem category	Category description	Example		
			Problem	**Impediment to discharge**	**Action plan**
Social	Problems with basic activities of daily living	Dependence on the assistance of others (prior to admission or currently) for basic needs.	Patient's mobility has declined, now unable to walk to bathroom alone.	Unclear whether patient will manage activities of daily living without assistance post-discharge.	Work with the ward team to determine causes of the decline and the need for carers or new living arrangements to plan prompt discharge.
	Problems with instrumental activities of daily living	Inability to do activities that maintain independence and quality of life.	Patient has had a stroke, can no longer drive to local shops.	Patient cannot get food shopping, does not want to move to care home.	Work with patient, family, occupational therapist and social worker to find best care solution, avoiding discharge delay.
	Accommodation problems	Isolated or inappropriate accommodation, tenancy or residency problems.	Patient lives in residential home, but the home is unwilling to take them back due to increased care needs.	Patient potentially has no accommodation to return to.	Check residential home's understanding of care needs is accurate. Work with patient, family and ward team to arrange return to that home or an alternative.
	Legal problems	Patient's capacity to make treatment or discharge decisions is uncertain. Problems regarding power of attorney or advance directive.	Patient with mild dementia is unwilling to accept additional home care. The ward team is concerned they will forget to take essential medications.	There are differing opinions in the ward team about whether the patient should be allowed to go home without care, leading to a delay in discharge planning.	Assess the patient's capacity to make discharge decisions. Educate the ward team about capacity. Discuss wishes with patient and arrange a 'best interests' meeting if required.

9.2.2 Checklist

The final version of the checklist was produced based on feedback and piloting of the preliminary versions as described above. A checklist was to be completed for every participant randomised to PIPM to promote consistent delivery of PIPM as defined in the service manual. If a participant was readmitted during 30 days from randomisation, a second, or third, checklist was completed as appropriate. Like the service manual, the checklist also went through multiple draft iterations, feedback from multiple stakeholders, and field-testing in piloting.

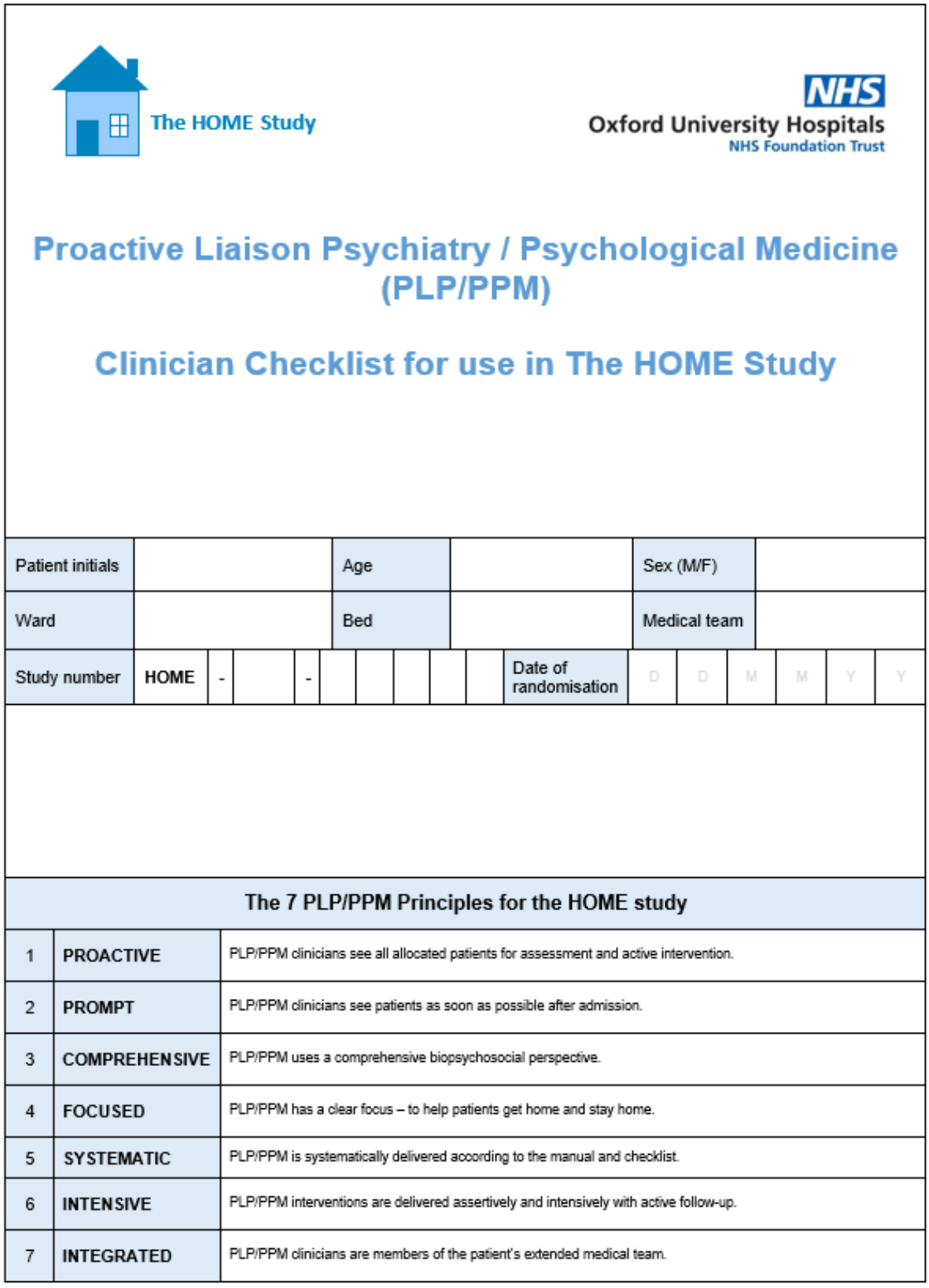
9.2.2.1 Materials

The checklist was produced on paper, with a plastic cover and spine for strength and durability to prevent damage during use in ward environments. This also had the advantage of ease of use at the bedside, and could be consistently used across sites. Electronic versions were considered but proved impractical to create with consistency and compatibility with different IT systems across multiple sites.

9.2.2.2 Front cover

The design of the front cover was developed to make each checklist and the participant to which it corresponded to quickly identifiable to the PIPM clinician; in addition, it acted as a reminder of the seven underlying principles of PIPM (Figure 9.6).

Figure 9.6 Front page of the checklist



The HOME Study

NHS
Oxford University Hospitals
NHS Foundation Trust

Proactive Liaison Psychiatry / Psychological Medicine (PLP/PPM)

Clinician Checklist for use in The HOME Study

Patient initials				Age				Sex (M/F)									
Ward				Bed				Medical team									
Study number	HOME	-		-					Date of randomisation	D	D	M	M	Y	Y		

The 7 PLP/PPM Principles for the HOME study		
1	PROACTIVE	PLP/PPM clinicians see all allocated patients for assessment and active intervention.
2	PROMPT	PLP/PPM clinicians see patients as soon as possible after admission.
3	COMPREHENSIVE	PLP/PPM uses a comprehensive biopsychosocial perspective.
4	FOCUSED	PLP/PPM has a clear focus – to help patients get home and stay home.
5	SYSTEMATIC	PLP/PPM is systematically delivered according to the manual and checklist.
6	INTENSIVE	PLP/PPM interventions are delivered assertively and intensively with active follow-up.
7	INTEGRATED	PLP/PPM clinicians are members of the patient's extended medical team.

9.2.2.3 Stage 1: Assessment and problem list

Stage 1 of PIPM involves a full biopsychosocial assessment of the participant using information from a variety of sources (see Chapter 6, section 6.4.3). The content and layout of this page was designed to prompt PIPM clinicians to consider a range of information sources and to complete a full assessment of each domain (see Figure 9.7). PIPM clinicians had to consider each category in the assessment and record whether, in their opinion, a potential problem was present; if a potential problem was identified they were then required to describe it, and state if the problem was potentially impeding safe discharge or increasing the risk of early readmission.

Figure 9.7 Stage 1: Assessment and problem list page of checklist

Stage 1: Complete biopsychosocial assessment and problem list

Sources of information reviewed: Y or N or U (unavailable)				Discussion with: Y or N			
Hospital notes		Mental health team notes		Patient		Ward team	
Drug chart		GP notes		Family/Carer		Other professionals	

	Categories to consider for potential problems	Present Y or N	If problem present, please give details	Is problem impeding discharge or increasing risk of readmission? Y or N
Bio -	Not medically safe for discharge			
	Medication related problem(s)			
	Sensory deficits			
Psycho -	Cognitive impairment			
	Behavioural problem(s)			
	Substance misuse			
	Other psychiatric diagnoses			
	Other sub-diagnostic threshold psychological problem(s)			
Social	Functional / mobility impairment(s)			
	Social needs / care needs / family concerns			
	Accommodation problem(s)			
	Legal considerations (e.g. capacity, Power of Attorney)			

Date Stage 1 completed	D	D	M	M	Y	Y	
Time taken to complete Stage 1 only (minutes to nearest 5)	Consultant						
	Assistant						

9.2.2.4 Stage 2: Create action plan

Stage 2 of PIPM involves synthesising the information gathered in Stage 1 and creating an action plan. Having the action plan on a separate page from the Stage 1 assessment was a conscious decision to emphasise the importance of completing the assessment before starting to create the action plan: experience from piloting had shown that initially some clinicians would create an action plan for each problem as they came across it. This led to incomplete action plans and actions not focused on minimising unnecessary time in hospital. The idea of PIPM was that it offers a comprehensive management plan focused on minimising unnecessary time in hospital, therefore some problems, although identified during the initial assessment, might be better addressed in a community setting. During the post-piloting discussions, piloting clinicians reported concerns that they would and were finding problems that would otherwise not be identified, and that might increase the time in hospital. Being a patient-centred service, if a problem was identified that needed to be addressed there and then, guidance was to do so, regardless of effect on time in hospital.

The layout of the page mirrors that of Stage 1, prompting the PIPM clinicians to discuss the proposed plan with the patient, family/carers, and ward team, consistent with the 'integrated' principle, and record what was done, when, and for how long (see Figure 9.8). Having documented action points was felt to be important as treating-to-target was found in the literature review to be a successful strategy used in collaborative care (see Chapter 6, section 6.1.4). The systematic review of previous RCTS of psychiatric services for general hospital patients (see Chapters 2-4) had also highlighted the lack of clear focus in some of the trial interventions, which potentially contributed to their lack of positive outcomes.

Figure 9.8 Stage 2: Create action plan

Stage 2: Create action plan for discharge

The plan has been discussed with: Y or N

Patient		Medical team		Therapy (OT/PT) team		Discharge/Social Work team	
Family/Carer		Nursing team		Other (detail):			

** Who is responsible for this action point - Consultant (C), Assistant (A)

	Categories	**Action plan:** for PLP team to address problems likely to impede discharge or increase risk of readmission	C or A**
Bio -	Not medically safe for discharge		
	Medication related problem(s)		
	Sensory deficits		
Psycho -	Cognitive impairment		
	Behavioural problem(s)		
	Substance misuse		
	Other psychiatric diagnoses		
	Other sub-diagnostic threshold psychological problem(s)		
Social	Functional / mobility impairment(s)		
	Social needs / care needs / family concerns		
	Accommodation problem(s)		
	Legal considerations (e.g. capacity, Power of Attorney)		

Date Stage 2 completed	D	D	M	M	Y	Y	
Time taken to complete Stage 2 only (minutes to nearest 5)	Consultant						
	Assistant						

9.2.2.5 Stage 3: Delivering the action plan and daily review

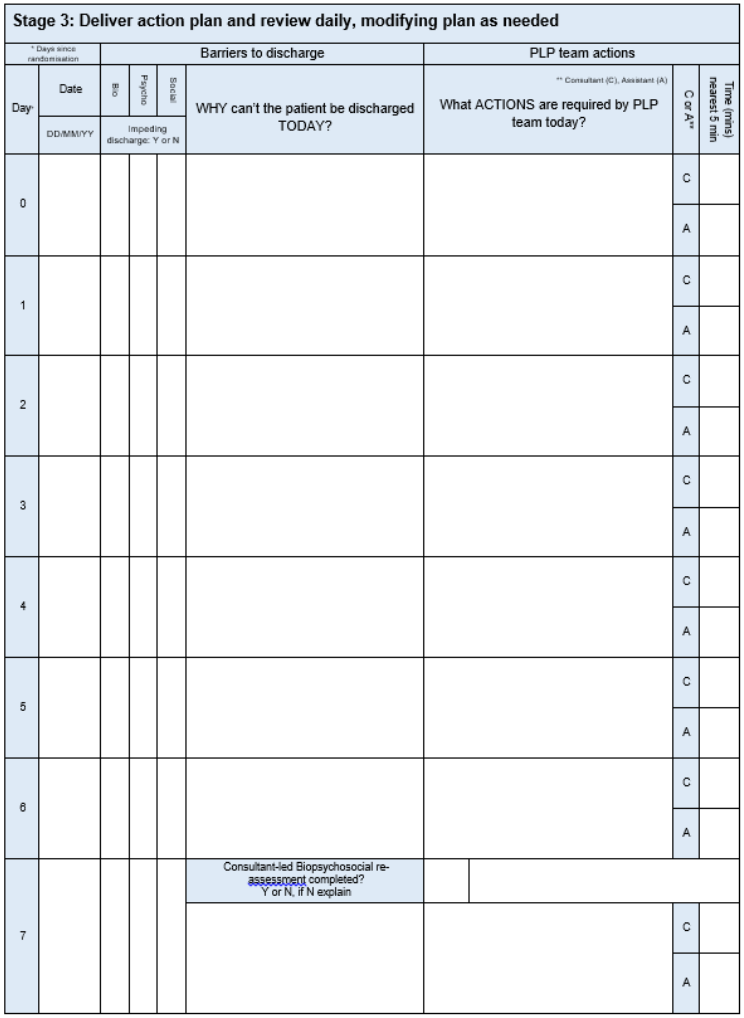
Stage 3 involves delivery of the action plan, with daily reviews, modifying the plan as required. This happens every working day, i.e. not weekends or bank holidays. Whilst working every day was considered, it was felt that the extra cost of this would not be balanced by improved outcomes: much of the work of PIPM was predicted to involve working with the wider MDT, which itself would be lower staffed outside of normal working hours.

The PIPM clinicians were required to enter data on each working day which in turn prompted them to review patients daily: all entries were dated to reduce the risk of PIPM clinicians forgetting to see a patient each day, and to maintain a record of the date corresponding to the number of days after randomisation.

The main priorities of PIPM, i.e. facilitating safe and timely discharge, and emphasising action from the PIPM team to achieve this, were summarised in two phrases to be considered by the PIPM clinicians every day and used as headings: (1) “Why can’t the patient be discharged today” and (2) “What actions are required by the Proactive Liaison Psychiatry (PLP) [PIPM] team today” (see Figures 9.9a and 9.9b). These phrases were added to act as another prompt to the PIPM clinicians to consider each of the three main categories in the initial assessment (i.e. ’bio’, ‘psycho’, and/or ‘social’ domains) for barriers to discharge each day.

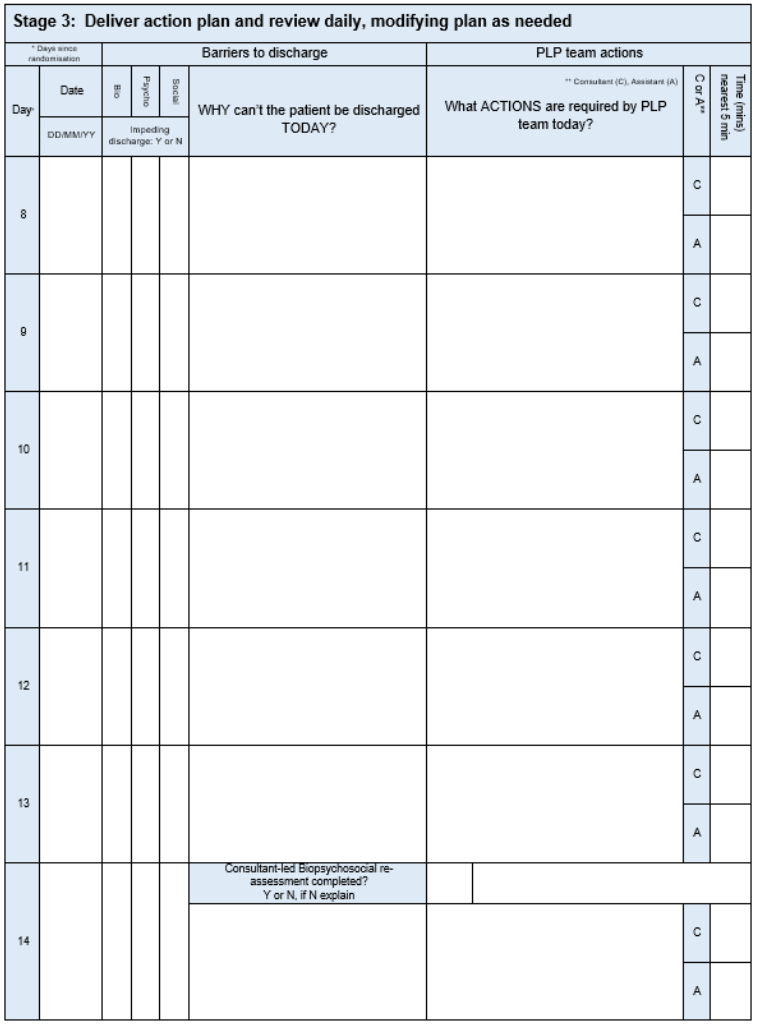
Another essential part of PIPM was the regular full re-assessments of participants by the consultant. The hospital consultants at the initial meeting had emphasised that they felt the clinical picture of patients would evolve over time and a one-off assessment would be unable to identify future problems. Piloting clinicians reported the same experience, and this was consistent with the results of the systematic review in that service models which focused on one-off assessments had not proved effective in previous trials. Therefore, every 7 days, a consultant re-assessment was required. Whether and when this happened, and if not why, was recorded.

Figure 9.9a Stage 3: Delivering the action plan and daily review – first two pages



Stage 3: Deliver action plan and review daily, modifying plan as needed

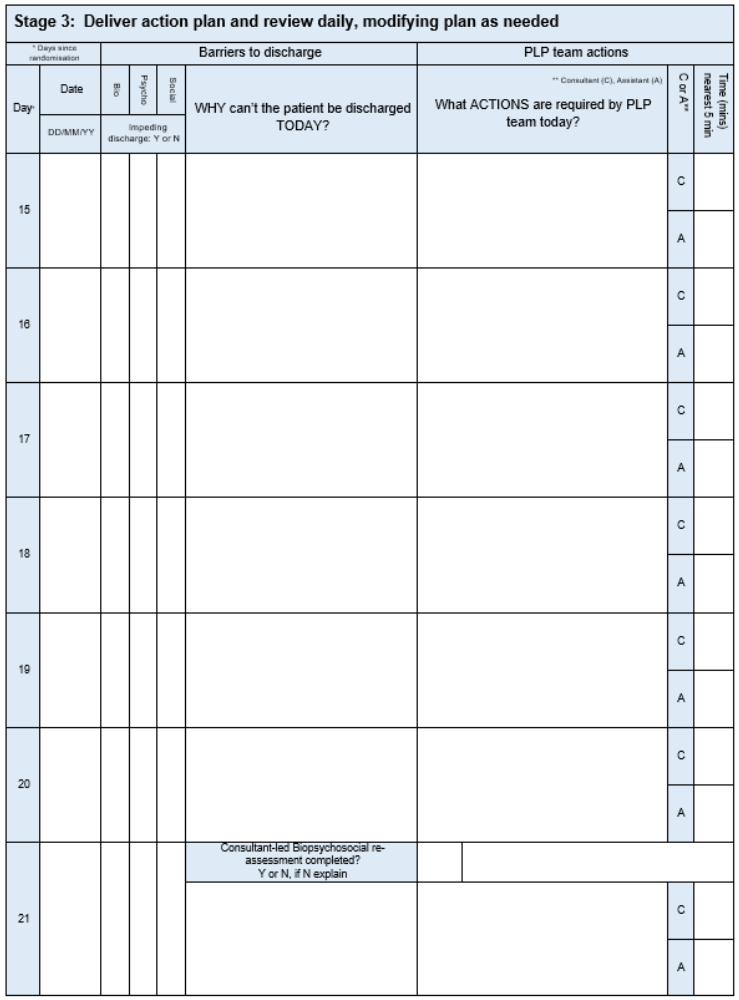
* Days since randomisation		Barriers to discharge				PLP team actions		
Day*	Date	Bio	Psycho	Social	WHY can't the patient be discharged TODAY?	** Consultant (C), Assistant (A) What ACTIONS are required by PLP team today?	C or A**	Time (mins) nearest 5 min
	DD/MM/YY	Impeding discharge: Y or N						
0							C	
							A	
1							C	
							A	
2							C	
							A	
3							C	
							A	
4							C	
							A	
5							C	
							A	
6							C	
							A	
7					Consultant-led Biopsychosocial re-assessment completed? Y or N, if N explain			
							C	
							A	



Stage 3: Deliver action plan and review daily, modifying plan as needed

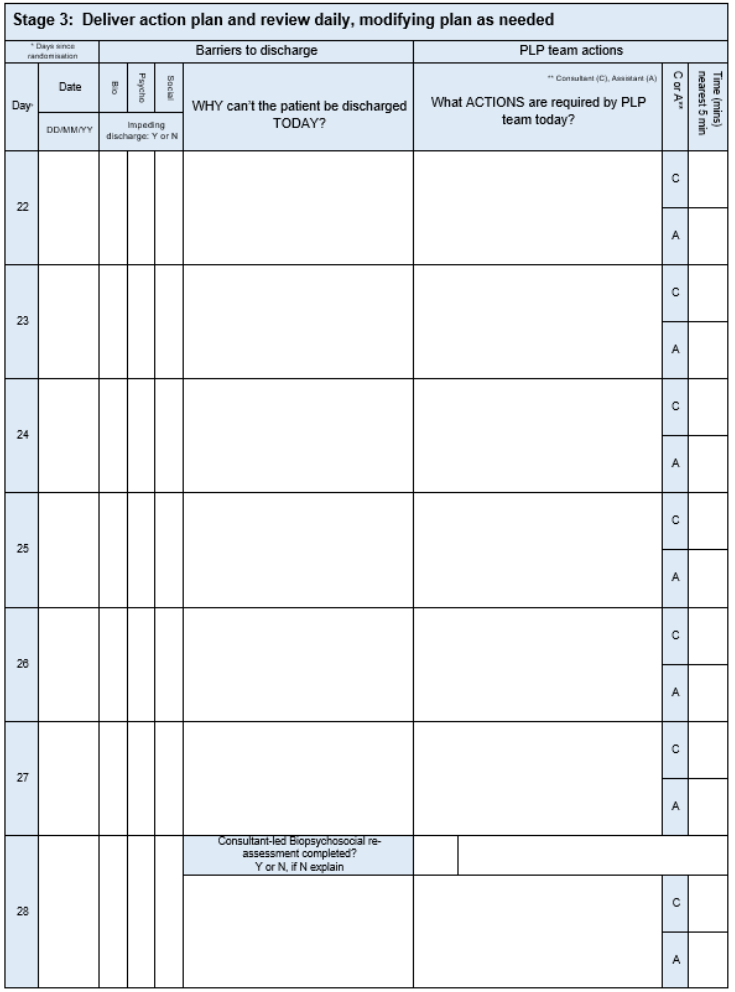
* Days since randomisation		Barriers to discharge				PLP team actions		
Day*	Date	Bio	Psycho	Social	WHY can't the patient be discharged TODAY?	** Consultant (C), Assistant (A) What ACTIONS are required by PLP team today?	C or A**	Time (mins) nearest 5 min
	DD/MM/YY	Impeding discharge: Y or N						
8							C	
							A	
9							C	
							A	
10							C	
							A	
11							C	
							A	
12							C	
							A	
13							C	
							A	
14					Consultant-led Biopsychosocial re-assessment completed? Y or N, if N explain			
							C	
							A	

Figure 9.9b Stage 3: Delivering the action plan and daily review – second two pages



Stage 3: Deliver action plan and review daily, modifying plan as needed

* Days since randomisation		Barriers to discharge				PLP team actions		
Day	Date	Bio	Psycho	Social	WHY can't the patient be discharged TODAY?	** Consultant (C), Assistant (A) What ACTIONS are required by PLP team today?	C or A**	Time (mins) nearest 5 min
	DD/MM/YY	Impeding discharge: Y or N						
15							C	
							A	
16							C	
							A	
17							C	
							A	
18							C	
							A	
19							C	
							A	
20							C	
							A	
21					Consultant-led Biopsychosocial re-assessment completed? Y or N, if N explain			
							C	
							A	



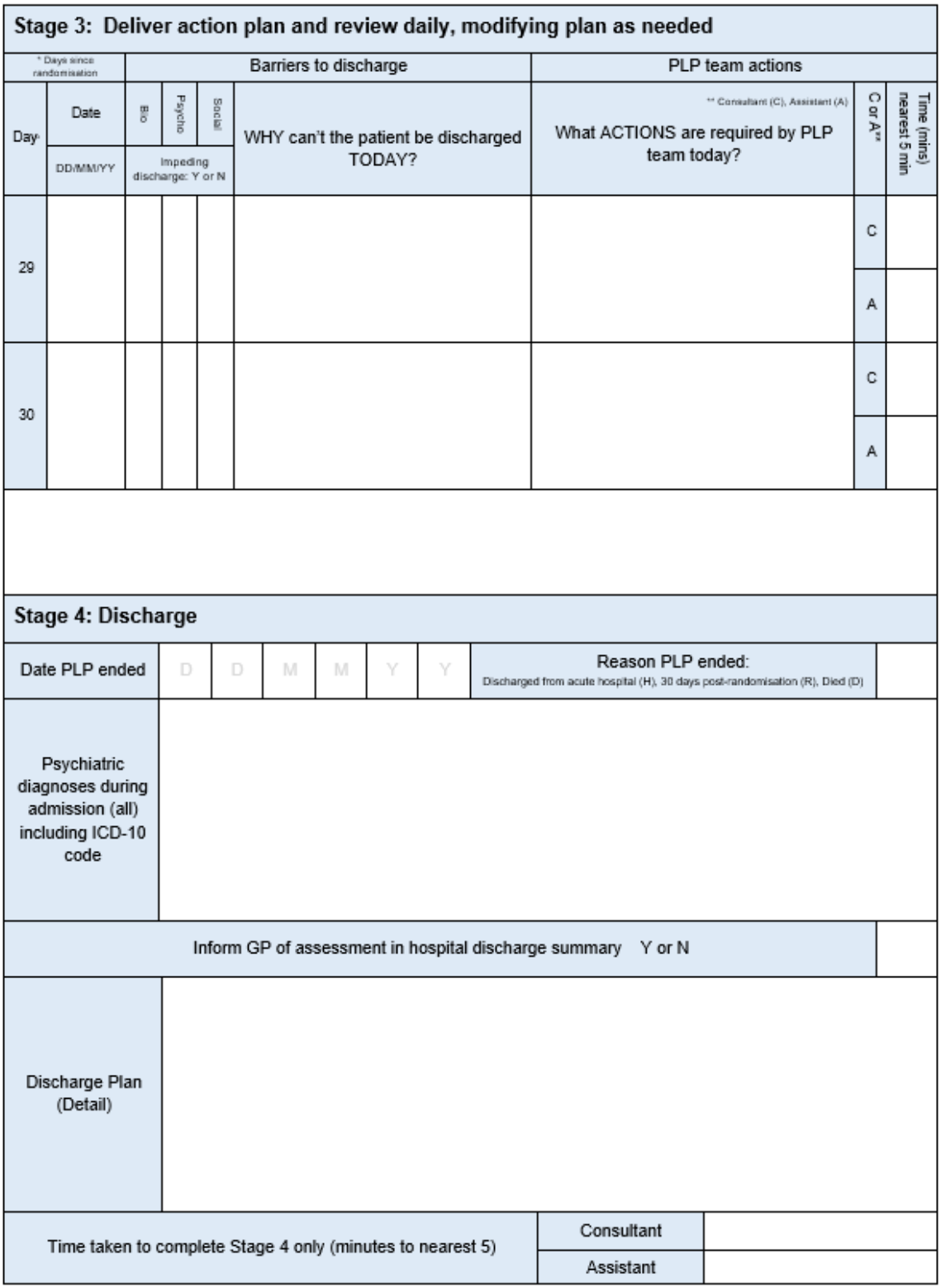
Stage 3: Deliver action plan and review daily, modifying plan as needed

* Days since randomisation		Barriers to discharge				PLP team actions		
Day	Date	Bio	Psycho	Social	WHY can't the patient be discharged TODAY?	** Consultant (C), Assistant (A) What ACTIONS are required by PLP team today?	C or A**	Time (mins) nearest 5 min
	DD/MM/YY	Impeding discharge: Y or N						
22							C	
							A	
23							C	
							A	
24							C	
							A	
25							C	
							A	
26							C	
							A	
27							C	
							A	
28					Consultant-led Biopsychosocial re-assessment completed? Y or N, if N explain			
							C	
							A	

9.2.2.6 Stage 4: Discharge

Stage 4 of PIPM is the patient's discharge from the general hospital and associated management plan (see Figure 9.10). Being integrated into the wider hospital team was a core principle of PIPM, so whether or not the PIPM clinicians managed to integrate their post-discharge management plan, if there was one, into the routine hospital discharge summary was recorded. One potential concern of completing a comprehensive assessment then focusing on discharge is that problems identified are not actioned during the admission, therefore a space was created in the checklist for the PIPM clinicians to document their discharge plan as a prompt to them to ensure that this was considered.

Figure 9.10 Stage 4: Discharge



Stage 3: Deliver action plan and review daily, modifying plan as needed

* Days since randomisation		Barriers to discharge				PLP team actions		
Day	Date DD/MM/YY	Bio	Psycho	Social	WHY can't the patient be discharged TODAY? Impeding discharge: Y or N	** Consultant (C), Assistant (A) What ACTIONS are required by PLP team today?	C or A**	Time (mins) nearest 5 min
29							C	
							A	
30							C	
							A	

Stage 4: Discharge

Date PLP ended	D	D	M	M	Y	Y	Reason PLP ended: Discharged from acute hospital (H), 30 days post-randomisation (R), Died (D)	
Psychiatric diagnoses during admission (all) including ICD-10 code								
Inform GP of assessment in hospital discharge summary Y or N								
Discharge Plan (Detail)								
Time taken to complete Stage 4 only (minutes to nearest 5)							Consultant	
							Assistant	

9.3 Training

PIPM is based on principles of psychiatric care that most general hospital psychiatrists are familiar with. However, its delivery is very different in practice to what most general hospital psychiatrists are used to and requires additional skills. Specifically clinicians needed to be able to: (1) initiate assessments with patients who have not been referred to them, and explain their role in the patient's overall care to the patient, family and carers, and ward staff (a point emphasised by the patients and carers in their group discussion); (2) complete comprehensive, but efficient, biopsychosocial assessments that go beyond the simple identification of psychiatric disorder; (3) create considered and targeted action plans based on the broad biopsychosocial assessment rather than merely recommend treatment for a psychiatric illness; (4) take an active role as a member of the ward team to ensure that their plan is accepted and implemented, rather than simply recommend it.

To help the PIPM clinicians acquire all the necessary skills, I led the delivery of a training programme for all clinicians in (1) delivering PIPM in The HOME Study and (2) the use of the checklist. The aim of the training was to ensure that clinicians developed the appropriate skills to deliver PIPM. Training comprised a mix of role plays, didactic teaching, pre-recorded videos of examples of PIPM delivery (using research team members as actors), and supervised direct experience of delivering PIPM on the ward. Both informal and formal facilitated role play was used, including at a simulation centre with a professional actor.

Training sessions (to coincide with the post-pilot meetings for the convenience of the clinicians) were held with short focused didactic sessions on key topics, followed by discussions, then role play. A mix of training methods was used to promote engagement from the attending PIPM clinicians and to utilise different widely-used teaching strategies. Each PIPM clinician attended at least one training

day and undertook role plays on different aspects of PIPM delivery. The role plays began with example videos of poor and good practice (written, developed, acted and recorded by me and other research team members). The clinicians would then be given a scenario to prepare for role play. The scenarios were based on the discussions with patients and carers and piloting experience, and written instructions were provided for both the clinician and actor (see Figure 9.11 for an example). Typical feedback from the clinicians after the role-plays included:

- "Surprising difficulty"
- Initial confusion as to whether PIPM is part of the ward medical team or supporting their service
- Finding it difficult not leading with introducing themselves as a psychiatrist/mental health professional

The feedback was then discussed with the PIPM clinicians as a whole to both modify future role-plays to make the instructions clearer and scenarios more relevant, and to inform the do's and don'ts section of the service manual (see Table 9.1). The PIPM clinicians' experiences in the role-plays was not otherwise formally evaluated.

Following the teaching sessions, clinicians would shadow me and other research team members delivering PIPM on the ward in Oxford. I and other research team members would then visit the clinicians at their base sites and observe them delivering PIPM; this was delivered instead of usual psychiatric care for patients who had been referred by ward clinicians as part of the local psychiatric service.

Figure 9.11 Example role scenario used in training clinicians to deliver PIPM

This text will be given to team at start of scenario

Name of Patient: Joan Bloggs, whose son is John Bloggs

Background: The key points are:

Joan was admitted 2 days ago to hospital with a three-day history of increased shortness of breath, poor sleep. Physical examination revealed a chest infection. Inflammatory markers were slightly raised, temperature 37.8C and slightly raised CRP and WCC. The patient is on a course of antibiotics and steroids. Other medications: Amitryptiline 10mg nocte, Mirtazapine 15mg nocte, allopurinol, furosemide, aspirin, bispoprolol, spironolactone, AdCal D3.

Task: Mrs. Bloggs was consented and randomised to PLP (Proactive Liaison Psychiatry), following a brief review, you've approached and her son who is at the bedside asks to speak to you.

Simulated Patient Scenario 2

Relative of a patient unsure about seeing a psychiatrist

This station is designed to illustrate 4 points to be addressed in debrief:

1) Concern about labelling relative as 'mental'
2) Psychiatry is part of the hospital system, not separate
3) Skilful drawing out of history
4) Reassurance about holistic assessment and benefits
5) Discussion about potential management

Scenario set up:

- Medical bay or side room to resemble one of the geriatric medical wards.
- Patient has no lines or monitoring in place but does have a catheter (if possible).
- There will also be an ECG (electrocardiogram) available in which the QT is prolonged (440+ for men).
- EPR (Electronic patient records):
    - Basic bloods – normal except for mildly elevated White Cell Count (neutrophilia) and CRP. Electrolytes (Na, Urea, Creatinine) may show that patient is a bit dry.
    - Drug chart:

      Cephalexin, prednisolone, Amitryptiline 10mg nocte, Mirtazapine 15mg nocte, allopurinol, furosemide, aspirin, bispoprolol, spironolactone, AdCal D3

Staff manner and approach

In this scenario, the relative will struggle to understand why the psychiatry team are there to see his mother and needs to be convinced of the same.

Summary of scenario for actor

You are unsure about the role of the two clinicians who come around to speak to you and your mother.
You are initially worried that they are from a psychiatry service, when your mother is in for a chest infection. You are concerned that they think she is 'pretending' and might not get treatment for the chest infection. Ask questions about this and your fears about mum being labelled as 'mental'.
After about 2 minutes, start to describe what you have noticed with your mother:

1. That she has been getting more anxious over the last few weeks. You tell the clinicians that she has been a 'worrier' all her life and this seems to have gotten worse.
2. She worries about her breathing especially in the evenings and this has led to her being admitted to hospital on 3 occasions in the last 6 months.
3. She also has been having very vivid dreams over the last few weeks and this bothers her.

You then start to worry that they are trying to kick her out of hospital and discharge her because there are no beds in the hospital and labelling her as 'mental' is one way of justifying it. Spend 5 – 10 minutes on this, allow them to convince you otherwise towards the end.
Recognise that anxiety and confusion are worsening problems and it would help mum to have them treated – agree with this only if you are convinced.

Running of scenario:

Team given scenario for 2 mins
For first two minutes, ask about why psychiatry, repeat that your mother is 'not mental'.
For next five minutes, provide a history on what mum is experiencing.
For the next five minutes, become concerned about hospital discharging mum too early and before she is well enough.
In the final minutes, if you are convinced about the explanation, say so, if not refuse to let them see your mother.

9.4 Quality assurance

There were two stages to the final quality assurance process: (1) initial assessment of clinicians' ability to deliver PIPM according to the service manual, and (2) ongoing assessment and monitoring of PIPM delivery during The HOME Study.

9.4.1 Initial assessment

Each clinician received informal verbal feedback during the training with the chance to ask me or other research team member's questions throughout. When training was completed, each clinician was assessed for competency in completing the components of PIPM according to the service manual. The assessment comprised observation of clinicians delivering PIPM and completing the checklist and then discussion of completed checklists with either me or another research team member. After each assessment, the clinician received personalised feedback on their performance, including on areas for development.

The assessment was standardised using a bespoke Quality Assurance Assessment Sheets (see Figures 9.12a and 9.12b) developed and tested by me and the research team, which covered the essential actions of PIPM. Prior to the competency assessment clinicians had to have seen a minimum of five patients from Stage 1 - biopsychosocial assessment, through to Stage 4 - discharge, within a two-week period. At the competency assessment, the assessor reviewed five fully completed checklists and observed the clinician delivering PIPM on the ward for half a day each.

Clinicians working in the consultant role were assessed on both initial assessment stages (Stage 1 and Stage 2), and follow-up stages (Stage 3 and Stage 4) as defined in the service manual. Clinicians in the assistant role were only assessed on the follow-up stages (Stage 3 and Stage 4), as defined in the service manual.

