Health Technology Assessment 2001; Vol. 5: No. 15

Review

Home treatment for mental health problems: a systematic review

T Burns
M Knapp
J Catty
A Healey
J Henderson
H Watt
C Wright

Health Technology Assessment
NHS R&D HTA Programme

How to obtain copies of this and other HTA Programme reports.
An electronic version of this publication, in Adobe Acrobat format, is available for downloading free of charge for personal use from the HTA website (http://www.hta.ac.uk). A fully searchable CD-ROM is also available (see below).

Printed copies of HTA monographs cost £20 each (post and packing free in the UK) to both public **and** private sector purchasers from our Despatch Agents.

Non-UK purchasers will have to pay a small fee for post and packing. For European countries the cost is £2 per monograph and for the rest of the world £3 per monograph.

You can order HTA monographs from our Despatch Agents:

– fax (with **credit card** or **official purchase order**)
– post (with **credit card** or **official purchase order** or **cheque**)
– phone during office hours (**credit card** only).

Additionally the HTA website allows you **either** to pay securely by credit card **or** to print out your order and then post or fax it.

Contact details are as follows:

HTA Despatch
c/o Direct Mail Works Ltd
4 Oakwood Business Centre
Downley, HAVANT PO9 2NP, UK

Email: orders@hta.ac.uk
Tel: 02392 492 000
Fax: 02392 478 555
Fax from outside the UK: +44 2392 478 555

NHS libraries can subscribe free of charge. Public libraries can subscribe at a very reduced cost of £100 for each volume (normally comprising 30–40 titles). The commercial subscription rate is £300 per volume. Please see our website for details. Subscriptions can only be purchased for the current or forthcoming volume.

Payment methods

Paying by cheque
If you pay by cheque, the cheque must be in **pounds sterling**, made payable to *Direct Mail Works Ltd* and drawn on a bank with a UK address.

Paying by credit card
The following cards are accepted by phone, fax, post or via the website ordering pages: Delta, Eurocard, Mastercard, Solo, Switch and Visa. We advise against sending credit card details in a plain email.

Paying by official purchase order
You can post or fax these, but they must be from public bodies (i.e. NHS or universities) within the UK. We cannot at present accept purchase orders from commercial companies or from outside the UK.

How do I get a copy of *HTA on CD*?

Please use the form on the HTA website (www.hta.ac.uk/htacd.htm). Or contact Direct Mail Works (see contact details above) by email, post, fax or phone. *HTA on CD* is currently free of charge worldwide.

The website also provides information about the HTA Programme and lists the membership of the various committees.

Home treatment for mental health problems: a systematic review

T Burns[1]*
M Knapp[2,3]
J Catty[1]
A Healey[2]
J Henderson[2]
H Watt[4]
C Wright[4]

[1] Department of Community Psychiatry, St George's Hospital Medical School, London, UK
[2] Department of Social Policy, London School of Economics, UK
[3] Department of Health Services Research, Institute of Psychiatry, London, UK
[4] Department of Psychiatry, St George's Hospital Medical School, London, UK

* Corresponding author

Competing interests: none declared

Published July 2001

This report should be referenced as follows:

Burns T, Knapp M, Catty J, Healey A, Henderson J, Watt H, *et al*. Home treatment for mental health problems: a systematic review. *Health Technol Assess* 2001;**5**(15).

Health Technology Assessment is indexed in *Index Medicus*/MEDLINE and *Excerpta Medica*/EMBASE. Copies of the Executive Summaries are available from the NCCHTA website (see opposite).

NHS R&D HTA Programme

The NHS R&D Health Technology Assessment (HTA) Programme was set up in 1993 to ensure that high-quality research information on the costs, effectiveness and broader impact of health technologies is produced in the most efficient way for those who use, manage and provide care in the NHS.

Initially, six HTA panels (pharmaceuticals, acute sector, primary and community care, diagnostics and imaging, population screening, methodology) helped to set the research priorities for the HTA Programme. However, during the past few years there have been a number of changes in and around NHS R&D, such as the establishment of the National Institute for Clinical Excellence (NICE) and the creation of three new research programmes: Service Delivery and Organisation (SDO); New and Emerging Applications of Technology (NEAT); and the Methodology Programme.

This has meant that the HTA panels can now focus more explicitly on health technologies ('health technologies' are broadly defined to include all interventions used to promote health, prevent and treat disease, and improve rehabilitation and long-term care) rather than settings of care. Therefore the panel structure has been redefined and replaced by three new panels: Pharmaceuticals; Therapeutic Procedures (including devices and operations); and Diagnostic Technologies and Screening.

The HTA Programme will continue to commission both primary and secondary research. The HTA Commissioning Board, supported by the National Coordinating Centre for Health Technology Assessment (NCCHTA), will consider and advise the Programme Director on the best research projects to pursue in order to address the research priorities identified by the three HTA panels.

The research reported in this monograph was funded as project number 97/27/02.

The views expressed in this publication are those of the authors and not necessarily those of the HTA Programme or the Department of Health. The editors wish to emphasise that funding and publication of this research by the NHS should not be taken as implicit support for any recommendations made by the authors.

Criteria for inclusion in the HTA monograph series
Reports are published in the HTA monograph series if (1) they have resulted from work commissioned for the HTA Programme, and (2) they are of a sufficiently high scientific quality as assessed by the referees and editors.

Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search, appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

ISSN 1366-5278

Published by Core Research, Alton, on behalf of the NCCHTA.
Printed on acid-free paper in the UK by The Basingstoke Press, Basingstoke.

◆

Contents

List of abbreviations

ACT	Assertive Community Treatment
CBA	cost–benefit analysis
CEA	cost-effectiveness analysis
95% CI	95% confidence interval
CM	Case Management*
CMHC	community mental health centre
CMHT	Community Mental Health Team
CPA	Care Programme Approach
CPN	community psychiatric nurse
CSG	Cochrane Schizophrenia Group
CUA	cost–utility analysis
DLP	Daily Living Programme
ICM	Intensive Case Management
IPCC	Intensive Psychiatric Community Care
ISA	Integrated Service Agency
NA	not applicable*
OT	occupational therapist
PACT	Program for Assertive Community Treatment
QALY	quality-adjusted life-year
RCT	randomised controlled trial
SD	standard deviation*
SMI	severe mental illness
TCL	Training in Community Living

* Used only in tables

Executive summary

Objective

This review investigates the effectiveness of 'home treatment' for mental health problems in terms of hospitalisation and cost-effectiveness. For the purposes of this review, 'home treatment' is defined as a service that enables the patient to be treated outside hospital as far as possible and remain in their usual place of residence.

Methods

Systematic literature search

'Home treatment' excluded studies focused on day, residential and foster care. The review was based on Cochrane methodology, but non-randomised studies were included if they compared two services; these were only analysed if they provided evidence of the groups' baseline clinical comparability.

Review of economic evaluations

Economic evaluations among the studies found were reviewed against established criteria.

Identification of service components

A three-round Delphi exercise ascertained the degree of consensus among expert psychiatrists concerning the important components of community-based services that enable them to treat patients outside hospital. The identified components were used to construct the follow-up questionnaire.

Follow-up of authors

As a supplement to the information available in the papers, authors of all the studies were followed up for data on service components, sustainability of programmes and service utilisation.

Data analysis

The outcome measure was mean days in hospital per patient per month over the follow-up period.

- Comparative analysis – compared experimental to control services. It analysed all studies with available data, divided into 'inpatient-control' and 'community-control' studies, and tested for associations between service components and difference in hospital days.
- Experimental services analysis – analysed only experimental service data and tested for associations between service components and hospital days.

Results

Systematic literature search

A total of 91 studies were found, conducted over a 30-year period. The majority (87) focused on people with psychotic disorders.

Review of economic evaluations

Only 22 studies included economic evaluations. They provided little conclusive evidence about cost-effectiveness because of problems with the heterogeneity of services, sample size, outcome measures and quality of analysis.

Delphi exercise

In all, 16 items were rated as 'essential', falling into six categories: home environment; skill-mix; psychiatrist involvement; service management; caseload size; and health/social care integration. There was consensus that caseloads under 25 and flexible working hours over 7 days were important, but little support for caseloads under 15 or for 24-hour services, and consensus that home visiting was essential, but not on teams being 'explicitly dedicated' to home treatment.

Response to follow-up

A total of 60% of authors responded, supplying data on service components and hospital days in most cases. Other service utilisation data were far less readily available.

Service characterisation and classification

The services were homogeneous in terms of 'home treatment function' but fairly heterogeneous in terms of other components. There was some evidence for a group of services that were multidisciplinary, had psychiatrists as integrated team members, had smaller caseloads, visited patients at home regularly and took responsibility for both health and social care. This was not a cohesive group, however.

Sustainability of services

The sustainability of home treatment services was modest: less than half the services whose authors responded were still identifiable. Services were more likely to be operational if the study had found them to reduce hospitalisation significantly.

Meta-analysis

Meta-analysis with heterogeneous studies is problematic. The evidence base for the effectiveness of services identifiable as 'home treatment' was not strong. Within the 'inpatient-control' study group, the mean reduction in hospitalisation was 5 days per patient per month (for 1-year studies only). No statistical significance could be measured for this result. For 'community-control' studies, the reduction in hospitalisation was negligible. Moreover, the heterogeneity of control services, the wide range of outcome measures and the limited availability of data might have confounded the analysis.

Regularly visiting at home and dual responsibility for health and social care were associated with reduced hospitalisation. Evidence for other components was inconclusive. Few conclusions could be drawn from the analysis of service utilisation data.

Location

Studies were predominately from the USA and UK, more of them being from the USA. North American studies found a reduction in hospitalisation of 1 day per patient per month more than European studies. North American and European services differed on some service components, but this was unlikely to account for this finding, particularly as no difference was found in their experimental service results.

Conclusions

State of research

There is a clear need for further studies, particularly in the UK. The benefit of home treatment over admission in terms of days in hospital was clear, but over other community-based alternatives was inconclusive.

Non-randomised studies

Difficulties in systematically searching for non-randomised studies may have contributed to the smaller number of such studies found (35, compared with 56 randomised controlled trials). This imbalance was compounded by a relatively poor response rate from non-randomised controlled trial authors. Including them in the analysis had little effect.

Limitations of this review

A broad area was reviewed in order to avoid the problem of analysing by service label. While reviews of narrower areas may risk implying a homogeneity of the services that is unwarranted, the current strategy has the drawback that the studies cover a range of heterogeneous services. The poor definition of control services, however, is ubiquitous in this field, however reviewed areas are defined.

Inclusion of mean data for which no standard deviations were available was problematic in that it prevented measuring the significance of the main findings. The lack of availability of this data, however, is an important finding, demonstrating the difficulty in seeking certainty in this area.

Only days in hospital and cost-effectiveness were analysed here. The range and lack of uniformity of measures used in this field made meta-analysis of other outcomes impossible. It should be noted, however, that the findings pertain to these aspects alone.

The Delphi exercise reported here was limited in being conducted only with psychiatrists, rather than a multidisciplinary panel. Its findings were used as a framework for the follow-up and analysis. Their possible bias should be borne in mind when considering them as findings in themselves.

Implications for clinicians

The evidence base for home treatment compared with other community-based services is not strong, although it does show that home treatment reduces days spent in hospital compared with inpatient treatment. There is evidence that visiting patients at home regularly and taking responsibility for both health and social care each reduce days in hospital.

Implications for consumers

Services that visit patients at home regularly and those that take responsibility for both health and social care are likely to reduce time spent in hospital. Psychiatrists surveyed in this review also considered support for carers to be essential. The evidence from this review, however, was that few services currently have protocols for meeting carers' needs.

Recommendations for research and commissioners

A centrally coordinated research strategy, with attention to study design, is recommended. Studies should include economic evaluations that report health and social service utilisation. Service components should be collected and reported for both experimental and control services. Studies should be designed with adequate power and longer durations of follow-up and use comparable outcome measures to facilitate meta-analysis. Research protocols should be adhered to throughout the studies. It may be advisable that independent researchers conduct studies in future.

It is no longer recommended that home treatment be tested against inpatient care, or that small, localised studies replicate existing, more highly powered studies.

Chapter 1

Introduction

Background

Despite the increasing shift in favour of community-based mental healthcare over the last 30 years, inpatient treatment remains the major cost within integrated services. This limits developments in the provision of community mental health services. At the same time, a wide variety of models of community service are now in operation. The need to develop a reliable working classification of these services in order to research their effectiveness has become increasingly evident – both because of the range of labels employed and because certain labels are considered to denote better and more fund-worthy services, despite often lacking clarity of definition.

The example of 'Case Management' illustrates the vexed question of service classification in community mental healthcare. Case Management has been described as involving, as a bottom-line, "a relationship between a client and a case manager that is designed to enhance continuity and co-ordination of care",[1] but there exists a "Babel-like confusion"[2] about the multiplicity of its forms and varieties. Work has been done on defining Assertive Community Treatment (ACT),[3,4] but there is less clarity about other forms of Case Management, and the impressive array of synonyms for or near-approximations to ACT (Program for Assertive Community Treatment (PACT), Training in Community Living (TCL), Assertive Case Management, Assertive Outreach, Aggressive Outreach) undermines attempts to clarify it as a model. Moreover, if 'brokerage' Case Management (the brokering of services to the client, not necessarily by a clinician) and ACT have been described as "opposite ends of a continuum",[1] then the range of service models falling between the two is less clearly delineated. Scott and Dixon[1] see the distinction as particularly blurred with 'Intensive Case Management' (ICM), a term often used interchangeably with ACT but distinguished from it by them on the grounds that it often lacks one or more ACT programme elements. ACT is sometimes described as team-based where Case Management involves individual caseloads,[5] but this distinction is not maintained consistently.