15 clinicians (eight senior general hospital psychiatrists and seven assisting clinicians, with one consultant initially performing the assistant role) were successfully trained to deliver PIPM across the three sites of recruitment to The HOME Study. Most clinicians were able to pass these assessments within two to three weeks of full-time work using the PIPM model, with a pass rate on initial assessment of 66.7% (16 passes from 24 assessments); there were 16 passes from 15 clinicians as one of the consultants initially performed and was assessed on the assistant role. Five clinicians failed their first assessments, four in the consultant role, and one in the assistant role. Potentially the initial assessment, being proactive and not based on a specific referral question, was more different from usual practice and therefore resulted in more initial failures than the follow-up and discharge assessments. It may also reflect the difficulty in senior clinicians adapting their practice compared to their colleagues, the one initial failure in the follow-up and discharge assessments was the consultant psychiatrist who performed in the assistant role. Failures were due to clinicians not complying with all aspects of the PIPM manual, for example focusing on areas of interest rather than using the defined systematic structure, or struggling with introducing themselves to patients who had not been referred. In general, it took several months of practice for the PIPM clinicians to informally report feeling fully comfortable with the new approach.

Figure 9.12a Quality Assurance Sheets for assessing potential PIPM clinicians – initial assessment (Stages 1 and 2)

The HOME Study:
PIPM Initial Assessment Quality Control Sheet

1	Names of PIPM Team Member & Role	NAME	ROLE

2	Date Assessment Completed	

3	Name of Assessor(s)	NAME

	Skill demonstrated to specified standard	Yes	No	OSC*
4	Assessment led by consultant psychiatrist with appropriate consultant involvement at all stages			O
5	Assessment within one working day of randomisation to PIPM			C
6	Review of medical notes, mental health trust notes, drug chart and discussion with ward team (plus family/carers and GP if appropriate)			O or S
7	Appropriate introduction to patient and description of role			O
8	Adequate and appropriate face-to-face review of patient			O
9	All biopsychosocial categories on PIPM checklist reviewed			S
10	Problem list created			S
11	Action plan, which is prioritised and focused on discharge, created and discussed with ward team (plus patient and family/carers and other professionals if appropriate)			O and S
12	All PIPM documentation completed accurately			S
13	Effective collaboration with ward colleagues			O
14	Effective working between PIPM team members			O

15	Comments:

* Assessed by:
O = Observation of PIPM team
S = Speaking through checklist with PIPM team
C = PIPM checklist

All boxes must be "Yes" for the encounter to be of adequate standard.

The HOME Study:
PIPM Initial Assessment Quality Control Sheet
Guidance Notes

General Notes

Only PIPM consultants will be appraised on their initial assessments, because it is their responsibility to take leadership in this aspect of the PLP intervention. They may receive aid from PIPM assistants, however the assistant will not be assessed.

When assessing PIPM consultants, the assessors may use more than one patient in their assessment. If the PIPM consultant does an assessment item correctly for one patient but not the other, the skill is not demonstrated.

Initial Assessment Quality Control Notes

Item 10: Item 10 can be completed by the PIPM team before consulting with medical team on ward if it is not feasible for them do so beforehand.

Item 6 & 11: 'Ward team' means any relevant member of the ward team (including doctor, nurse, occupational therapist, physiotherapist).

Item 12: The word 'accurately' indicates that the PIPM clinicians' documentation matches up with the explanation they gave for item 9.

Figure 9.12b Quality Control Sheets for assessing potential PIPM clinicians – follow-up stages (Stages 3 and 4)

The HOME Study: PIPM Follow-up Quality Control Sheet

1	Names of PIPM Team Member & Role	NAME	ROLE
2	Date Assessment Completed		
3	Name of Assessor(s)	NAME	

	Skill demonstrated to specified standard	Yes	No	OSR*
4	Review every weekday of patient, medical records and drug chart			S
5	Maintain momentum of action plan			O
6	Prompt discussions with ward team when changes to discharge plan are indicated			O or S
7	Problem list and action plan revised as necessary, including review of individual PLP clinician tasks			O or S
8	Consultant-led reassessment every 7 days			S
9	Appropriate and accurate information included in hospital discharge summary			R
10	All PIPM documentation completed accurately			S
11	Effective collaboration with ward colleagues			O
12	Effective working between PIPM clinicians			O

13	Comments:

* Assessed by:
O = Observation of at least one half-day session
S = Speaking through at least five PIPM checklists with PIPM team
R = Medical records

All boxes must be "Yes" for the encounter to be of adequate standard.

The HOME Study: PIPM Follow-up Quality Control Sheet Guidance notes

General Notes

Both PIPM consultants and assistants will be appraised on their follow-up assessments individually. When assessing PIPM team members, the assessors may use more than one patient in their assessment. If the PIPM team member does an assessment item correctly for one patient but not the other, the skill is not demonstrated.

Initial Assessment Quality Control Notes

Item 6: 'Ward team' means any relevant member of the ward team (including doctor, nurse, occupational therapist, physiotherapist).

Item 10: The word 'accurately' indicates that the PIPM clinicians' documentation matches up with the explanation they gave for item 9. Mandatory items on the checklist must be completed.

Assessment

The assessment for each individual will comprise at least one half-day session direct observation PLUS discussion of 5 completed checklists.

9.4.2 Ongoing assessment and monitoring

Scheduling regular meetings can help increase the consistency of delivery and data collection and the morale of those involved(43). I chaired weekly video-conference calls with all the clinicians delivering PIPM. These calls were an opportunity for peer support and sharing of clinical problems to facilitate this new way of working. They also provided me with an opportunity to monitor delivery across all sites, e.g. of how closely delivery adhered to the service manual, by asking each site to present their assessment, action plan, and follow-up work for a patient each week. The aims of the meetings were to: (1) foster a sense of team-working across sites, (2) maintain high quality PIPM delivery, and (3) resolve queries about PIPM delivery in a timely fashion.

The calls lasted 30-45minutes and had a structure to maximise efficiency and transparency: I would start the meeting with an update about PIPM delivery in general; each site would then give a brief update of delivery over the past week. Then any issues with delivery or completion of the checklist would be raised and discussed so an appropriate collective response was made to maximise consistency of delivery and data collection. Finally, an illustrative case would be discussed to allow the clinicians to share their experiences and thoughts on PIPM delivery from a clinical perspective.

Ongoing monitoring also involved re-assessment of all clinicians delivering PIPM to ensure the quality of PIPM delivery was maintained over time. The research team and I undertook in-person re-assessments of all clinicians delivering PIPM approximately every six months. Clinicians at each site were re-assessed at the same time, so there was no difference in timings for those who had struggled to pass at the initial assessments. The aim of the re-assessments was to ensure that the delivery of PIPM was consistent with the service manual throughout the trial. The re-assessments, like the initial assessments, took place on-site and involved observation of the clinician on the ward and discussion of completed checklists with me or another research team member. The same assessment sheets were used as for the initial assessment to ensure consistency of assessment. Again, as with the initial assessments, each clinician received personalised feedback on their

performance. If they did not pass the assessment, the reasons were discussed, bespoke re-training provided if required, and the clinician was reassessed. They could not deliver PIPM or complete the checklist until the re-assessment had been passed, in line with recommended practices for quality management(43).

In total, 24 quality assurance assessments of PIPM delivery with a 92% pass rate (22 out of 24 assessments were passes) were completed over the two years of The HOME Study. Following the two failed assessments, the relevant clinicians received further observation and face-to-face teaching, with re-assessment on the same or the following day: on both occasions the clinician passed on re-assessment. There were also update meetings in Oxford twice during The HOME Study attended by all the PIPM clinicians and the PIPM developers to review overall PIPM delivery and address any problems. These differed from the weekly video-conference calls in that they were in-person, and lasted a whole day. This allowed for greater discussion between all the PIPM clinicians and research team on problems with consistent delivery. It was also hoped that in-person meetings would help maintain team-working across sites and allow any new PIPM clinicians to meet their peers at other sites in person, and outside of the structure of the video-conference calls.

Chapter 10: Preparing Proactive Integrated Psychological Medicine (PIPM) for delivery - Discussion

10.1 Summary of findings from the operationalisation process

The quality of a randomised trial of a new service model is dependent on the accuracy and the consistency with which the intervention is delivered. Clinicians delivering the new service model can easily drift from delivering the new model as intended, especially when it is fundamentally different from previous practice. Therefore the quality of the delivery of the new intervention should be maximised, and this can be achieved by providing clear definitions of the service, e.g. in a service manual, training and embedding mechanisms for ongoing quality assurance(43).

10.1.1 Service manual

Recognising the importance of maximising consistent delivery of PIPM in The HOME Study, I developed a service manual along with Professor Sharpe and Dr Walker: this provided a clear background to the new model, and detailed instructions on how the new intervention was to be implemented. The manual was developed in parallel with PIPM itself, and underwent multiple iterations responding to feedback from PIPM clinicians, and field-testing during PIPM piloting.

The final version of the service manual detailed the seven principles of PIPM and the main differences with usual psychiatric services for general hospital inpatients. It described the roles within PIPM and how each of the four stages should be delivered, including the aims of each stage, who should deliver it, how long it should take, and the anticipated actions. This included specific aspects for which PIPM clinicians were likely to need specific prompts, for instance, descriptions of each problem category to be considered in the Stage 1 - biopsychosocial assessment, with examples

of problems and action plans. The manual also summarised the training and quality assurance procedures, common 'do's and don'ts' for the PIPM clinicians and example responses to questions frequently asked about PIPM.

The service manual will be made publicly available, which is considered important in assisting future replication(128), improving uptake post-evaluation, and also allows for further research of the intervention, e.g. to identify the key core components of its success to rationalise the model and improve efficiency(129).

10.1.2 Checklist

I also created a checklist with Professor Sharpe and Dr Walker as a prompt for the PIPM clinicians; a strategy reported to improve consistency of delivery(130). Like the service manual, the checklist also went through multiple draft iterations, and field-testing via piloting. The checklist was designed to be an integral component of PIPM, guiding its delivery according to the service manual, and was to be used during each stage of PIPM. Each stage of PIPM is laid out with specific prompts on what to do, for example where to consider obtaining information, what to consider during the initial assessment, and who to discuss the action plan with. Relevant sections of the checklist were intended to be completed on each day that the patient was reviewed with the aim of focussing the PIPM clinicians on what immediate actions were required. The checklist was in the form of a paper booklet rather than in an electronic format to facilitate use at the patient's bedside, and to avoid limitations caused by problems with integrating the checklist into different electronic patient record systems used across hospital Trusts.

10.1.3 Training

All clinicians who delivered PIPM in The HOME Study received bespoke training that included didactic lectures, small group teaching, role plays, and on-the-ward shadowing. The main aim of training was to prepare the clinicians to deliver PIPM as set out in the service manual. Training was focused on the areas of PIPM that differed most significantly from traditional liaison practice, including assessing patients that have not been referred and providing daily follow up as an active member of the ward team.

10.1.4 Quality assurance

As well as the service manual and checklist, I developed a quality assurance process with Professor Sharpe and Dr Walker to maximise consistent, quality delivery of PIPM in line with the service manual. The delivery of the clinicians was assessed against pre-specified criteria, and they were required to meet all the criteria before delivering PIPM in The HOME Study. To ensure ongoing consistent implementation, further quality monitoring processes were put in place. These included weekly video-conferences between the PIPM developers and clinicians, regular re-assessment of clinicians' delivery of PIPM, and face-to-face up-date meetings bringing PIPM clinicians together. Both the video-conferences and meetings focused on difficulties of PIPM delivery, interpretations of the manual in practice, and consistent use of the checklist. They were also an opportunity for peer support and sharing of clinical problems to facilitate this new way of working.

10.2 Strengths and limitations of the preparation process

10.2.1 Strengths of the preparation process

There were a number of strengths to the preparation process. I aimed to develop guidelines, training, and quality assurance processes that would help delivery of PIPM in The HOME Study, but could also be used by those wanting to implement PIPM into routine care if it is found to be effective. The relevance of these processes is increased by the regular input at all stages from clinicians who would be delivering the new model in The HOME Study, who would also be the type of clinicians who would likely be asked to deliver PIPM in routine care (liaison psychiatrists and allied mental health professionals working in general hospitals).

Another strength of the preparation process was the iterative piloting: with subsequent pilots building on the findings from previous ones, and took place at all sites that PIPM would be delivered in during The HOME Study. The evolving manual and checklist were used at each pilot, allowing direct testing and standardised feedback to be collected to ensure all participants were able to provide their input and engage with the development process. The manual will be made publicly available for external scrutiny and to prompt further evaluation. Clear and detailed reporting for the delivery of a complex intervention makes it easier for others to replicate what was delivered in the trial, and helps researchers interpret the results of outcome evaluations(114). However, many trials of complex interventions do not provide intervention manuals which may have limited their uptake into routine clinical practice(131).

The training utilised a variety of teaching methods familiar to those being trained and based on adult learning principles. The role play scenarios were informed by insights from the patient and carer group discussion, providing an important perspective from outside the research team(132).

The quality assurance process included standardised assessments of clinicians' ability to deliver PIPM according to the service manual, both before they were allowed to deliver PIPM during The HOME

Study, and during delivery to ensure ongoing quality of delivery. There was regular contact between all the clinicians delivering PIPM and the research team on weekly video-conference calls, to allow for timely clarification of ambiguities of delivery in the different contexts, with the aim of increasing consistency of delivery.

10.2.2 Limitations of the preparation process

However, there are also limitations to the overall process, and to the resulting guidelines, training, and quality assurance process. A limitation of the discussions at the post-pilot meetings, as in the development process, is that they were not focus groups where the discussion and interaction between the participants is explored in depth. Therefore, as in the development process, potential deeper analysis and insights that could have been gained from a formal focus group methodology were not available. Similarly, the lack of audio-recording of the sessions limited the ability to perform deeper analysis of the discussions and group dynamics. Although the researchers attempted to involve all participants, lack of experience in group discussion moderation may have led to "consensus" agreements that did not accurately reflect the positions of all those present(89). Audio or video recording of actual delivery would have allowed for greater scrutiny and could have been used to help promote consistent delivery, as has been shown in other complex intervention delivery contexts(121). As with the development process, the sampling could have been broader for the patient and carer discussion. The small numbers of patients and carers involved also reduced the potential to establish wider opinions.

The lack of explicit consideration of formalised theory of how PIPM would be integrated into wider routine practice was another limitation(133, 134). PIPM was operationalised for delivery in the context of a randomised trial, with a specific focus on consistency of delivery rather than adaption to local and individual circumstances. Whilst this benefits the internal validity of The HOME Study, which is essential for it to be a worthwhile and ethical use of public funds, it does limit the direct

generalisability of the operationalisation processes in a post-trial context. For example, the clinicians delivering PIPM were from hospitals with well-established psychiatric services and the delivery was supported by significant resources from the trial(135); availability of these may not be consistent across other NHS sites which limits the potential for PIPM to be adopted into clinical practice.

Another example is the paper checklist: using a physical booklet increased consistency of use across sites and time, however if PIPM were to be implemented on a wider basis post-evaluation it is unlikely a paper checklist would be used, especially as most NHS trusts are, or moving toward, becoming paperless(136). Another consideration is that, in effect, the checklist became part of PIPM, in that it was used by all clinicians for each patient they saw, therefore delivering PIPM outside of The HOME Study, without a checklist, would be delivering a different, albeit similar, intervention. Similarly, the resources associated with a trial such as The HOME Study, including training and monitoring of delivery, mean post-evaluation delivery is likely to diverge from delivery within the trial(94). Complete consistency of delivery post-evaluation is both unlikely and unnecessary as long as the key elements are delivered consistently and what was delivered is recorded(137).

10.3 Discussion of findings

The HOME Study is not the first randomised trial of psychiatric services for general hospital inpatients. However, as my systematic review in Chapters 2-4 showed, the applicability of results from previous studies were limited in a number of ways including: (1) descriptions of how the service models were delivered were, at best, superficial making analysis of how they affected (or failed to affect) their chosen outcomes difficult; (2) none of the previous trials reported measures of what was actually delivered. Indeed, as none of the trials found differences in their primary outcomes between the intervention and usual care, it is hard to evaluate whether that was in part due to ineffective service models or ineffective delivery of the service models. It is therefore difficult to interpret both their results and how their service models might be implemented in other contexts with confidence.

10.3.1 Implications for future work/care and policy

The operationalisation of PIPM for delivery in The HOME Study has resulted in two documents (service manual and checklist) and a training and quality assurance process that can be scrutinised and adapted by others outside of the research team. A Spanish group has already translated the service manual and adaption in their setting is awaited. The next step is to evaluate the delivery of PIPM in The HOME Study.

Chapter 11: Evaluation of the delivery of PIPM in The HOME Study - Introduction and methods

11.1 Introduction

11.1.1 Why process evaluations are important

It is important to study the delivery of an intervention in a randomised trial (that is, to conduct a process evaluation). A process evaluation can be used for a number of purposes: First, a process evaluation can be used to study whether the intervention was delivered as intended(66, 111, 138, 139). This is important for interpreting the trial results and for replicability(140). Second, it can be used to study whether the intervention was delivered consistently(68), for example across sites or by different clinicians. This is important because trial analysis plans usually assume consistent delivery or minimal differences in delivery. Thirdly, it can be used to study how an intervention was implemented(141). Finally, it can be used to inform future implementation in routine practice(94). Process evaluations are particularly important in trials of complex interventions where there is more than one potential causal pathway from intervention to outcome and in trials where the intervention is delivered by multiple people in different settings(142).

11.1.2 Guidance on undertaking process evaluations

There are a number of published guidelines and theories to aid the design and undertaking of process evaluations of delivery of interventions in trials and routine practice, including RE-AIM(143), Normalisation Process Theory(144), and the Consolidated Framework for Intervention Research(145). RE-AIM is well established and pragmatic and it guides evaluation of the delivery of the intervention. Because it is pragmatic it can be used by researchers without substantial process evaluation experience and its results are accessible to a wide audience(146). However, the

advantages of simplicity and pragmatism can also be seen as disadvantages, especially by those interested in the process of how an intervention was delivered rather than just the extent to which it was implemented with respect to what was planned. An alternative would be a more theory-based process such as Normalisation Process Theory (NPT)(133). Normalisation Process Theory is a framework to help understand the barriers and facilitators to implementation of a new intervention and how it can be 'normalised' into routine practice(144). NPT has been successfully used to guide development, evaluation, and implementation of complex interventions in a number settings(134, 144). There has been some criticism that NPT places more emphasis on the healthcare professional during implementation, at the expense of those receiving the intervention(147). The Consolidated Framework for Implementation Research (CFIR), is a consolidation of 19 theoretical frameworks used to help data collection and analysis to identify barriers and facilitators to intervention implementation(148). The CFIR has also been used successfully in a wide range of studies, although mostly in studies of implementation into routine practice after successful evaluation studies(148). Both NPT and CFIR allow for greater explanatory analysis of the links between the intervention and outcomes observed. This compared to more descriptive frameworks, such as RE-AIM, also makes them more complex to utilise.

Process evaluations can also focus on exploring the proposed causal mechanisms of interventions. The proposed mechanisms through which an intervention is hypothesised to affect the chosen outcomes, is the programme theory(94, 149). Explicitly stating the proposed causal relationships between actions can help evaluators to design data collection strategies to understand how the new intervention may be effective via both the proposed routes and unintended causal pathways(150, 151). Critics of programme theory question whether the causal effects of complex interventions can be meaningfully reduced to discrete components, and whether the effects of those components are tightly associated with measurable outcomes. Proponents maintain that explicitly stating the proposed mechanisms through which a new intervention is to work is both possible and desirable to

aid development and evaluation of the intervention(152). The diagrammatic representation of a programme theory, showing the relationships between the component actions of the intervention and the outcomes, is known as a logic model(149). Logic models should also include other routes by which the intervention may result in changes in outcomes. As with all models where there is a tension between clarity and completeness, logic models can be too complex or too simple(153). Trying to convey too much information can be confusing and off-putting. An overly complicated model, whilst comprehensive, might undermine the goal of clarifying the proposed underlying process(es). Alternatively, the underlying rationale can be unclear if the model is too simple or ambiguous. No logic model, however sophisticated, will capture all the relevant potential pathways from actions to outcomes. Therefore, adding complexity in logic models can potentially detract from the core function of clearly specifying the proposed mechanism of action. However, mapping out other potential routes for changes in outcomes can help developers acknowledge other potential contributors to their results and plan process evaluation accordingly, particularly in complex interventions(154). Explicitly stating the proposed causal processes can help focus the data collection on key research questions most important to the evaluators, usually the key uncertainties about how the intervention affects the chosen outcomes(94). The alternative, i.e. to evaluate all aspects of the process, risks reducing the quality of the evaluation by inadequately answering a wider range of questions(94). Whilst the seven principles of PIPM lend themselves to a simple logic model, developing a model that is adequately comprehensive is beyond the scope of this thesis.

11.1.3 Data collection in process evaluations

The methods of data collection in a process evaluation depend on the nature of the intervention and its delivery context, available resources, and the objective(s) of the process evaluation(155). The choice of data collection method can influence the accuracy and consistency of the data(43) and even delivery of the intervention. To measure the delivery of a complex intervention with multiple components, a wide range of data is required(94). However, collecting large amounts of data can

compromise the accuracy of the data collected(94) and waste resources, so establishing a data analysis plan prior to data collection is important.

Process evaluations can involve the collection and analysis of quantitative data, qualitative data or both. The collection of both quantitative and qualitative data is desirable. For example, quantitative data can be especially helpful in determining objectively whether the intervention was delivered as intended whereas qualitative data can help us understand how differences from what was intended have arisen. Delivery inconsistent with what was intended may result from either: (1) conscious decisions by those delivering the intervention based on the local context (sometimes called "innovation", or "adaptation")(94), or (2) delivery inconsistent from what was intended may also have happened due to people not following the guidance on delivery of the intervention (sometimes known as "drift")(156). Qualitative data can also help us learn about the experiences of those delivering and receiving the intervention on a larger scale than can be achieved from a pilot. This information can be particularly helpful for informing implementation in routine practice post-trial if the intervention is found to be effective.

Data collection for a process evaluation should be done in parallel with intervention delivery as data collection or analysis after the trial, when the results are known, might lead to bias. Data can be collected as part of the trial, for example participant data collected routinely in the trial, and from specific data collection procedures, such as self-reporting by those delivering the intervention. Data can also be collected from specifically designed data collection procedures, and include data collected via surveys, interviews or focus groups involving those delivering and receiving the intervention.

11.2 Aim

The aims of my process evaluation were to evaluate (1) what was delivered and whether it was delivered as intended, and (2) people's experiences of PIPM.

11.3 Methods

11.3.1 Framework

I chose to use the RE-AIM framework to guide my process evaluation because it is well-established, pragmatic, and best suited the relatively narrow focus of my aims; to evaluate what was delivered and whether it was delivered as intended, and people's experiences of PIPM. The RE-AIM framework organises the evaluation to emphasise aspects important for the generalisability of the findings of a trial, and implementation in other settings(143, 146). RE-AIM has five component parts: Reach, Effectiveness, Adoption, Implementation, and Maintenance (Table 11.1)(143, 146).

Table 11.1 The RE-AIM framework(143, 146)

RE-AIM dimension	**Description**
Reach	The absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative.
Effectiveness	The impact of an intervention on important outcomes, including potential negative effects, quality of life, and economic outcomes.
Adoption	The absolute number, proportion, and representativeness of settings and intervention agents who are willing to initiate a program.
Implementation	The intervention agents' fidelity to the various elements of an intervention's protocol. This includes consistency of delivery as intended and the time and cost of the intervention.
Maintenance	The extent to which a program or policy becomes institutionalised or part of routine organisational practice or policies. The proportion and representativeness of settings that continue the intervention and reasons for maintenance, discontinuance or adaptation.

11.3.2 Data collected to describe PIPM delivery and people's experiences of PIPM

What data are collected depends on the framework (in this case RE-AIM) and the aims of the process evaluation (to measure what was delivered and if was delivered as intended, and the experiences of those involved).

The main focus of the **Reach** component is considering how representative the population receiving the intervention is, with respect to the target population for the intervention. In the context of The HOME Study, those randomised to PIPM are the target population. Post-evaluation, the target population would be older (i.e. ≥65 years), acutely admitted general hospital inpatients. Therefore, I measured: the percentage of patients randomised to PIPM in The HOME Study who received PIPM; the reasons why patients allocated to PIPM did not receive it; the demographic and clinical characteristics of all participants enrolled in The HOME Study; the characteristics of the patients randomised to PIPM (using participant data from The HOME Study and data from the PIPM checklist).

Effectiveness in RE-AIM considers the effect of the intervention on outcomes; positive, negative, and unintended. The HOME Study is evaluating the effectiveness of PIPM compared with usual care, which is outside the scope of this thesis. The patients and ward environment are not passive receivers of PIPM and it is the interaction of PIPM and the delivery context that results in the outcomes observed(157). Therefore, it is important to understand the positive and negative experiences of those involved (i.e. the patients, carers, ward professionals, and clinicians delivering PIPM) when interpreting the results of The HOME Study and considering future implementation. For example, comprehensive and earlier involvement of psychiatric clinician's in patient care may lead to less time in hospital but may not be welcome by patients, or enjoyed by PIPM clinicians. Similarly, the introduction of PIPM may lead to overlapping roles with other ward professionals and concerns about de-skilling the ward professionals in psychosocial assessment and management, which would

be a barrier to future implementation. Without exploring the experiences of those involved, this information would not be available.

Adoption refers to the settings and healthcare professionals required to deliver the intervention. Different settings and professionals vary in available resources, expertise, commitment, and understanding of the intervention. The level of adoption across sites and healthcare professionals in the context of a trial will be different to potential post-evaluation adoption. Therefore, data on the hospitals and wards where PIPM was delivered were collected contemporaneously, as are those that were considered but ultimately did not deliver PIPM. A narrative description of the clinicians who delivered PIPM was also recorded in contemporaneous logs.

Implementation focuses on the extent to which PIPM was delivered as intended. It would not be practical or efficient to attempt to measure every aspect of delivery, and doing so would lead to data being collected that could not realistically be analysed(94). Therefore, to decide what data should be collected, in terms of what was actually delivered, on the principles underlying PIPM. It was also important to explore the experiences of those delivering the principles to inform the results of what was actually delivered. I decided on a measure for each principle (see Table 11.2). To measure *proactive* delivery, I measured how many patients randomised to receive PIPM actually received it (defined as receiving Stage 1 and Stage 2). *Prompt* care was measured by the percentage of patients receiving Stage 1 and Stage 2 within one day of randomisation. For the *comprehensive* assessment, I chose to measure the percentage of patients randomised to PIPM where the PIPM clinicians considered each of the categories in the biopsychosocial assessment. The *focus* of PIPM was on discharge planning, and therefore the percentage of patients PIPM clinicians focused on this was measured. *Integrated* care was measured by the percentage of patients where the PIPM action plan was discussed with the ward team. Similarly, the *intensity* of PIPM delivery was measured by the percentage of patients having their care reviewed by PIPM clinicians every working weekday during

their admission. Finally, PIPM was designed to be delivered *systematically*, therefore the percentage of patients where the checklist was fully completed was also measured.

The service manual sets out four stages of PIPM, who delivers what components of PIPM and in what time frame, all of which I also measured as part of understanding if PIPM was delivered as intended.

Maintenance can refer to both the setting/delivery level and the participant level. Consistent delivery during the trial is essential and knowledge of barriers and facilitators to consistent delivery are important for considering potential implementation into routine practice. The maintenance of PIPM implementation over the course of The HOME Study was also using data collected contemporaneously in the PIPM checklists.

Table 11.2 Measures of delivery of the seven PIPM principles

PIPM Principle	**Main measure**
Proactive approach	Percentage of patients allocated to PIPM receiving Stage 1 and Stage 2 assessment
Prompt care	Percentage of patients with Stage 1 and Stage 2 assessment done within 1 day of allocation to PIPM
Comprehensive assessment	Percentage of patients allocated to PIPM who had all categories assessed
Focussed discharge planning	Percentage of patients where focused discharge planning took place
Integrated care	Percentage of patients where discussion with ward professionals occurred
Intensive intervention	Percentage of patients reviewed every working day
Systematic delivery	Percentage of patients with completed checklist

11.3.3 Procedures for data collection

11.3.3.1 Quantitative data collection

Quantitative data was collected from two sources: the PIPM checklist and participant data from The HOME Study. The checklist was used for data on what was delivered. Participant data was used to describe the population who received the PIPM.

11.3.3.1.1 Checklist data

As part of the operationalisation of PIPM I developed a checklist for the clinicians to use for each patient, to increase the consistency of delivery (see Chapters 8-10). I realised that I could use the checklist to contemporaneously collect data on what was actually delivered during the trial in terms of both the seven principles, and the four stages of PIPM delivery, and how long they spent on each. To additionally collect data on all activities undertaken by the PIPM clinicians, I added a "work done" section to the back of the checklist to be completed by the PIPM clinicians for each patient they saw to capture as much of the work actually undertaken as possible (see Figure 11.1). The potential options for "work done" went through multiple iterations, and comprehensive feedback and input was received from the piloting clinicians based on their liaison psychiatry experiences, the service manual, and their experiences during piloting. I aimed to develop a comprehensive list, which was also practical to complete: to facilitate this the work done component of the checklist was formatted to cover a single page and clinicians completed yes/no answers. A space was left for free text given the likelihood that the options listed would not be exhaustive.

A checklist (see Appendix, Additional Files) was completed for each patient allocated to PIPM. Data were collected on the delivery of PIPM according to the service manual including on each of the seven underlying principles. The checklist was completed contemporaneously for each patient by the clinician(s) delivering PIPM. Thorough and consistent completion of the checklist was vital. Therefore, each PIPM clinician was specifically trained in completing the checklist, and a section was

included in the service manual on how to complete the checklist. Each checklist had to be completed in full and signed by the clinician as confirmation. The completed checklists were then scanned and sent securely to a central trial office where they were double entered onto an electronic database. Any missing data were flagged, and the completing clinicians contacted to provide the missing data. There were also weekly video-conference calls between all the clinicians delivering PIPM, where problems completing the checklists could be discussed with each other and with the researchers. All of these components aimed to minimise inconsistent interpretation between clinicians and over time. To further maximise consistent data collection, explanations of each section of the 'work done' page were given in the service manual (see Appendix, Additional Files).

11.3.3.1.2 Participant data

A large amount of data was routinely collected on all patients in The HOME Study to allow for description of the demographics and clinical characteristics of the participants (summarised in Table 11.3). Data collected included the hospital and ward they were recruited from, NHS and hospital numbers, date of birth, sex, ethnicity, relationship status (i.e. whether the patient has a partner or spouse), usual place of residence (e.g. private home or care home), postcode (to calculate deprivation index), whether the patient normally lived alone, employment status, reason for hospital admission, diagnoses recorded on admission, medications prescribed, date of admission to hospital, cognitive function (using the telephone version of the Montreal Cognitive Assessment(158, 159)), independent functioning (measured by the Barthel Index of Activities of Daily Living(160)), health-related quality of life (measured by the EQ-5D-5L(161)), symptoms of anxiety and depression (measured by the Patient Health Questionnaire-4(162, 163)), overall quality of life (trial specific measure), and secondary healthcare use in the year prior to randomisation (including the number of admissions to hospital).

The research assistants collecting the data were trained, assessed, and supervised throughout data collection. All data was doubled entered to enhance accuracy and discrepancies checked against the data collection documentation(164). Diagnoses at admission were recorded from the participant's medical records. I and another doctor coded each diagnosis according to the ICD-10 categories(165) in parallel to maximise reliability. Any inconsistences were discussed and resolved within the research team.

Table 11.3 Participant demographics and clinical characteristics routine collected in The HOME Study

Demographics	NHS and Hospital numbers
	Date of birth
	Sex
	Ethnicity
	Relationship status
	Residence type
	Postcode
	Living alone
	Employment status
Clinical characteristics	Reason for hospital admission
	Diagnoses
	Medication prescribed
	Date of hospital admission
	Date of admission to specified acute ward
	Days in hospital pre-enrolment
	Overall quality of life (study-specific item)
	Health-related quality of life (EQ-5D-5L)
	Depression & anxiety symptoms (PHQ-4)
	Independent functioning (Barthel)
	Cognitive function (MOCA-T)

Figure 11.1 Data collected on “work done” by the PIPM clinicians

Summary of work done by PLP/PPM team during admission Y or N				
Information gathered from:	Patient		Family/informal support	
	Carers and accommodation staff		Acute hospital records	
	Ward team		Other acute hospital staff including usual care LP/PM	
	Primary care staff		Primary care records	
	Community mental health team		Community mental health records	
	Other professionals (e.g. social workers)		Other professional records	
Examination:	Mental state examination		Relevant physical examination	
Specific assessment of:	Cognitive function		Capacity	
Direct therapeutic interventions for:	Patient		Family/carer(s)	
	Patient jointly with ward team member(s)		Ward team members	
Advice to ward team about:	Investigations		Psychiatric diagnoses	
	Medications		Psychological and behavioural interventions	
	Environmental and functional optimisation		Risk minimisation on ward	
	MCA/MHA use		Safeguarding	
Post-assessment involvement in care:	Direct patient reviews		Regular communication with ward team	
	Routine board round discussions		Participating in multidisciplinary team meeting(s)	
	Driving implementation of management plan		Participating in discussions with other specialties	
	PLP/PPM team referral to usual care psychiatry for out-of-hours cover		PLP/PPM team referral to usual care psychiatry for specialist advice or input	
Focused discharge planning with:	Patient		Family/informal support	
	Carers and accommodation staff		Ward team	
	Other acute hospital staff		Other out-of-hospital professionals	
Post-discharge plans and specific advice:	Specific advice for GP		Referral to community mental health team	
	Communication with other healthcare professionals		Communication with other non-healthcare professionals	
Other (please detail):				

11.3.3.2 Qualitative data collection

Qualitative data was collected from two sources; individual interviews, and contemporaneous trial notes. Contemporaneous notes help inform any change in context, for example a ward's discharge process changing which may require an adaption to PIPM delivery. The experiences of those involved help inform interpretation of what was actually delivered, especially if there was inconsistent, or adapted, delivery. Data on peoples' experiences of delivering and receiving the intervention can be collected using qualitative methods, which are particularly informative in randomised trials of complex interventions(166). Qualitative data can also help understand how interventions were delivered in practice(142). Both interview- and observation-based methods can be particularly helpful in capturing unintended or unanticipated outcomes from complex intervention delivery(94).

11.3.3.2.1 Individual interviews

The clinicians delivering PIPM, clinicians and allied health professionals on the wards where it was delivered, and the patients and carers receiving PIPM were interviewed to gain insights into how PIPM was delivered in practice and the experiences of those involved. These experiences could have been explored by other methods, including surveys(85), or group discussions(88). As discussed in Chapter 5, surveys can be sent to large numbers of potential respondents but generally have low response rates and points of interest cannot be explored in more detail(85). Group discussions are a way of exploring points of interest in detail, and can be an efficient method of obtaining the views of a range of people. However, group discussions do not allow for deep exploration of individual opinions and obtain a smaller range of opinions. I chose to conduct individual interviews to allow deeper exploration of peoples' experiences because I felt this would best allow me to meet the aim of identifying why PIPM was delivered as it was. The opportunity in individual interviews to explore

people's experiences in detail outweighed the disadvantages of them being more time consuming than options involving groups of participants(87).

Individual interviews can generally be one of three types; in-depth, semi-structured, or structured(86). In-depth interviews focus on one or two issues in great depth, with little pre-set structure and the interview progresses based on the interviewees' answers. Semi-structured interviews have a broader focus and often pre-decided starting points set out in a topic guide. They therefore have less flexibility than in-depth interviews but can cover a wider range of topics and may be more consistent in the areas explored. Structured interviews by contrast are effectively questionnaires with the interviewers trained to ask specific questions, with fixed answers, in a standard way(86). I chose to use semi-structured interviews as I aimed to explore the interviewees' experiences of PIPM, and have some flexibility to explore topics of interest that came up.

Other groups that could have been interviewed included patients not receiving PIPM and their carers, and clinicians and professionals contributing to the care of the trial participants in the community. As the aim of the process evaluation was to explore what was delivered and why, interviewing patients who did not receive PIPM would have been unlikely to add significant insights. However, insight into the experiences of care in general during admission of patients not receiving PIPM would allow greater interpretation of the experiences of those receiving PIPM, even if not directly comparable. However, given resource limitations and the fact that the opinions of the hospital stay of the patients and their carers of all participants of The HOME Study were already being collected as part of the outcome data collection for the trial, no interviews of participants not receiving PIPM were undertaken. Similarly, consideration was given to exploring the opinions and experiences of professionals involved in the care of participants in the community. However, after the follow-up phone call and direct involvement in post-discharge care was removed from the PIPM model, there was less potential for direct contact between PIPM clinicians and community professionals. Any individual community professional was likely to have very little contact with PIPM,

especially given the wide catchment areas of the sites participating in the trial, therefore interviewing them would likely have been low yield.

11.3.3.2.1.1 Sample

There were three groups of potential interviewees: (1) clinicians delivering PIPM, (2) clinicians working on the wards where PIPM was being delivered, and (3) the patients receiving PIPM and their carers. Interviewing everyone involved in PIPM would have been practically impossible, in terms of both conducting the interviews and analysing them. Also, interviewing everyone in such a large population would also be unlikely to yield a greater range of insights than from an appropriate sample. Two of the main sampling strategies are convenience and purposive, with many sub-types of purposive sampling, e.g. snowball or criterion sampling(167, 168). Convenience sampling involves selecting the most accessible participants and therefore has the least resource demands. However, as participants are being selected purely on accessibility the range and quality of the data obtained is likely to be the weaker of the methods. Purposive sampling involves actively selecting participants based on the research aim, for example targeting participants likely to have a broad range of experiences (maximum variation sample), or participants who are likely to have specifically different experiences (deviant sample)(167). The aim of the interviews was to obtain the full breadth of experiences of those involved, therefore the following sampling methods were used:

(1) Purposive sampling of staff on the wards where PIPM was delivered by professional background, with the aim of obtaining perspectives of PIPM from as broad range of professional backgrounds as possible from each site(169).

(2) Purposive sampling by delivery site (Cambridge, Exeter, and Oxford) of patients who received PIPM and carers of patients who received PIPM; participants were invited to take part in interviews to explore their experiences to get a range across the study. Within sites a convenience sample was then used. It would be impractical to interview all patients (or their

carers) who received PIPM, however an insufficient sample means it is difficult to draw wider conclusions about the intervention overall(170).