Cochrane Systematic Reviews provide a means of evaluating randomised controlled trials (RCTs) and conducting systematic meta-analyses, where data are available. Cochrane Systematic Reviews have been conducted in four areas encompassed by our term 'home treatment': ACT,[6] Case Management,[5] Community Mental Health Teams (CMHTs)[7] and Crisis Intervention.[8] Reviewers, however, report on a wide range of outcome measures and scales used, impeding pooling of results, and point out the "striking … extent to which inadequately validated instruments [are] used to measure outcome".[5,6] Meta-analyses are also hampered by lack of data in an appropriate form (reported with means and standard deviations). In the area of services (rather than interventions) research, these problems are exacerbated by the lack of clear definition of the services under review.

Marshall and Lockwood[6] based their definition of ACT on the label used by the study authors, and excluded studies of ACT as an alternative to hospitalisation or 'hospital diversion'. They found it to be "a clinically effective approach". Marshall and colleagues[5] defined Case Management as any form of 'care' or 'case management' or 'Care Programme Approach' (CPA) excluding ACT, and concluded that Case Management is "an intervention of questionable value". The authors admit the limitations of their inclusion criteria in terms of service definition, realising that "it is not possible to be certain that the trialists were applying their labels correctly. It may even be that the interventions in successful trials are more likely to be retrospectively labelled 'ACT'." This might be argued to render unsound their conclusion that 'ACT' should be implemented and 'Case Management' abandoned.

Tyrer and colleagues[7] reviewed studies of CMHT care, excluding studies of services labelled either ACT or Case Management. They found that CMHT care was not inferior to standard non-team care in any important respect and suggested that it may be superior in reducing hospital admission. Finally, Crisis Intervention might be considered not to fall entirely within the area of 'home treatment' but, in practice, Joy and colleagues[8] in their review found that all the included studies were of "a form of home care for acutely ill people, which included elements of crisis intervention". They concluded that

To attempt a characterisation of service models at the level of components (bottom-up) rather than label (top-down), we conducted a Delphi exercise, utilising expert psychiatrists' opinions. We did not seek a definition of 'home treatment' from this exercise; instead, we asked leading psychiatrists what they considered to be the most important components of community-based mental health services that enabled them to treat a patient outside hospital. The components generated through this exercise were then used to characterise the services in our review through a follow-up survey to authors. Key components were tested for association with the outcome days in hospital. The year of study publication and the location of the study were also tested for association with days in hospital, to identify wider trends. To answer questions about the sustainability of the service programmes studied, the follow-up survey included questions about the components of the service today.

In this review, days in hospital during the follow-up period is used as the outcome measure, as a proxy for clinical outcome. It is recognised that this is problematic[14] as it is a measure of the services people receive rather than those they need, and has been shown to be sensitive to local practice and policy. It does not specifically measure change in health status. Despite this, it remains the only robust proxy measure for clinical status within a system. Moreover, meta-analyses in other areas necessarily use similarly crude measures. We chose hospital days as the outcome that was most likely to be obtainable from the studies. Bearing in mind that previous reviews have found a wide range of outcome measures and scales to be used,[5,6] we chose to analyse only hospitalisation outcomes and not other clinical or social outcomes or user and carer satisfaction.

It is a premise of the analytical strategy that to analyse studies with inpatient-control services alongside studies with community-based control services would give misleading results, given that the outcome measure was days in hospital. It is acknowledged that control patients in hospital would not necessarily remain there for the entire study period, while patients in the community (in experimental or control conditions) might be admitted to hospital; this is, indeed, the basis on which days in hospital is used as an outcome measure. Nevertheless, the studies using inpatient treatment as the control service are analysed separately to avoid distortion of results.

Where possible, the analysis is not divided any further on the basis of the control service. This enables us to analyse the maximum number of services together. The control services are often even more poorly defined than the experimental services. Since the premise of the review is that experimental services should not simply be analysed by their label, it was important not to base our analysis on even less well-defined labels for the control services. We anticipated that incomplete information on the control service characteristics would exacerbate the problem, since 'standard care' control services in some studies might comprise a model labelled, for instance, 'Case Management' in other studies.

To reflect these problems with the range and lack of clarity of control services, we present two analytical strategies. The first (the 'comparative analysis') is a meta-analysis of those studies for which we obtained data on hospital days, and proceeds along conventional lines, taking the difference between experimental and control services as its outcome measure. Here, our research question necessarily reflects the diversity of control services, acknowledging that in many studies it is unclear what the experimental service is being compared with, unless it is inpatient treatment. Where individual service components are tested for association with outcome, studies are only included where we have information about both experimental and control service components, in order to calculate the difference between them (for example, in caseload size). It is hypothesised that evidence in favour of experimental services may be due to some degree to the issues discussed earlier that limit generalisability, such as the impact of the charisma of study authors and their commitment to that service. The size of this effect is not ascertainable through this conventional meta-analysis.

The alternative, less conventional, analysis (the 'Experimental Services Analysis') uses only data from the experimental services. This analysis is not a randomised comparison. It has the disadvantage that its findings will therefore be affected by differences in the severity of the illness of patients in different studies and by local policies on hospitalisation. The analysis presupposes a certain quality of data based on the fact that the studies from which the data are taken are randomised trials. For this reason, non-randomised studies were not used in this analysis.

The Experimental Services Analysis has the advantage, however, that the associations between service components and days in hospital can be tested using a larger number of studies: all the studies can be included, regardless of what control service was used (including inpatient treatment). The diversity of the control services is thus no longer a problem, as the experimental services are compared only with each other. For this analysis, we needed information only on service components for the experimental service, which was likely to be available more often than for the control service. It was also hoped that the possible impact of the charisma and commitment of experimental service leaders would be minimised by analysing experimental services only against each other.

Definitions

For the purposes of this review, 'home treatment' or 'home-based service' is defined as a service that enables the patient to be treated out of hospital as far as possible and to stay in their usual place of residence.

The term 'Community Mental Health Team' is used in this review and the follow-up questionnaire (see page 37) as a generic term. This is in contradistinction to the definition used by Tyrer in his review,[7] which is a narrower concept, excluding ACT and Case Management.

Aims

The aims of the review are:

- to ascertain the effectiveness of home treatment over usual services in terms of reducing hospital days and in terms of cost-effectiveness
- to identify key components of home treatment services
- to measure the effects of different components of home treatment services on days in hospital
- to ascertain the sustainability of home treatment services and of these key components
- to identify and evaluate the published studies in this area which include an economic evaluation
- to measure the impact of methodological quality (in particular, randomisation) on the results of studies.

Research questions

- Are 'home treatment' services more effective than inpatient treatment in terms of reducing hospital days and costs?
- Are 'home treatment' services more effective, in terms of reducing hospital days and costs, than other community-based services with which they are compared?

Our initial brief was to evaluate the effectiveness of home treatment 'compared to admission' for mental health problems. This gives rise to the first research question above. ('Inpatient treatment' here means an initial period of inpatient treatment, followed by discharge as appropriate.) In view of the development of community care over the last 30 years, however, it was necessary to include studies comparing home treatment to services other than inpatient treatment. Because of the multiplicity of control services discussed earlier, this gives rise to the second question above. The difficulties with answering this question, and interpreting its findings, are discussed below.

Further, more specific questions were generated using a Delphi exercise (see chapter 4):

- Are services with smaller caseloads superior to services with larger caseloads in terms of reducing hospital days and in terms of cost-effectiveness (positive correlation between caseload size and hospital days)?
- Are services with a higher contact frequency superior to services with a lower contact frequency in terms of reducing hospital days and in terms of cost-effectiveness (negative correlation between contact frequency and hospital days)?
- Are services with a higher proportion of contacts made in the patient's home (or home environment) superior to services with a smaller proportion of such contacts in terms of reducing hospital days and in terms of cost-effectiveness (negative correlation between the percentage of home contacts and hospital days)?
- Are services with longer hours of operation superior to services with shorter hours of operation in terms of reducing hospital days and in terms of cost-effectiveness (negative correlation between hours of operation and hospital days)?

Chapter 2

Systematic literature search

Introduction

In searching the literature for this review, we aimed to be both systematic and wide-ranging. We adopted the search methodology of the Cochrane Systematic Reviews and searched the substantial database of trials compiled by the Cochrane Schizophrenia Group (CSG), as well as other important databases. Four Cochrane Reviews – of ACT,[6] Case Management,[5] CMHTs[7] and Crisis Intervention[8] – cover areas that fall within our definition of 'home treatment' as a service that enables the patient to be treated out of hospital as far as possible and to stay in their usual place of residence. We incorporated the search strategies of these four Cochrane Reviews into ours in order to include all their findings. We also searched their reference lists to ensure that this had been successful. Our search strategy, however, also aimed to be over-inclusive, in view of the fact that the previous reviews had been very tightly focused and that the area is inherently broad and unclear.

Methods

Criteria for selecting studies for this review

Types of participants

The majority of the study participants were required to be within the age range 18–65 years (maximum range 16–75 years) and to suffer from a 'mental health problem'. Substance abuse as a sole diagnosis was not included, but studies were eligible if they included people with a dual diagnosis of a mental health problem with substance abuse.

Types of services

A service was considered to be 'home treatment' or 'home-based' if it aimed to treat the patient outside hospital as far as possible and enabled them to stay in their usual place of residence. Studies of day care, foster care and community residential services were excluded.

Types of studies

Two categories of study were included. Studies were included as RCTs if they met Cochrane quality standards for RCTs.[15] Studies were included in the review as 'non-randomised studies' if they compared two services. Their inclusion in the analysis, however, was dependent upon further methodological criteria (see page 7).

Outcome measure

The outcome measure for this review was days in hospital over the follow-up period. Other outcomes were not analysed due to the reported range of outcome measures commonly used and the finding that a large proportion of instruments used in studies have been inadequately validated.[5,6]

Search strategy for identification of studies

Electronic searching

Searches were conducted in two stages. In the first stage, the CSG terms for psychotic illness were used (see appendix 3).

The following term was used to identify 'home treatment' studies:

[OUTREACH or HOSTEL or AFTERCARE or RESIDENTIAL or HOUSING or TRANSITIONAL or POSTHOSPITAL or ((COMMUNIT* near4 (TEAM* or CENTER* or CENTRE* or TREAT*) or ((CASE or CARE) near MANAGEMENT) or CPA or (CARE near1 PROGRAMME near1 APPROACH) or (ASSERTIVE near1 COMMUNITY near1 TREATMENT) or PACT or TCL or (TRAINING near (COMMUNITY near1 LIVING)) or (MADISON near4 MODEL) or (INTENSIV* or MOBILE or OUTREACH or COMMUN* or HOME) near3 (CARE* or INTERVEN* or TREAT* or THERAP* or MANAGEMENT* or MODEL* or PROGRAMM* or TEAM* or SERVICE* or BASE*) or (HOSPITAL* near3 (DIVERSION or ALTERNATIVE*) or ((DAY or DROP-IN) near3 (HOSPITAL or CARE or TREATMENT or CENTRE or CENTER or UNIT)) or (AMBULATORY and (TREATMENT or CARE)) or (PARTIAL near1 HOSPITALI?ATION) or (CRISIS or EARLY) near1 INTERVENTION) or FOSTER or GUARDIANSHIP or 'DAILY LIVING PROGRAMME'].

The following databases were searched using the CSG's terms for RCTs combined with their term for psychotic illness and the term for home treatment:

CINAHL (1982–10.99)
The CSG Register (–9.99)
EMBASE (1980–10.99)
MEDLINE (1966–12.99)
PsycLIT (1887–9.99).

Terms specific to each database were added to the generic term for home treatment. For full details, see appendix 3.

In the second stage, the search was performed again using the following term for mental health problems: [(MENTAL* or PSYCH*) near (DISORDER* or ILL*)]. This less sophisticated search term was designed to pick up any studies of mental health problems other than psychotic illness, which might have been missed by the original search.

Reference searching

Reference lists of all included RCTs and identified reviews (including the four Cochrane Reviews in this area, both the 'included' and 'excluded' studies lists) were searched for eligible studies missed by the electronic search.

Non-randomised studies

Systematically searching for studies that are not RCTs is known to be problematic.[16] As yet, no solution has been found, but a Cochrane Group for Non-randomised Studies has recently been established. An attempt was made to drop the CSG terms for RCTs, but this yielded thousands of items and was abandoned. Our search for non-randomised studies was therefore not 'systematic', unlike the search for RCTs. However, the electronic searches produced numerous items that were not RCTs, including reviews and editorials as well as studies, and the search was supplemented with searches of the reference lists of the included RCTs and reviews.

Selection of studies

Electronic searches were conducted at two time-points: July and November 1999. For the original search, the search terms above were combined with the CSG's terms for severe mental illness; in the second search, these terms were replaced by the terms for mental health problems or psychiatric disorder. This ensured that no studies of non-psychotic populations had been missed in the original search and had the additional benefit of finding more recent publications (*Figure 1*).