(3) All clinicians providing PIPM in The HOME Study were invited for interview given the relatively small numbers involved, and importance to the research aim of their direct experiences of delivering PIPM.

Eligible potential participants were approached, informed about the study, and provided informed consent. Sample size was informed by practical issues regarding the trial resources, consideration of groups of special interest (i.e. the PIPM clinicians as detailed above), and the requirement to obtain a range of professional backgrounds(171). Commonly sample size is also dependant on data saturation. Data saturation is generally agreed to have been reached when no new codes are identified from further data collection(172). Therefore, to base the sample size on data saturation requires interim analysis of the data, which was not conducted. The number of interviews conducted was based on obtaining a range of professional backgrounds of ward professionals from each site, patients' and carers from each site, all PIPM clinicians, and the resources of the study. This was potentially inefficient as data saturation may have been reached with a smaller sample.

11.3.3.2.1.2 Timing

The PIPM clinician interviews took place throughout PIPM delivery. Individual clinicians were interviewed at least two months after starting to deliver PIPM. Interviews with ward clinicians took place after at least 12 months of delivery on their ward, to allow for staff to become familiar with PIPM, and while delivery was still occluding, so that experiences were still recent. Interviews with patients and carers took place within one-month post-discharge, and were no longer receiving PIPM, to maximise recall without the interviewees feeling hindered by talking about clinical care they were still receiving.

Timing is important to consider as although the intervention is hopefully consistently delivered, the context and the individual's interactions with it may change, and opinions and memories may

change over time(94). For example, opinions early in the trial, when PIPM clinicians are still adapting to the processes involved in the new intervention and ward clinicians are less familiar with it, may differ from at the end. There was no set time limitation for the duration of interviews and they continued until interviewer and interviewee were satisfied little further information would be added.

11.3.3.2.1.3 Procedure

The interviews involved one participant being interviewed by a single researcher and were conducted face-to-face or over the telephone. The interviews were based on topic guides developed specifically for each group of interviewees, and aimed to explore the interviewees' experiences of PIPM (see Table 11.4). The interviewers were members of the research team who were familiar with qualitative interview techniques and had practiced with the topic guides amongst the research team. Questions were open-ended, with follow-up questioning as appropriate to promote information gathering(171). Each interview was audio recorded and transcribed verbatim by a member of the research team. Any identifying details in the transcripts were redacted by the transcribers to maintain confidentiality. The transcribers did not take part in the analysis for this reason. The transcripts were grouped into PIPM clinicians, ward healthcare workers, and patients and carers.

Table 11.4 Topic guides for semi-structured interviews

WARD CLINICIANS INTERVIEW TOPIC GUIDE

Key Questions

1. What has this new way of working been like for you?
2. What has it been like for your patients?
3. Have you noticed anything different about this new way of working? (e.g. in relation to usual way of working or usual CL psychiatry)

Follow Up Questions

4. What has been positive about this new way or working? What has been negative?
5. How could it be improved for the future?
6. Is there anything else

PATIENT AND CARERS INTERVIEW TOPIC GUIDE

Patients

1. Experience of seeing the extra doctor? (what was it like?)
2. What was helpful about seeing the extra doctor?
3. What was unhelpful about seeing the extra doctor?
4. Any concerns about seeing the extra doctor?

Carers

1. Experience of participant seeing the extra doctor? (what was it like for the participant?)
2. Experience of participant seeing the extra doctor? (what was it like for the carer?)
3. What was helpful about participant seeing the extra doctor?
4. What was unhelpful about participant seeing the extra doctor?
5. Any concerns about seeing the extra doctor?

PIPM CLINICIANS INTERVIEW TOPIC GUIDE

Roles:

1. Briefly describe your professional background?
2. What is your current/most recent non-PPM clinical role?
3. How long have you been doing PPM?

PPM:

1. What have been the main differences between PPM and your usual practice that you have notice?
2. What has been your experiences of each stage?
3. Advantages and disadvantages of each principle
    - Proactive/Prompt/Comprehensive/Focused/Systematic/Intensive/Integrated

PPM clinician roles

1. Communication between PPM clinicians

Ward:

2. What has your relationship with the ward been like?
    - Medics/nurses/therapists/discharge team/social workers
3. What facilitators and barriers to integration have you experienced/noticed?

Future:

1. Explain PPM to colleague: how would you describe PPM to a colleague who might work in the role?
2. What would you think if you were told you would be doing PPM full-time indefinitely?
3. Main challenges of PPM?
4. Main advantages of PPM?

11.3.3.2.2 Contemporaneous notes

Contemporaneous notes were kept by the research team throughout the trial. The notes included descriptions of the sites and wards, issues with trial delivery, the training and quality assurance of the clinicians delivering PIPM, and any changes during the trial. This included purposive data collection on the sites where PIPM was to be delivered. Table 11.5 shows an example of the data collection tool I helped to create to capture information about the trial context. In a dynamic NHS environment there are constant changes, so changes were also recorded in the contemporaneous notes.

Table 11.5 Data collection tool for ward delivering PIPM

The HOME Study: Ward information			
Hospital		Ward	
Specialty(ies)			
Number of beds			
Criteria for admission			
Staffing			
Ward working			
Comments			

11.3.4 Analysis

11.3.4.1 Quantitative Data Analysis

Quantitative data were analysed using a variety of descriptive (also known as summary) statistics. Descriptive statistics are appropriate when there is a large amount of data that needs to be summarised and communicated as simply and clearly as possible. There are three main categories of descriptive statistics: measures of frequency (e.g. percentages), central tendency (e.g. mean or median), and variation (e.g. standard deviation or interquartile range)(173). A strength of using descriptive statistics is the clarity they can bring to large data sets and the accuracy (assuming limited measurement error). Descriptive statistics do not allow for further inferences outside of the study population, which would be useful going forward but was not the aim of my study. Descriptive analysis was appropriate for my aim of evaluating what was delivered and whether this differed from what was intended. I conducted the quantitative data analysis in StataIC 16(174).

11.3.4.2 Qualitative Data Analysis

Qualitative data can be analysed in a number of ways including thematic analysis(175), the framework approach(176, 177), and grounded theory(178). Thematic analysis is widely used and involves identifying common patterns and themes within the data. Advantages of thematic analysis include its flexibility and that the analysis stays close to the original data(179). The flexibility can be a disadvantage as it can lead to inconsistencies in analysis(179). The framework approach begins similarly to thematic analysis, with familiarisation and coding. However unlike in thematic analysis, an analytical framework is then developed and applied to subsequent data, with the data charted in summarised form by category into a matrix. The framework approach is systematic, allows for illustrative data to be easily identified for a theme, and has a clear audit trail from data to illustrative quotes(176). However, some claim it can lead to inappropriate quantification, moves away from the original data earlier than thematic analysis and requires time and specialist skills(176). Grounded

theory is an iterative approach using cycles of inductive (data driven analysis), deductive (theory driven analysis) and verification against the source data, with sampling to inform the evolving findings(178). Grounded theory is systematic and provides rich analysis(180). However, grounded theory is particularly time-consuming, using constant comparison of the emerging codes with the data, and has less theoretical generalisability outside the data set(180). I chose to use thematic analysis due to its flexibility and general accessibility as an analysis method for someone with less experience in qualitative methodology(175).

The analysis of the transcripts was based on the thematic analysis. This allowed for both individual perspectives to be examined and comparisons across interviews (within each of the three sample groups). Members of the research team, including me, familiarised themselves with the transcripts of one group. I and another researcher then coded a selection of transcripts from that group chosen for their variability to maximise the number of initial codes. The initial codes were then discussed with the research team and a list of codes agreed, based partly deductively from the topic guides and aims of the evaluation. I and another researcher then coded the remaining transcripts in that group. The codes and coding were then verified by other members of the research team and final codes agreed and example quotes selected. The research team then met to group the codes into themes. I and another researcher then re-reviewed the transcripts with the themes to ensure they accurately reflected the data. To maximise the quality and consistency of analysis the research team met regularly to discuss progress and evolving themes. This enabled real-time discussion and interrogation of initial groupings and themes. The research team then met again to finalise the themes. The process was similarly repeated for each of the other sample groups.

11.3.4.3 Data Analysis Plan

I wrote a formal analysis plan, with a description of each variable to be analysed, how the data was recorded, where the data was recorded, and how it would be reported, prior to starting the analysis. This plan was then discussed with the research team, led by Professor Sharpe and Dr Walker, and included specialist statistical instruction. The final analysis plan is available in the supplementary files. What was planned to be delivered for each RE-AIM category is shown in Table 11.6. The results, what was actually delivered, are reported in Chapter 12.

Table 11.6 Summary of analysis plan

RE-AIM component	Planned to be delivered and measured
Reach	The target population for PIPM in The HOME Study was all eligible patients on the study wards. Eligible patients (see Chapter 1 for details) were acutely admitted patients aged 65 and over (randomised to PIPM). It was expected that this population would have relatively high rates of multimorbidity, including psychiatric conditions.
Effectiveness	The effectiveness of PIPM is being evaluated in The HOME Study. The process evaluation is focused on what, in terms of PIPM, was delivered in The HOME Study, and why. The opinions of those who experienced PIPM on what it was like are important to understand the 'why', and will inform our understanding of the outcomes, when they are available. It is also important that those opinions are obtained blind the outcome evaluation to minimise potential for analysis to be biased by knowledge of effectiveness (or not).
Adoption	PIPM was designed to be delivered in The HOME Study on wards accepting acute admissions of patients aged 65 and over. PIPM was designed to be delivered by a team of Consultant Psychiatrists and assistants with clinical qualifications and experience in working with general hospital inpatients with psychiatric disorders.

Implementation	The delivery of PIPM in The HOME Study was intended to be according to the service manual. Namely:
	• The seven principles of PIPM
	  ○ Proactive
	  ○ Prompt
	  ○ Comprehensive
	  ○ Focused
	  ○ Integrated
	  ○ Intensive
	  ○ Systematic
	• The four Stages of PIPM
	  ○ Stage 1: Biopsychosocial assessment
	  ○ Stage 2: Action plan
	  ○ Stage 3: Delivery of action plan
	  ○ Stage 4: Discharge
	• The work done by PIPM clinicians
	  ○ Time spent by PIPM clinicians
	  ○ Work done by PIPM clinicians

Maintenance	PIPM was planned to be delivered consistently over the course of the trial, specific aims for consistently prompt (time from randomisation to completion of Stage 1) and consistent (in terms of time spent by PIPM clinicians per patient) care.

11.4 Reflexivity

One of the main purposes of qualitative research is the interpretation and understanding of others' perspectives. As such, the background and biography of the researcher (the interpreter) affects how they think about, design, and analyse the study (reflexivity)(181). Therefore the researcher should be thoughtful with "conscious self-awareness" of their position within the study process(181). This is particularly the case in individual interviews where the professional, personal, and socioeconomic characteristics of the researcher and interviewee can all affect the interview dynamics and therefore the data collected(182). It is therefore important to explicitly reflect on my own background.

My professional background is as a medical doctor, currently training in general adult psychiatry. I was a member of the research team responsible for delivering The HOME Study. More specifically, as detailed earlier in this thesis, I was one of the developers of PIPM and I led its operationalisation. I also trained clinicians in delivering PIPM and delivered it myself at the Oxford site in the assistant role. This meant I had a notable investment in PIPM being successful. My professional and socioeconomic background was similar to the PIPM and ward clinicians in general. I have also spent a large proportion of my life living, studying, and working in two of the three sites of the trial where the patient population was drawn from (Cambridge and Oxford).

11.4.1 Mitigation

I took a number of steps to mitigate the potential bias from my position as developer, deliverer, and researcher. The study design was developed in collaboration with the research team to provide a range of inputs. Interviewees were informed that the transcripts of each interview would be (and were) anonymised. I did not interview any of patients or carers in Oxford where I may have personally been involved in their care. I did not interview any of the ward clinicians at any site. All interview transcripts were coded by at least two members of the research team. One of the other

researchers had a nursing background. The analysis plan was pre-specified, again following discussion with the wider research team.

Chapter 12: Evaluation of the delivery of PIPM in The HOME Study - Results

12.1 Results

In this chapter I report the results of the evaluation of delivery of PIPM in The HOME Study using the RE-AIM framework as set out in the analysis plan (see Chapter 11, section 11.3.4.3). The patients who received PIPM are described using participant data from the trial, and data from the checklists. The settings are described using data collected contemporaneously. Additionally, 55 professionals from the wards where PIPM was delivered, 26 patients who received PIPM, and 18 carers for patients who received PIPM were interviewed (Table 12.1). A further 17 patients, 6 carers, and 5 ward professionals were approached but declined to take part or were uncontactable (see Appendix Table A.2). All 15 of the clinicians who delivered PIPM were interviewed to explore their experiences of PIPM.

Table 12.1 Semi-structured qualitative interviewees

Interview cohort	Number of interviewees
Patients	**26**
Carers	**18**
PIPM clinicians	**15**
Consultant	8
Assistant	7
Ward professionals	**55**
Consultant Physician	10
Nurse	10
Occupational Therapist	9
Junior Doctor	8
Discharge Co-ordinator	5
Physiotherapist	4
Discharge Planning Liaison Nurse	3
Matron	3
Healthcare assistant	1
Housekeeper	1
Social Worker	1
Total	**114**

12.2 Reach

12.2.1 Patients eligible to participate in The HOME Study (target population)

12.2.1.1 Patients randomised to PIPM who actually received it

Of the 1,373 patients randomised to the PIPM arm of the trial, 1,359 actually received it (i.e. both Stage 1 and Stage 2 completed) (99.0%) (Table 12.2), with 11 patients being discharged before being seen by the PIPM clinicians, one dying before being seen, and the PIPM clinicians not being told about two patients by the recruiters.

12.2.1.2 Patients eligible to participate in The HOME Study

Two thirds of patients eligible to participate during The HOME Study's recruitment period (2,744/4,079 or 67%) took part (see Chapter 1 for inclusion and exclusion criteria). The age and sex distributions were similar for the patients who agreed to take part and those who did not (Table 12.3). The reasons for declining to take part are shown in Table 12.4, with "not interested in research" being the most common reason given (554/1,335 or 42%). Just over one percent (18/1,335 or 1.3%) declined to participate as they disliked the 'psychological aspect' of the study.

Table 12.2 Patients randomised to PIPM receiving PIPM and reasons if they did not

	Patients randomised to PIPM
PIPM received (n=1,373)	
Yes	1359 (99.0%)
No	14 (1.0%)
Reason for randomised patients not receiving PIPM (n=14)	
Discharged before initial assessment	11
Died before initial assessment	1
PIPM clinicians not informed of randomisation	2

Table 12.3 The HOME Study sample demographics

PIPM eligible patients	**All eligible patients who took part (n= 2,744)**	**All eligible patients who declined (n= 1,335)**
Age (years)		
Mean (SD)	81.8 (8.2)	82.1 (8.0)
Median (IQR, range)	83 (75-88, 65-102)	83 (76-88, 65-101)
65-74 years (n, %)	616 (22.5)	267 (20.0)(
75-84 years (n, %)	975 (35.5)	515 (38.6)
≥ 85 years (n, %)	1,153 (42.0)	553 (41.4)
Sex (n, %)		
Female	1,341 (48.9))	673 (50.4)
Male	1,403 (51.1)	662 (49.6)

Table 12.4 Reasons for declining to participate in The HOME Study

	All patients who declined (n = 1,335)*
Reason for declining:	
Not interested in research	554 (41.5%)
Too much going on	271 (20.3%)
Too unwell / tired	157 (11.8%)
Doesn't think will benefit	119 (8.9%)
Does not want to answer questions	108 (8.1%)
Seeing too many people already	34 (2.5%)
Dislikes psychological aspect	18 (1.3%)
Other	74 (5.5%)

*Percentages do not add to exactly 100% due to rounding.

12.2.2 Characteristics of patients randomised to PIPM

The demographic characteristics of patients who received PIPM were collected on entry into The HOME Study and are listed in Table 12.5. The demographic characteristics of patients who did not receive PIPM are listed in the Appendix in Table A.3.

The mean age of patients who received PIPM was 82 years (SD 8.2). The majority (1,237/1,359 or 91%) were admitted to hospital from a private residence, rather than, for example, a care home. Over half of patients were admitted from residences in the two least socially deprived post-code quintiles according to the deprivation index measure (see Table 12.5 for information on definition of deprivation index). Over 40% (574/1,359) of patients lived in rural areas (see Table 12.5 for information on definition of rural/urban). Ethnicity was not reliably recorded.

The clinical characteristics of the patients were also collected on entry into The Home Study and are shown in Table 12.6. The clinical characteristics of those who did not received PIPM are given in the Appendix (Table A.4). There was notable multimorbidity, with a median of five diagnoses per patient listed on their admission summary. The primary reasons for admission listed in the medical notes in almost half of patients were cardiorespiratory conditions or general, non-specific, symptoms. Also notable was the level of polypharmacy, with a median of 11 medications prescribed per patient (interquartile range 8-14) at the point of entry into The HOME Study.

Symptoms of anxiety and depression, cognitive function, and index of independent functioning were measured at entry into The HOME Study; the results are summarised in Table 12.7. The scores of those who did not receive PIPM are shown in the Appendix (Table A.5). Almost half scored ≥3 on either the Patient Health Questionnaire 2 (PHQ-2; 640/1,359 or 47%) or the Generalised Anxiety Disorder 2 (GAD-2; 581/1,359 or 43%). Cognitive function was measured using the Montreal Cognitive Assessment - Telephone version (MoCA-T). The median score on the MOCA-T was 10/22; a score of >19 is interpreted as normal cognition. Despite the notable levels of depressive and anxiety symptoms and cognitive impairment, only 5% (68 out of 1,359) were engaged with a community

mental health team at the time of randomisation to PIPM. The mean score on the Barthel Index of Activities of Daily Living was 9/20 implying a notable level of care needs prior to admission.

12.2.2.1 Psychiatric diagnoses recorded by PIPM clinicians during hospital stay

At the time of discharge from hospital the PIPM clinicians recorded all psychiatric diagnoses that were applicable to that patient during the admission, summarised in Table 12.8. Two thirds of patients (898/1,359 or 66.1%) had at least one applicable psychiatric diagnosis, which is noteworthy given that psychiatric services to general hospital inpatients typically see only around 5% of admissions(183). In over half of patients (708/1,359 or 52.1%) a diagnosis of a cognitive disorder (dementia, delirium, mild cognitive disorder, or a combination) was applicable. A third of patients (497/1,359 or 36.6%) were noted to have delirium, which is consistent with the upper limits of reported rates in similar populations(184). 10% (146/1,359) received a diagnosis of depressive disorder and one in every twenty patients (5.8% or 80/1,359) of an anxiety disorder.

The lower rates of other psychiatric disorders, such as somatoform disorders (11/1,359 or 0.8%), may reflect the patient population, i.e. prevalence of somatoform disorders decreases after the age of 65(185). It may also reflect limitations in the comprehensiveness of the diagnoses from PIPM clinicians focused on minimising unnecessary time in hospital rather than exhaustive psychiatric evaluations.

Table 12.5 Demographic characteristics of patients randomised to PIPM[b]

	Total sample (n = 1,359)	Did not receive PIPM (n = 14)
Age, years		
Mean (SD)	82 (8.2)	81 (9.4)
Median (IQR, range)	83 (76-89, 65-103)	82 (15, 69-98)
65-74 years	303 (22.3%)	5 (35.7%)
75-84 years	480 (35.3%)	5 (35.7%)
≥85 years	576 (42.4%)	4 (28.6%)
Sex		
Female	667 (49.1%)	3 (21.4%)
Male	692 (50.9%)	11 (78.6%)
Usual place of residence		
Private residence	1,237 (91.0%)	14 (100.0%)
Other	122 (9.0%)	0 (0.0%)
Ethnicity[c]		
White British	698 (51.4%)	6 (42.9%)
Other	33 (2.4%)	0 (0.0%)
Not stated	628 (46.2%)	8 (57.1%)
Relationship status		
Spouse/partner	594 (43.7%)	8 (57.1%)
No spouse/partner	765 (56.3%)	6 (42.9%)
Employment status		
Retired	1,323 (97.4%)	14 (100.0%)
Working	22 (1.6%)	0 (0.0%)
Not working (due to health)	12 (0.9%)	0 (0.0%)
Not working (other reason)	2 (0.2%)	0 (0.0%)
Living alone		
Yes	610 (44.9%)	6 (42.9%)
No	749 (55.1%)	8 (57.1%)
Residence area[d]		
Urban	785 (57.8%)	9 (64.3%)
Rural	574 (42.2%)	5 (35.7%)
Deprivation index quintiles[e]		
4 (least deprived)	454 (33.4%)	6 (42.9%)
3	402 (29.6%)	2 (14.3%)
2	307 (22.6%)	2 (14.3%)
1	157 (11.6%)	4 (28.6%)
0 (most deprived)	39 (2.9%)	0 (0.0%)

[b] Data are number (%) unless otherwise indicated. Percentages do not always sum to 100 due to rounding

[c] Ethnicity was not routinely recorded at one of the three NHS Trusts in The HOME Study

[d] Based on census data, areas (small groups of post codes) with a population of over 10,000 people are counted as urban, all other areas are rural. Further information available at: https://www.ons.gov.uk/census/2001censusandearlier/dataandproducts/outputgeography/outputareas last accessed 16/07/2020

[e] The deprivation index is a composite measure of relative deprivation at a small local area. It is based on seven separate measures: Income, Employment, Education and Skills and Training, Health and Disability, Crime, Barriers to Housing and Services, Living Environment. Further information available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/853811/IoD2019_FAQ_v4.pdf last accessed 16/07/2020

Table 12.6 Clinical characteristics of patients receiving PIPM[f]

	Total sample (n = 1,359)
Reason for hospital admission	
Symptoms and signs involving the circulatory and respiratory systems	364 (26.8%)
General symptoms	301 (22.2%)
Falls and injuries	188 (13.8%)
Symptoms and signs involving the digestive system and abdomen	159 (11.7%)
Symptoms and signs involving cognition, perception, emotional state and behaviour	144 (10.6%)
Symptoms and signs involving the urinary system	89 (6.6%)
Symptoms and signs involving the skin and subcutaneous tissue	67 (4.9%)
Abnormal investigation findings	26 (1.9%)
Symptoms and signs involving the nervous and musculoskeletal systems	21 (1.6%)
Multimorbidity (Patients with at least one diagnosis in the following bodily systems on admission)[g]	
Circulatory system	959 (70.6%)
Endocrine, nutritional and metabolic disease	524 (38.6%)
Genitourinary system	415 (30.3%)
Musculoskeletal system and connective tissue	407 (30.0%)
Respiratory system	394 (29.0%)
Mental and behavioural disorders	380 (28.0%)
Neoplasms	333 (24.5%)
Digestive system	317 (23.3%)
Nervous system	247 (18.2%)
Eye and adnexa	155 (11.4%)
Blood and blood-forming organs and disorders of immune mechanisms	125 (9.2%)
Skin and subcutaneous tissue	76 (5.6%)
Certain infectious and parasitic diseases	57 (4.2%)
Injury, poisoning and certain other consequences of external causes	53 (3.9%)
Ear and mastoid process	45 (3.3%)
Congenital and chromosomal abnormalities	8 (0.6%)
Number of diagnoses per patient	
Mean (SD)	5.8 (3.2)
Median (IQR, range)	5 (4-8, 0-24)
Number of medications per patient	
Mean (SD)	11.4 (5.2)
Median (IQR, range)	11 (8-14, 1-36)

[f] Data are number (%) unless otherwise indicated. Percentages do not always sum to 100 due to rounding

[g] Using ICD-10 classifications, available at: https://icd.who.int/browse10/2019/en last accessed 14th August 2020

Table 12.7 Psychiatric characteristics of patients receiving PIPM

	Total sample (n = 1,359)
Depressive symptoms score (PHQ-2, 0-6)[h]	
Mean (SD)	2.6 (2.1)
Median (IQR, range)	2 (1-4, 0-6)
Score ≥3	640 (48.6%)
Anxiety symptoms score (GAD-2, 0-6)[i]	
Mean (SD)	2.5 (2.2)
Median (IQR, range)	2 (0-4, 0-6)
Score ≥3	581 (43.8%)
Independent functioning score (Barthel Index, 0-20)	
Mean (SD)	9.3 (5.7)
Median (IQR, range)	9 (5-14, 0-20)
Cognitive function score (MoCA-T, 0-22)[j]	
Mean (SD)	9.5 (6.2)
Median (IQR, range)	10 (5-15, 0-22)
Receiving follow-up from Community Mental Health Team at time of admission	
No	1,291 (95.0%)
Yes	68 (5.0%)

[h] N = 1,316 as PHQ-2 data not available for 43 patients
[i] N = 1,327 as PHQ-2 data not available for 32 patients
[j] N = 1,227 as MoCA-T data not available for 132 patients

Table 12.8 Psychiatric diagnoses applicable during hospital stay of patients receiving PIPM[k]

All current psychiatric diagnoses for each patient	Total sample (n = 1,359)
Patients with psychiatric diagnoses during PIPM delivery	
None	461 (33.9%)
One or more	898 (66.1%)
Number of current psychiatric diagnoses per patient	
0	461 (33.9%)
1	568 (41.8%)
2	293 (21.6%)
3	32 (2.5%)
4	5 (0.4%)
The percentage of patients with the following ICD-10 diagnoses:[l]	
Cognitive disorders (F0x)	708 (52.1%)
Delirium without dementia	295 (21.7%)
Dementia without delirium	168 (12.4%)
Dementia with delirium	165 (12.1%)
Mild cognitive disorder without delirium	43 (3.2%)
Mild cognitive disorder with delirium	37 (2.7%)
Other cognitive disorders	19 (1.4%)
Depressive disorders (F32, F33)	146 (10.7%)
Severe depressive episode	6 (0.4%)
Moderate depressive episode	87 (6.4%)
Mild depressive episode	11 (0.8%)
Other/not stated depressive episode	45 (3.3%)
Anxiety disorders (F41)	80 (5.9%)
Generalised Anxiety Disorder	37 (2.7%)
Mixed anxiety and depressive disorder	20 (1.5%)
Panic disorder	13 (1.0%)
Other/unspecified anxiety disorder	13 (1.0%)
Substance use disorders (F1x)	55 (4.0%)
Stress and adjustment disorders (F43)	23 (1.7%)
Schizophrenia and delusional disorders (F2x)	15 (1.1%)
Somatoform disorders (F45)	11 (0.8%)
Intellectual disability (F70-F79)	8 (0.6%)
Personality disorders (F60)	7 (0.5%)
Bipolar affective disorder and hypomania (F30, F31)	7 (0.5%)
Other psychiatric diagnoses	21 (1.5%)

[k] Data are number (%) unless otherwise indicated. Percentages do not always sum to 100 due to rounding

[l] Each patient could have more than one psychiatric diagnosis so numbers do not add to 1,359

12.3 Effectiveness

12.3.1 Patients' and carers' positive and negative experiences of PIPM

26 patients who received PIPM, and 18 carers of patients who received PIPM, were interviewed about their experiences of PIPM. The themes arising from analysis of the interviews are listed in full the Appendix (Table A.6 and Table A.7), along with the contributing codes and example quotations.

Positive themes that arose from the patient interviews were that the patients (1) valued therapeutic relationships with PIPM clinicians, (2) valued the interest PIPM clinicians had in patients as people, (3) found practical contributions by PIPM clinicians helpful, and (4) the PIPM clinicians helped patients understand their care. Positive aspects of the therapeutic relationship patients referred to included: time spent together, regularity of contact, and having an opportunity to talk, including about things they would not otherwise have talked about.

"*...the professional contact...was very reassuring*." (Patient 21)

Patients reported valuing the feeling that PIPM clinicians were interested in patients as people, and involved them in discussions about their care.

"…[PIPM Clinician] *was enquiring things of me rather than the others* [who] *were telling me things*" (Patient 9)

Patients also found the practical contributions PIPM clinicians made to their care helpful, for example in arranging psychiatric follow-up and ensuring all discharge arrangements were in place.

"...*they made sure they'd done everything to set everything in place*." (Patient 4)

Finally, patients reported that the PIPM clinicians helped them understand their care better.

"*So I did actually find that quite nice to be able to have somebody to talk to just to check up on what I had actually been told as to what I had imagined I'd be told*." (Patient 3)

Positive themes that arose from the carer interviews were: (1) carers found practical contributions by PIPM clinicians helpful, (2) carers appreciated communication with PIPM professionals, and (3) carers valued the interest PIPM clinicians had in patients as people. The first and third themes reflected the reported patient experiences, for example arranging psychiatric follow-up and being interested in the patient as a person.

"…they tried to very much engage her in her own care and in her own decision making" (Carer 6)

The second theme reflected an appreciation of being kept informed and a reported increase in confidence felt by carers that the patient was being looked after.

"*I think it built a little bit of confidence in us that...people were looking after him*" (Carer 18)

The main negative theme that emerged from the interviews with patients was that not everyone found the additional clinical contact helpful. Some patients did not like the perceived focus on their mental state.

"...*I was not in there to...talk about or...be treated for my mental state. I was in there because I had fallen down the stairs*..." (Patient 16)

Others were unsure of the role of PIPM in their care.

"…*I mean I still don't know to this day what it was for, was it to examine how I, how I felt emotionally about been [sic] in hospital?"* (Patient 6)

Others felt that the addition of PIPM meant too many people were involved in the patient's care.

"...*you've got a lot of medical people coming to see you and it was...very confusing as to who was who*." (Patient 25)

No negative themes arose from the interviews with carers.

12.3.2 Ward professionals' positive and negative experiences of PIPM

55 professionals from wards where PIPM was delivered were interviewed about their experiences of PIPM. The themes arising from analysis of the interviews are listed in full in the Appendix (Table A.8), along with the contributing codes and example quotations. Positive themes were (1) valuing the therapeutic relationship PIPM clinicians had with the patients, (2) welcoming the focus on discharge, (3) finding PIPM clinicians practical contributions helpful, (4) valuing the PIPM clinicians' psychiatric expertise, (5) appreciating the integration of PIPM with ward professionals, (6) feeling PIPM is different from usual psychiatric services, and (7) valuing the biopsychosocial approach.

Positive aspects of the therapeutic relationship the ward professionals described valuing included: the time PIPM clinicians spent with patients and their families, support provided by PIPM clinicians to families, PIPM clinicians talking to patients about their feelings and concerns and having conversations other professionals would not have, and the regular contact they had with patients.

"*It's, it's finding out what's really going on with somebody, so I think that's hopefully been helpful and scared, lonely, ill people in hospital love talking to people - why wouldn't you? And I think that's incredibly powerful, to have people who have at least got a bit of time to talk to people*." (W65, Consultant Physician)

"...*you have conversations that we don't have, as we're not, we don't have the time...it's really useful*…" (W21, Nurse)

Ward professionals reported feeling that PIPM motivated patients to take part in rehab, improved their confidence, and helped patients stay independent. Practical contributions were appreciated by the ward professionals, including help managing patients with complex needs and facilitating discharges, as well as seeing patients and their families jointly and providing a second opinion.

"...*often it's nice to have another - it's almost like having a second opinion as well, they come in, scrutinize the care that's been done, ask about why things haven't been done, or, or think about their sort of psychological wellbeing as well, which maybe someone has missed. And I think that's - yeah, really, really positive part of it*." (W49, Junior Doctor)

"...*they also give me some recommendation which I think they're quite useful*…" (W20, Nurse)

"...*I think the time that the psychiatry team spend, erm, speaking to relatives or carers and the collateral history that they get, erm, is always thorough and helpful*…" (W32, Consultant Physician)

Ward professionals valued having psychiatric expertise, particularly senior expertise, and the ability to identify psychological problems other clinicians could miss.

"...*they get more information, they're kind of, you know like medical so you get more information from the GP as well and uh different community mental health teams as well so...those information's, gathered information's, are really really* [sic] *helpful for us to make that decision on discharge planning*." (W27, Discharge coordinator)

"...*so the real difference with this study for me has been the number of consultants that I've met or got to know here, day in, day out really, and it's that knowledge that you can ask questions about things and I suppose from the training perspective you learn from them, but also it just makes the patient flow much better*." (W37, Junior Doctor)

PIPM clinicians integrating with the ward professionals was appreciated.

"...*I think people feel a lot more confident just to go and ask them a question and sort of say, you know, 'I've got this patient'…they're on the ward and because they are part of the MDT now, people just feel a lot more confident to ask those questions*..." (W33, Nurse)

Ward professionals experienced PIPM as different to usual liaison psychiatry, for example seeing patients the usual service would not, and seeing patients earlier.

"...*so that's what really good about the [PIPM model] is picking up people who wouldn't normally come anywhere near psych liaison*…" (W45, Physiotherapist)

Ward professionals also commented on PIPM using a biopsychosocial approach, which by example encouraged others to do the same and be more holistic.

"...*it probably also provides...a good nudge sometimes for the clinicians to think more in terms of...biopsychosocial model rather than just biomedical which I guess we're guilty of doing sometimes*…" (W61, Junior Doctor)

The negative themes about PIPM expressed by ward professionals interviewed was an experience of not finding additional clinical input helpful, mirroring the negative themes that emerged from the patient interviews. Some felt that PIPM generated extra work for them, and that the individual professional roles on the ward had become blurred.

"...*sometimes it feels like it's doubling our workload rather than reducing it*." (W22, Junior Doctor)

"…*sometimes it feels like they are trying to do all the jobs of the MDT rather than be focusing on the psychological aspects of it…I think there has been a blurring of what...they're trying to do*…" (W22, Junior Doctor)

There were some reports from ward professionals that they had experienced confusion in communication with patients, particularly with a feeling that "too many people" were involved in their care, again echoing a negative theme from the patient interviews.

"...*it becomes a little bit more confused because there is too many people involved in... trying to organise that patient's discharge*." (W30, Physiotherapist)

Other ward professionals' experiences included a fear that staff may become deskilled if they did not have to manage the more routine psychiatric problems themselves.

"...*I think there is a risk of...confidence or capability or willingness of acute generalists to fall if those* [PIPM clinicians] *are taking on much of that activity. So that a bit of a balance, but I wouldn't want generalists to back off from managing psychological issues...as a result of an intervention such as this*." (W29, Consultant Physician)

A number of ward professionals expressed scepticism that every patient would benefit from seeing a PIPM clinician.

"...*I felt like our patient cohort already got a good service in terms of looking at their physical and mental health...I'm not convinced that it's supplemented the care that they're already getting."* (W47, Occupational Therapist)

12.3.3 PIPM clinicians' positive and negative experiences of delivering PIPM

All 15 clinicians who delivered PIPM were interviewed about their experiences. The themes and contributing codes with example quotations are listed in full in the Appendix (Table A.9). Their positive experiences could be grouped into two main themes: (1) their experience of practicing PIPM was better than their experience of usual liaison psychiatry, and (2) a feeling of bringing a psychotherapeutic presence to the ward.

Some PIPM clinicians reported feeling more responsibility for the patients compared to their usual role.

"...*one of the nice things about it, is that you do feel like...can make a difference...and it's tangible at times*…" (PIPM10, Assistant)

Other reported experiences included feeling more involved in patient care, having less unnecessary administration to complete, and that they were making more of a difference for patients.

"...superficially it looks like you're just doing psychiatry, but… eventually you will realise it is a radically new approach because you are seeing patients proactively, as in they haven't been referred, no-one is asking you to get involved. That puts a different emphasis on the relationships you have to build with the ward teams. And you have to think about the patients in a totally new way." (PIPM12, Consultant)

PIPM clinicians believed they had conversations with patients that other ward professionals did not, a view that also emerged from the ward professionals' interviews.

"...we're quite good at getting in there with tricky situations that nobody wants to touch, then I think that's when people start to think that we have a use." (PIPM6, Consultant)

Some PIPM clinicians also said that they felt their presence on some of the busy acute wards helped improve patient-centred care at times.

"...*the other thing is that I think that one brings compassion to the general hospital ward in a way that it's distinctly lacking*." (PIPM14, Consultant)

The negative theme expressed by PIPM clinicians were potential downsides to PIPM, many of which were similar to those reported by the ward professionals. PIPM clinicians felt that both they and ward professionals might become de-skilled; PIPM clinicians in managing acute psychiatric problems and ward professionals in managing basic psychiatric problems.

"...*there's a risk that you become deskilled in your work with more acute erm psychiatric problems so I think there's got to be a balance*…" (PIPM7, Assistant)

"...*one of the worries...is that you de-skill people who would otherwise be managing these things*…" (PIPM13, Assistant)

Some PIPM clinicians had experienced, as extra clinicians on the ward, how their role could overlap with those of other professionals.

"...*our roles overlap with other team members...so there's a risk of feeling that you're either stepping on peoples' toes, you're duplicating work*…" (PIPM7, Assistant)

This is reminiscent of patients reporting confusion over who was who, and ward professionals' worries about blurring of roles and unclear decision making processes.

PIPM clinicians worried their presence might increase the burden on the patients and their families, for example, by repeating history taking.

"...*one of the things we've been doing a lot was doing a collateral history which had been done by the OT and it would be the same questions for the family to answer and then it's quite tiresome for the families and the patients, 'cause we ask the same questions. However, I think that lately we've been trying to communicate a little bit more with the team to make sure we don't call the family to ask the same questions...*" (PIPM72, Assistant)

Similarly, PIPM clinicians also worried about creating more work for colleagues in the community.

"*There's a possibility that you could create more work by identifying more* [problems]…" (PIPM13, Assistant)

Finally, PIPM clinicians commented that they experienced difficulty delivering PIPM on a part-time, or irregular, basis, emphasising the importance of continuity of care in delivering PIPM.

"*I think it needs to be one person seeing the same patients on a regular basis, otherwise it simply doesn't work – you can't pick up all the intricacies and nuances that exist around the the* [sic] *factors preventing them from getting out of hospital*…" (PIPM13, Assistant)

12.4 Adoption

12.4.1 Settings where PIPM was delivered

PIPM was delivered at three hospitals, one in each of Cambridge, Exeter, and Oxford, covering the populations of the respective cities and surrounding rural areas (Table 12.9). Each of the three hospitals accepted acute admissions via their emergency department or emergency assessment units. Two other hospitals were approached to participate in the trial; Horton General Hospital in Oxfordshire, and Queen Elizabeth University Hospital in Glasgow. However, neither could allocate the resources to fully deliver The HOME Study, including PIPM.