The search for studies from the identified publications was performed by two reviewers (JC and CW). One reviewer (JC) examined the abstracts of all publications detected by the search

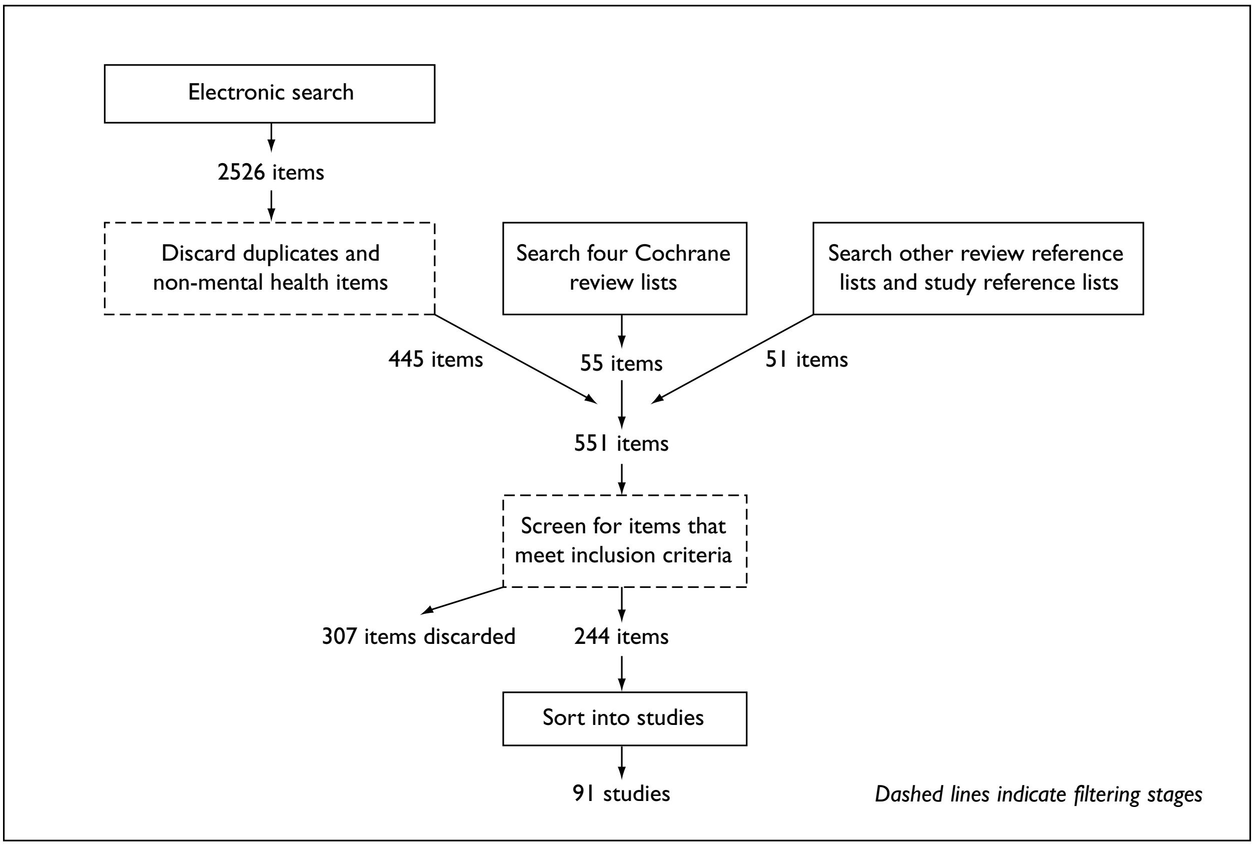

FIGURE 1 *Systematic literature search*

and eliminated irrelevant ones (such as publications on non-mental health topics and child and geriatric mental health) and duplicates. Both reviewers examined the abstracts of the remaining publications and eliminated studies of day care, residential care and foster care, as well as other studies that were not of home treatment (as defined on page 5). The results were pooled and copies obtained of all papers pertinent to the studies.

Methodological criteria

The studies were initially grouped into the two categories – 'RCTs' and 'non-RCTs' (non-randomised studies) – on the basis of the author's description of the study. Their methodology was later assessed against Cochrane methodological criteria, and apparent RCTs with flawed randomisation were moved into the 'non-RCTs' category. To be included as an RCT, studies had to be adequately randomised and use an intention-to-treat analysis.[15] Alternate assignment was not acceptable as a form of randomisation. Non-randomised studies were included in the review if they compared two services. They were only included in the analysis, however, if they were prospective studies and either matched cases and controls or provided evidence that the two groups were similar on baseline clinical variables (such as diagnostic profile, years in hospital, or admissions).

Data extraction and missing data

Both researchers extracting data were non-clinical. It was hoped that this would minimise bias.

Hospital days and service utilisation

Data were extracted from the papers by JH and supplemented through a process of follow-up to the study authors (see chapter 5). Studies were categorised as either 'data provided by author', 'data extracted from paper', 'no usable data' (where hospitalisation was presented in a form other than mean hospital days per patient) or 'no relevant information in the study' (where hospitalisation was not collected).

Study characteristics

Details of the studies – duration of the study, attrition, number randomised, number followed up, diagnostic profile of participants – were extracted from the papers by JC.

Results

The initial searches produced 2526 items, which was reduced to 445 after elimination of duplicates and non-mental health items. A further 55 items were added which had not been found in our search, but had been included in the four Cochrane Reviews, either in their 'included' or their 'excluded studies' lists. The examination of reference lists in the studies and other reviews produced a further 51 items.

Elimination of irrelevant material produced 244 items, relating to 91 studies. Once their methodology had been assessed, they were found to comprise 56 (uncompromised) RCTs and 35 non-RCTs (compromised RCTs or non-randomised studies) (*Figure 1*). All included studies are listed in appendix 1. Studies excluded from the review are listed in appendix 4. The percentages given below are for those studies for which we have the relevant data.

Study characteristics and patient populations: all studies

Characteristics and patient groups of each study are listed in appendix 2.

Of all the studies, 18 were 'inpatient-control' studies, that is, where the control service was an initial period of inpatient treatment followed by discharge as appropriate. The remaining studies were 'community-control' studies. The patient populations studied comprised either entirely psychotic patients or had a predominance of psychotic patients in the majority of the studies, but there were seven studies (four RCTs and three non-randomised studies) with predominantly or solely neurotic patients. Six of the studies were of dual diagnosis patients (mental illness and substance misuse), and ten studies were of homeless mentally ill patients. One study was of jail recidivists. A total of 19 studies focused on 'high service users' (also defined as 'heavy users of services' or as having 'high admissions', 'significant treatment history' or 'unusually high readmissions') and three were on patients who were 'difficult to treat'. Only six studies had excluded patients with a history of violence and five excluded them if they were misusing substances, despite major concerns expressed about exclusions (*Table 1*).[17]

Study characteristics and patient populations: RCTs

Nine of the RCTs were inpatient-control studies. Ten of the community-control studies selected patients at the point of discharge from hospital; the rest selected them from other (community) sources or from a combination of these and hospital discharge. One study was cluster-randomised. The studies' dates of first publication ranged from 1973 to 1999, with a median of 1995.