PIPM was delivered on a total of 24 wards in the three hospitals. Most wards were specialist/general medical wards with some wards specialising in medicine for the elderly. PIPM was stopped in nine wards before the end of The HOME Study, either due to there not being adequate numbers of eligible patients or because the ward itself was closing for reasons unrelated to The HOME Study. PIPM clinicians reported feeling less able to affect patient care on specialist wards, such as cardiology wards, where patients tended to only have one specific medical or surgical problem and few psychological or social problems. In all three hospitals, the wards where PIPM was delivered had consistently high numbers of multimorbid, complex, medical patients.

12.4.2 The clinicians who delivered PIPM

A total of 15 different clinicians delivered PIPM; eight in the consultant role and eight in the assistant role (one clinician worked in both roles). All those working in the consultant role were consultant psychiatrists with experience of working in general hospitals. Those working in the assistant role were either senior mental health occupational therapists, trainee psychiatrists, psychiatric clinical fellows or consultant psychiatrists as shown in Table 12.10. One potential PIPM clinician was considered unlikely to attain the required skills in the adequate time after initial informal assessment and was therefore not trained. Not all clinicians who went on to deliver PIPM did so for the entire duration of The HOME Study, all due to pre-arranged commitments. However, as noted above (see section 12.3.3), some of the clinicians who delivered PIPM reported reservations about delivering PIPM permanently, mainly due to concerns about becoming deskilled in managing severe psychiatric illness.

Table 12.9 Summary descriptions of the hospitals where PIPM was delivered

Site	Description[m]
Addenbrooke's Hospital, Cambridge University Hospitals NHS Foundation Trust	University hospital with over 1,000 beds. Both district general and specialist services. Serves a population of approximately 600,000 people in south Cambridgeshire and adjoining areas. The emergency and urgent care departments see around 130,000 presentations a year.
John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust	University hospital with over 800 beds. Both district general and specialist services. Serves a population of approximately 650,000 people in south Oxfordshire and adjoining areas. The emergency and urgent care departments see around 100,000 presentations a year.
Royal Devon and Exeter Hospital, Royal Devon and Exeter NHS Foundation Trust.	District general hospital with approximately 400 bed. Provides some specialist services. Serves a population of approximately 460,000 in Exeter, east Devon, and mid-Devon. The emergency and urgent care departments see around 100,000 presentations a year.

Table 12.10 Professional backgrounds of clinicians delivering PIPM

PIPM role	Professional background	Number
Consultant	General adult/Liaison psychiatry*	4
	Older adult/Liaison psychiatry	4
Assistant	General adult/Liaison psychiatry*	3
	Mental Health Occupational Therapist	2
	Core psychiatry trainee equivalent	1
	Post core psychiatry training	2

* = One consultant in General adult/Liaison psychiatry worked in both consultant and assistant roles

[m] Data from CQC reports, available at https://www.cqc.org.uk/ last accessed 18th July 2020

12.5 Implementation

12.5.1 The seven principles of PIPM

12.5.1.1 Taking a proactive approach

Of the 1,373 patients randomised to PIPM, 1,359 (99.0%) received a Stage 1 assessment (Table 12.11). Every patient who received a Stage 1 assessment also had a Stage 2 action plan formulated.

12.5.1.1.1 PIPM clinicians experiences of working proactively

The themes describing the experiences of working proactively that emerged from interviews with the PIPM clinicians, and their constituent codes with example quotes are reported in full in the Appendix (Table A.10). Consistent with the theory of being proactive, some PIPM clinicians reported identifying more patient needs by being proactive than they generally did in the usual reactive services. Some PIPM clinicians reported uncertainty around the psychiatrist's role with some patients, a view also reported by some ward professionals (see above).

"...*you see a much wider variety of patients. We see people getting better, we see people dying, we see complicated cases that we otherwise sometimes might not see, that's been good*" (PIPM3, Consultant)

Table 12.11 Measures of delivering PIPM proactively

Measures of delivering PIPM proactively	All patients randomised to PIPM (n = 1,373)
Patients randomised to PIPM receiving Stage 1 assessment	
Yes	1,359 (99.0%)
No	14 (1.0%)
Patients randomised to PIPM receiving Stage 2 action plan	
Yes	1,359 (99.0%)
No	14 (1.0%)

Data are number (%) unless otherwise indicated

12.5.1.2 Providing care promptly

Of the 1,359 patients who received PIPM, 1,312 (96.5%) had a Stage 1 assessment completed within one day of randomisation (Table 12.12). The main reason the 47 other patients did not was due to randomisation happening on Friday afternoon and the PIPM clinicians not completing the Stage 1 assessment until the following Monday. The main reason that the number of patients not receiving a Stage 2 action plan within one day is slightly higher (54 rather than 47) is that occasionally other relevant ward professionals were not available immediately after the Stage 1 assessment was completed, so PIPM clinicians had to wait to discuss the Stage 2 action plan.

12.5.1.2.1 PIPM clinicians experiences of working promptly

When PIPM clinicians mentioned delivering PIPM promptly in their interviews, they reported finding it easier to affect patient care when involved early in their admission to the ward (see Table A.10 in the Appendix for full details).

"...*the value in it is getting involved very quickly*…" (PIPM14, Consultant)

Promptness of care was also mentioned by ward clinicians as being important.

"*So sometimes I think the horse has bolted so I think, you know within- ideally I think that the intervention would begin within 24 hours of the patient arriving in hospital."*
(W29, Medical Consultant)

Table 12.12 Measures of delivering PIPM promptly

Measures of delivering PIPM promptly	All patients receiving PIPM (n = 1,359)
Patients receiving Stage 1 assessment within 1 day of randomisation	
Within 1 day	1,312 (96.5%)
More than 1 day	47 (3.5%)
Patients receiving Stage 2 action plan within 1 day of randomisation	
Within 1 day	1,305 (96.0%)
More than 1 day	54 (4.0%)

12.5.1.3 Making a comprehensive biopsychosocial assessment

100% of patients (1,359/1,359) who received PIPM had all 12 categories considered for problems as part of their Stage 1 assessments, as indicated by completion of the relevant sections in the checklist (Table 12.13). The PIPM clinicians felt that only four out of the 1,359 patients had no problems present in any of the 12 categories. Of the 1,355 patients with a problem in at least one category, all had identified problems that were considered for whether they were impeding discharge or increasing the risk of early readmission (100.0%).

12.5.1.3.1 PIPM clinicians experiences of comprehensive biopsychosocial assessments

The PIPM clinicians interviewed reported a variety of potential beneficial experiences delivering PIPM comprehensively (see Table A.10 in the Appendix for full details). Some PIPM clinicians reported that the comprehensive assessment meant they picked up on things other clinicians missed. A consequence of being comprehensive in the assessment is that a number of the PIPM clinicians reported being more involved in both the medical and social aspects of the patients care than they were used to in their usual roles.

"...*once you get the hang of it and you kind of get going with it and you see how it works, it's quite an exciting, and I would say quite gratifying way to be practising and it feels quite good, you can quite quickly...actually have quite an impact, you can be quite focussed, you can come away after an hour, 45 minutes...you can kind of feel 'I've done a really comprehensive quick, and troubleshooting of course and focussed, but I've really given a good... wide thought to this patient and really thought about a whole lot of things, and it's stretched what I would normally come up with'... I think it's quite gratifying*" (PIPM8, Consultant)

"...*one of the positives of [PIPM] is being able to bring that and help, help the ward as a whole, seeing the patient from a more holistic point of view*" (PIPM15, Assistant)

Table 12.13 Measures of delivering PIPM comprehensively

Measures of delivering PIPM comprehensively	
All categories considered for problems (n = 1,359)	
Yes	1,359 (100.0%)
No	0 (0.0%)
Consideration of whether each problem present is impeding discharge or increasing risk of readmission (n = 1,355)	
Yes	1,355 (100.0%)
No	0 (0.0%)

12.5.1.4 Focusing on a clear goal

Of the 1,359 patients who received PIPM, PIPM clinicians discussed discharge planning for 94% of patients (1,277/1,359; see Table 12.14). They discussed discharge planning with the ward team for over 90% of patients (1,233/1,359), and the patient (1,061/1,359 or 78.1%) and/or family (742/1,359 or 54.6%) in the majority of cases.

12.5.1.4.1 PIPM clinicians experiences of focusing on a clear goal

PIPM clinicians' experiences of focusing on a clear goal are detailed in full in the Appendix Table A.10. A number of clinicians experienced frustration at focusing solely on problems affecting discharge and found that it was important to have a senior clinician involved to balance the risks and benefits of discharge.

"...*sometimes the presence of the psychiatric disorder if it's not preventing discharge, we're not there to fix it and that's a, that's a bit of a frustration*…" (PIPM6, Consultant)

"...*we are able to take a lot more in terms of positive risks, which I don't think any other band* [seniority of clinician] *would be able to do*." (PIPM3, Consultant)

Table 12.14 Measures of delivering focused PIPM

Measures of focused delivery of PIPM	Total sample (n = 1,359)
Focused discharge planning by PIPM clinicians:	
Yes	1,277 (94.2%)
No	82 (6.0%)
Details of focused discharge planning with:	
Ward team	1,233 (90.7%)
Patient	1,061 (78.1%)
Family/informal support	742 (54.6%)
Other acute hospital staff	397 (29.2%)
Other out-of-hospital professionals	129 (9.5%)
Carers and accommodation staff	113 (8.3%)

Data are number (%) unless otherwise indicated. Percentages do not always sum to 100 due to rounding

12.5.1.5 Integrating with the clinical team

PIPM clinicians had a discussion with the ward team as part of the Stage 1 assessment regarding 1,314 of the 1,359 patients they saw (96.7%) (Table 12.15). The Stage 2 action plan was discussed with at least one member of the wider ward team for 1,307 patients (96%). The action plan was discussed with the medical team and nursing team in 90% (1,221/1,359) and over two thirds of patients (952/1,359) respectively. The action plan was discussed with the therapy team for over half of patients (726/1,359 or 53.6%).

12.5.1.5.1 PIPM clinicians experiences of integrating with the clinical team

PIPM clinicians' experiences of some of the benefits of integrating with the clinical team varied from feeling part of the team to still feeling separate (see Table A.10 in the Appendix for full details). Interestingly, some PIPM clinicians reported that being integrated into the ward team resulted in them taking on the role of therapist to the ward, for example providing informal psychological support and insights to other ward staff.

"*You're really part of the ward community...you're there as a visitor in usual care, you're there as part of the team in* [PIPM]" (PIPM7, Assistant)

"*I've got to know staff in a way that perhaps I wouldn't have done before*" (PIPM6, Consultant)

"...*we're still mental health professionals working in an acute hospital and we're not members of that hospital…*" (PIPM10, Assistant)

Table 12.15 Measures of delivering integrated PIPM

Measures of delivering integrated PIPM	**(n = 1,359)**
PIPM clinicians discussed with rest of ward team during initial biopsychosocial assessment	
Yes	1,314 (96.7%)
No	45 (3.3%)
Action plan discussed with wider ward team	
Yes	1,307 (96.2%)
No	52 (3.8%)
Action plan discussed with team:	
Medical team	1,221 (89.9%)
Nursing team	952 (70.1%)
Therapy team	729 (53.6%)
Social work team	262 (19.3%)
Other	52 (3.8%)

Data are number (%) unless otherwise indicated. Percentages do not always sum to 100 due to rounding

12.5.1.6 Providing intensive interventions

Of the 1,359 patients who received PIPM, 924 (68.0%) received PIPM every working weekday they were in hospital. When including patients where the PIPM clinicians only missed one day of PIPM, that figure increased to 1,307/1,359 (96.1%) (Table 12.16). Most days when PIPM was not delivered when it should have been were towards the end of admissions when there was a less acute change in the discharge plans. PIPM clinicians missed 11 days of PIPM for one patient who was transferred to another acute hospital to await nursing home placement. They missed 10 days of PIPM in another patient who was being medically optimised for surgery and the PIPM clinicians could find no ongoing psychosocial problems.

12.5.1.6.1 PIPM clinicians experiences of providing intensive interventions

PIPM clinicians' reported experiencing a number of potential benefits to providing intensive interventions (see Table A.10 in the Appendix for full details). The daily review in PIPM is notably different from most psychiatric services so it is interesting that some PIPM clinicians reported that daily reviews increased the accuracy of their assessments compared to one-off assessments. In addition, some PIPM clinicians felt intense delivery of PIPM allowed them to make lots of little changes to patient management which cumulatively had an important beneficial effect on outcomes.

"*Knowing what's happening day to day probably does make a really big difference because you can set a plan up one day and if you then go back to it three days later, if it's gone off track...well it's hard to pick up on those difficulties if you're only going back to these things very infrequently*." (PIPM7, Assistant)

"*...it's very rewarding seeing the patients day to day…*" (PIPM15, Assistant)

"*...what you learn...is that cross sectional assessments can be very inaccurate, and having the chance to see people on a daily basis, you form a better picture of them and a better sense of their mental state...and I think when someone comes into the hospital in extremis, commenting on their...mood, on the presence or absence of a mood disorder, on the presence or absence of an anxiety disorder, I think it's quite easy to get it wrong...*" (PIPM13, Assistant)

Table 12.16 Measures of delivering PIPM intensively

Measures of delivering PIPM intensively	**(n = 1,359)**
Patient reviewed every working weekday	
Yes	924 (68.0%)
No	435 (32.0%)
Number of days PIPM wasn't delivered when it should have been	
0	924 (68.0%)
1	383 (28.18%)
2	41 (3.02%)
3	7 (0.52%)
4	1 (0.07%)
5	1 (0.07%)
≥6	2 (0.14%)

12.5.1.7 Ensuring the systematic delivery of PIPM

A checklist was completed in full for all 1,359 patients who received PIPM (Table 12.17). Inconsistent assessments and management were observed in the initial pilots and were potential limitations in the trials identified in the systematic review detailed in this thesis (Chapters 2-4). To mitigate the risk of this happening in the delivery of PIPM during The HOME Study, a checklist was created as well as service manual, as described in Chapters 8-10.

12.5.1.7.1 PIPM clinicians experiences of systematic delivery

PIPM clinicians reported valuing working in a systematic manner (see Table A.10 in the Appendix).

"'*it's quite a good way of of of* [sic] *us doing what we should be doing in a way, in a more disciplined way…*" (PIPM11, Consultant)

Table 12.17 Measures of delivering PIPM systematically

Measures of systematic delivery of PIPM	**(n = 1,359)**
100% completion of checklist	
Yes	1,359 (100.0%)
No	0 (0.0%)

12.5.2 The four stages of PIPM

12.5.2.1 Stage 1: Comprehensive biopsychosocial assessment and problem list

Stage 1 is a consultant-led comprehensive biopsychosocial assessment aiming to create a list of all the patient's biomedical, psychiatric, psychological, or social problems. The assessment should be done as soon as possible after admission to the ward. Of all 1,359 patients seen by PIPM, 1,357 had a consultant-led assessment (99.9% of assessments; Table 12.18). For two patients who were assessed by the assistant, the consultant was unavailable.

The mean time from admission to the ward to completion of Stage 1 was 2.8 days. The delay from ward admission to assessment was mainly due to the time taken for recruiters for The HOME Study to screen, approach, and recruit the patients (a process which only started after admission to the ward). As shown in Figure 12.1, delays of four days or more were uncommon. The time from admission to the hospital to admission to the PIPM ward was a median of 1 day (see Appendix Table A.11 and Figure A.1 for distribution). Once patients were randomised to PIPM, almost all Stage 1 assessments took place within one day (1,318/1,359 or 97%; see Appendix Figure A.2 for distribution). The distribution of times from hospital and ward admission to completion of Stage 1 are shown in the Appendix Figures A.3 and A.4.

The median time that consultants spent on the Stage 1 assessment was 30 minutes (IQR 20-40). The median time that assistants spent on Stage 1 was five minutes. The Stage 1 assessment requires PIPM clinicians to look for problems in 12 broad biopsychosocial categories, described in Table 12.19. For each patient, the PIPM clinician(s) recorded whether a problem was present or not in each category. Following the comprehensive assessment, PIPM clinicians were then required to decide whether the problem(s) they had identified posed a risk of either impeding the patient's

discharge or increasing the risk of the patient being re-admitted early, i.e. within 30 days of randomisation.

Only 17 of the 1,359 patients randomised to PIPM were found to have no problems impeding discharge, and were therefore due for discharge on the day of the initial assessment (see Figure 12.2). Two thirds of patients (918/1,359, or 67.5%) had problems impeding discharge in three or more categories as shown in Figure 12.3 and Table 12.20. For example, 1,089 patients had acute medical problems impeding discharge, whilst only 14 had medical problems identified by the PIPM clinicians which were not impeding discharge.

Table 12.18 Rate of completion and time taken for the Stage 1 comprehensive biopsychosocial assessment in PIPM

	Total sample (n = 1,359)
Consultant-led Stage 1 completed	
Yes	1,357 (99.9%)
No	2 (0.1%)
Time from ward admission to Stage 1[n], days	
Mean (SD)	2.8 (1.7)
Median (IQR, range)	2 (2-4, 0-10)
Consultant time spent on Stage 1, minutes	
Mean (SD)	31.5 (13.5)
Median (IQR, range)	30 (20-40, 0-120)
Assistant time spent on Stage 1	
Mean (SD)	12.0 (15.0)
Median (IQR, range)	5 (0-20, 0-80)

Data are number (%) unless otherwise indicated. Percentages do not always sum to 100 due to rounding

[n] See Appendix for Table A.11 for times from randomisation to PIPM and hospital admission to Stage 1 and Figures A.1-A.4 for the distributions of times to Stage 1 completion.

Figure 12.1 Distribution of time elapsed from admission to ward to completion of Stage 1

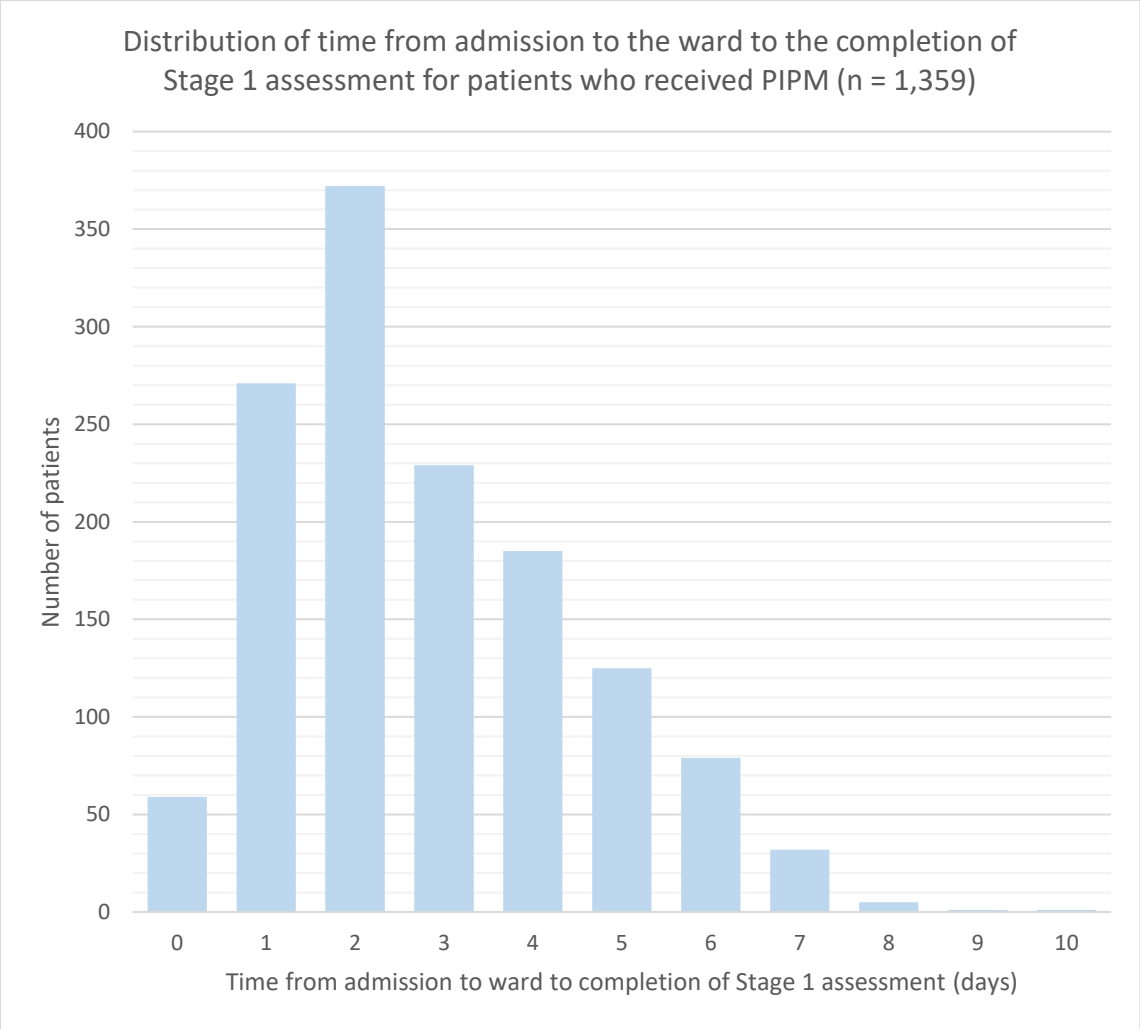


Table 12.19 Problem categories used in the Stage 1 comprehensive biopsychosocial assessment and their definitions

Problem category	Definition
Not medically safe for discharge	All active medical conditions either acute or chronic, including the presenting complaint/reason for admission, which require acute treatment in a general hospital.
Medication related problem(s)	Medication problem affecting timely discharge including non-compliance with medications, polypharmacy, side-effects, medical team concerns. Not restricted to psycho-active medications.
Sensory deficits	Any sensory impairment affecting the patient's orientation or ability to adequately engage with their management or complicating their interactions with staff.
Cognitive impairment	Any cognitive impairment, acute or chronic.
Behavioural problem(s)	Any patient behaviour that affects their care.
Substance misuse	Misuse of any substance(s).
Other psychiatric diagnoses	Any psychiatric conditions that meet diagnostic threshold(s) not included so far.
Other sub-diagnostic threshold psychological/ psychiatric problem(s)	Any psychiatric or psychological problem that does not reach diagnostic threshold(s).
Functional / mobility impairment(s)	The patient's physical dependence prior to and during the current admission.
Social needs / care needs / family concerns	Isolation, dependence in activities of daily living, patient or family concerns about the patient's ability to manage at home with their current support.
Accommodation problem(s)	Isolated or physically inappropriate accommodation, tenancy or residency problems.
Legal considerations (e.g. capacity, Power of Attorney)	Unclear capacity to make treatment or discharge decisions, no power of attorney for health matters, advanced directive.

Figure 12.2 Number of categories with a problem impeding discharge identified in the Stage 1 comprehensive biopsychosocial assessment

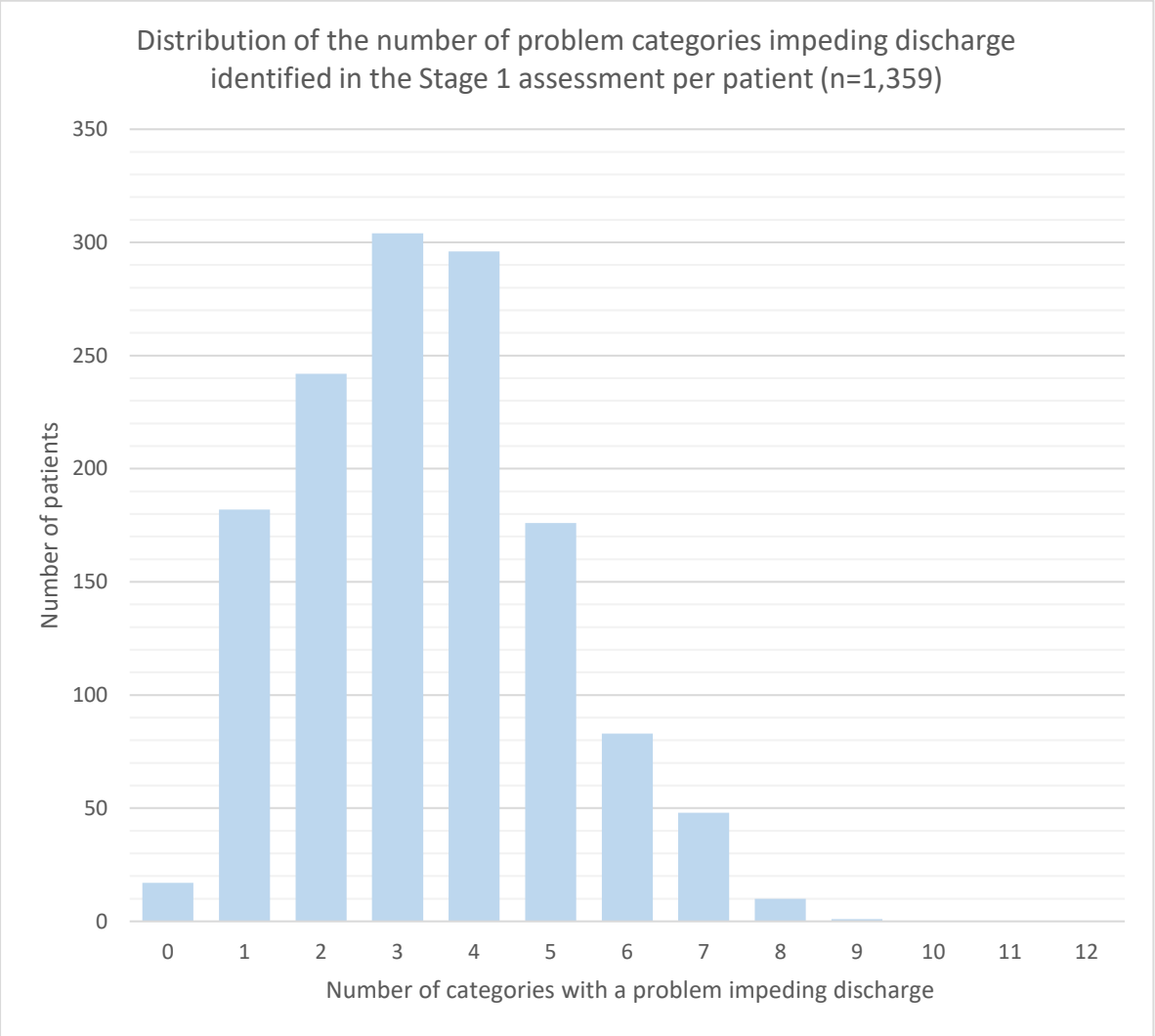


Figure 12.3 Graph showing the percentage of patients with problems impeding discharge and problems not impeding discharge in each category identified at Stage 1

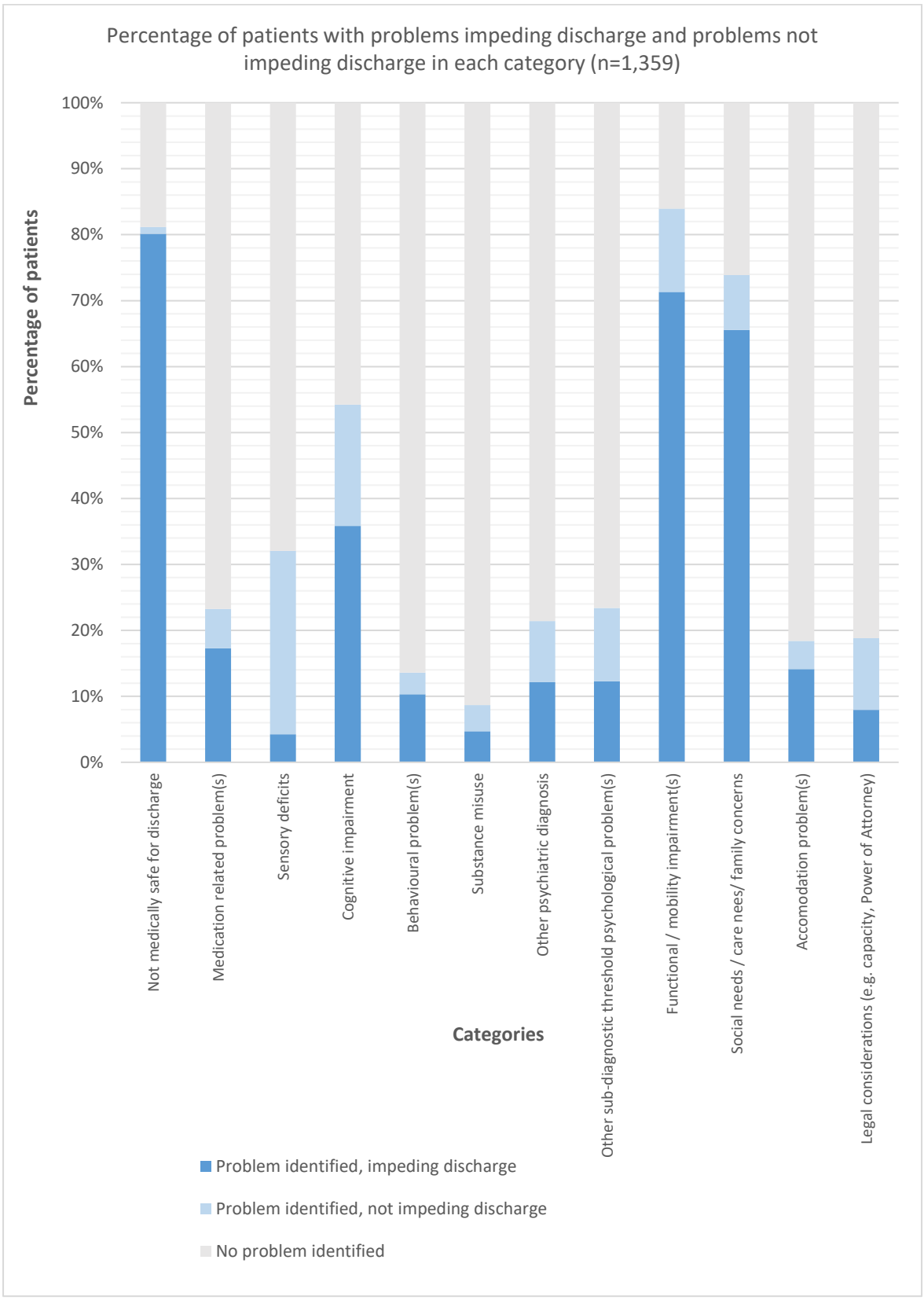


Table 12.20 Table showing the percentage of patients with problems impeding discharge and percentage of patients with problems not impeding discharge in each category identified at Stage 1

Biopsychosocial category	Problem impeding discharge (n, %)	Problem NOT impeding discharge (n, %)
Not medically safe for discharge	1,089 (80.1%)	14 (1.0%)
Medication related problem(s)	235 (17.3%)	81 (6.0%)
Sensory deficits	58 (4.3%)	378 (27.8%)
Cognitive impairment	487 (35.8%)	250 (18.4%)
Behavioural problem(s)	140 (10.3%)	45 (3.3%)
Substance misuse	64 (4.7%)	54 (4.0%)
Other psychiatric diagnoses	165 (12.1%)	126 (9.3%)
Other sub-diagnostic threshold psychological/ psychiatric problem(s)	167 (12.3%)	151 (11.1%)
Functional / mobility impairment(s)	969 (71.3%)	172 (12.7%)
Social needs / care needs / family concerns	891 (65.6%)	113 (8.3%)
Accommodation problem(s)	192 (14.1%)	58 (4.3%)
Legal considerations (e.g. capacity, Power of Attorney)	108 (7.9%)	148 (10.9%)

12.5.2.2 Stage 2: Action plan

In Stage 2 the PIPM clinicians, led by the consultant, considered the problems impeding discharge identified in Stage 1 and created an action plan to address current and potential barriers to prompt discharge, in conjunction with the wider ward team. Over 99% of Stage 2 action plans (1,351/1,359) were consultant-led (Table 12.21). For the eight patients who did not have a consultant-led action plan, this was usually due to the discharge plan already being finalised by the ward team, for example the patient was already awaiting transport for discharge that day. The median time spent by the PIPM consultant on Stage 2 was five minutes (Table 12.21) potentially reflecting the ease of action plan formulation after the comprehensive Stage 1 assessment had been recorded.

Table 12.21 Completion of the Stage 2 action plan and time taken

	Total sample (n = 1,359)
Consultant-led Stage 2 completed	
Yes	1,351 (99.4%)
No	8 (0.6%)
Time from Stage 1 to Stage 2[o], days	
Mean (SD)	0.02 (0.1)
Median (IQR, range)	0 (0-0, 0-3)
Consultant time spent on Stage 2, minutes	
Mean (SD)	7.30 (4.5)
Median (IQR, range)	5 (5-10, 0-60)
Assistant time spent on Stage 2, minutes	
Mean (SD)	1.82 (3.45)
Median (IQR, range)	0 (0-5, 0-30)

[o] See the Appendix for Table A.13 for times from randomisation to PIPM and hospital admission to Stage 2 and Figures A.5-A.7 for the distributions of times to Stage 2 completion.

12.5.2.3 Stage 3: Delivery of action plan and daily review

Stage 3 of PIPM involved delivery of the action plan, monitoring the patient's progress, and adapting the plan as required. Stage 3 was mainly delivered by the PIPM assistant clinician, with the consultant providing supervision and weekly re-assessments whilst patients remained in hospital. PIPM clinicians reviewed each patient's care every working weekday until the patient was discharged, or until 30 days after randomisation, whichever was sooner. If the PIPM clinicians were aware of any patients re-admitted within 30 days of randomisation, they continued to see the patient until discharge, or until 30 days was reached. The median assistant time spent on Stage 3 per patient was 35 minutes in total, and the median consultant time was 20 minutes in total (Table 12.22).

PIPM included a consultant-led reassessment every week that the patient remained in hospital up to 30 days from randomisation and therefore under PIPM - up to four in total (i.e. at day 7, day 14, day 21, and day 28). The rate of reassessment was similar at each week, indicating that PIPM consultant involvement was maintained throughout admission (Figure 12.4). This implies that PIPM input remained constant throughout patients' stays. It also implies that PIPM clinicians consistently did not re-review a quarter of patients when the manual stated they should. A potential reason for this is that the PIPM consultants were more involved in the day-to-day patient care than expected. This is demonstrated by consultant involvement being recorded on more days than mandated in the PIPM service manual, i.e. not just on days 7, 14, 21, and 28. Recent consultant reviews may have negated the perceived requirement for further review on specific days as determined by the number of days after randomisation. For example, for patients who had a review on day 5 or 6, consultants may have felt less compelled to see patients on day 7.

For each day the patient remained in hospital, the PIPM clinicians recorded whether a problem in the 'biological', 'psychological', or 'social' categories was impeding the patient's discharge (Figure 12.4). Problems in the 'biological' category were present for over 80% of patients on initial

assessment (1,122/1,359) and became less prevalent over time. Problems in the 'psychological' category were present for just over 40% of patients (593/1,359) initially and also became less prevalent over time. Problems in the 'social' category were similarly prevalent (1,066/1,359) early in the admission to those in the 'biological' category but increased in prevalence over the course of the admission. These findings emphasise that one off assessments may miss the longitudinal change in problem profiles for patients and that the timing of an assessment affects the likely findings.

Table 12.22 Completion of weekly reviews and time taken for daily reviews in Stage 3

	Total sample (n = 1,359)
Weekly consultant re-assessments completed (n=1,576)	
Yes	1,236 (78.4%)
No	340 (21.6%)
Consultant time spent on stage 3, minutes (n =1,359)	
Mean (SD)	30.6 (35.4)
Median (IQR, range)	20 (5-45, 0-270)
Assistant time spent on stage 3, minutes (n =1,359)	
Mean (SD)	55.4 (63.9)
Median (IQR, range)	35 (15-75, 0-505)

Data are number (%) unless otherwise indicated.

Figure 12.4 Graph showing the percentage of weekly consultant re-assessments completed in Stage 3

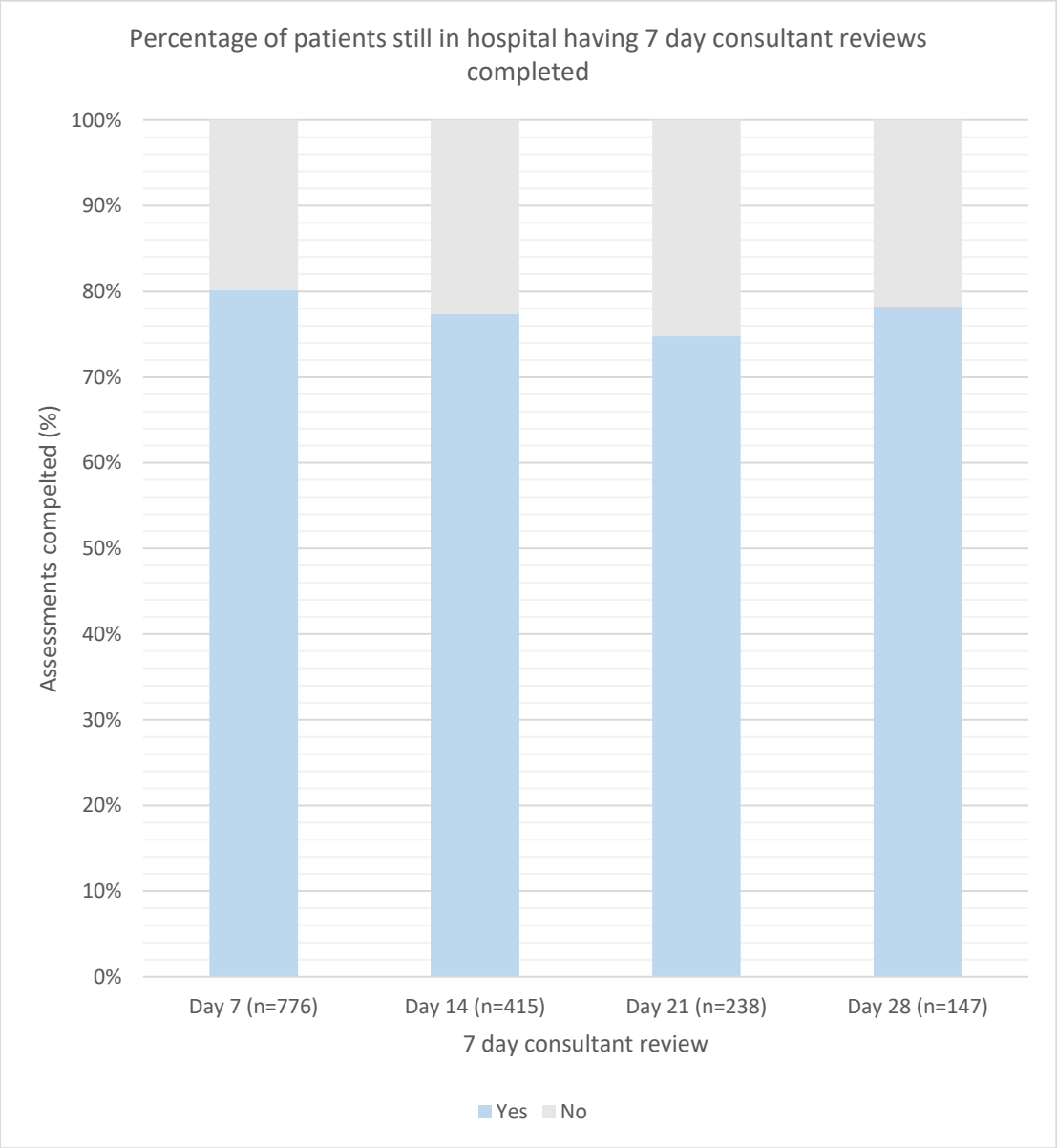
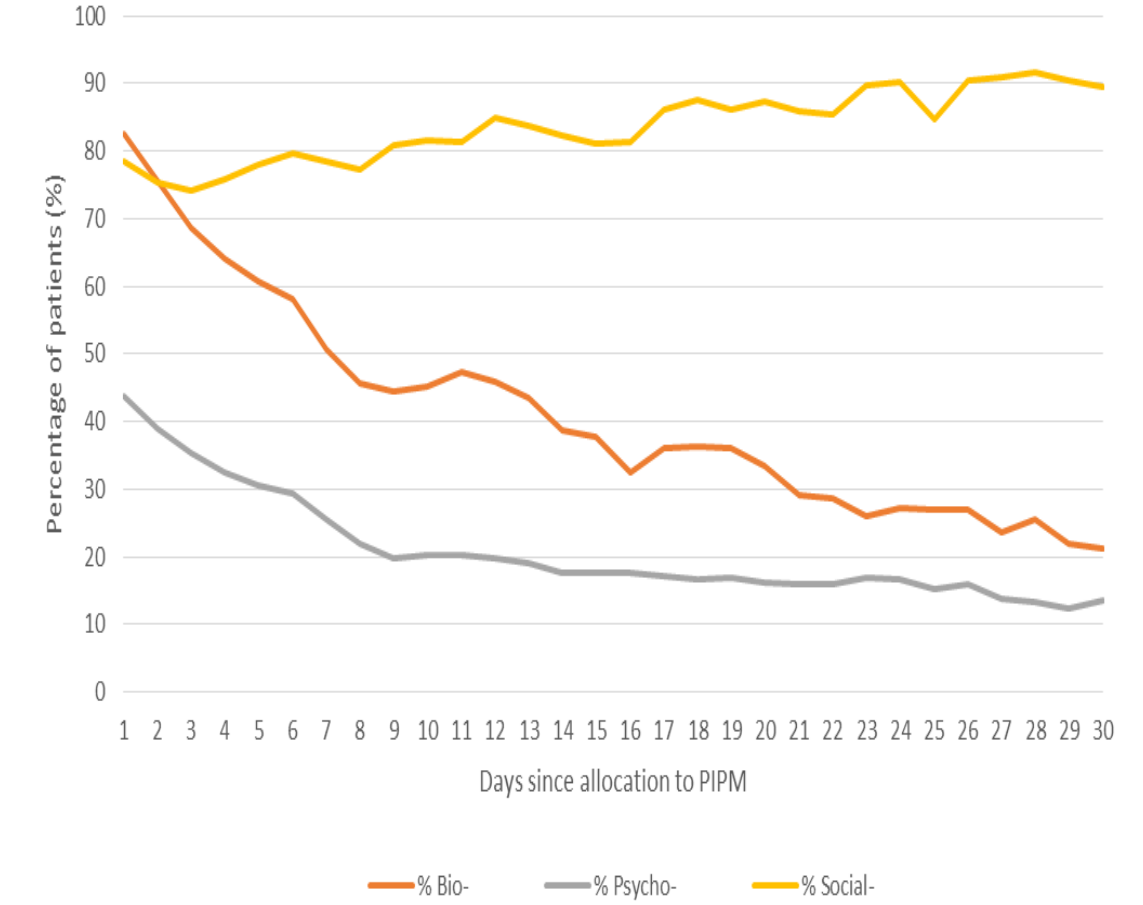
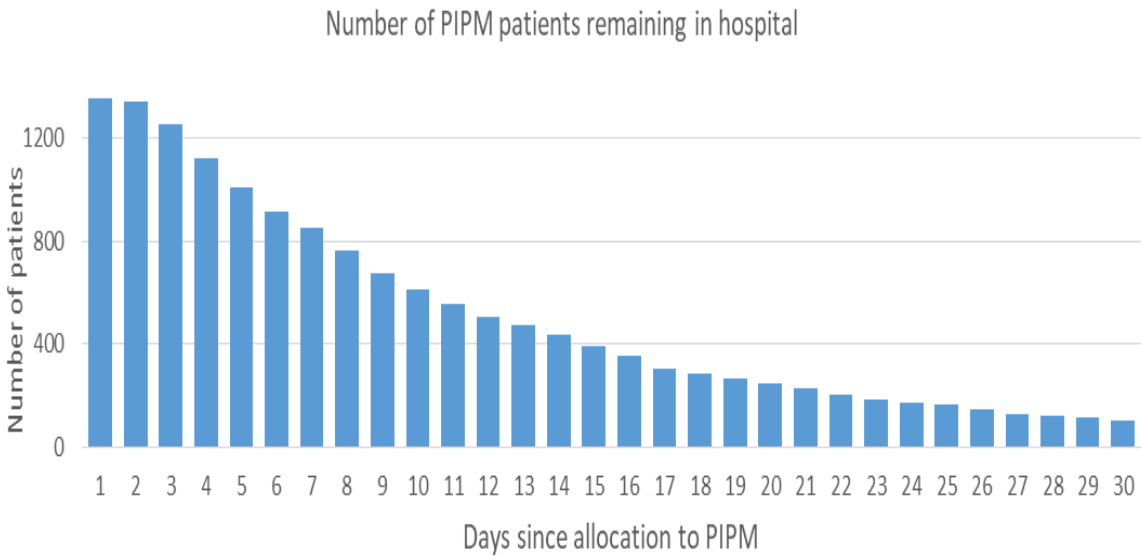


Figure 12.5 Percentage of patients with a 'biological', 'psychological', or 'social' problem impeding discharge, and total number of patients remaining in hospital, on each day following randomisation to PIPM in Stage 3





"Allocation" in figures = randomisation

12.5.2.4 Stage 4: Discharge from hospital

In Stage 4 the PIPM clinicians, led by the assistant, aimed to ensure any outstanding problems would be addressed after discharge. Routine information for the patient's GP was included in the hospital discharge summary. When additional specific advice was required, the PIPM clinicians liaised directly with the relevant professionals, by phone, letter, or e-mail. The median assistant time spent on Stage 4 was 5 minutes, reflecting that the majority of the discharge planning was done during the admission, and not left until the end of the admission (Table 12.23).

The PIPM clinicians gave specific advice to community professionals for a third of the patients (887/1,359 or 65%) they saw (Table 12.24). Specific advice to GPs was made in a quarter of patients (384/1,359 or 28%) and direct referrals to the relevant Community Mental Health Team (CMHT) were made for 7% of patients (97/1,359) (Table 12.24).

Table 12.23 Time taken by PIPM clinicians at discharge in Stage 4

	Total sample (n = 1,359)
Consultant time spent on stage 4, minutes	
Mean (SD)	1.4 (3.7)
Median (IQR, range)	0 (0-0, 0-45)
Assistant time spent on stage 4, minutes	
Mean (SD)	5.2 (3.5)
Median (IQR, range)	5 (5-5, 0-30)

Table 12.24 Advice from PIPM clinicians to community and primary care professionals in Stage 4

	Total sample (n = 1,359)
Discharge plans and specific advice given	
No specific advice	887 (65.3%)
Specific advice	472 (34.7%)
Specific advice given:	
Advice to GP	384 (28.3%)
Advice to other community healthcare professionals	90 (6.6%)
Direct referral to Community Mental Health Team	97 (7.1%)
Advice to other community non-healthcare professional	42 (3.1%)

Percentages do not always sum to 100 due to rounding.

12.5.3 PIPM clinician work done

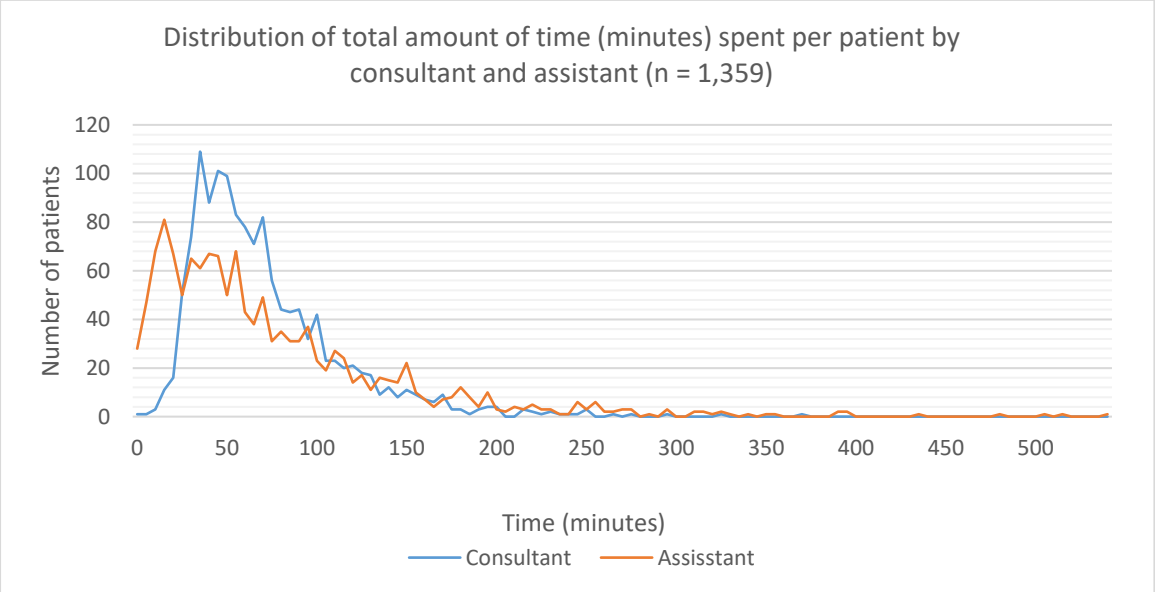
12.5.3.1 Time spent by PIPM clinicians delivering PIPM

PIPM clinicians used the checklist to record the amount of time they had spent providing advice or care for each patient during each interaction. As shown in Table 12.25 the median total time spent per patient was just under two hours (115 minutes), split roughly equally between consultant time (60 minutes) and assistant time (55 minutes). Figure 12.6 shows the distribution of total time spent per patient by both PIPM consultants and assistants.

Table 12.25 Total time spent per patient by PIPM clinicians

Total time spent per patient	Total sample (n = 1,359)
Total time spent by Consultant, minutes	
Mean (SD)	70.8 (42.1)
Median (IQR, range)	60 (40-90, 0-370)
Total time spent by Assistant, minutes	
Mean (SD)	74.3 (69.3)
Median (IQR, range)	55 (25-100, 0-540)
Total time spent by PIPM clinicians, minutes	
Mean (SD)	145.1 (100.5)
Median (IQR, range)	115 (75-190, 20-885)

Figure 12.6 Graph showing the distribution of total time spent per patient by PIPM clinicians



12.5.3.2 Work done by PIPM clinicians

After each patient was discharged, the PIPM clinicians completed a further section of the checklist summarising all the work they had done for the patient (Table 12.26). PIPM clinicians gathered information from the patients themselves (98.4% of patients, or 1,337/1,359), their hospital records (99.3% of patients, or 1,350/1,359), and the ward team (99.6% of patients, or 1,354/1,359). Primary care records were consulted for almost 90% of patients (1,211/1,359), and family or informal carers were consulted to obtain collateral information for 68.6% of patients (932/1,359). Other sources of information, such as community mental health records, or community professionals, were consulted less frequently as described in Table 12.26.

The PIPM clinicians completed mental state examinations on the majority of patients (1,252/1,359 or 92.1%); interestingly they also completed relevant physical examinations on a quarter of patients (348/1,359 or 25.6%). The PIPM clinicians delivered direct therapeutic interventions to almost half of the patients reviewed (6223/1,359 or 45%). They also delivered therapeutic interventions to the ward staff looking after a patient randomised to PIPM in 6.6% of cases (89/1,359); for example, psychological supervision for ward team members dealing with stressful patient-family-staff interactions.

Giving advice to the ward team on medications (623/1,359 or 46% of patients), psychiatric diagnoses (825/1,359 or 61% of patients), and environmental optimisation (633/1,359 or 47% of patients) was common. Advice on mental health legislation (86/1,359 or 6% of patients) and safeguarding (26/1,359 or 2% of patients) was less frequently given. This observation may reflect the eligibility criteria for the trial which excluded patients who had already been referred to the usual care psychiatric service as such referrals would mostly commonly be for acute behavioural disturbance and advice on the use of legislation and safeguarding.

PIPM clinicians stayed involved in the patient's care throughout admission (up to 30 days from randomisation to PIPM) and had regular contact with the ward team after the initial patient assessment (1,252/1,359 or 92% of patients). However, the PIPM clinicians requested almost no contact with usual care psychiatry services in the hospital for further specialist advice (10/1,359 or 0.7%) or attention from those services out-of-hours (8/1,359 or 0.6%). This finding may reflect the trial sample (i.e. the inclusion of potentially fewer acute psychiatrically unwell patients) but this could also be a consequence of intensive proactive psychiatric care leading to fewer emergencies.

Table 12.26 Work done by PIPM clinicians for each patient during admission

Work done by PIPM clinicians	Total sample (n = 1,359)
Information gathered from:	
Ward team	1,354 (99.6%)
Acute hospital records	1,350 (99.3%)
Patient	1,337 (98.4%)
Primary care records	1,211 (89.1%)
Family/informal support	932 (68.6%)
Community mental health records	526 (38.7%)
Other professionals (e.g. social workers)	164 (12.1%)
Other acute hospital staff including usual care psychiatry	138 (10.2%)
Carers and accommodation staff	128 (9.4%)
Primary care staff	71 (5.2%)
Other professional records	34 (2.5%)
Community mental health team	31 (2.3%)
Examinations and assessments completed:	
Mental state examination	1,252 (92.1%)
Relevant physical examination	348 (25.6%)
Direct therapeutic interventions with:	
Patient	623 (45.8%)
Family/carer(s)	314 (23.1%)
Patient jointly with ward team member(s)	124 (9.1%)
Ward team members	89 (6.6%)
Advice to ward team about:	
Psychiatric diagnoses	825 (60.7%)
Environmental and functional optimisation	633 (46.6%)
Medications	627 (46.1%)
Psychological and behavioural interventions	554 (40.8%)
Investigations	477 (35.1%)
Risk minimisation on ward	119 (8.8%)
MCA/MHA use	86 (6.3%)
Safeguarding	26 (1.9%)
Post-assessment involvement in care:	
Direct patient reviews	1,252 (92.1%)
Regular communication with ward team	1,245 (91.6%)
Driving implementation of management plan	1050 (77.3%)
Routine board round discussions	660 (48.6%)
Participating in multidisciplinary team meeting(s)	443 (32.6%)
Participating in discussions with other specialties	343 (25.2%)
Referral to usual care psychiatry for specialist advice or input	10 (0.7%)
Referral to usual care psychiatry for out-of-hours cover	8 (0.6%)

Percentages do not always sum to 100 due to rounding.

12.6 Maintenance

The change in time from randomisation to completion of Stage 1 over the course of The HOME Study is shown in Figure 12.7, which stayed consistently between 0.5 and 0.7 of a day. Figure 12.8 shows the change in average time spent per patient by PIPM consultants and assistants over the course of The HOME Study, which stayed consistently between 60 and 80 minutes per patient. The overall trajectory of the total time spent per patient is similar to the time from randomisation to Stage 1, and increases slightly before returning to a level similar to initial levels by the end of The HOME Study. The main observation derived from both figures is the relative consistency of PIPM delivery over the almost 2 years of The HOME Study, which involved 24 different wards and 15 different PIPM clinicians.

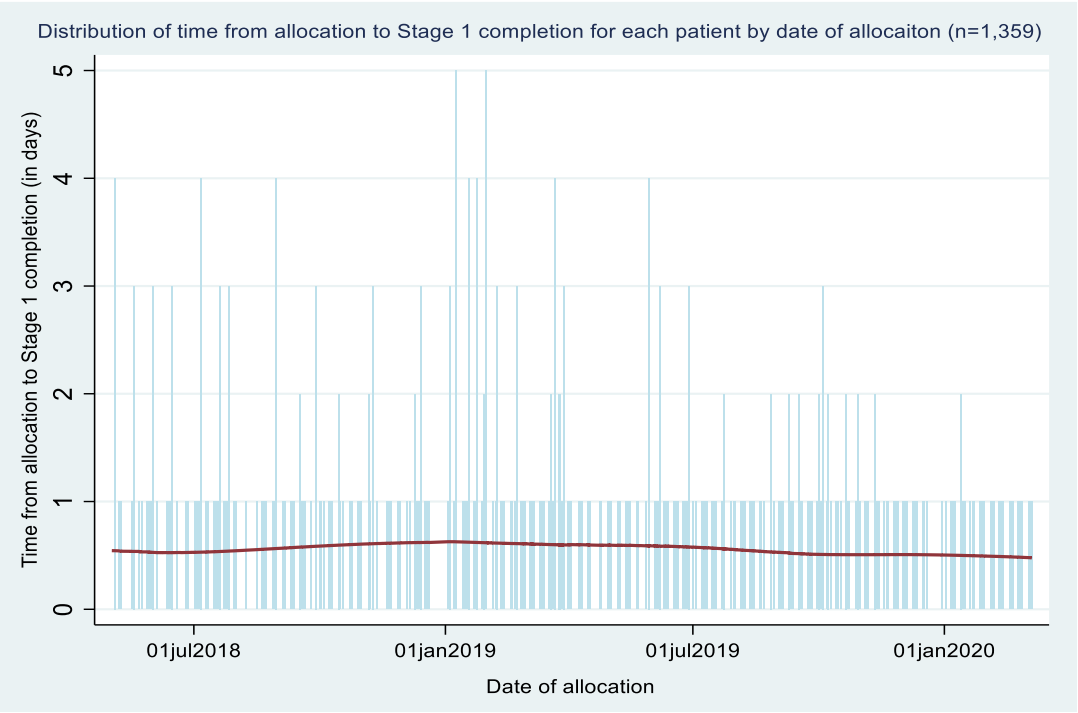
12.6.1 PIPM clinicians and ward professionals experiences of maintaining PIPM over time

The experiences of maintaining PIPM over time reported by PIPM clinicians and ward professionals are summarised in the Appendix (Table A.12). The main theme from both groups was the changes they felt would help maintain the implementation of PIPM. The changes reported by PIPM clinicians included wanting to see all patients, see them early in the admission, and to be fully integrated into the ward team. Ward clinicians also reported a desire for PIPM to maintain that involvement for the entire admission, not just for up to 30 days. Some ward professionals commented on the (lack of) integration of PIPM clinicians.

"...*it has been absolutely fascinating to learn about how the system operates, the nuances of that, where people get stuck and why they get stuck, typically for quite bureaucratic reasons and I think you learn how to navigate that system, how to chart that system in the interests of a patient...*"
(PIPM13, Assistant)

"…*it just felt that 'oh you had this luxury for the first thirty days' and then it just disappeared*…"
(W25, Nurse)

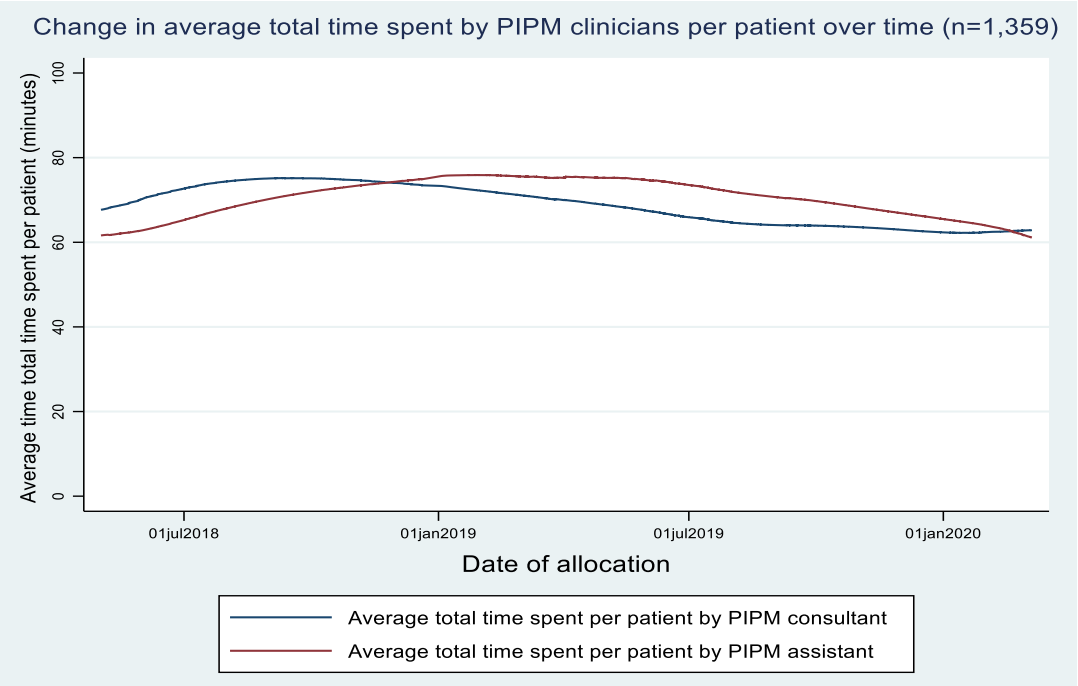
Figure 12.7 Time interval from randomisation to completion of Stage 1, over the course of The HOME Study (days)



Red line = average time from randomisation to Stage 1 completion

Blue bars = time from randomisation to Stage 1 completion for each patient

Figure 12.8 Total time spent by PIPM clinicians per patient over the course of The HOME Study



"Allocation" in figures = randomisation

Chapter 13: Evaluation of the delivery of PIPM in The HOME Study - Discussion

13.1 Summary findings

The main findings from the evaluation were:

- Reach: Nearly all patients randomised to receive PIPM actually received it and the patients who received PIPM were representative of the target population (older general hospital inpatients with multimorbidity and a high prevalence of psychiatric symptoms). The main reason given for not participating in The HOME Study (and therefore not being potentially randomised to PIPM) was not being interested in research rather than not wanting to receive PIPM. The main reason PIPM was not delivered to patients who were randomised to it was when patients were discharged before PIPM clinicians could see them. PIPM clinicians felt PIPM to be less useful on wards with patients with little multimorbidity, suggesting wards with higher rates of multimorbidity should be the focus.
- Effectiveness: Patients, carers and ward staff valued PIPM although PIPM and ward clinicians were both concerned about the potential for blurred responsibilities.
- Adoption: PIPM was delivered in the context of a clinical trial, limiting the generalizability of findings related to adoption, and required a well-funded psychiatric service. However, the hospitals and clinicians that agreed to deliver it did so and continued to do so throughout the study.
- Implementation: PIPM implementation fidelity was very high on six of seven measures. The lowest score was on the "intensive" measure, at 68%, meaning that PIPM was delivered less intensely than intended, i.e. PIPM clinicians did not review the patient every single weekday. PIPM clinicians recorded that biological, psychological and social problems were all common impediments to discharge and that the relative contribution of each of these categories

changed over the course of the admission. It is notable that 40% of patients they saw had a psychological problem impeding discharge on initial assessment, especially when considering that on average less than 5% of general hospital patients are referred to current liaison psychiatry services(186).

- Maintenance: PIPM continued to be delivered at a good level of fidelity for the duration of the trial, just under 2 years. Both PIPM and ward clinicians felt further integration of PIPM clinicians into the regular ward team would be required to maintain PIPM delivery in the long-term.

13.2 Strengths and limitations of the evaluation of delivery of PIPM in The HOME Study

13.2.1 Strengths of the evaluation of delivery of PIPM in The HOME Study

The evaluation has several strengths. There was a clear aim - to measure what was delivered and whether PIPM was delivered as intended, and to evaluate the experiences of those involved. Both quantitative and qualitative methods were used to collect and analyse a range of complementary data. There was a comprehensive data collection strategy, which was piloted in advance of being used to ensure its feasibility(43). The use of trial participant data maximised data quality and completeness, and reduced the potential for reporting bias as the reason for data collection was not explicitly evaluative(94). The use of data from PIPM checklists ensured consistent data collection on what was actually delivered in real-time without interfering with intervention delivery(94), and allowed the consistency of PIPM delivery to be evaluated across time.

Sampling for the interviews maximised the potential for a wide range of views and experiences to be captured by including all the clinicians who delivered PIPM, ward professionals with a range of professional backgrounds, and ward professionals and patients and carers from all three sites where PIPM was delivered. Interviews of all groups (PIPM clinicians, ward professionals, patients and carers) were analysed simultaneously to maximise the consistency of analysis, with at least two researchers coding each transcript independently. There was a pre-specified analysis plan for the overall evaluation (see Chapter 11, section 11.3.4), developed in discussion with the research team and specialist trial statisticians.

13.2.2 Limitations of the evaluation of delivery of PIPM in The HOME Study

The evaluation also had several limitations. It focused only on establishing what was actually delivered, whether this was consistent with what was intended, and the experiences of those involved, rather than aiming to also evaluate the process of implementation. The context of this evaluation was within a clinical trial, limiting its generalisability to implementation in routine practice.

The main limitation to the collection of quantitative data was the use of the data from the checklists completed by the PIPM clinicians: this method of data collection may have led to bias in recording, and lower quality data than specific data collection by researchers(94). However, to address this the checklists were completed for clinical purposes as well as research purposes, were completed in real-time, and were checked for completeness by the research team soon after completion. In addition, the need for accuracy in data recording and collection was emphasised in weekly video-conference calls with PIPM clinicians and during on-site quality assurance visits.

The qualitative data collection also had limitations. Interviews were conducted in relatively small samples of ward professionals, and patients and carers. Although a range of professional backgrounds of ward staff were sought, the busy, dynamic nature of the wards limited the number willing and able to participate in interviews. Patient interviewees were purposively sought from each site, but only patients who could provide informed consent and use a telephone could be interviewed, therefore excluding a sizable percentage of the target patient population of PIPM as many had medical or psychiatric problems or co-morbidities which impacted on their capacity and/or ability to consent or be interviewed. Whilst this exclusion was partially mitigated by interviewing the carers of some patients who could not be interviewed themselves, carers' experiences are not analogous to those of the patients for whom they care. The fact that the analysis of the carer interviews found no negative experiences of PIPM also highlights the difficulty

of sampling as it is likely that carers were more likely to agree to an interview if they had a positive experience of PIPM. Finally, it is also unclear if some of the experiences that were reported were specific to PIPM: the interviewees could also have been referring to research assistants from The HOME Study (who approached the patients and carers, took consent, and completed the baseline data collection), or the wider ward team.

The analysis of the quantitative data did not include comparisons of data between sites. This meant I was unable to compare the consistency of delivery at different sites. The analysis was limited to describing what was delivered, consistent with my aim for the evaluation and published guidance(141), however this meant no inferential analysis of the qualitative data was undertaken. Once the outcomes of The HOME Study are known, further analysis will be indicated, for example 'on-treatment' analyses of how variation in delivery affected outcomes(141).

Due to resource limitations, the analysis of the qualitative data was not done sequentially but when all interviews had been completed. This meant that developing themes could not be used to influence subsequent interviews and a formal decision that data saturation had been reached could not be made(187). Computer-assisted qualitative data analysis software (CAQDAS) was not used, which may have restricted the coding schemes that were developed(188) and the summaries and themes that were developed were not shared with interviewees to obtain their views on them. The analyses were conducted according to interviewee type but subgroups according to hospital and ward type were not possible with the sample sizes obtained. Differences between hospitals and ward types as well as staffing and ward culture could all have affected the experiences of those involved.

Finally, as discussed below, the data collection and evaluation was conducted by people, including myself, who may have a bias towards identifying positive findings.

13.3 My position in the evaluation of PIPM delivery in The HOME Study

I was involved in developing, operationalising, and delivering PIPM in The HOME Study, as well as designing and leading the evaluation of its delivery. There are a number of potential benefits to the evaluation of my having all of these roles but also a number of potential downsides. It is important to be transparent about the position of the evaluators and to allow others to consider how that might affect the data collected and analysis completed(168).

My knowledge of PIPM allowed me to use the RE-AIM framework to plan data collection and analysis effectively. However, an independent evaluator may have brought different insights and perspectives, and would not have been as invested in PIPM as an intervention. I also delivered PIPM and conducted part of the data collection by completing checklists. Data collection by those delivering PIPM delivery had the advantage of being efficient, but to mitigate the risk of biased responses, including my own, the data required in the checklists was purposely quantitative to minimise subjectivity.

Another part of the data collection was interviews with the PIPM clinicians: I conducted all the interviews, apart from one – where I, as a PIPM clinician, was interviewed by another member of the research team. The dynamic between me, as a developer of PIPM and someone who trained them, and the interviewees has to be considered in terms of the opinions they expressed. Potential advantages of my position include being able to identify and explore areas someone with less knowledge of PIPM or its delivery would not have done, and the interviewees potentially being more open and willing to discuss their perceptions of shortcomings and potential improvements with someone that has a good understanding of the intervention(189). Equally, the interviewees may not have been comfortable in giving negative views to me given my relationship with them (as a colleague and as a developer of PIPM). To mitigate this, I emphasised that the purpose of the interviews was to explore their true experiences and the more we discussed both positives and

negatives the richer the evaluation would be. I also reassured the interviewees that the transcripts would be anonymised to avoid identification by other members of the research team and any perceived repercussions. The scope and depth of expressed views may also have been affected by the interpersonal dynamics between me and the interviewee. The consultant psychiatrists I interviewed may have been more likely to speak freely with me, a psychiatric trainee and therefore professionally their junior. This is potentially not the case for the non-medical professionals in the assistant role.

I also interviewed patients and carers, but purposely none from the Oxford site where I delivered PIPM. All the patient and carer interviews were conducted by telephone and the interviewees were informed that I was a researcher for The HOME Study team, rather than someone who delivered it. My socioeconomic background was similar to the average participant, and I had spent the majority of my life living and working in the same geographic locations as the majority of the patients that I interviewed. This may have helped me establish rapport with the interviewees, but may also have hindered disclosure of negative experiences, or identification of alternative or less common perspectives.

My position as researcher and evaluator should be considered in the context of the analysis of the delivery as well. My knowledge of PIPM and experience of delivery were potentially an advantage in terms of insights into the potential reasons for delivery to vary from what was intended. However, there was a risk of my subjective experience biasing the analysis. Therefore, the quantitative measures were pre-agreed with the trial statisticians. The analysis of the interviews was done in parallel with at least one other member of the research team. To provide a potentially wider perspective for the analysis the main other member of the research team coding the transcripts had a nursing background, with the aim of seeing the data from a different professional perspective.

13.4 Implications of findings of the process evaluation for The HOME Study

The findings of the process evaluation will help with the interpretation of the outcome of The HOME Study. If PIPM is found to be effective, further evaluation of PIPM outside of a trial context, and in a wider variety of settings, would be required to fully establish its feasibility and effectiveness in other contexts. Similarly, it will be important to consider potential adaptations, including titration of its components and further study of the role of the PIPM clinicians and wider ward team, including nurses and allied health professionals. If PIPM is not found to be effective in The HOME Study, any indication as to whether that is because of issues with delivery in the trial, or inherent problems with the model, will be useful.

13.4.1 If PIPM is effective in The HOME Study

An important question to consider if PIPM is found to be effective in The HOME Study is whether it will be feasible to deliver in routine practice, and potential barriers to delivery highlighted by the process evaluation. PIPM was delivered consistently throughout the two years of The HOME Study, across three sites, over 24 different wards, and by 15 different PIPM clinicians. Both patients and carers mentioned their appreciation for the extra attention and care that resulted from PIPM, one PIPM clinician felt PIPM brought a “compassion” to the acute wards that was otherwise lacking, PIPM clinicians reported positive experiences in delivering PIPM, and ward clinicians were positive about having extra staff with psychiatric expertise available in the ward environment. However, delivery outside of the trial context will be different.

13.4.1.1 Cost-effectiveness of PIPM

PIPM is relatively resource-intensive at the initial point of care, with the proposed positive impact on patient outcomes and costs realised over the subsequent weeks and months. The resource cost was a problem in setting up The HOME Study; two of the five sites initially approached to participate could not deliver PIPM due to lack of funding for clinician time. However, this could be mitigated if PIPM is found to be cost-effective and areas of higher costs adapted. There are four areas of notable extra cost in PIPM: (1) seeing all older, acutely admitted patients, (2) seeing them every day, (3) the cost of employing PIPM clinicians (consultants and assistants), and (4) potential increase in work from identifying previously unaddressed problems:

- Seeing all patients is only likely to be efficient in populations with high rates of unmet psychosocial comorbidity. During the delivery of PIPM in The HOME Study, PIPM clinicians reported difficulties finding opportunities to positively affect care for patients with single-issue reasons for admission. This was particularly relevant to specialist wards, such as cardiology wards, where patients tended to only have one specific medical or surgical problem and few psychological or social problems. PIPM should therefore be delivered on wards with high numbers of multimorbid, complex, medical patients(190).
- The principle where PIPM delivery differed most from what was intended according to the service manual in The HOME Study was “intensity”. Not only is intensive delivery more costly than less intensive delivery, this is also a potential barrier to implementation in routine practice, particularly if unable to be fully delivered with the additional resources available in a trial setting. PIPM clinicians did feel that the longitudinal picture obtained from daily visits were useful, and the patients and carers found the regular contact reassuring. However, if PIPM is found to be effective in The HOME Study, as it was not delivered as intensely as planned, reducing the required intensity required in the service manual would be reasonable area for investigation post-trial.

- The need for a consultant psychiatrist to assess and maintain involvement in the management of every patient under PIPM, is another cost factor to consider. The median total time spent by the PIPM consultants per patient was 60 minutes (interquartile range (IQR) 40-90 minutes). The median total time spent on each patient by PIPM clinicians combined was 115 minutes (IQR 75-190 minutes). Although this is a comparatively small amount of time for a comprehensive and intensive service, if delivered to all patients, greater up-front resources will be required compared to current liaison services which see less than 5% of general hospital patients(186). This may be particularly difficult in the context of a resource-limited healthcare service such as the NHS. However, comprehensive and efficient psychiatric assessment of complex, multimorbid patients requires highly skilled clinicians. Consultant psychiatrists with experience of working in general hospitals are also more likely to effectively integrate into and influence ward multi-disciplinary teams (MDTs) than other less experienced mental health professionals.
- The assistant role in PIPM is designed to increase the reach of the PIPM consultants by allowing them to focus on assessment and management planning, whilst the assistant helps update and action the management plans. After the initial biopsychosocial assessment, the work done by PIPM clinicians involved mainly: (1) advice, which requires psychiatric expertise and is likely to be more effective from senior clinicians, and (2) practical input such as regular communication and driving the implementation of the management plan, for which psychiatric expertise is potentially less essential. Identifying the appropriate PIPM clinicians, and appropriate skills, for the population and their context will therefore be important for wider implementation. A significant proportion of the barriers to discharge were in the 'social' domain, and professionals skilled in dealing with social problems, including occupational therapists or social workers, would be well placed to work in this role. A more radical solution to cost-saving would be to remove the assistant role altogether, and distribute the work across ward clinicians (for example, ward occupational therapists, junior

doctors, discharge nurses, and social workers). This would bring PIPM more in-line with integrated models in the US(38).

- As well as being relatively resource intensive in itself, PIPM may generate more work for both hospital and community services by identifying problems that would otherwise not have been addressed. In practice, usual care liaison psychiatric services, including out-of-hours services, were involved in less than 1% of patients receiving PIPM in The HOME Study. Whilst this may be because patients were excluded from the trial if they were already being seen by liaison psychiatric services, it may also reflect that early and comprehensive involvement in care reduces the need for subsequent emergency involvement. At discharge, specific advice was given to a quarter (384/1,359, or 28.3%) of participants' GPs. This is likely to be more than usual as most of the patients would not normally have been seen by psychiatric services. It remains to be seen in the cost-effectiveness study(29) if this initial increase in workload translates into an overall cost saving by addressing problems earlier and more efficiently.

13.4.1.2 Integrating into established ward teams

Another potential barrier to delivery of PIPM highlighted by the process evaluation was difficulties in integrating the PIPM clinicians with the ward team, including problems with role blurring and professional identity. For example, some PIPM clinicians and ward professionals felt PIPM at times encroached on roles and responsibilities of other ward professionals. Although this was welcomed at times, at others it was resented, and caused worries about de-skilling. Some of the ward staff interviewed were unsure of the value of PIPM in assessing and managing wider biopsychosocial issues, rather than purely focusing solely on psychiatric illness.