TABLE 1 *Study characteristics*

Characteristics	Total *n* = 91		RCTs *n* = 56		Non-RCTs *n* = 35		*p*-value
Inpatient-control (%)	18	(20)	9	(16)	9	(26)	0.26
Community-control (%)	73	(80)	47	(84)	26	(74)	
Median year of 1st publication	1994		1995		1992		0.051
Majority psychotic patients (%)	84	(92)	52	(93)	32	(91)	1.00
Studies of dual diagnosis (%)	6	(7)	4	(7)	2	(6)	1.00
Studies of homeless mentally ill (%)	10	(11)	8	(14)	2	(6)	0.31
Mean follow-up (months) (SD)	19.2	(12.8)	17.7	(10.6)	21.8	(15.6)	0.23
Mean number randomised (SD)	179.4	(200.5)	173.6	(168.2)	189.6	(249.8)	0.64
Mean number followed up (SD)	154.0	(194.3)	147.1	(153.2)	167.0	(256.6)	0.80

SD, standard deviation

The mean duration of follow-up across the RCTs was 17.7 months, with a range from three to 48 months. The majority were 12-month (30.9%), 18-month (18.2%) or 2-year (18.2%) studies. The size of the study population varied too, with the total number randomised ranging from 24 patients to 873. In all, 44% of the studies had fewer than 100 participants in total and 12% had fewer than 50.

Four of the RCTs focused predominately on dual diagnosis with substance misuse, and eight on homeless mentally ill patients. Thirteen focused on 'high service users' and three on patients who were 'difficult to treat'. Four studies excluded patients with a history of violence and two if they were misusing substances.

Study characteristics and patient populations: non-randomised studies

We found 35 studies that compared a home treatment service to a control service, but were not randomised or had flawed randomisation. Ten had flawed randomisation, 17 were prospective non-randomised (observational) studies and five were retrospective studies. In three studies the design was not clear.

We extracted information on the comparability of the experimental and control patients for all 27 prospective non-randomised studies. We included the flawed-randomisation RCTs in this process, as the inadequacy of the randomisation might have resulted in non-comparable groups. Seven studies had matched controls and 17 gave evidence that the groups were similar on clinical measures at baseline. These 24 studies were eligible for inclusion in the analysis (data analysis). In two studies the groups were not similar at baseline and in four there was no evidence for their comparability. However, all the non-randomised studies are included in the descriptive results, as in these descriptions we aim to provide a detailed overview of the full range of studies. (Both non-randomised and flawed-randomisation studies will be referred to henceforth as 'non-randomised studies'.)

Nine of the studies were inpatient-control studies. Of the remaining 26 (community-control) studies, seven had selected the patients at the point of discharge and the rest had selected them by other means. The year of first publication ranged from 1964 to 1999, with a median of 1992.

The majority of the studies again included predominantly psychotic patients (91% of studies), with only three considering predominantly or only neurotic patients. Only two studies were of dual diagnosis patients (with mental illness and substance misuse) and two of homeless patients. Six studies focused on 'high service users', and none focused specifically on 'difficult to treat' patients. Only two studies excluded violent patients and three excluded patients abusing substances.

The mean duration of follow-up in these non-RCTs was 21.8 months. The largest group was of 2-year studies (12 studies: 36%), with six (18%) 1-year and four (12%) 18-month studies. The size of the total population selected ranged from 30 to 1416, but 11 studies (37%) had fewer than 100 participants in total, and three studies (10%) had fewer than 50.

Differences between randomised and non-randomised studies

The difference in date of publication between RCTs and non-randomised studies approached significance ($p = 0.051$). Non-randomised studies were earlier than RCTs, first publishing data in 1992 compared to 1995. A few early studies with flawed randomisation (Pasamanick – Ohio[18]; Weinman – Philadelphia[19]) had affected this result: prior to their relocation to the non-randomised studies group, the median year of publication had been almost the same for the two groups. The RCTs were not significantly larger studies (the difference in numbers of participants was not significant), or longer, and the predominant diagnostic profile was not significantly different. Despite being earlier studies, the non-randomised studies were not more likely to be inpatient-control studies.

Comparing studies where the control service was inpatient treatment to the rest, there was a highly significant difference in the date of publication (an 8-year difference overall). This difference continued to be highly significant when only the RCTs were analysed, and just reached significance when only the non-randomised studies were analysed (*Table 2*).

TABLE 2 *Inpatient-control services by year*

	Median year of first data publication		**Total**
	RCTs	**Non-RCTs**	
Inpatient-control (Type I)	1986	1982	1986
Community-control (Type II)	1995	1993	1994
p-value	0.001	0.046	0.001

Studies with three treatment conditions

A total of 21 studies (13 RCTs and eight non-randomised studies) allocated participants to three treatment arms; for instance, intensive versus standard Case Management versus 'usual services' (Curtis – New York[20]) or 'consumer ACT' versus 'non-consumer ACT' versus 'standard care' (Herinckx – Oregon[21]). Only nine of these (seven RCTs and two non-randomised studies) had data on mean days in hospital (appendix 5).

Names given to services

Experimental services (Table 3)

Experimental services in half the studies were named as varieties of ICM, ACT or TCL. A total of 63% of the RCTs studied ICM compared with 34% of the non-randomised studies, and the difference was significant. Case Management ('standard', 'brokerage' or 'strengths') and home-based care or home care made up a further 13% and 10% respectively, and CMHT care was studied in 6%. The 'other' category comprised a range of services, including: community psychiatric nurse (CPN) care; 'outreach'; 'close supervision'; 'intensive community follow-up'; 'treatment network team'; 'nursing social support programme'; general practitioner (GP) psychiatric clinics; 'community service'; 'enablers'; and 'guardianship networks'. Services that described themselves as working on the principles of ICM, ACT or TCL themselves had a variety of names: 'assertive outreach Case Management', 'assertive outreach' and 'continuous treatment', among others.

TABLE 3 *Labelling of experimental services*[*]

Labels	**Total** $n = 91$	**RCTs** $n = 56$	**Non-RCTs** $n = 35$
ICM/ACT/TCL (%)	47 (52)	35 (63)	12 (34)
CM (%)	12 (13)	6 (11)	6 (17)
Home(-based) care (%)	9 (10)	3 (5)	6 (17)
CMHT (%)	5 (6)	4 (7)	1 (3)
Other (%)	18 (20)	8 (14)	10 (29)

[*] p = *0.037*

CM, Case Management

Control services (Table 4)

Control services were drawn from a wide variety of services, notably inpatient services (19%) and non-intensive forms of Case Management (20%), such

TABLE 4 *Labelling of control services*

Labels	**Total** $n = 91$	**RCTs** $n = 56$	**Non-RCTs** $n = 35$	p**-value**
Inpatients (%)	17 (19)	8 (14)	9 (26)	
Outpatients/ CMHC (%)	17 (19)	11 (20)	6 (17)	0.73
CM (standard/ brokerage/ strengths) (%)	18 (20)	13 (23)	5 (14)	
ACT (%)	2 (2)	1 (2)	1 (3)	
Standard care (%)	21 (23)	13 (23)	8 (23)	
No service	3 (3)	0 (0)	3 (9)	
Other (%)	13 (14)	10 (18)	3 (9)	

CMHC, community mental health centre

as 'standard' or 'traditional', 'strengths' and 'brokerage'. The 'other' services included psychoeducation (one study), CPN service (one), generic teams (one) and psychosocial occupational therapy or rehabilitation (two). The largest category was 'standard care' (23), which was rarely clearly defined in the papers. Further clarity on the standard care control services was sought through follow-up.