Problems arising from changes and challenges to professional roles and identity are widely reported in implementation literature(191, 192). Professional identity is linked to the work environment and

culture, and an important consideration in delivering new services(193-195). Interestingly, the problems with role blurring in PIPM delivery tended to be ward, rather than hospital, specific. If PIPM is effective and scaled-up, explicit consideration of how PIPM clinicians will integrate with ward teams will need to be provided. For example, roles and responsibilities could be made explicit prior to PIPM being implemented, and the PIPM clinicians may be able to be more adaptive with what they, or others, deliver outside of the comparatively stricter trial context.

13.4.1.3 Potential adaptations to the PIPM model

Delivery of PIPM in routine practice may require adaptations to the model evaluated in The HOME Study. The greater the change, the less confident we can be that the adapted service would be effective. However, if adaptations are required, changes that are consistent with the underlying principles, and reflect the experiences of delivery in The HOME Study, would be preferable.

- Proactive: PIPM is designed to proactively see all patients on the wards where it is delivered. Either for cost (discussed above) or practical reasons, seeing all patients may not be possible. PIPM clinicians could be more selective, identifying patients by attending the ward or team MDT discussions or board rounds, and screening notes remotely. However, less routine contact with all patients may also make it more difficult for PIPM clinicians to integrate into the wider ward team, a concern raised by both PIPM and ward clinicians. There is greater potential for major psychosocial problems of patients who do not have overt psychiatric illness to be missed.
- Promptness: Patients are admitted to wards at all times of the day, and PIPM during The HOME Study was delivered within normal working hours on weekdays, therefore some participants were allocated to PIPM late on a Friday and not seen until Monday, reducing the ‘promptness’ of the intervention. Given that the wards typically have reduced staffing

levels outside of normal working hours, delivering PIPM out-of-hours, to increase the promptness of PIPM involvement, is likely to be inefficient.

- Comprehensive: PIPM clinicians reported enjoying undertaking routine broad biopsychosocial assessments, and were able to do them relatively quickly (mean time for consultant assessment 32 minutes, standard deviation (SD) 13.5). However, problems in some categories of the PIPM assessment were rarely identified (for example, substance misuse was impeding discharge in <5% of patients, see Table 12.20 and Figure 12.3). Further consideration of these results might allow for adaptations to the categories, both in content and number.
- Focused: PIPM was designed to focus on discharge for every participant, and in a small number of participants the PIPM clinicians did not do this. Some PIPM clinicians reported that they found the focus on discharge frustrating, which may account for some of the lack of implementation. Further training on the indication for focusing on discharge should be considered for future implementation.
- Integrated: There were high levels of integration of PIPM clinicians with the ward team, described as the proportion of patients for whom action plans were discussed with other professionals. However, all groups of interviewees felt integration could be improved. This implies that the measure for integration was imperfect. A lack of integration may reflect aspects of the trial, such as individual randomisation and PIPM being delivered on multiple wards, as opposed to seeing all patients on one ward. It may also reflect an inherent weakness in the development of the model, where there was notably more input from psychiatrists than other ward professionals. It is notable that interviewees' experiences (PIPM and ward clinicians) were that the ability of the PIPM clinicians to maintain consistent delivery of PIPM would be improved if there was more PIPM (both earlier and for the duration of the admission and greater integration with ward teams) rather than less.

- Intensiveness: PIPM is designed to be delivered on every weekday (excluding bank holidays) from the day of allocation to the day of discharge, within 30 days of allocation. When a single day was missed, this tended to be the last day of the admission and the participant had been discharged before PIPM clinicians could see them. Other days where PIPM was not delivered also tended to come towards the end of participants' admissions in situations where discharge plans were finalised. It is possible that in those situations the PIPM clinicians prioritised their time with patients for whom they felt their clinical contribution would be greatest. Whilst additional strategies could be put in place to promote greater adherence to the service manual, such as closer scrutiny of daily delivery, it should also be considered that daily contact may not be necessary or desirable, and strategies to maximise efficiency should be considered in future adaptations of the PIPM model.
- Systematic: Checklists were used consistently, and PIPM clinicians found them helpful. However, outside of a trial setting, consistent use of a checklist, especially a paper checklist, may be difficult to maintain due to both resource limitations, and natural drift in clinical practice. This could be mitigated in part by rationalising the checklist (for example, removing data collection sections) and integrating it into local electronic notes.

13.4.2 If PIPM is ineffective in The HOME Study

If PIPM is found to be ineffective in The HOME Study it will be important to consider whether that is due to inadequate delivery, or inherent problems with the model.

Overall, delivery of PIPM was consistent with the service manual. Of the main measures of delivery, 'intensity' was the least well implemented compared to what was intended in the service manual. However, the PIPM clinicians still reviewed each patient on almost every relevant day. Therefore, if The HOME Study is negative, it will be difficult to attribute this to delivery being divergent from what was intended, based on the measures reported. Analysis of the interviews suggested potential problems with delivery that are not accounted for in the quantitative measures. For example, both PIPM clinicians and ward clinicians reported problems with integration of the PIPM team into the wider ward team. Various potential reasons were suggested, including confusion over roles, and artefacts of the trial such as only seeing some patients on each ward due to individual randomisation. Fears of contamination meant that PIPM clinicians were told to refrain from giving advice on patients not randomised to PIPM, in effect detaching them from the wider team. A limitation of the development process of PIPM was the relative lack of involvement of ward clinicians. If The HOME Study is negative, failure to adequately integrate PIPM into the wider team will be a potential reason.

Inherent problems with the model may also result in a negative result in The HOME Study. For example, two thirds of patients had a diagnosable psychiatric disorder during admission, but the rates of psychiatric problems impeding discharge were lower than medical and social problems impeding discharge. Therefore, despite high rates, presence of psychiatric disorders may not have contributed to prolonged admissions as much as hypothesised and therefore extra psychiatric input, whilst appropriate to meet the patients' needs, would not affect the main outcome of the trial.

Chapter 14: Overall discussion and conclusions

14.1 Summary of findings in this thesis

In this thesis I had the opportunity to help develop a new psychiatric service model for older general hospital inpatients, operationalise the new model, and evaluate its delivery in the context of a randomised trial, The HOME Study. To inform the development and delivery of the new model, I also undertook a systematic review of randomised trials of psychiatric services for general hospital inpatients. I therefore had four overall aims for this thesis, as discussed below.

14.1.1 Aim 1

To summarise the evidence of effectiveness for psychiatric services for adult general hospital inpatients from randomised controlled trials using a systematic review of the published literature.

I completed a comprehensive systematic review of randomised trials of psychiatric services for general hospital inpatients, which has subsequently been published(31); a copy of the paper is included in the Appendix (Additional Files). I identified eight randomised controlled trials (RCTs) of psychiatric services for general hospital inpatients, however clinical and methodological heterogeneity precluded meta-analysis. None of the eight trials reported clear evidence that the psychiatric service under investigation added to usual care was more effective than usual care alone.

The lack of trials identified may reflect the difficulty in conducting randomised trials of complex interventions. The absence of positive findings from the trials may be due to shortcomings in the trial designs, including: 1) the exclusion of patients with more severe symptoms who may have been more likely to respond to psychiatric intervention; 2) potentially inconsistent delivery of the psychiatric services in the trials; 3) contamination from patients in the usual care arms referred for

psychiatric assessment; and 4) small sample sizes. Another possible reason for the lack of conclusive findings are intrinsic limitations of the psychiatric service models investigated. These services focused on provision of psychiatric assessments and recommendations; this model has been found to result in poor implementation of recommendations; a shortcoming exacerbated by little or no post-assessment follow-up. As a result, potential benefits from psychiatric input are unlikely to have been realised, leading to the conclusion that the service was no more effective than usual care. These findings supported the need for further systematic evaluation of new models of psychiatric care, as was developed and delivered in The HOME Study.

14.1.2 Aim 2

To develop a new psychiatric service for older general hospital inpatients.

I worked with Professor Sharpe and Dr Walker to develop a new psychiatric service model for older general hospital inpatients. Unlike most current services, this model had an explicit development process that reflected published guidelines; the relevant literature was reviewed, expert opinion and patient and carer input was sought, and extensive piloting was undertaken. The resulting new service model, Proactive Integrated Psychological Medicine (PIPM), focuses on the management of older, multimorbid patients that make up an increasing percentage of general hospital inpatients, and who are more likely to have psychosocial comorbidities. A full description of PIPM has been published to allow further evaluation and implementation(32); a copy of the paper is included in the Appendix (Additional Files).

14.1.3 Aim 3

To operationalise the new psychiatric service model for delivery.

None of the trials identified in my systematic review described how they ensured consistent delivery of their services. I operationalised PIPM for delivery in The HOME Study, to ensure PIPM was delivered as intended. This included creating an instructional service manual, a checklist to be completed for each patient, and a quality assurance process.

14.1.4 Aim 4

To evaluate the delivery of the new service model in the context of a randomised trial, The HOME Study.

PIPM was found to be feasible to deliver in the context of The HOME Study, with 1,369 receiving PIPM out of 1,373 randomised to receive it. PIPM was delivered consistently over 22 months, in 24 wards across three UK general hospital sites. The majority of measures of delivery, as detailed in the PIPM manual, showed that the model was well adhered to (see section 12.5). The main area where the delivery diverged from what was intended was in the intensity of follow-up by PIPM clinicians. This in part reflected the measurement criteria (98% of patients were seen every day or every day but one), and in part reflected a potential area of adaption to the PIPM model. Attention should be paid to areas of divergence from delivery as intended, as they may indicate important adaptations from the model in theory to delivery in practice, or drift which may be due to barriers to implementation. Patients and their carers, ward professionals, and PIPM clinicians reported a range of experiences relating to PIPM. Common positive themes arising from qualitative interviews as a whole were an appreciation for the focus on the patient's experience that PIPM brought, as well as the ease of access to specialist psychiatric opinion. The main negative themes across the interviews

was of potential blurring of professional roles and responsibilities, risking duplication of work, confusion for patients, and de-skilling of ward and psychiatric professionals.

14.2 Strengths and limitations of the thesis

14.2.1 Strengths of the thesis

This thesis covered the development, operationalisation, and delivery of a new service model in the context of a randomised controlled trial. A comprehensive systematic review was completed to inform development and delivery, which has been published(31). The new model, PIPM, was developed in line with established guidelines for complex interventions(66), and included repeated piloting and involvement of patients, carers, and clinicians. A detailed description of the resultant model was published to promote further evaluation and implementation(32). PIPM was operationalised to optimise delivery, with the service manual and checklist being made publically available to aid transparency and promote potential future evaluation and delivery. A thorough evaluation of the delivery of PIPM in The HOME Study was completed, prior to the results of the trial being known to minimise bias from knowledge of the trial outcomes(142).

14.2.2 Limitations of the thesis

The breadth of the thesis limited my ability to focus in greater detail on specific topics. In particular I focused on what was actually delivered and the experiences of those involved, rather than explicit consideration of published theories on how PIPM may be incorporated into routine practice(133, 134). I did not follow one specific published complex intervention development approach, which may make external evaluation of the process harder. Another limitation was the relative lack of input from stakeholders outside of the research team in the development of the model, particularly from professionals on the wards where PIPM was delivered. The lack of a separate research team from the developers to evaluate the delivery, and the consequent risk of biases, were discussed in Chapter 13.

14.3 Implications of the findings in this thesis

The findings in this thesis have implications for The HOME Study (discussed in Chapter 13, section 13.4). The generalisability of the findings should be considered, as well as the implications for those delivering and commissioning psychiatric services for general hospital inpatients, and for researchers in the field.

14.3.1 Generalisability of the findings in this thesis

Where service models are developed for evaluation in RCTs the primary aim is delivery within a trial context, rather than routine practice. Delivery within a trial brings constraints that post-trial implementation does not necessarily bring. Generalisability of the findings of the trial are related to the underlying aim of the evaluation, i.e. whether it is to see if the intervention works under ideal circumstances (efficacy) or in the 'real-world' (effectiveness)(196, 197). In reality, trials exist on a spectrum between these two points. Trials that focus on efficacy attempt to maximise internal validity, can be used to examine causal mechanisms, and are more often used early in the development of an idea; a common example of their use is in drug development. However, in minimising variability in contextual factors, such trials can miss important information regarding feasibility and acceptability. Trials of effectiveness focus more on external validity, i.e. the generalisability of their results, and are therefore particularly helpful for service and policy development. However, maximising generalisability can reduce the ability for a trial to identify causal mechanisms or the underlying efficacy of the intervention, increasing the importance of thorough process evaluation. This is relevant in the context of the work presented in this thesis as the development, operationalisation, and delivery of PIPM all occurred in the context of The HOME Study, a pragmatic RCT focusing on effectiveness(29).

There are a number of factors to be considered relating to the generalisability of the findings in this thesis:

- Randomised trials have specific resources available for training and quality assurance that are unlikely be readily available outside a trial context. For example, the weekly video calls and ongoing quality assurance processes in The HOME Study are unlikely to be practical in routine clinical practice. The high levels of consistent delivery reported here may not be possible in routine practice, although it remains to be seen whether they are necessary.
- Piloting took place where the trial was to take place, but these settings are unlikely to be representative of NHS hospitals in general. Specifically, the development and delivery took place in three relatively well-funded teaching hospitals in Southern and East England. Each site had well established psychiatric services which could afford to deliver PIPM as part of a trial, not only financially, but in providing psychiatric staff from their usual care service. Two sites considered for the trial could not afford the resources to deliver PIPM in this context. As discussed in Chapter 13, delivery in routine practice would be less resource intensive, however, consideration of the important causal components, or the 'minimally effective version' of PIPM will be necessary.
- PIPM clinicians did not find PIPM useful on wards where patients had single medical issues, for example an interventional cardiology ward. The majority of wards on which PIPM was delivered throughout the trial were medical, with complex multimorbid patients. Therefore, initial focus on implementing PIPM should be on wards with acutely admitted, older, multimorbid patients.
- The choice to focus on reducing unnecessary time in hospital was based on clinical need, and practicalities of what can be measured and compared in a randomised trial. Some PIPM clinicians found this explicit focus different from their normal practice, and challenging to maintain. PIPM clinicians being involved in discharge planning also led to some tension at times when other ward professionals felt their professional roles were encroached upon.

Therefore, a focus on minimising time in hospital is likely to be a challenge to generalisability. A change in focus could be considered, however if the trial does show PIPM to be effective, this would be a change away from the evidence. The HOME Study may find positive results in some secondary outcomes, such as patient satisfaction, or symptom scores, which might indicate future areas for PIPM to focus on.

- Another consideration for generalisability is that PIPM, designed as an 'integrated' service, was delivered in an individually randomised trial. The HOME Study used individual randomisation for a number of reasons, including that PIPM was designed to affect patient care at the individual level and to integrate into the ward without completely changing how the ward operates, as changing the overall care delivery on any given ward appeared unfeasible(29). Additionally, there were no obvious appropriate natural clusters for a cluster randomised trial. The evident cluster, i.e. wards, vary both within hospitals and across hospitals by their organisation, size, staffing, and patient mix. Randomising by ward would mean the allocation of wards would be known prior to, and therefore potentially influence, decisions to admit individual patients to that ward. However, individual randomisation does increase the risk of contamination – either patients randomised to usual care receiving PIPM, or PIPM-like care from the influence of PIPM being delivered to other patients on same ward. Whilst this is mainly an issue for The HOME Study, it does also create some limitations for this thesis; the main limitation being PIPM not being delivered in The HOME Study, as it would be delivered in routine practice, i.e. to most/all patients on each ward. Therefore, the experiences of the PIPM and ward clinicians in the trial may have been materially different from how PIPM would be delivered in a post-trial setting (as well as the inherent differences from PIPM being delivered as part of a trial).

14.3.2 Implications for those delivering and commissioning psychiatry services for general hospital inpatients

The finding that psychiatric services for general hospital inpatients lack evidence for effectiveness from randomised trials is important for those delivering and commissioning such services. The systematic review described in Chapters 2-4 summarises the current evidence from RCTs for the effectiveness of psychiatric services for adult general hospital inpatients. PIPM will be only the ninth psychiatric service model for general hospital inpatients evaluated in a randomised trial, and the first for over a decade. It will be the first of these models to have a service manual and published service description(32).

The development of PIPM and its implementation in The HOME Study aims to expand the evidence base for psychiatric services in the general hospital setting. Inpatients in general hospitals are increasingly old and multimorbid; characteristics which are associated with greater burden of both psychiatric illness and biopsychosocial problems(198). Services will need to address these complex needs. The English NHS Five Year Forward View promised "*Proper funding and integration of mental health crisis services, including liaison psychiatry*"(62), and the English NHS Long Term Plan stated that "*All general hospitals will have mental health liaison services*"(23). There has been interest in other new service models(25) and also trials of joint geriatrician-psychiatric units, however with little evidence of their effectiveness(199). There is a current focus on expanding the coverage of general hospitals by psychiatric services(200, 201).

Over recent decades, significant service innovations in liaison psychiatry have taken place in out-of-hospital settings, with the notable success of the collaborative care model(64, 101). The psychiatric care of general hospital inpatients has, at least until recently, been relatively neglected and has continued to be delivered in the same way for decades. The recent and important innovations of proactive consultation and integrated care service models are therefore important developments. The development process of PIPM followed the principles of the proactive and integrated service

models by emphasising greater involvement of psychiatric services in day-to-day medical care. The PIPM service model I have described in this thesis is a further advance of these innovations especially designed for elderly medical patients as an example of a cohort of complex multimorbid patients.

14.3.3 Implications for researchers and future research

The findings in this thesis have implications for future research. The lack of evidence of effectiveness from RCTs suggests a need for larger, more methodologically robust trials, of new service models. If further trials are conducted, then the interventions must be well described, as should the mechanisms for monitoring consistent delivery in the trials. Making the model descriptions and service manuals publicly available allows others to scrutinise, repeat and adapt the models for other settings.

PIPM is designed to reduce unnecessary time in hospital, which will have downstream effects, therefore further exploration of the experiences of community colleagues, such as GPs and care home staff, would also be of value to explore the impact this model has on care after patients have been discharged from their acute admission. Finally, PIPM has been developed in well-resourced settings. If effective, the dissemination of PIPM to less resource-rich settings will be an important goal, and this may require adaptations to the model presented in this thesis.

14.4 Conclusions

In this thesis I have found that there have been few randomised trials of psychiatric services for general hospital inpatients published, and none for over a decade. The few trials there have been have found little evidence of effectiveness for the psychiatric services they have investigated. I have described the development of a new model for psychiatric services for general hospital inpatients, known as PIPM. I led the operationalisation and delivery of PIPM in The HOME Study, where its effectiveness is being evaluated. I have presented an evaluation of the delivery of PIPM in The HOME Study. The analysis of the implementation presented here will both inform those results and provide a basis for any future implementation in practice.

Psychiatric services for general hospital inpatients, especially older patients with high rates of multimorbidity, are important and should be based on the best available evidence. The work in this thesis has highlighted a relative paucity of randomised trial evidence, but more positively, that the development, operationalisation and delivery of new psychiatric service models is possible. The work I have described here will, I hope, lead to further research in this important area.

References

1. Goldberg SE, Whittamore KH, Harwood RH, Bradshaw LE, Gladman JR, Jones RG, et al. The prevalence of mental health problems among older adults admitted as an emergency to a general hospital. Age and ageing. 2012;41(1):80-6.
2. Castro-de-Araújo LFS, Barcelos-Ferreira R, Martins CB, Bottino C. Depressive morbidity among elderly individuals who are hospitalized, reside at long-term care facilities, and are under outpatient care in Brazil: a meta-analysis. Brazilian Journal of Psychiatry. 2013;35:201-7.
3. Castro-de-Araujo LFS, Barcelos-Ferreira R, Martins CB, Bottino C. Depressive morbidity among elderly individuals who are hospitalized, reside at long-term care facilities, and are under outpatient care in Brazil: a meta-analysis (vol 35, pg 201, 2013). Revista Brasileira de Psiquiatria. 2015.
4. Whittamore KH, Goldberg SE, Gladman JR, Bradshaw LE, Jones RG, Harwood RH. The diagnosis, prevalence and outcome of delirium in a cohort of older people with mental health problems on general hospital wards. International journal of geriatric psychiatry. 2014;29(1):32-40.
5. Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. The Lancet. 2014;383(9920):911-22.
6. Katherine Burn W, Nicola Davies K, Ross Mckenzie F, Ann Brothwell J, Philip Wattis J. The prevalence of psychiatric illness in acute geriatric admissions. International journal of geriatric psychiatry. 1993;8(2):171-4.
7. Cole MG, Ciampi A, Belzile E, Zhong L. Persistent delirium in older hospital patients: a systematic review of frequency and prognosis. Age and ageing. 2009;38(1):19-26.
8. Beeler PE, Cheetham M, Held U, Battegay E. Depression is independently associated with increased length of stay and readmissions in multimorbid inpatients. European journal of internal medicine. 2020;73:59-66.
9. Whitty CJ, MacEwen C, Goddard A, Alderson D, Marshall M, Calderwood C, et al. Rising to the challenge of multimorbidity. British Medical Journal Publishing Group; 2020.
10. Guthrie B, Payne K, Alderson P, McMurdo ME, Mercer SW. Adapting clinical guidelines to take account of multimorbidity. Bmj. 2012;345:e6341.
11. Palladino R, Tayu Lee J, Ashworth M, Triassi M, Millett C. Associations between multimorbidity, healthcare utilisation and health status: evidence from 16 European countries. Age and ageing. 2016;45(3):431-5.

12. Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. The Lancet. 2012;380(9836):37-43.

13. Digital N. Hospital Admitted Patient Care Activity 2018-19. Available from: https://digitalnhsuk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2018-19. 2019.

14. Imison C, Poteliakhoff E, Thompson J. Older people and emergency bed use: exploring variation: King's Fund; 2012.

15. Schiøtz ML, Stockmarr A, Høst D, Glümer C, Frølich A. Social disparities in the prevalence of multimorbidity–A register-based population study. BMC public health. 2017;17(1):1-11.

16. Walker A, Barrett JR, Lee W, West RM, Guthrie E, Trigwell P, et al. Organisation and delivery of liaison psychiatry services in general hospitals in England: results of a national survey. BMJ open. 2018;8(8):e023091.

17. Kathol RG, Kunkel EJ, Weiner JS, McCarron RM, Worley LL, Yates WR, et al. Psychiatrists for medically complex patients: bringing value at the physical health and mental health/substance-use disorder interface. Psychosomatics. 2009;50(2):93-107.

18. Chen KY, Evans R, Larkins S. Why are hospital doctors not referring to consultation-liaison psychiatry?–a systemic review. BMC psychiatry. 2016;16(1):1-12.

19. Sockalingam S, Alzahrani A, Meaney C, Styra R, Tan A, Hawa R, et al. Time to consultation-liaison psychiatry service referral as a predictor of length of stay. Psychosomatics. 2016;57(3):264-72.

20. Leentjens AF, Boenink AD, van der Feltz-Cornelis CM. Can we increase adherence to treatment recommendations of the consultation psychiatrist working in a general hospital? A systematic review. Journal of psychosomatic research. 2010;68(3):303-9.

21. Saraiva S, Guthrie E, Walker A, Trigwell P, West R, Shuweidi F, et al. The nature and activity of liaison mental services in acute hospital settings: a multi-site cross sectional study. BMC health services research. 2020;20(1):1-11.

22. UK NGC. NICE Guideline 94 Emergency and acute medical care in over 16s: service delivery and organisation: Chapter 23 Liaison Psychiatry. 2018.

23. England N. The NHS long term plan. London: NHS England; 2019. 2019.

24. Tadros G, Salama RA, Kingston P, Mustafa N, Johnson E, Pannell R, et al. Impact of an integrated rapid response psychiatric liaison team on quality improvement and cost savings: the Birmingham RAID model. The Psychiatrist. 2013;37(1):4-10.

25. Desan PH, Zimbrean PC, Weinstein AJ, Bozzo JE, Sledge WH. Proactive psychiatric consultation services reduce length of stay for admissions to an inpatient medical team. Psychosomatics. 2011;52(6):513-20.
26. Chan AC, Burke CA, Coffey EM, Hilden DR, Coira DL, Warner-Cohen J, et al. Integrated inpatient medical and psychiatric care: Experiences of 5 institutions. American College of Physicians; 2018.
27. Muskin PR, Skomorowsky A, Shah RN. Co-managed care for medical inpatients, CL vs C/L psychiatry. Psychosomatics. 2016;57(3):258-63.
28. Barrett J, Aitken P, Lee W. Report of the 2nd annual survey of liaison psychiatry in England. Royal College of Psychiatrists. 2015.
29. Walker J, Burke K, Toynbee M, van Niekerk M, Frost C, Magill N, et al. The HOME Study: study protocol for a randomised controlled trial comparing the addition of Proactive Psychological Medicine to usual care, with usual care alone, on the time spent in hospital by older acute hospital inpatients. Trials. 2019;20(1):1-9.
30. Tadd W, Hillman A, Calnan S, Calnan M, Bayer T, Read S. Dignity in Practice: An exploration of the care of older adults in acute NHS Trusts: Citeseer; 2011.
31. Toynbee M, Walker J, Clay F, Hollands L, van Niekerk M, Harriss E, et al. The effectiveness of inpatient consultation-liaison psychiatry service models: A systematic review of randomized trials. General Hospital Psychiatry. 2021.
32. Sharpe M, Toynbee M, Walker J, Consultation THSPI. Proactive Integrated Consultation-Liaison Psychiatry: A new service model for the psychiatric care of general hospital inpatients. General Hospital Psychiatry. 2020;66:9-15.
33. Wood R, Wand AP. The effectiveness of consultation-liaison psychiatry in the general hospital setting: a systematic review. Journal of psychosomatic research. 2014;76(3):175-92.
34. Sibbald B, Roland M. Understanding controlled trials. Why are randomised controlled trials important? BMJ: British Medical Journal. 1998;316(7126):201.
35. Mulrow CD. Systematic reviews: rationale for systematic reviews. Bmj. 1994;309(6954):597-9.
36. Oldham MA, Chahal K, Lee HB. A systematic review of proactive psychiatric consultation on hospital length of stay. General hospital psychiatry. 2019;60:120-6.
37. Andreoli P. A systematic review of studies of the cost-effectiveness of mental health consultation-liaison interventions in general hospitals. Psychosomatics. 2003;44(6):499-507.
38. Hussain MaS, Dallas. Integrated models of care for medical inpatients with psychiatric disorders: a systematic review. Psychosomatics. 2014;55(4):315-25.

39. Stein B, Müller MM, Meyer LK, Söllner W, Group CGW. Psychiatric and psychosomatic consultation-liaison Services in General Hospitals: a systematic review and meta-analysis of effects on symptoms of depression and anxiety. Psychotherapy and psychosomatics. 2020;89(1):6-16.
40. Callaghan P, Eales S, Coates T, Bowers L. A review of research on the structure, process and outcome of liaison mental health services. Journal of Psychiatric and Mental Health Nursing. 2003;10(2):155-65.
41. Methley AM, Campbell S, Chew-Graham C, McNally R, Cheraghi-Sohi S. PICO, PICOS and SPIDER: a comparison study of specificity and sensitivity in three search tools for qualitative systematic reviews. BMC health services research. 2014;14(1):1-10.
42. Fossey M, Parsonage M. Outcomes and performance in liaison psychiatry. Centre for Mental Health. 2014.
43. Hulley S, Cummings S, Browner W, Grady D, Newman T. Designing clinical research (vol. 4th). Philadelphia: LWW. 2013.
44. Higgins JP, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, et al. Cochrane handbook for systematic reviews of interventions: John Wiley & Sons; 2019.
45. Walker J, Burke K, Wanat M, Fisher R, Fielding J, Mulick A, et al. The prevalence of depression in general hospital inpatients: a systematic review and meta-analysis of interview-based studies. Psychological medicine. 2018;48(14):2285-98.
46. Rethlefsen ML, Farrell AM, Trzasko LCO, Brigham TJ. Librarian co-authors correlated with higher quality reported search strategies in general internal medicine systematic reviews. Journal of clinical epidemiology. 2015;68(6):617-26.
47. Stevinson C, Lawlor D. Searching multiple databases for systematic reviews: added value or diminishing returns? Complementary therapies in medicine. 2004;12(4):228-32.
48. Wright K, Golder S, Rodriguez-Lopez R. Citation searching: a systematic review case study of multiple risk behaviour interventions. BMC medical research methodology. 2014;14(1):1-8.
49. Mahood Q, Van Eerd D, Irvin E. Searching for grey literature for systematic reviews: challenges and benefits. Research synthesis methods. 2014;5(3):221-34.
50. Higgins JP, Altman DG, Gøtzsche PC, Jüni P, Moher D, Oxman AD, et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. Bmj. 2011;343.
51. Baldwin R, Pratt H, Goring H, Marriott A, Roberts C. Does a nurse-led mental health liaison service for older people reduce psychiatric morbidity in acute general medical wards? A randomised controlled trial. Age and Ageing. 2004;33(5):472-8.

52. Cullum S, Tucker S, Todd C, Brayne C. Effectiveness of liaison psychiatric nursing in older medical inpatients with depression: a randomised controlled trial. Age and ageing. 2007;36(4):436-42.
53. Gater RA, Goldberg D, Evanson J, Lowson K, McGrath G, Tantam D, et al. Detection and treatment of psychiatric illness in a general medical ward: a modified cost–benefit analysis. Journal of Psychosomatic Research. 1998;45(5):437-48.
54. Shah A, Odutoye K, De T. Depression in acutely medically ill elderly inpatients: a pilot study of early identification and intervention by formal psychogeriatric consultation. Journal of affective disorders. 2001;62(3):233-40.
55. Levenson JL, Hamer RM, Rossiter LF. A randomized controlled study of psychiatric consultation guided by screening in general medical inpatients. The American journal of psychiatry. 1992.
56. Talley S, Davis DS, Goicoechea N, Brown L, Barber LL. Effect of psychiatric liaison nurse specialist consultation on the care of medical-surgical patients with sitters. Archives of Psychiatric Nursing. 1990;4(2):114-23.
57. Cole MG, Fenton FR, Engelsmann F, Mansouri I. Effectiveness of geriatric psychiatry consultation in an acute care hospital: a randomized clinical trial. Journal of the American Geriatrics Society. 1991;39(12):1183-8.
58. Meesters PDC HM, Hermans J. Psychiatric disorders and effectiveness of psychiatric consultations with medical/surgical patients staying long in hospital. Tijdschrift voor Psychiatrie. 1991;33(10):694-703.
59. Weir CJ, Butcher I, Assi V, Lewis SC, Murray GD, Langhorne P, et al. Dealing with missing standard deviation and mean values in meta-analysis of continuous outcomes: a systematic review. BMC medical research methodology. 2018;18(1):1-14.
60. Begg C, Cho M, Eastwood S, Horton R, Moher D, Olkin I, et al. Improving the quality of reporting of randomized controlled trials: the CONSORT statement. Jama. 1996;276(8):637-9.
61. Hengeveld MW, Ancion FA, Rooijmans HG. Psychiatric consultations with depressed medical inpatients: a randomized controlled cost-effectiveness study. The International Journal of Psychiatry in Medicine. 1989;18(1):33-43.
62. England N, DoHaS C. Implementing the five year forward view for mental health. London: NHS England. 2016.
63. Cowie MR, Blomster JI, Curtis LH, Duclaux S, Ford I, Fritz F, et al. Electronic health records to facilitate clinical research. Clinical Research in Cardiology. 2017;106(1):1-9.

64. Sharpe M, Walker J, Hansen CH, Martin P, Symeonides S, Gourley C, et al. Integrated collaborative care for comorbid major depression in patients with cancer (SMaRT Oncology-2): a multicentre randomised controlled effectiveness trial. The Lancet. 2014;384(9948):1099-108.
65. Gilbody S, Bower P, Fletcher J, Richards D, Sutton AJ. Collaborative care for depression: a cumulative meta-analysis and review of longer-term outcomes. Archives of internal medicine. 2006;166(21):2314-21.
66. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. Bmj. 2008;337.
67. O'Cathain A, Croot L, Duncan E, Rousseau N, Sworn K, Turner KM, et al. Guidance on how to develop complex interventions to improve health and healthcare. BMJ open. 2019;9(8):e029954.
68. Campbell M, Fitzpatrick R, Haines A, Kinmonth AL, Sandercock P, Spiegelhalter D, et al. Framework for design and evaluation of complex interventions to improve health. Bmj. 2000;321(7262):694-6.
69. Bleijenberg N, Janneke M, Trappenburg JC, Ettema RG, Sino CG, Heim N, et al. Increasing value and reducing waste by optimizing the development of complex interventions: Enriching the development phase of the Medical Research Council (MRC) Framework. International Journal of Nursing Studies. 2018;79:86-93.
70. Netto G, Bhopal R, Lederle N, Khatoon J, Jackson A. How can health promotion interventions be adapted for minority ethnic communities? Five principles for guiding the development of behavioural interventions. Health promotion international. 2010;25(2):248-57.
71. Colquhoun HL, Squires JE, Kolehmainen N, Fraser C, Grimshaw JM. Methods for designing interventions to change healthcare professionals' behaviour: a systematic review. Implementation Science. 2017;12(1):1-11.
72. Möhler R, Köpke S, Meyer G. Criteria for reporting the development and evaluation of complex interventions in healthcare: revised guideline (CReDECI 2). Trials. 2015;16(1):1-9.
73. O'Cathain A, Croot L, Sworn K, Duncan E, Rousseau N, Turner K, et al. Taxonomy of approaches to developing interventions to improve health: a systematic methods overview. Pilot and feasibility studies. 2019;5(1):1-27.
74. Locock L, Robert G, Boaz A, Vougioukalou S, Shuldham C, Fielden J, et al. Testing accelerated experience-based co-design: a qualitative study of using a national archive of patient experience narrative interviews to promote rapid patient-centred service improvement. Health Services and Delivery Research. 2014;2(4).
75. Gaglio B, Shoup JA, Glasgow RE. The RE-AIM framework: a systematic review of use over time. American journal of public health. 2013;103(6):e38-e46.

76. Clarke D, Jones F, Harris R, Robert G. What outcomes are associated with developing and implementing co-produced interventions in acute healthcare settings? A rapid evidence synthesis. BMJ open. 2017;7(7):e014650.
77. Dalgetty R, Miller CB, Dombrowski SU. Examining the theory-effectiveness hypothesis: A systematic review of systematic reviews. British journal of health psychology. 2019;24(2):334-56.
78. Croot L, O'Cathain A, Sworn K, Yardley L, Turner K, Duncan E, et al. Developing interventions to improve health: a systematic mapping review of international practice between 2015 and 2016. Pilot and feasibility studies. 2019;5(1):1-13.
79. Turner KM, Rousseau N, Croot L, Duncan E, Yardley L, O'Cathain A, et al. Understanding successful development of complex health and healthcare interventions and its drivers from the perspective of developers and wider stakeholders: an international qualitative interview study. BMJ open. 2019;9(5):e028756.
80. Sledge WH, Gueorguieva R, Desan P, Bozzo JE, Dorset J, Lee HB. Multidisciplinary proactive psychiatric consultation service: impact on length of stay for medical inpatients. Psychotherapy and psychosomatics. 2015;84(4):208-16.
81. Hart C. Doing a literature review: Releasing the research imagination. 2018.
82. Greenhalgh T, Thorne S, Malterud K. Time to challenge the spurious hierarchy of systematic over narrative reviews? European journal of clinical investigation. 2018;48(6).
83. Baumeister RF, Leary MR. Writing narrative literature reviews. Review of general psychology. 1997;1(3):311-20.
84. Haddaway NR, Collins AM, Coughlin D, Kirk S. The role of Google Scholar in evidence reviews and its applicability to grey literature searching. PloS one. 2015;10(9):e0138237.
85. Schofield M, Knauss C. Surveys and questionnaires in health research. Research methods in health: Foundations for evidence-based practice. 2010:213-36.
86. Britten N. Qualitative research: qualitative interviews in medical research. Bmj. 1995;311(6999):251-3.
87. DiCicco-Bloom B, Crabtree BF. The qualitative research interview. Medical education. 2006;40(4):314-21.
88. Powell RA, Single HM. Focus groups. International journal for quality in health care. 1996;8(5):499-504.
89. Karnieli-Miller O, Strier R, Pessach L. Power relations in qualitative research. Qualitative health research. 2009;19(2):279-89.
90. Stewart DW, Shamdasani PN. Focus groups: Theory and practice: Sage publications; 2014.

91. Gill P, Stewart K, Treasure E, Chadwick B. Methods of data collection in qualitative research: interviews and focus groups. British dental journal. 2008;204(6):291-5.
92. Parker A, Tritter J. Focus group method and methodology: current practice and recent debate. International Journal of Research & Method in Education. 2006;29(1):23-37.
93. Lancaster GA, Dodd S, Williamson PR. Design and analysis of pilot studies: recommendations for good practice. Journal of evaluation in clinical practice. 2004;10(2):307-12.
94. Moore G, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions. UK medical Research Council (MRC) guidance. 2014:1-133.
95. Triplett P, Carroll CP, Gerstenblith TA, Bienvenu OJ. An evaluation of proactive psychiatric consults on general medical units. General hospital psychiatry. 2019;60:57-64.
96. Bui M, Thom RP, Hurwitz S, Levy-Carrick NC, O'Reilly M, Wilensky D, et al. Hospital length of stay with a proactive psychiatric consultation model in the medical intensive care unit: a prospective cohort analysis. Psychosomatics. 2019;60(3):263-70.
97. Bronson BD, Alam A, Schwartz JE. The impact of integrated psychiatric care on hospital medicine length of stay: a pre-post intervention design with a simultaneous usual care comparison. Psychosomatics. 2019;60(6):582-90.
98. Slaets J, Kauffmann R, Duivenvoorden H, Pelemans W, Schudel W. A randomized trial of geriatric liaison intervention in elderly medical inpatients. Psychosomatic medicine. 1997;59(6):585-91.
99. Aitken P, Robens S, Emmens T. Developing Models for Liaison Psychiatry Services-Guidance. Strategic Clinical Network for Mental Health England: Dementia and Neurological Conditions South West. 2014.
100. Becker L, Saunders R, Hardy R, Pilling S. The RAID model of liaison psychiatry. Report on the evaluation of four pilot services in east London Retrieved from https://pdfs seman tics c holar org/1616/95b0a f8fec. 2016;49584:78539-11083.
101. Katon WJ, Lin EH, Von Korff M, Ciechanowski P, Ludman EJ, Young B, et al. Collaborative care for patients with depression and chronic illnesses. New England Journal of Medicine. 2010;363(27):2611-20.
102. Huffman JC, Niazi SK, Rundell JR, Sharpe M, Katon WJ. Essential articles on collaborative care models for the treatment of psychiatric disorders in medical settings: a publication by the academy of psychosomatic medicine research and evidence-based practice committee. Psychosomatics. 2014;55(2):109-22.