Service models used as controls in some studies were used as experimental services in others for a variety of reasons. Some studies compared two forms of ACT or Case Management in which one feature differed. In other cases, the date of the study influenced the choice of service studied, as services that were once treated as experimental or innovative (such as Case Management) later became 'standard' and were used as the control for studies of ICM.

Reviews

Of the 56 RCTs in this review, 33 (58.9%) had to date been included in one of the four Cochrane Systematic Reviews falling within this area (ACT, Case Management, CMHT and Crisis Intervention[5–8]). Of the remaining 23, ten were published more recently than the Cochrane Reviews. Eight of the remaining 13 studies had been excluded from the Cochrane Reviews as not meeting their inclusion criteria.

Outcome variables

Hospitalisation

In all, 34 studies reported information on hospitalisation in a form not usable in our analysis, that is, not in the form of mean hospital days per patient. Typical measures collected were number of admissions, duration of admissions (for patients who were admitted at all) and proportion of all patients who were hospitalised at any point during the follow-up period (appendix 5).

Of 26 studies presenting data on hospitalisation that we could not include in our analysis, nine found a significant difference in favour of the experimental service and none found a significant difference in favour of the control service. In the remainder, the findings were not significant or the significance was not clearly stated. Out of the RCTs for which there was hospitalisation data that we could not use, only one study found significant results in favour of the experimental service, one found a significant difference in favour of the control service, and one found a significant difference only within groups. Out of the non-randomised studies, six found a significant difference in favour of the experimental service and none found a significant difference in favour of the control service. It must be noted that this is a very crude expression of the results, since the hospital measures were all different.

Other outcomes

The studies reported on a wide range of clinical and social outcomes. Most had clinical measures of psychopathology and symptomatology and measures of social functioning. Many reported on 'satisfaction with treatment', some on 'needs for care', family and carer satisfaction and/or 'burden' and social support. Studies specifically of homelessness in combination with mental illness necessarily included measures of homelessness or residential autonomy, while studies of patients with co-morbid substance misuse included substance misuse measures.

To analyse these outcomes in detail is beyond the scope of this review. As discussed above, reviewers who have done so have found that a wide range of different scales are used, many of them inadequately validated (see page 1). This severely limits the comparability and generalisability of the study findings.

Attrition rates

Although we extracted data on the number of participants followed up, focusing on the number for whom data on hospital days were obtained, this information was extremely difficult to ascertain from the published information. The figures reported for numbers followed up should thus be treated with caution.

Discussion

Scope of research

We found 91 studies: a large number compared to many areas of service research. Nevertheless, given the breadth of inclusion criteria for this review, and its 30-year time span, even this many studies might seem relatively small. This highlights the fact that service research is presently lagging behind therapeutic intervention research in mental health.

Studies of all designs were more likely to study varieties of ACT and ICM than other service models, but RCTs were significantly more likely than non-randomised studies to test these models. Very few looked at special patient groups such as homeless people or people with co-morbid substance misuse. The studies also varied tremendously in size. We did not examine each study for evidence of a power calculation because they have only recently come into regular use. Given what is now known about the spread of hospitalisation for severely mentally ill patients (positively skewed as a result of the nature of the illness), it is likely that many of the studies were not sufficiently powered to allow for this. The issue of powering is returned to in the review of economic evaluations (page 23, 'Statistical power').

Location

The vast majority of the studies (76 out of 91) were conducted in the USA (55 studies) and the UK (21). It is possible that the low number of other studies found may reflect search strategy bias, as databases may favour English-language studies. Nevertheless, several non-English studies (not all of them having English abstracts) were found by the search but did not meet the inclusion criteria for this review (see appendix 4).[22–26]

Methodology

In this review, we have distinguished between RCTs and non-randomised studies in order to analyse the RCTs alone, and have relegated RCTs with compromised randomisation to the 'non-randomised studies' group. This was justified in view of the methodological rigour that RCTs offer. The distinction between uncompromised and compromised RCTs (RCTs with flawed randomisation) may, however, be unreliable. Our policy was in line with that of the Cochrane Centre: a study was included if it gave details of randomisation that showed it to have been adequate or if it did not give details, and relegated if it gave details that showed it to have been compromised. This runs the risk that where authors did not give details about the randomisation, their studies may have been included as 'uncompromised RCTs', although their randomisation was in fact flawed. Unfortunately, the level of under-reporting of randomisation details is so high that it would be impossible to exclude studies where the authors failed to detail the randomisation. Anecdotal evidence concerning two of the studies included as uncompromised RCTs, however, suggests that this is indeed problematic. In one study, there seems to have been well-intentioned but misguided contravention of the randomised allocation by clinicians to 'protect' known patients who they considered too ill for the experimental service to contain. In another, much earlier study, referrers withdrew some patients from the study on the basis of the allocation, without telling research staff their names, and then presented them again in an attempt to achieve the preferred treatment. Similar problems surrounded the issue of attrition, which was very poorly reported overall.

We found fewer non-randomised studies than RCTs. This may be due to the difficulty of conducting a 'systematic' search for such studies, which distorted the search strategy between the two groups. The fact that the non-randomised studies were earlier on average than the RCTs, however, needs to be treated with caution. The relegation of some RCTs with flawed randomisation (such as Pasamanick – Ohio[18] and Weinman – Philadelphia[19]) to the non-randomised studies group had a great impact on this finding because these were very early studies. Without them, it would seem that researchers are no more likely to choose RCTs over non-randomised studies today than they were 20 or 30 years ago. The fact that the RCTs with compromised randomisation were usually earlier studies suggests that the methodology of RCTs may have been improving with time.

Over three times as many of the non-randomised studies (excluding flawed RCTs) were prospective studies as were retrospective ones. In three cases, however, the study design was not clearly stated in the paper. This may imply that these three studies were retrospective, as authors may be more likely to report the study design of prospective studies. Most of the prospective studies (24 out of 27, including the flawed RCTs) either had matched controls or presented evidence that the two groups were clinically similar at baseline. Nevertheless, this leaves 11 studies that would not be eligible for analysis because of being retrospective, having dissimilar patient groups or not reporting evidence of their comparability.

Inpatient-control studies

Inpatient-control studies were significantly earlier than community-control studies, regardless of the study design, as we had expected. There were, however, some recent inpatient-control studies. Despite the progressive shift from inpatient to community treatment and the huge influence of pioneering inpatient-control studies (Marx – Madison[27] and Stein – Madison[11]), there is clearly still a belief among researchers that it is important to test home treatment in comparison to inpatient care.