103. Callahan CM, Boustani MA, Unverzagt FW, Austrom MG, Damush TM, Perkins AJ, et al. Effectiveness of collaborative care for older adults with Alzheimer disease in primary care: a randomized controlled trial. Jama. 2006;295(18):2148-57.
104. Strong V, Waters R, Hibberd C, Murray G, Wall L, Walker J, et al. Management of depression for people with cancer (SMaRT oncology 1): a randomised trial. The Lancet. 2008;372(9632):40-8.
105. Stuck AE, Siu AL, Wieland GD, Rubenstein L, Adams J. Comprehensive geriatric assessment: a meta-analysis of controlled trials. The Lancet. 1993;342(8878):1032-6.
106. Ellis G, Gardner M, Tsiachristas A, Langhorne P, Burke O, Harwood RH, et al. Comprehensive geriatric assessment for older adults admitted to hospital. Cochrane database of systematic reviews. 2017(9).
107. Abdulwahid MA, Booth A, Kuczawski M, Mason SM. The impact of senior doctor assessment at triage on emergency department performance measures: systematic review and meta-analysis of comparative studies. Emergency Medicine Journal. 2016;33(7):504-13.
108. Lewis R, and Edwards, N. Improving length of stay: what can hospitals do? : Nuffield Trust; 2015.
109. Bloor M. Focus groups in social research: Sage; 2001.
110. Hawe P, Shiell A, Riley T. Complex interventions: how “out of control” can a randomised controlled trial be? Bmj. 2004;328(7455):1561-3.
111. Carroll C, Patterson M, Wood S, Booth A, Rick J, Balain S. A conceptual framework for implementation fidelity. Implementation science. 2007;2(1):1-9.
112. Dane AV, Schneider BH. Program integrity in primary and early secondary prevention: are implementation effects out of control? Clinical psychology review. 1998;18(1):23-45.
113. Spillane V, Byrne MC, Byrne M, Leathem CS, O’Malley M, Cupples ME. Monitoring treatment fidelity in a randomized controlled trial of a complex intervention. Journal of advanced nursing. 2007;60(3):343-52.
114. Mowbray CT, Holter MC, Teague GB, Bybee D. Fidelity criteria: Development, measurement, and validation. American journal of evaluation. 2003;24(3):315-40.
115. Bradley F, Wiles R, Kinmonth A-L, Mant D, Gantley M. Development and evaluation of complex interventions in health services research: case study of the Southampton heart integrated care project (SHIP). Bmj. 1999;318(7185):711-5.
116. Ferm L, Rasmussen CDN, Jørgensen MB. Operationalizing a model to quantify implementation of a multi-component intervention in a stepped-wedge trial. Implementation Science. 2018;13(1):1-14.

117. Hales B, Terblanche M, Fowler R, Sibbald W. Development of medical checklists for improved quality of patient care. International Journal for Quality in Health Care. 2008;20(1):22-30.
118. Haynes AB, Weiser TG, Berry WR, Lipsitz SR, Breizat A-HS, Dellinger EP, et al. A surgical safety checklist to reduce morbidity and mortality in a global population. New England journal of medicine. 2009;360(5):491-9.
119. Winters BD, Gurses AP, Lehmann H, Sexton JB, Rampersad CJ, Pronovost PJ. Clinical review: checklists-translating evidence into practice. Critical Care. 2009;13(6):1-9.
120. Vats A, Vincent C, Nagpal K, Davies R, Darzi A, Moorthy K. Practical challenges of introducing WHO surgical checklist: UK pilot experience. Bmj. 2010;340.
121. Wanat M, Walker J, Hodges L, Richardson A, Sharpe M. Selecting, training and supervising nurses to treat depression in the medically ill: experience and recommendations from the SMaRT oncology collaborative care trials. General hospital psychiatry. 2015;37(6):518-21.
122. McCarney R, Warner J, Iliffe S, Van Haselen R, Griffin M, Fisher P. The Hawthorne Effect: a randomised, controlled trial. BMC medical research methodology. 2007;7(1):1-8.
123. Stahl SM, Davis RL. Best practices in medical teaching: Cambridge University Press; 2011.
124. Murad MH, Coto-Yglesias F, Varkey P, Prokop LJ, Murad AL. The effectiveness of self-directed learning in health professions education: a systematic review. Medical education. 2010;44(11):1057-68.
125. Kaufman DM. Applying educational theory in practice. Bmj. 2003;326(7382):213-6.
126. McNaughton N, Ravitz P, Wadell A, Hodges BD. Psychiatric education and simulation: a review of the literature. The Canadian Journal of Psychiatry. 2008;53(2):85-93.
127. Magill N, Knight R, McCrone P, Ismail K, Landau S. A scoping review of the problems and solutions associated with contamination in trials of complex interventions in mental health. BMC medical research methodology. 2019;19(1):1-13.
128. Winter SG, Szulanski G. Replication as strategy. Organization science. 2001;12(6):730-43.
129. Michie S, Fixsen D, Grimshaw JM, Eccles MP. Specifying and reporting complex behaviour change interventions: the need for a scientific method. BioMed Central; 2009.
130. Wolff AM, Taylor SA, McCabe JF. Using checklists and reminders in clinical pathways to improve hospital inpatient care. Med J Aust. 2004;181(8):428-31.
131. Grant SP, Mayo-Wilson E, Melendez-Torres G, Montgomery P. Reporting quality of social and psychological intervention trials: a systematic review of reporting guidelines and trial publications. PloS one. 2013;8(5):e65442.

132. Carman KL, Dardess P, Maurer M, Sofaer S, Adams K, Bechtel C, et al. Patient and family engagement: a framework for understanding the elements and developing interventions and policies. Health affairs. 2013;32(2):223-31.
133. May C, Finch T. Implementing, embedding, and integrating practices: an outline of normalization process theory. Sociology. 2009;43(3):535-54.
134. May CR, Finch T, Ballini L, MacFarlane A, Mair F, Murray E, et al. Evaluating complex interventions and health technologies using normalization process theory: development of a simplified approach and web-enabled toolkit. BMC health services research. 2011;11(1):1-11.
135. Glasgow RE, Emmons KM. How can we increase translation of research into practice? Types of evidence needed. Annu Rev Public Health. 2007;28:413-33.
136. Macaulay Ta. Progress towards a paperless NHS. BMJ: British Medical Journal. 2016;355.
137. Hawe P, Shiell A, Riley T, Gold L. Methods for exploring implementation variation and local context within a cluster randomised community intervention trial. Journal of Epidemiology & Community Health. 2004;58(9):788-93.
138. Moore G, Audrey S, Barker M, Bond L, Bonell C, Cooper C, et al. Process evaluation in complex public health intervention studies: the need for guidance. BMJ Publishing Group Ltd; 2014.
139. Steckler AB, Linnan L, Israel B. Process evaluation for public health interventions and research: Jossey-Bass San Francisco, CA; 2002.
140. Resnick B, Inguito P, Orwig D, Yahiro JY, Hawkes W, Werner M, et al. Treatment fidelity in behavior change research: a case example. Nursing research. 2005;54(2):139-43.
141. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, et al. Process evaluation of complex interventions: Medical Research Council guidance. bmj. 2015;350.
142. Oakley A, Strange V, Bonell C, Allen E, Stephenson J. Process evaluation in randomised controlled trials of complex interventions. Bmj. 2006;332(7538):413-6.
143. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. American journal of public health. 1999;89(9):1322-7.
144. Murray E, Treweek S, Pope C, MacFarlane A, Ballini L, Dowrick C, et al. Normalisation process theory: a framework for developing, evaluating and implementing complex interventions. BMC medicine. 2010;8(1):1-11.
145. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implementation science. 2009;4(1):1-15.

146. Glasgow RE, Harden SM, Gaglio B, Rabin B, Smith ML, Porter GC, et al. RE-AIM planning and evaluation framework: adapting to new science and practice with a 20-year review. Frontiers in public health. 2019;7:64.
147. Segrott J, Murphy S, Rothwell H, Scourfield J, Foxcroft D, Gillespie D, et al. An application of extended normalisation process theory in a randomised controlled trial of a complex social intervention: process evaluation of the strengthening families Programme (10–14) in Wales, UK. SSM-population health. 2017;3:255-65.
148. Kirk MA, Kelley C, Yankey N, Birken SA, Abadie B, Damschroder L. A systematic review of the use of the consolidated framework for implementation research. Implementation Science. 2015;11(1):1-13.
149. House A, Guthrie E, Walker A, Hewsion J, Trigwell P, Brennan C, et al. A programme theory for liaison mental health services in England. BMC health services research. 2018;18(1):1-11.
150. Grant A, Treweek S, Dreischulte T, Foy R, Guthrie B. Process evaluations for cluster-randomised trials of complex interventions: a proposed framework for design and reporting. Trials. 2013;14(1):1-10.
151. Rogers PJ. Using programme theory to evaluate complicated and complex aspects of interventions. Evaluation. 2008;14(1):29-48.
152. White H. Theory-based impact evaluation: principles and practice. Journal of development effectiveness. 2009;1(3):271-84.
153. Renger R, Titcomb A. A three-step approach to teaching logic models. American Journal of Evaluation. 2002;23(4):493-503.
154. Mills T, Lawton R, Sheard L. Advancing complexity science in healthcare research: the logic of logic models. BMC Medical Research Methodology. 2019;19(1):1-11.
155. Saunders RP, Evans MH, Joshi P. Developing a process-evaluation plan for assessing health promotion program implementation: a how-to guide. Health promotion practice. 2005;6(2):134-47.
156. Bumbarger B, Perkins D. After randomised trials: issues related to dissemination of evidence-based interventions. Journal of Children's Services. 2008.
157. Pawson R, Tilley N. Realistic evaluation: sage; 1997.
158. Nasreddine ZS, Phillips NA, Bédirian V, Charbonneau S, Whitehead V, Collin I, et al. The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. Journal of the American Geriatrics Society. 2005;53(4):695-9.
159. Pendlebury ST, Welch SJ, Cuthbertson FC, Mariz J, Mehta Z, Rothwell PM. Telephone assessment of cognition after transient ischemic attack and stroke: modified telephone interview of

cognitive status and telephone Montreal Cognitive Assessment versus face-to-face Montreal Cognitive Assessment and neuropsychological battery. Stroke. 2013;44(1):227-9.
160. Mahoney FI, Barthel DW. Functional evaluation: the Barthel Index: a simple index of independence useful in scoring improvement in the rehabilitation of the chronically ill. Maryland state medical journal. 1965.
161. Herdman M, Gudex C, Lloyd A, Janssen M, Kind P, Parkin D, et al. Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). Quality of life research. 2011;20(10):1727-36.
162. Kroenke K, Spitzer RL, Williams JB. The Patient Health Questionnaire-2: validity of a two-item depression screener. Medical care. 2003:1284-92.
163. Kroenke K, Spitzer RL, Williams JB, Monahan PO, Löwe B. Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. Annals of internal medicine. 2007;146(5):317-25.
164. Day S, Fayers P, Harvey D. Double data entry: what value, what price? Controlled clinical trials. 1998;19(1):15-24.
165. Organization WH. The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines: World Health Organization; 1992.
166. O'Cathain A, Thomas K, Drabble S, Rudolph A, Hewison J. What can qualitative research do for randomised controlled trials? A systematic mapping review. BMJ open. 2013;3(6):e002889.
167. Marshall MN. Sampling for qualitative research. Family practice. 1996;13(6):522-6.
168. Aurini JD, Heath M, Howells S. The how to of qualitative research: Strategies for executing high quality projects: Sage; 2016.
169. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Administration and policy in mental health and mental health services research. 2015;42(5):533-44.
170. Munro A, Bloor M. Process evaluation: the new miracle ingredient in public health research? Qualitative Research. 2010;10(6):699-713.
171. Ritchie J, Lewis J, Nicholls CM, Ormston R. Qualitative research practice: A guide for social science students and researchers: sage; 2013.
172. Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. Field methods. 2006;18(1):59-82.
173. Mishra P, Pandey CM, Singh U, Gupta A, Sahu C, Keshri A. Descriptive statistics and normality tests for statistical data. Annals of cardiac anaesthesia. 2019;22(1):67.
174. StataCorp. Stata Statistical Software: Release 16. College Station, TX: StataCorp LLC. 2019.

175. Braun V, Clarke V. Using thematic analysis in psychology. Qualitative research in psychology. 2006;3(2):77-101.
176. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC medical research methodology. 2013;13(1):1-8.
177. Ward DJ, Furber C, Tierney S, Swallow V. Using F ramework A nalysis in nursing research: a worked example. Journal of advanced nursing. 2013;69(11):2423-31.
178. Glaser BG, Strauss AL, Strutzel E. The discovery of grounded theory; strategies for qualitative research. Nursing research. 1968;17(4):364.
179. Nowell LS, Norris JM, White DE, Moules NJ. Thematic analysis: Striving to meet the trustworthiness criteria. International journal of qualitative methods. 2017;16(1):1609406917733847.
180. El Hussein M, Hirst S, Salyers V, Osuji J. Using grounded theory as a method of inquiry: Advantages and disadvantages. Qualitative Report. 2014;19(27).
181. Finlay L. "Outing" the researcher: The provenance, process, and practice of reflexivity. Qualitative health research. 2002;12(4):531-45.
182. Manderson L, Bennett E, Andajani-Sutjahjo S. The social dynamics of the interview: Age, class, and gender. Qualitative health research. 2006;16(10):1317-34.
183. Parsonage M, Fossey, M., & Tutty, C. Liaison Psychiatry in the Modern NHS: Report. Centre for Mental Health; 2012.
184. Siddiqi N, House AO, Holmes JD. Occurrence and outcome of delirium in medical in-patients: a systematic literature review. Age Ageing. 2006;35(4):350-64.
185. Hilderink P, Collard R, Rosmalen J, Voshaar RO. Prevalence of somatoform disorders and medically unexplained symptoms in old age populations in comparison with younger age groups: a systematic review. Ageing research reviews. 2013;12(1):151-6.
186. Parsonage M, Fossey M, Tutty C. Liaison Psychiatry in the Modern NHS: Report: Centre for Mental Health; 2012.
187. Fetters MD, Curry LA, Creswell JW. Achieving integration in mixed methods designs—principles and practices. Health services research. 2013;48(6pt2):2134-56.
188. Woods M, Paulus T, Atkins DP, Macklin R. Advancing qualitative research using qualitative data analysis software (QDAS)? Reviewing potential versus practice in published studies using ATLAS. ti and NVivo, 1994–2013. Social Science Computer Review. 2016;34(5):597-617.

189. Audrey S, Holliday J, Parry-Langdon N, Campbell R. Meeting the challenges of implementing process evaluation within randomized controlled trials: the example of ASSIST (A Stop Smoking in Schools Trial). Health education research. 2006;21(3):366-77.
190. Bonell C, Oakley A, Hargreaves J, Strange V, Rees R. Assessment of generalisability in trials of health interventions: suggested framework and systematic review. Bmj. 2006;333(7563):346-9.
191. Tavender EJ, Bosch M, Gruen RL, Green SE, Knott J, Francis JJ, et al. Understanding practice: the factors that influence management of mild traumatic brain injury in the emergency department-a qualitative study using the Theoretical Domains Framework. Implementation Science. 2014;9(1):1-10.
192. Alexander KE, Brijnath B, Mazza D. Barriers and enablers to delivery of the Healthy Kids Check: an analysis informed by the Theoretical Domains Framework and COM-B model. Implementation Science. 2014;9(1):1-14.
193. Kent B, McCormack B. Clinical context for evidence-based practice: John Wiley & Sons; 2010.
194. Weiner BJ, Belden CM, Bergmire DM, Johnston M. The meaning and measurement of implementation climate. Implementation Science. 2011;6(1):1-12.
195. Cummings GG, Estabrooks CA, Midodzi WK, Wallin L, Hayduk L. Influence of organizational characteristics and context on research utilization. Nursing research. 2007;56(4):S24-S39.
196. Wilsford D. Path dependency, or why history makes it difficult but not impossible to reform health care systems in a big way. Journal of public policy. 1994;14(3):251-83.
197. Bevan G, Robinson R. The interplay between economic and political logics: path dependency in health care in England. Journal of health politics, policy and law. 2005;30(1-2):53-78.
198. Aubert CE, Schnipper JL, Fankhauser N, Marques-Vidal P, Stirnemann J, Auerbach AD, et al. Patterns of multimorbidity in medical inpatients: a multinational retrospective cohort study. Internal and emergency medicine. 2020;15(7):1207-17.
199. Goldberg SE, Bradshaw LE, Kearney FC, Russell C, Whittamore KH, Foster PE, et al. Care in specialist medical and mental health unit compared with standard care for older people with cognitive impairment admitted to general hospital: randomised controlled trial (NIHR TEAM trial). Bmj. 2013;347.
200. Wins WC. Improving the outcome for older people admitted to the general hospital: guidelines for the development of liaison mental health services for older people. London: Royal College of Psychiatrists. 2005.
201. Eales S. Liaison Psychiatry for every acute hospital: Integrated mental and physical healthcare. College Report 183. 2013.

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    - Publication: PIPM description paper, General Hospital Psychiatry, 2020
    - Publication: The HOME Study Protocol, Trials, 2019
    - Publication: The HOME Study statistical and economic analysis plan, Trials, 2020

A. Supplementary tables and figures

Table A.1 Systematic review search strategy

Database	Search strategy
Medline	1 Hospitals, District/ 2 Hospitals, General/ 3 Tertiary Care Centers/ 4 exp Hospitals, Teaching/ 5 "district hospital*".ti,ab. 6 "general hospital*".ti,ab. 7 "tertiary hospital*".ti,ab. 8 "teaching hospital*".ti,ab. 9 "medical centre*".ti,ab. 10 "medical center*".ti,ab. 11 "general medical".ti,ab. 12 (ward* adj4 patient*).ti,ab. 13 (hospital* adj4 patient*).ti,ab. 14 Inpatients/ 15 in$patient*.ti,ab. 16 Hospitalization/ 17 Hospital Units/ 18 Patient Admission/ 19 OR/ 1-18 20 "psych* consult*".ti,ab. 21 (liaison adj2 psych*).ti,ab. 22 "psychosomatic medicine".ti,ab. 23 "psych* medicine".ti,ab. 24 "consultation-liaison*".ti,ab. 25 Psychiatric Department, Hospital/ 26 "behav* medicine*".ti,ab. 27 "mental health liaison*".ti,ab. 28 "hospital psych*".ti,ab. 29 "mental health service".ti,ab. 30 "mental health unit".ti,ab. 31 "general hospital psych*".ti,ab. 32 "mental health".ti,ab. 33 OR/ 20-32 34 randomized controlled trial.pt. 35 controlled clinical trial.pt. 36 (placebo or trial or groups).ab. 37 random*.ti,ab. 38 OR/ 34-37 39 19 and 33 and 38

Embase	1 public hospital/ 2 general hospital/ 3 tertiary care center/ 4 exp teaching hospital/ 5 "district hospital*".ti,ab. 6 "general hospital*".ti,ab. 7 "tertiary hospital*".ti,ab. 8 "teaching hospital*".ti,ab. 9 "medical centre*".ti,ab. 10 "medical center*".ti,ab. 11 "general medical".ti,ab. 12 (ward* adj4 patient*).ti,ab. 13 (hospital* adj4 patient*).ti,ab. 14 hospital patient/ 15 in$patient*.ti,ab. 16 hospitalization/ 17 "hospital subdivisions and components"/ 18 hospital admission/ 19 OR/ 1-18 20 "psych* consult*".ti,ab. 21 (liaison adj2 psych*).ti,ab. 22 "psychosomatic medicine".ti,ab. 23 "psych* medicine".ti,ab. 24 "consultation-liaison*".ti,ab. 25 psychiatric department/ 26 "behav* medicine*".ti,ab. 27 "mental health liaison*".ti,ab. 28 "hospital psych*".ti,ab. 29 "mental health service".ti,ab. 30 "mental health unit".ti,ab. 31 "general hospital psych*".ti,ab 32 "mental health".ti,ab. 33 OR/ 20-32 34 exp "controlled clinical trial (topic)"/ 35 (placebo or trial or groups).ab. 36 random*.ti,ab. 37 OR/ 34-36 38 19 and 33 and 37

PsycINFO	1 "district hospital*".ti,ab. 2 "general hospital*".ti,ab. 3 "tertiary hospital*".ti,ab. 4 "teaching hospital*".ti,ab. 5 "medical centre*".ti,ab. 6 "medical center*".ti,ab. 7 "general medical".ti,ab. 8 (ward* adj4 patient*).ti,ab. 9 (hospital* adj4 patient*).ti,ab. 10 exp Hospitalized Patients/ 11 in$patient*.ti,ab. 12 Hospitalization/ 13 hospital admission/ 14 OR/ 1-13 15 mental health services/ 16 "psych* consult*".ti,ab. 17 (liaison adj2 psych*).ti,ab. 18 "psychosomatic medicine".ti,ab. 19 "psych* medicine".ti,ab. 20 "consultation-liaison*".ti,ab. 21 "behav* medicine*".ti,ab. 22 "mental health liaison*".ti,ab. 23 "hospital psych*".ti,ab. 24 "mental health service".ti,ab. 25 "mental health unit".ti,ab. 26 "general hospital psych*".ti,ab. 27 "mental health".ti,ab. 28 OR/ 15 - 27 29 clinical trials/ 30 (placebo or trial or groups).ab. 31 random*.ti,ab. 32 OR/ 29-31 33 14 and 28 and 32

CINAHL via EBSCOhost	S35 S18 AND S29 AND S34 S34 S30 OR S31 OR S32 OR S33 S33 TI random* OR AB random* S32 AB placebo or trial or groups S31 (MH "Clinical Trials+") S30 (MH "Randomized Controlled Trials") S29 S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 S28 (MH "Sexual Counseling") S27 (MH "Motivational Interviewing") S26 (MH "Emergency Services, Psychiatric") S25 TI "mental health" OR AB "mental health" S24 TI "hospital psych*" OR AB "hospital psych*" S23 TI "behav* medicine*" OR AB "behav* medicine*" S22 TI "consultation-liaison*" OR AB "consultation-liaison*" S21 TI "psych* medicine" OR AB "psych* medicine" S20 TI liaison n2 psych* OR AB liaison n2 psych* S19 TI "psych* consult*" OR AB "psych* consult*" S18 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 S17 (MH "Patient Admission") S16 (MH "Hospital Units") OR (MH "Burn Units") OR (MH "Delivery Rooms+") OR (MH "Intensive Care Units+") OR (MH "Nurseries, Hospital") OR (MH "Nursing Units") OR (MH "Observation Units") OR (MH "Oncology Care Units") OR (MH "Operating Rooms") OR (MH "Rehabilitation Centers+") S15 (MH "Hospitalization+") S14 TI inpatient* OR AB inpatient* S13 (MH "Inpatients") S12 TI hospital* n4 patient* OR AB hospital* n4 patient* S11 TI ward* n4 patient* OR AB ward* n4 patient* S10 TI "general medical" OR AB "general medical" S9 TI "medical center*" OR AB "medical center*" S8 TI "medical centre*" OR AB "medical centre*" S7 TI "teaching hospital*" OR AB "teaching hospital*" S6 TI "tertiary hospital*" OR AB "tertiary hospital*" S5 TI "general hospital*" OR AB "general hospital*" S4 TI "district hospital*" OR AB "district hospital*" S3 (MH "Tertiary Health Care") S2 (MH "Hospitals, Community") OR (MH "Hospitals, Rural") OR (MH "Hospitals, Urban") OR (MH "Magnet Hospitals") OR (MH "Cancer Care Facilities") OR (MH "Hospices") OR (MH "Hospital Ships") OR (MH "Hospitals, Public+") S1 (MH "Hospitals, Public+")

Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials	ID Search Hits #1 MeSH descriptor: [Hospitals] explode all trees #2 MeSH descriptor: [Hospitals, Animal] explode all trees #3 MeSH descriptor: [Hospitals, Psychiatric] explode all trees #4 MeSH descriptor: [Hospitals, Pediatric] explode all trees #5 #2 or #3 or #4 #6 #1 NOT #5 #7 "district hospital*".ti,ab. #8 "general hospital*".ti,ab. #9 "tertiary hospital*".ti,ab. #10 "teaching hospital*".ti,ab. #11 "medical centre*".ti,ab. #12 "medical center*".ti,ab. #13 "general medical".ti,ab. #14 (ward* near/4 patient*).ti,ab. #15 (hospital* near/4 patient*).ti,ab. #16 MeSH descriptor: [Inpatients] explode all trees #17 MeSH descriptor: [Hospital Units] explode all trees #18 MeSH descriptor: [Hospitalization] explode all trees #19 inpatient*.ti,ab. #20 #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 83367 #21 MeSH descriptor: [Psychiatric Department, Hospital] explode all trees #22 "psych* consult*".ti,ab. #23 (liaison near/2 psych*).ti,ab. #24 "psych* medicine".ti,ab. #25 "consultation-liaison*".ti,ab. #26 "behav* medicine*".ti,ab. #27 "hospital psych*".ti,ab. #28 "mental health".ti,ab. #29 #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 #30 #20 and #29

DARE and NHS EED

Title: Psych*	AND	*(Any field:)*
		Hospital*
		“medical centre*”
		“medical center*”
		Inpatient*
		“patient admission*”
		“ward patient*”

Title: “mental health”	AND	*(Any field:)*
		Hospital*
		“medical centre*”
		“medical center*”
		Inpatient*
		“patient admission*”
		“ward patient*”

Title: liaison	AND	*(Any field:)*
		Hospital*
		“medical centre*”
		“medical center*”
		Inpatient*
		“patient admission*”
		“ward patient*”

Title: “behav* medicine”	AND	*(Any field:)*
		Hospital*
		“medical centre*”
		“medical center*”
		Inpatient*
		“patient admission*”
		“ward patient*”

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Psychiatric consultation
Psychiatry consultation
Liaison psychiatry
Liaison psychiatrist
Psychosomatic medicine
Psychiatric medicine
Consultation-liaison
Consultation liaison
Behavioural medicine
Behavioral medicine
Mental health liaison
Hospital psychiatry
Hospital psychiatrist
Hospital psychiatrists

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<tr><td>Title: inpatient</td><td>AND</td><td>Mental health</td></tr>
<tr><td>Title: admission</td><td>AND</td><td>Mental health</td></tr>
<tr><td>Title: ward</td><td>AND</td><td>Mental health</td></tr>
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Table A.2 People who declined to be interviewed

Interview cohort	Number
Patients	**17**
Not Contactable	7
Declined- reason unknown	2
Declined- cannot remember hospital stay	2
Declined- worried about COVID-19	1
Declined- too unwell	2
Declined- recent bereavement	1
Too deaf to hear on phone	1
Reason not given	1
Carers	**6**
Declined- worried about COVID-19	1
Reason not given	5
PIPM clinicians	**0**
Ward Professionals	**5**
Not available at time arranged	4
Believes views will have already been captured by other staff	1
Total	**28**

Table A.3 Demographic characteristics of patients allocated to PIPM

	Received PIPM (n = 1359)	**Did not receive PIPM (n = 14)**
Age, years		
Mean (SD)	82 (8.2)	81 (9.4)
Median (IQR)	83 (12.6)	82 (15)
Range	65 – 103	69 - 98
65-74 years	303 (22.3%)	5 (35.7%)
75-84 years	480 (35.3%)	5 (35.7%)
≥85 years	576 (42.4%)	4 (28.6%)
Sex		
Female	667 (49.1%)	3 (21.4%)
Male	692 (50.9%)	11 (78.6%)
Usual place of residence		
Private residence	1,237 (91.0%)	14 (100.0%)
Sheltered accommodation	14 (1.0%)	0 (0.0%)
Assisted living	21 (1.6%)	0 (0.0%)
Care home/nursing home	87 (6.4%)	0 (0.0%)
Ethnicity[p]		
White British	698 (51.36%)	6 (42.9%)
White Irish	11 (0.81%)	0 (0.0%)
Any other white background	15 (1.10%)	0 (0.0%)
Indian	1 (0.07%)	0 (0.0%)
Pakistani	1 (0.07%)	0 (0.0%)
Any other Asian background	1 (0.07%)	0 (0.0%)
Caribbean	2 (0.15%)	0 (0.0%)
Any other black background	2 (0.15%)	0 (0.0%)
Not stated	628 (46.21%)	8 (57.1%)
Relationship status		
Spouse/partner	594 (43.71%)	8 (57.1%)
No spouse/partner	765 (56.29%)	6 (42.9%)
Employment status		
Retired	1,323 (97.35%)	14 (100.0%)
Working	22 (1.62%)	0 (0.0%)
Not working (due to health)	12 (0.88%)	0 (0.0%)
Not working (other reason)	2 (0.15%)	0 (0.0%)
Living alone		
Yes	610 (44.89%)	6 (42.9%)
No	749 (55.11%)	8 (57.1%)
Residence area		
Urban	785 (57.76%)	9 (64.3%)
Rural	574 (42.24%)	5 (35.7%)
Deprivation index quintiles		
0 (most deprived)	39 (2.87%)	0 (0.0%)
1	157 (11.55%)	4 (28.6%)
2	307 (22.59%)	2 (14.3%)
3	402 (29.58%)	2 (14.3%)
4 (least deprived)	454 (33.41%)	6 (42.9%)

[p] Ethnicity not routinely recorded at one of the three NHS Trusts in The HOME Study

Table A.4 Clinical characteristics of patients allocated to PIPM

	Received PIPM (n = 1359)	**Did not receive PIPM (n = 14)**
Reason for hospital admission		
Abnormal investigation findings	26 (1.9%)	1 (7.1%)
Symptoms and signs involving the circulatory and respiratory systems	364 (26.8%)	5 (35.7%)
Symptoms and signs involving cognition, perception, emotional state and behaviour	144 (10.6%)	0 (0.0%)
Symptoms and signs involving the digestive system and abdomen	159 (11.7%)	0 (0.0%)
Falls and injuries	188 (13.8%)	1 (7.1%)
General symptoms	301 (22.2%)	6 (42.9%)
Symptoms and signs involving the nervous and musculoskeletal systems	21 (1.6%)	0 (0.0%)
Symptoms and signs involving the skin and subcutaneous tissue	67 (4.9%)	1 (7.1%)
Symptoms and signs involving the urinary system	89 (6.6%)	0 (0.0%)
Multimorbidity (Patients with at least one diagnoses in the following bodily systems on admission)		
Blood and blood-forming organs and disorders of immune mechanisms	125 (9.2%)	2 (14.3%)
Certain infectious and parasitic diseases	57 (4.2%)	2 (14.3%)
Circulatory system	959 (70.6%)	9 (64.3%)
Congenital and chromosomal abnormalities	8 (0.6%)	0 (0.0%)
Digestive system	317 (23.3%)	6 (42.9%)
Ear and mastoid process	45 (3.3%)	3 (21.4%)
Endocrine, nutritional and metabolic disease	524 (38.6%)	5 (35.7%)
Eye and adnexa	155 (11.4%)	2 (14.3%)
Genitourinary system	415 (30.3%)	4 (28.6%)
Injury, poisoning and certain other consequences of external causes	53 (3.9%)	1 (7.1%)
Mental and behavioural disorders	380 (28.0%)	2 (14.3%)
Musculoskeletal system and connective tissue	407 (30.0%)	5 (35.7%)
Neoplasms	333 (24.5%)	1 (7.1%)
Nervous system	247 (18.2%)	5 (35.7%)
Respiratory system	394 (29.0%)	5 (35.7%)
Skin and subcutaneous tissue	76 (5.6%)	1 (7.1%)
Number of diagnoses		
Median (IQR)	5 (4)	5 (5)
Range	0 - 24	0 - 25
Number of medications		
Mean (SD)	11.4 (5.2)	11.7 (6.2)
Median (IQR)	11 (6)	12 (8)
Range	1 - 36	3 - 24

Data are number (%) unless otherwise indicated.

Table A.5 Psychiatric characteristics at baseline of patients allocated to PIPM

	Received PIPM (n = 1359)	**Did not receive PIPM (n = 14)**
Depressive symptoms (PHQ-2, 0-6) [q]		
Mean (SD)	2.6 (2.1)	2.4 (1.7)
Score ≥3	640 (48.6%)	7 (50.0%)
Anxiety symptoms (GAD-2, 0-6)[r]		
Mean (SD)	2.5 (2.2)	2.6 (2.4)
Score ≥3	581 (43.8%)	6 (42.9%)
Independent functioning (Barthel Index, 0-20)		
Mean (SD)	9.3 (5.7)	11.0 (6.2)
Cognitive function (MoCA-T, 0-22)		
Mean (SD)	9.5 (6.2)	11.6 (6.1)
Receiving follow-up from Community Mental Health Team at time of admission		
Yes n (%)	68 (5.0%)	Not recorded*
No n (%)	1291 (95.0%)	Not recorded*

Data are number (%) unless otherwise indicated.

* = Community Mental Health Team status recorded by PIPM clinicians so not recorded for those patients not seen by PIPM clinicians.

[q] N = 1,316 as PHQ-2 data not available for 43 patients

[r] N = 1,327 as PHQ-2 data not available for 32 patients

Table A.6 Summary of experiences reported by 26 patients who received PIPM

Theme	Code	Example quotation	Interviewee
Positive experience			
Valued therapeutic relationship	Helpful to talk about feelings	"...it's a good point of view to see a person's...personal reaction to what's going on around them and how they're feeling..."	Pt9
	Talked about things normally would not talk about	"...it made you sort of say things to people out-loud that you might be thinking..."	Pt9
	Talking to PIPM clinicians was reassuring	"...the professional contact...was very reassuring."	Pt21
	Spent time with patient	"...he had the time to listen and let me speak."	Pt25
	Appreciated regular contact	"...came to see me every day... before I came home..."	Pt4
Valued interest in patient as a person	Interested in patient as a person	"...it makes you feel that...someone is interested in your personal circumstances."	Pt21
	Asked things of patient rather than telling them	"…[PIPM Clinician] was enquiring things of me rather than the others were telling me things"	Pt9
Found practical contributions helpful	Arranged psych follow-up	"...I'm going to have...some counselling – which they've helped me arrange"	Pt4
	Helped ensure discharge arrangements were all in place	"...they made sure they'd done everything to set everything in place."	Pt4
Helped to understand care	Helped understand medical problems and their treatment	"So I did actually find that quite nice to be able to have somebody to talk to just to check up on what I had actually been told as to what I had imagined I'd be told."	Pt3
	Helped understand discharge plans	"...improved...your understanding of-of what had happened to you...and...your rehabilitation..."	Pt11
	Appreciated coordination of physical and mental care	"...the thing that we really appreciated was the holistic approach...in which everything was really very fully coordinated - the physical side, the mental side, the psychological side...and for giving total care overall."[s]	Pt9
Negative experience			
Did not find additional clinical contact helpful	Did not like additional focus on mental state	"...I was not in there to...talk about or...be treated for my mental state. I was in there because I had fallen down the stairs..."	Pt16
	Did not know what PIPM clinicians' role was	"...I mean I still don't know to this day what it was for, was it to examine how I, how I felt emotionally about been in hospital?	Pt6
	Addition of PIPM meant too many people involved in care	"...you've got a lot of medical people coming to see you and it was...very confusing as to who was who -"	Pt25

[s] Quote from husband of patient

Table A.7 Summary of experiences reported by 18 carers of patients who received PIPM

Theme	Code	Example quotation	Interviewee
Positive experience			
Carer found practical contributions helpful	Arranged psych follow-up	"[PIPM Clinician]...referred my dad to a...memory clinic..."	C17
	Helped ensured discharge arrangements were all in place	"...the consultant who saw her to discharge her when I was there was very…keen to get things moving and put everything in place."	C6
Carer appreciated communication with PIPM clinicians	Appreciated being kept informed about care	"...I know [PIPM clinician] certainly kept me informed…about what was going on..."	C17
	Built confidence that patient was being looked after	"I think it built a little bit of confidence in us that...people were looking after him"	C18
	Helped understand discharge plans	"...he [PIPM clinician] talked about my dad coming out..."	C17
Carers valued interest in patient as a person	Involved patient in decision-making	"they tried to very much engage her in her own care and in her own decision making"	C6
	Interested in patient as a person	"...the fact that she could talk about her experiences and people were interested in listening that was…good for her, she enjoyed that.."	C2

Table A.8 Summary of experiences reported by a convenience sample of 55 professionals from wards were PIPM was delivered

Theme	Code	Example quotation	Interviewee
Positive experience			
Valued therapeutic relationship	Support families	"It's good sometimes they're quite supportive with- with anxious families…"	W28
	Talk to patients about their feelings and concerns	"…they [PIPM clinicians] are able to dig a bit deeper about how the patient's feeling and how we could help them."	W59
	Spend time with patient and / or family	"It's, it's finding out what's really going on with somebody, so I think that's hopefully been helpful and scared, lonely, ill people in hospital love talking to people - why wouldn't you? And I think that's incredibly powerful, to have people who have at least got a bit of time to talk to people."	W65
	Have conversations with patients that others don't have	"...you have conversations that we don't have, as we're not, we don't have the time...it's really useful…"	W21
	Seeing patients regularly, follow them up	"And it tends to be…more intensive…and longitudinal rather than a requested and singular assessment as is a routine part of managing patients with complex needs."	W29
Welcomed focus on discharge	Motivated patients to take part in rehab	"That helped motivate them actually partake in the occupational therapy. "	W17
	Improve patient's confidence	"And confidence, you know they will improve their [patient's] confidence."	W24
	Focussed on getting patients home as soon as possible	"I think it has been positive…I can see that your, your team is very focused on...getting patients home as soon as possible and in a safe way so that, that's a good thing…"	W21
	Helped patients stay independent	"...actually getting her so much more independent...than she would have been…"	W17
Found practical contributions helpful	Don't need to refer, happened automatically, proactive	"I think there's...certainly a psychological benefit in someone proactively stepping in to a patient's care and adding value, as opposed to when you've asked someone to add value."	W49
	Trying to cut across bureaucracy, simplify things	"...it's someone who's trying to cut across...bureaucracy, who's trying to simplify things, and it works most of the time...but it doesn't always work."	W17
	Helpful managing patients with complex needs	"We had some very complicated cases and it was really useful to have them on board, and for us to jointly work together, you know, for a seamless flow for the patients."	W64
	Give treatment recommendations	"...they also give me some recommendation which I think they're quite useful…"	W20
	Another view, second opinion, supporting us	"...often it's nice to have another - it's almost like having a second opinion as well, they come in, scrutinize the care that's been done, ask about why things haven't been done, or, or think about their sort of psychological wellbeing as well, which maybe someone has missed. And I think that's - yeah, really, really positive part of it."	W49

	Has helped facilitate discharges	"...its been helpful in getting people home, and making sure that they go home and that their needs are- are better recognised and that, I think."	W61
	Seeing patients and families jointly	"…[PIPM] helped me through a few tricky situations as well when she's met families with me and we've done a lot together."	W34
	Arrange psych follow-up after discharge	"And it's always reassuring to know that there's follow-up arranged for patients leaving our ward, that they'll be seen in the community, they won't be lost, because [PIPM] team will- put it in place, and that's really helpful."	W40
	Talk to family, get collateral history	"...I think the time that the psychiatry team spend, erm, speaking to relatives or carers and the collateral history that they get, erm, is always thorough and helpful…"	W32
	Explore home situation	"...they look at the home situation…"	W66
Valued psychiatric expertise	Clarified psychiatric diagnosis	"…it certainly helped with making diagnoses…"	W37
	Get information regarding psych history	"...they get more information, they're kind of, you know like medical so you get more information from the GP as well and uh different community mental health teams as well so...those information's, gathered information's, are really really [sic] helpful for us to make that decision on discharge planning."	W27
	Helpful because other clinicians lack psychiatric expertise	"...well just the knowledge that people have, obviously, you know you get a lot of very confused patients on our wards and...you know...although I've been working here a while, my knowledge of that is...you know it's only on the surface."	W18
	Help assess capacity	"...the [PIPM clinicians] have been able to do certain things like capacity assessment…"	W26
	Senior psychiatrist expertise	"...so the real difference with this study for me has been the number of consultants that I've met or got to know here, day in, day out really, and it's that knowledge that you can ask questions about things and I suppose from the training perspective you learn from the, but also it just makes the patient flow much better."	W37
	People can see that psychiatry has a lot more to offer	"...they [PIPM clinicians] offer a lot more than that and I think, again, people being able to see what they have to offer in terms of, you know, patient care and stuff, I think that's made them more approachable to other people as well, and that's a really nice thing."	W67
	Identified psychological problems that other clinicians miss	"…the psychiatrist saw them thought that they had a likely background of cognitive impairment, I don't think we would have been picked up to be honest."	W49
Integration of PIPM with HCPs	Complement rest of team, fits in	"...every morning and the [PIPM] team have been there when we're going through the board to hear how we work and get a feel for how we can- they can complement and augment what's already happening rather than just adding another layer…"	W65
	Staff used to certain pattern - difficult to change	"I think some of our...in-hospital teams have found it difficult at times because they don't like change…"	W33
	Update rest of team regularly	"...for the most part they have been brilliant at keeping us updated…"	W67

	Working together as a team, pulling in the same direction	"...different professional's doing- and pulling in the same direction...has been helpful."	W51
	Able to ask opinion informally, can easily get advice	"...I think people feel a lot more confident just to go and ask them a question and sort of say, you know, 'I've got this patient'…they're on the ward and because they are part of the MDT now, people just feel a lot more confident to ask those questions..."	W67
	Helpful that they are around often, visible, present on ward	"...their presence was always...available whenever we wanted them…"	W62
PIPM is different from usual care psychiatry	See patients early in care, faster than usual psych	"...it's easier to get help from psychiatric team [PIPM team] and faster. We know that they're on the ward and we can ask them question and they come back and reassess the patients, it makes our life easier."	W40
	See patients that usual psych service wouldn't	"...so that's what really good about the [PIPM model] is picking up people who wouldn't normally come anywhere near psych liaison…"	W45
	More interaction about specific patients than usual psych	"...with liaison psychiatry, you know the patient you refer them, they will come, assess, make a recommendation, they're off. It wasn't the same with this [PIPM], yeah, they were- they were there for you, if you needed them again, they'll say 'call me, bleep me', they'll answer your questions..."	W64
	PIPM team were more aware of other issues on ward than usual CLP because they were integrated	"…having [PIPM clinicians] on the ward as well just meant things happened faster...and perhaps the [PIPM] team were also you know more aware of other issues on the ward, knew who the people were- were to talk to in terms of you know the nursing staff and the physio and the OT so...you know more integrated in a service um so I think if anything things flowed more smoothly."	W68
Biopsychosocial approach	Encourages others to take biopsychosocial perspective	"...it probably also provides...a good nudge sometimes for the clinicians to think more in terms of...biopsychosocial model rather than just biomedical which I guess we're guilty of doing sometimes…"	W61
	Getting whole picture	"And I think it is getting the whole picture."	W32
	Bridge divide between psychiatry and medicine	"…where before, it was a little bit 'that's them and us' and 'above the neck, below the neck' kind of 'that's mental, that's physical' this is a little - a lot more integrated…"	W65
	Holistic approach	"...I think there's a huge benefit to a...holistic approach…we can learn a lot from you…"	W32
Negative experience			
Did not find additional clinical input helpful	Generates extra work for others	"...sometimes it feels like it's doubling our workload rather than reducing it."	W22
	Unclear who is in charge of decisions	"I think sometimes, people, again because people are busy and are trying to do their best, where does the- where does the I- where is the box- where is the locus of control to determine what next...and who's...driving the bus and...there's often the need...unless somebody is doing that...it can, people can get lost in a hospital if who's making a decision...It has to be a singular force I think."	W65

	Risk of medics backing off from managing psych issues	"...I think there is a risk of...confidence or capability or willingness of acute generalists to fall if those [PIPM clinicians] are taking on much of that activity. So that a bit of a balance, but I wouldn't want generalists to back off from managing psychological issues...as a result of an intervention such as this."	W29
	Seeing patients who don't need to be seen by psych	"Yeah, it might be wasting their time potentially by seeing patients that don't need to be seen."	W44
	Felt pressured to plan discharge	"...we're all working in a pressured environment trying to get people out, but it seems like it's been added pressure…"	W26
	Blurring of roles with discharge planners / SW / therapists	"…sometimes it feels like they are trying to do all the jobs of the MDT rather than be focusing on the psychological aspects of it…I think there has been a blurring of what...they're trying to do…"	W22
	Psychiatric input not necessary as part of everyday ward care	"...I felt like our patient cohort already got a good service in terms of looking at their physical and mental health...I'm not convinced that it's supplemented the care that they're already getting."	W47
	Too many people involved in care, doubling up	"...it becomes a little bit more confused because there is too many people involved in...trying to organise that patient's discharge."	W30
	Communication confusion with families	"...I think families get confused."	W22

Table A.9 Summary of experiences reported by all 15 clinicians who delivered PIPM

Theme	Code	Example quotation	Interviewee
Positive experience			
Different from usual role	Felt more responsibility for patient	"And being able to be more integrated you do have more of a sense that this is your patient, that you're responsible, that you are more interested to see if you, you know, if you started medication one day, it's great that it's already part of your system – you're gonna [sic] go back the next day, see what effect that had over night, maybe adjust it again."	PIPM16
	Feel more involved in patient's care	"You feel more involved in their care - I think that feels good"	PIPM16
	Spend less time doing unnecessary admin	"...the beauty of this, one of the real positives is.. the amount of documentation that we've had to complete…they don't need to be that arduous"	PIPM11
	Feel like you are making a difference	"...one of the nice things about it, is that you do feel like...can make a difference...and it's tangible at times…"	PIPM10
	More different to usual CL than expected	"...superficially it looks like you're just doing psychiatry, but.. eventually you will realise it is a radically new approach because you are seeing patients proactively, as in they haven't been referred, no-one is asking you to get involved. That puts a different emphasis on the relationships you have to build with the ward teams. And you have to think about the patients in a totally new way."	PIPM12
Psychotherapeutic presence	Have conversations other clinicians don't	"...we're quite good at getting in there with tricky situations that nobody wants to touch, then I think that's when people start to think that we have a use."	PIPM6
	Advocating for what patients want	"...that's been their stated desire when they've come in, they've said "I don't want to stay in" and we've been able to get them out quickly with the appropriate care"	PIPM13
	Able to bring compassion to medical care	"...the other thing is that I think that one brings compassion to the general hospital ward in a way that it's distinctly lacking."	PIPM14
Proactive	Rewarding to see & treat people with a wider variety of psychiatric problems	"...you see a much wider variety of patients. We see people getting better, we see people dying, we see complicated cases that we otherwise sometimes might not see, that's been good"	PIPM3
	Identify more of the patient's needs by being proactive	"I think you want to keep that proactive as frequent as possible contact with patients from the senior clinicians, because... you don't see what the patient is doing, you can't really be as dynamic or as intensive with their treatment from your office."	PIPM16
Promptly	Helpful to be there early in ward admission	"...the value in it is getting involved very quickly…"	PIPM14

Comprehensive	Like being able to provide holistic care	"...one of the positives of [PIPM] is being able to bring that and help, help the ward as a whole, seeing the patient from a more holistic point of view"	PIPM15
	Empowered to be involved in all aspects of care	"...one does feel empowered to interfere in not only all the psychiatric care but the medical care *and* the social care for people…"	PIPM14
	Help patient to understand medical treatment	"...some of the work that we've done has been that kind of bridging that gap, saying actually this person has no understanding of what's going on for them regarding their diagnosis or their investigations or the plans for treatment and.. it maybe that we get ..the specialist to come and sit down and properly talk to them in ways that they can understand about it and that might be all they need..."	PIPM10
	Gratifying to do a quick but comprehensive assessment	"...once you get the hang of it and you kind of get going with it and you see how it works, it's quite an exciting, and I would say quite gratifying way to be practising and it feels quite good, you can quite quickly...actually have quite an impact, you can be quite focussed, you can come away after an hour, 45 minutes...you can kind of feel 'I've done a really comprehensive quick, and troubleshooting of course and focussed, but I've really given a good .. wide thought to this patient and really thought about a whole lot of things, and it's stretched what I would normally come up with'...I think it's quite gratifying"	PIPM8
Focused	Would like to treat problems not affecting discharge	"...sometimes the presence of the psychiatric disorder if it's not preventing discharge, we're not there to fix it and that's a, that's a bit of a frustration…"	PIPM6
Systematic	Value systematic approach	"...it's quite a good way of of of us doing what we should be doing in a way, in a more disciplined way…"	PIPM11
Intensive	Daily follow-up likely to save time overall	"I actually think you won't spend more time doing this, I think you would just use your time more directly for patient-focussed care, and less for probably correcting problems...that you've created perhaps by not being around as much."	PIPM16
	Good to see patient through to end of admission	"...actually it's quite nice to see things through to the end and focus on different kinds of problems."	PIPM13
	Rewarding to see patients every day	"...it's very rewarding seeing the patients day to day…"	PIPM15
	Like being able to build relationship with family	"Often feels like we build up a good working relationship with...not just the patients but with the family members as well…"	PIPM15
	Patients appreciate seeing the same doctor every day	"...my sense is...that a lot of the patients enjoy seeing us, enjoy seeing the same face every day, where...actually with the medical teams they don't get to see the same face every day and actually they get to see the same face of someone who they've revealed something about their lives to, so they will often have told you about their family, about their	PIPM13

		home circumstances, about things which have been going on for them, about their mood and so on, so...I think, that definitely improves their experience of care in the hospital"	
Integrated	Get to know ward team	"I've got to know staff in a way that perhaps I wouldn't have done before"	PIPM6
	Enjoy working with wider group of professionals	"...you end up working with a different group of professionals within the MDT, which has been a great thing."	PIPM13
Maintenance considerations	Helpful learning about hospital systems	"...it has been absolutely fascinating to learn about how the system operates, the nuances of that, where people get stuck and why they get stuck, typically for quite bureaucratic reasons and I think you learn how to navigate that system, how to chart that system in the interests of a patient..."	PIPM13
Negative experience			
Potential downsides	Risk of PIPM clinicians losing skills in managing severe psychiatric illness	"...there's a risk that you become deskilled in your work with more acute erm psychiatric problems so I think there's got to be a balance…"	PIPM7
	Part-time working leading to problems with continuity for PIPM team members	"I think it needs to be one person seeing the same patients on a regular basis, otherwise it simply doesn't work – you can't pick up all the intricacies and nuances that exist around the the [sic] factors preventing them from getting out of hospital…"	PIPM13
	More clinicians involved can place burden on patient / family	"...one of the things we've been doing a lot was doing a collateral history which had been done by the OT and it would be the same questions for the family to answer and then it's quite tiresome for the families and the patients, 'cause we ask the same questions. however, I think that lately we've been trying to communicate a little bit more with the team to make sure we don't call the family to ask the same questions..."	PIPM72
	Risk of deskilling medics from managing psych issues	"...one of the worries...is that you de-skill people who would otherwise be managing these things…"	PIPM13
	Can be overlap with roles of other professionals	"...our roles overlap with other team members...so there's a risk of feeling that you're either stepping on peoples' toes, you're duplicating work…"	PIPM7
	Concern about creating work post-discharge by seeing non-referred patients	"There's a possibility that you could create more work by identifying more…"	PIPM13
	Sometimes less interesting than seeing patients	"I'm not sure that I could do this full-time because I think I wouldn't see enough complex patients to, to kind of keep me interested and stimulated"	PIPM11

	with severe mental illness		

Table A.10 Summary of the reported experiences of the PIPM clinicians implementing the seven principles of PIPM

Theme	Code	Example quotation	Interviewee
Proactive	Identify more of the patient's needs by being proactive	"I think you want to keep that proactive as frequent as possible contact with patients from the senior clinicians, because...you don't see what the patient is doing, you can't really be as dynamic or as intensive with their treatment from your office."	PIPM16
	Uncertain of psychiatrist's role with some patients	"...but other times it feels like we see patients that I-I think don't need us really"	PIPM72
	Very different seeing people who have not referred	"I've always found this, 'go to the ward, here's the question, solve the problem for us in your assessment, write a management plan, and then swish out, I've always found that quite difficult. What I really like about [PIPM] is that you find your own questions. You come to it … without the water being muddied by what other people are thinking, and that allows you to formulate your own judgements, and then to set your own questions with the relevant answers."	PIPM14
	Other clinicians can be puzzled why we are seeing patients without severe psychiatric problems	"I think they are sometimes a bit bemused by the fact that we are seeing patients who, to their eyes have no psychiatric or psychological or psychosocial comorbidity"	PIPM13
Prompt	Helpful to be there early in ward admission	"...the value in it is getting involved very quickly…"	PIPM14
Comprehensive	Pick up on biopsychosocial problems other clinicians miss	"...it's all about picking up on things that medics wouldn't see or the rest of the team wouldn't pick up on."	PIPM72
	Broadens care to biopsychosocial	"I think it changes it from...regarding the hospital stay as a passive environment in which to receive medical care to a very active environment to work on...the whole bio-psycho-social problems…"	PIPM7
	Contribute to medical management as well as 'psychiatric'	"...we are able to usefully contribute to people's medical management as well…"	PIPM3
	More involvement in non-psych (medical, social) problems compared with usual practice	"...we are focussing more on [the] social part, because our aim is different…"	PIPM7
	Important that initial assessment is done by senior clinician	"...a very efficient use of time to have the consultant doing the assessments. I think…it…probably leads to high quality…plans, at least at the start of treatment. And I think, it's probably quite efficient in terms of time management in that…more experienced clinicians…don't spend a lot of time asking all the	PIPM14

		routine questions, and they tend to hone in quite quickly on the important factors, so they can more easily whip through the assessment process...although other clinicians are very able at doing psychiatric assessments and gathering the relevant information and nine times out of ten that would be perfect, that medical stuff is often a stumbling block, not because it's actually relevant, but because they don't know whether it's relevant or not."	
Focused	Frustrated by hospital discharge systems	"And it has also been just downright frustrating because of the madness in the system and plans chopping and changing and the number of different cooks involved in that discharge plan and how often different cooks want to do different things."	PIPM12
	Senior clinician able to balance risks and benefits of discharge	"...we are able to take a lot more in terms of positive risks, which I don't think any other band would be able to do."	PIPM3
	Able to help patient to engage in rehab	"I feel we are...really pushing our patients to engage in therapy, get moving...it makes a big difference, people are a lot more...capable"	PIPM3
	Need to change the general idea that being in hospital is good	"...it is a big change in mentality because often...the idea that being in hospital is not a good thing, isn't something that is just in the public mind-set, I think it's in the mind-set of doctors, including the ones that should know better like the physicians that are running the medical wards. There is still this sense that if you keep the patient you're 'giving them a bit longer', you're giving them something good. Rather than you're taking away their chance to escape infections, you're taking their time out of hospital. Still feels like you are caring and nurturing and doing something positive by looking after them in hospital and I don't think that's been adjusted. And I don't think it's a natural thing either, after doing all your training it's a hard thing to keep in your head, when you've got, we've had some patients recently who have been resisting, actively resisting being discharged, and your emotional response to that is still one I think of feeling a bit uncomfortable. Being a bit regretful that you've got to do it for them, for their own good. It still takes some adjustment, I think that's a battle, to make it not feel like you are discharging a person for the purposes of the study or for the purposes of the hospital. It doesn't feel like you're doing it for the patient very easily."	PIPM16
Systematic	Value systematic approach	"...it's quite a good way of of [sic] us doing what we should be doing in a way, in a more disciplined way…"	PIPM11
Intensive	Lots of little changes by PIPM leading to big effects	"...when we're making those daily decisions and daily input...it might just be a...micro tweak each day so it almost feels like we're doing less, although you know cumulatively it would be much more for an individual than we might do usually"	PIPM6

	Daily review leads to more accurate assessment than a one-off	"...what you learn...is that cross sectional assessments can be very inaccurate, and having the chance to see people on a daily basis, you form a better picture of them and a better sense of their mental state...and I think when someone comes into the hospital in extremis, commenting on their...mood, on the presence or absence of a mood disorder, on the presence or absence of an anxiety disorder, I think it's quite easy to get it wrong..."	PIPM13
	Provided more consistency, continuity, than rest of ward team	"So we're providing the consistency of care on those wards, whether that's our role or not is another matter, but I'm sure it does improve patient care."	PIPM14
	Daily review allows you to get to know patients	"...it allows you the opportunity to really get to know patients during their time in hospital…"	PIPM13
	Daily review helpful to see changes in patients	"Knowing what's happening day to day probably does make a really big difference because you can set a plan up one day and if you then go back to it three days later, if it's gone off track...well it's hard to pick up on those difficulties if you're only going back to these things very infrequently."	PIPM7
	Spend more time seeing patients than in usual CLP	"The main difference, I think, is...the amount you get to see people."	PIPM16
	Follow-up harder if assistant not at initial assessment	"Not being there for the initial assessment is a problem."	PIPM16
Integrated	Feel part of team, integrated, not a visitor	"You're really part of the ward community...you're there as a visitor in usual care, you're there as part of the team in [PIPM]"	PIPM7
	Presence on ward is useful	"I think being present on the ward is very useful..."	PIPM14
	Didn't feel fully integrated with ward team	"...we're still mental health professionals working in an acute hospital and we're not members of that hospital…"	PIPM10
	Have to learn who key people in ward team are	"...you have to learn who the key people within the systems very quickly..."	PIPM16
	Took on role of therapist to the ward	"…having a role as sort of therapists to the clinical team...and I guess that would be something that we've got training for that other professions wouldn't have the same type of training for."	PIPM7

Table A.11 Completion of Stage 1 and time taken from hospital admission, ward admission, and allocation to PIPM

	Total sample (n = 1,359)
Consultant-led Stage 1	
Yes	1,357 (99.9%)
No	2 (0.1%)
Stage 1 completed within 1 day of randomisation	
≤1 day	1,312 (96.5%)
>1day	47 (3.5%)
Time to Stage 1 from allocation to PIPM, days	
Mean (SD)	0.6 (0.7)
Median (IQR, range)	0 (0-1, 0-5)
Time to Stage 1 from ward admission, days	
Mean (SD)	2.8 (1.7)
Median (IQR, range)	2 (2-4, 0-10)
Time to Stage 1 from hospital admission, days	
Mean (SD)	4.03 (1.85)
Median (IQR, range)	4 (3-5, 1-10)
Time to ward admission from hospital admission, days	
Mean (SD)	1.2 (1.2)
Median (IQR, range)	1 (0-2, 0-6)
Consultant time spent on Stage 1, mins	
Mean (SD)	31.45 (13.45)
Median (IQR, range)	30 (20-40, 0-120)
Assistant time used spent on Stage 1	
Mean (SD)	11.95 (15.03)
Median (IQR)	5 (0-20, 0-80)

Table A.12 Summary of the experiences of maintaining PIPM reported by the clinicians delivering PIPM and healthcare professionals from the wards were PIPM was delivered

Theme	Code	Example quotation	Interviewee
PIPM clinicians			
Changes would like to see to facilitate maintenance	Would like to see all ward patients – not just those randomised to PIPM in the trial	"In an ideal world you would be based on a ward where every single one of the patients was also somebody that you took an interest in…"	PIPM14
	Post-trial they would prioritise greater integration	"It would be good, it would be good to be the, there's a consultant physician on this ward, but also a consultant psychiatrist."	PIPM11
	Would like to see patients even earlier in admission if possible	"I generally think [we should get involved] as early as possible...once they are on the emergency assessment unit…"	PIPM16
Healthcare professionals			
Maintenance considerations	Only lasts 30 days	"…it just felt that 'oh you had this luxury for the first thirty days' and then it just disappeared…"	W25
	Would be better if saw patients even earlier in hospital stay	"So sometimes I think the horse has bolted so I think, you know within- ideally I think that the intervention would begin within 24 hours of the patient arriving in hospital."	W29
	Not fully integrated	"It feels very much like...an additional service that's been attached to [an] already existing ward service rather than necessarily an integrated team member."	W50

Table A.13 Completion of the Stage 2 action plan and time taken from hospital admission, ward admission, and allocation to PIPM

	Total sample (n = 1359)
Time to action plan from stage 1, days	
Mean (SD)	0.02 (0.1)
Median (IQR, range)	0 (0-0, 0-3)
Time to action plan from allocation to PIPM, days	
Mean (SD)	0.57 (0.68)
Median (IQR, range)	1 (0-1, 0-5)
Time to action plan from ward admission, days	
Mean (SD)	2.83 (1.73)
Median (IQR, range)	2 (2-4, 0-10)
Time to action plan from hospital admission, days	
Mean (SD)	4.05 (1.85)
Median (IQR, range)	4 (3-5, 1-10)
Consultant time spent on Stage 2, mins	
Mean (SD)	7.30 (4.52)
Median (IQR, range)	5 (5-10, 0-60)
Assistant time spent on Stage 2, mins	
Mean (SD)	1.82 (3.45)
Median (IQR, range)	0 (0-5, 0-30)

Figure A.1 Distribution of time (in days) from hospital admission to ward admission

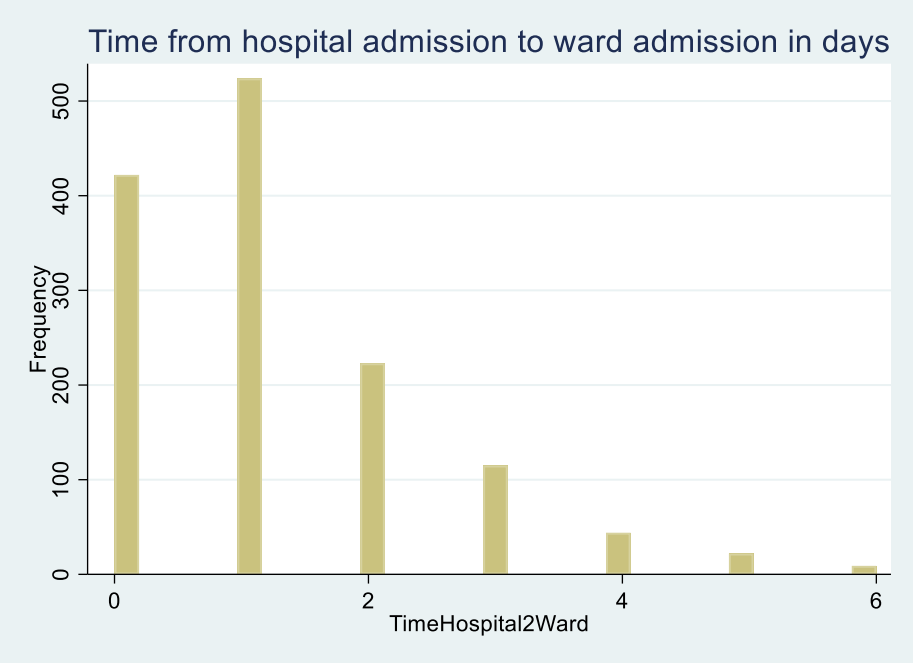


Figure A.2 Distribution of time (in days) from randomisation to PIPM to completion of Stage 1

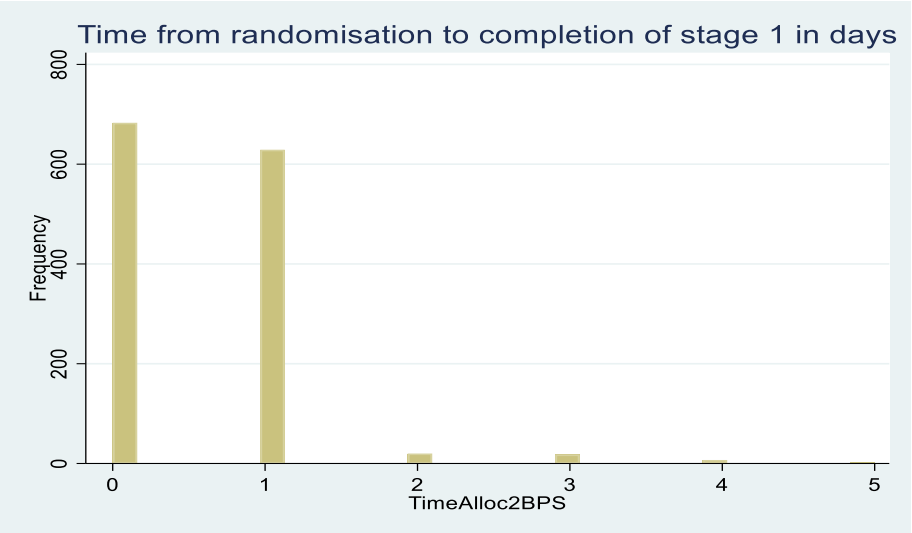


Figure A.3 Distribution of time (in days) from hospital admission to completion of Stage 1

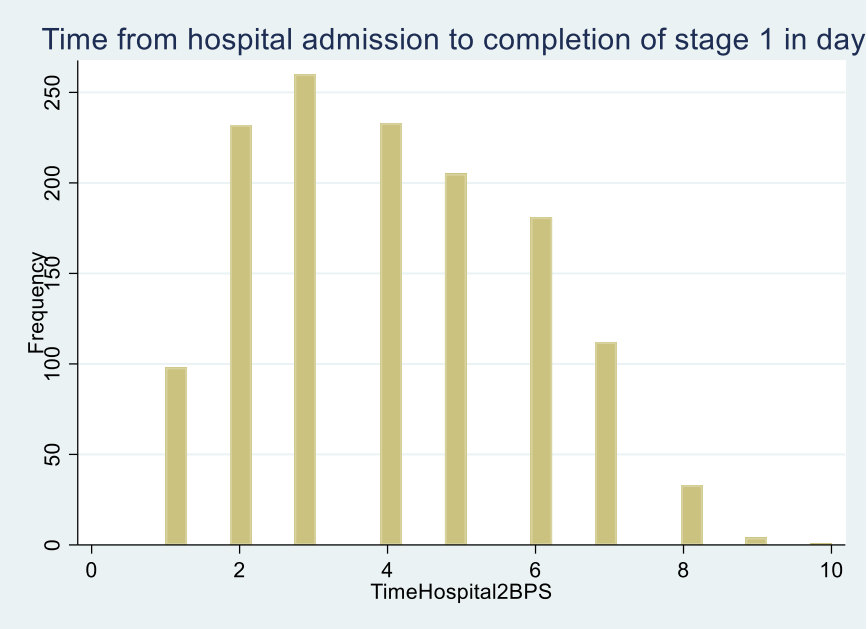


Figure A.4 Distribution of time (in days) from ward admission to completion of Stage 1

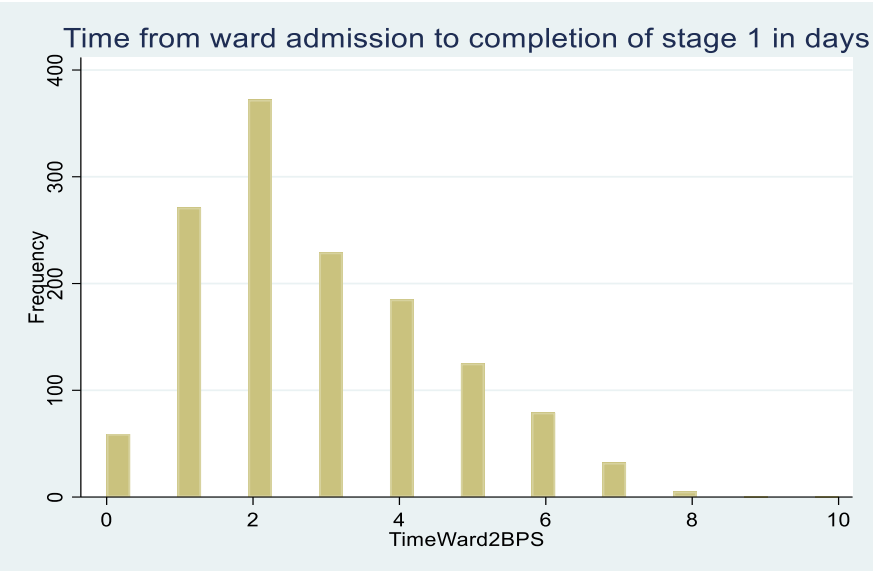


Figure A.5 Time from randomisation to PIPM to Stage 2 in days

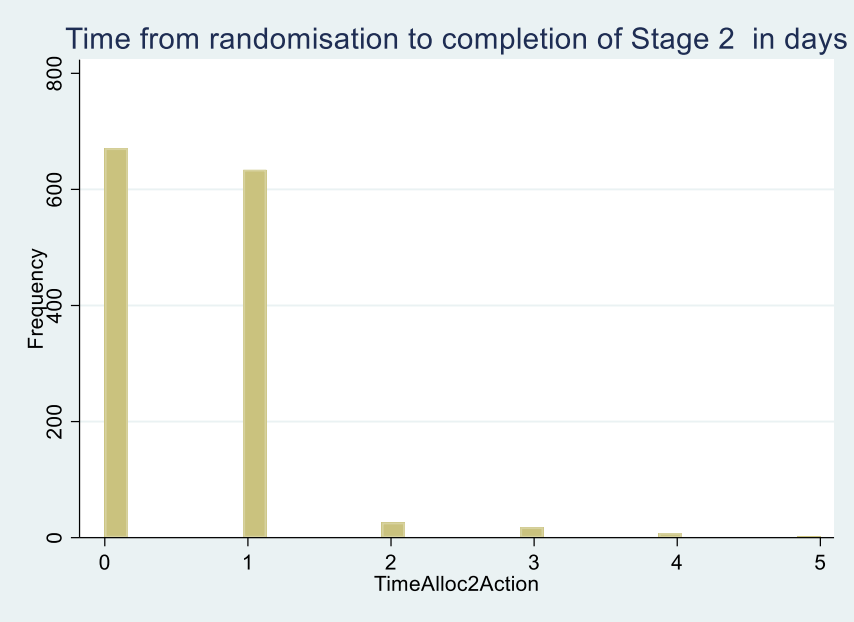


Figure A.6 Time from ward admission to Stage 2 in days

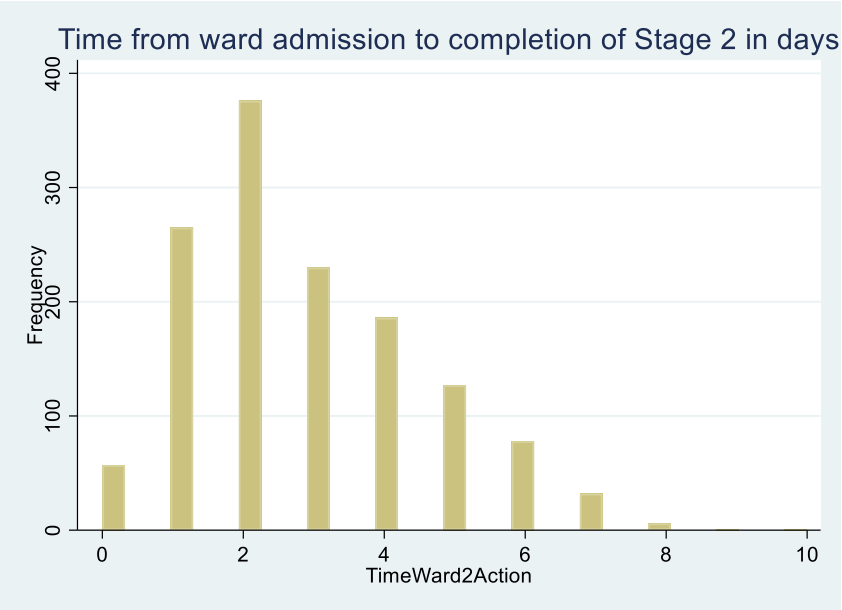
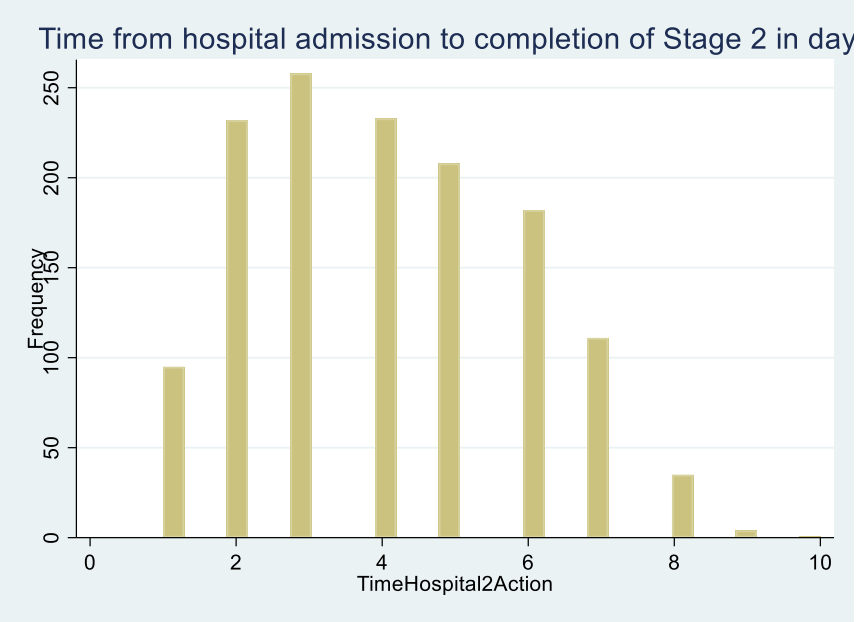


Figure A.7 Time from hospital admission to Stage 2 in days



B. Additional materials

B.1 References

Separate pdf file of references in this thesis

B.2 Documents

a) Systematic review protocol

Copy of the protocol for my systematic review registered with PROSPERO. See pdf file in additional materials entitled “Sys_Rev_Protocol.pdf”

b) PIPM service manual

Copy of the service manual used in The HOME Study. See pdf file in additional materials entitled “PIPM_ServiceManual.pdf”

c) PIPM checklist

Copy of the PIPM checklist used in The HOME Study. See pdf file in additional materials entitled “PIPM_Checklist.pdf”

d) PIPM quality control for initial assessment

Copy of the quality control assessment sheet used to assess the initial PIPM assessment in The HOME Study. See pdf file in additional materials entitled “PIPM_QualityControl_InitialAssessment.pdf”

e) PIPM quality control for follow up

Copy of the quality control assessment sheet used to assess the follow up PIPM work in The HOME Study. See pdf file in additional materials entitled “PIPM_QualityControl_FollowUp.pdf”

f) PIPM delivery analysis plan

Copy of the data analysis plan for PIPM delivery. See pdf file in additional materials entitled “PIPM_Delivery_AnalysisPlan.pdf”

B.3 Publications

a) Systematic review of RCTs of psychiatric services for general hospital inpatients, General Hospital Psychiatry 2021

Copy of the published systematic review. See pdf file in additional materials entitled

"Publication_SystematicReview_GHP2021.pdf"

b) PIPM description paper, General Hospital Psychiatry 2020

Copy of the published description of PIPM. See pdf file in additional materials entitled

"Publication_PIPMdescription_GHP2020.pdf"

c) The HOME Study statistical and economic analysis plan, Trials 2020

Copy of the published statistical and economic analysis plan for The HOME Study. See pdf file in additional materials entitled "Publication_TheHOMEStudyStatisticalAnalysisPlan_Trials2020.pdf"

d) The HOME Study protocol, Trials 2019

Copy of the published protocol for The HOME Study. See pdf file in additional materials entitled

"Publication_TheHOMEStudyProtocol_Trials2019.pdf"

END