Chapter 3

Review of economic evaluations

Introduction

This review aims to assess the state of the evidence concerning the effectiveness of home treatment in terms of hospital days and cost-effectiveness. Our analysis of the outcome days in hospital is presented in chapter 6. Our assessment of the state of economic evidence, however, takes two forms. In chapters 5 and 6 (see page 37, 'Methods'; page 38, 'Service utilisation data'; page 59, 'Cost analysis'; page 61, 'Comparative analysis: service utilisation data and costs'; page 63, 'Costs'; and page 66, 'Experimental services analysis: service utilisation and costs'), we detail an intensive follow-up of study authors for service utilisation data usable in a meta-analysis of costs. Here, however, we report on a review of the specific economic evaluations undertaken by the home treatment studies found, evaluating their methodologies and summarising their findings.

The three main types of economic evaluation used in health and social care evaluation are all represented in the studies discussed below. The three types are described briefly in *Box 1*.

BOX 1 Types of economic evaluation

Cost-effectiveness analysis (CEA) addresses two types of question:

- if two treatment options are of equal cost, which provides the greatest level of health-related benefits?
- if two options are found to be equally beneficial, which is less costly?

Typically, resource costs are combined with clinical outcomes measured in 'natural' units of effectiveness to produce cost-effectiveness ratios (such as cost per successfully treated case). Most mental healthcare CEAs concurrently use a range of instruments measuring symptomatology, functioning, general quality of life and patient satisfaction. They also consider the cost implications of specific service arrangements or treatments. Multiple outcome evaluations that do not assume a single primary outcome are sometimes called cost–consequences analyses.

Cost–utility analysis (CUA) differs from CEA in its approach to outcome measurement, with health gain (in terms of life years gained) weighted by the 'utility' that relevant groups attach to the health states in which an improved life expectancy will be lived. The most common form of utility-based measure used in CUA is the quality-adjusted life-year (QALY).[29,30] CUA allows comparisons to be made across a wide range of healthcare programmes that target different patient and population groups. In a mental health context, however, concerns have been expressed that what is gained in terms of broad programme comparability may be lost due to the insensitivity of current QALY measures to changes in mental health-related well-being.[31]

Cost–benefit analysis (CBA) addresses questions of allocative efficiency (do benefits exceed costs?), which ultimately requires the measurement of welfare changes in monetised units in order to enable direct comparisons between costs and benefits. All consequences linked to specific interventions are ideally taken into account in appraising efficiency. In mental health, these consequences include the direct resource implications of the service, broader resource implications felt by other agencies and (more difficult to quantify) gains in patient welfare and consequences for families and other informal care-givers.

(**Efficiency** is defined as improved balance between costs and outcomes.)

Methods

All economic evaluations reviewed were taken from the results of the general search strategy (page 7, 'Results'). A study was considered to be appropriate for inclusion in the economic review if reference was made to service outcomes as well as costs. Studies were not included if they did not explicitly consider other outcomes alongside costs within the paper or in a companion paper because such cost analyses do not constitute economic evaluations.[28] Studies that reported on the outcomes from different interventions but only focused on the costing of inpatient admissions were also excluded from the review in this section.

We did not subject each paper to a systematic quality review, although in drawing up this discussion we did employ the widely used Drummond and colleagues' 'checklist'[28] for assessing the quality of economic evaluations (*Box 2*), as well as examining the appropriateness of the statistical methods used. Here, we offer a

BOX 2 Checklist for reviewing economic evaluations (Drummond *et al.*, 1997)[28]

1. Was a well-defined question posed in an answerable form?
2. Was a comprehensive description of competing alternatives given?
3. Was there evidence that the programme's effectiveness had been established?
4. Were all the relevant costs and consequences for each competing alternative identified?
5. Were costs and consequences measured accurately in appropriate physical units?
6. Were costs and consequences valued credibly?
7. Was an incremental analysis of costs and consequences performed?
8. Were costs and consequences adjusted for differential timing?
9. Was allowance made for uncertainty in the estimates of costs and consequences?
10. Did the presentation and discussion of study results include all issues?

general descriptive overview of the evaluations and their conclusions, comment on the quality of studies and point out any factors that may affect the reliability of published conclusions. As elsewhere in this report, we distinguish inpatient-control studies (where the control service was an initial period of inpatient treatment) from community-control studies (where the control service was community-based). We divide our discussion into UK and North American evidence because health systems differ so greatly between the two.

Results

Overview of evidence on the efficiency of home treatment

From the pool of studies identified through the search process, 22 met the above criteria (11 from the USA, two from Canada and nine from the UK). *Tables 5* and *6* summarise the UK and North American studies respectively.

The studies span a 20-year period, although the majority were published during the last ten years. Not surprisingly, the most common form of economic evaluation reported was CEA (including cost–consequences analysis) (19 studies), with two describing their evaluations as a CBA, and one a CUA. All but four of the included studies were based on RCTs of experimental services. All the studies were concerned with assessing new services for adults with mental health problems, although there was some variation in more specific inclusion criteria. One North American paper was primarily concerned with evaluating services for people with a dual diagnosis of mental health problems and substance misuse, whilst a key inclusion criterion for three others was homelessness in addition to mental health problems. A smaller number of studies in both North America and the UK also covered severe neurotic illness. Two studies from the UK focused on community psychiatric nursing for people with neuroses and affective disorders.

In the descriptions of studies in *Tables 5* and *6*, both the article giving the economic evaluation and the study to which it belongs are referenced.

United Kingdom (*Table 5*)

Of the nine UK studies meeting the review criteria, six were community-control studies. Two of these were evaluations of CPN services for neurotic illness. Mangen and colleagues (1983)[37] (Paykel – London) evaluated treatment delivered by CPNs against outpatient psychiatrist treatment, whilst the control intervention in Gournay and Brooking (1995)[33] (Gournay – Middlesex) was GP care. Neither study delivers convincing evidence that CPNs are more cost-effective than the control service, although Mangen and colleagues report significantly lower psychiatric treatment costs for patients in the experimental arm. Gournay and Brooking report a net benefit linked to the delivery of CPN care (after allowing for increased work attendance when estimating costs). However, they do not report appropriate statistical tests. The CUA reported by Gournay and Brooking concludes that CPNs would be more efficiently deployed within patient groups with 'more serious' disorders. This conclusion should, however, be treated with caution, as it is based on a tentative comparison of cost–utility ratios drawn from another paper[41] (not included in this review, see appendix 4).

The four remaining community-control studies focused predominately on psychotic patients. They were concerned with evaluating the efficiency of Case Management or care programming arrangements, although given the existing confusion over the meaning of such terms, and the fact that local service initiatives are likely to develop independently of one another, comparisons between studies is difficult. Each of the studies essentially addresses different questions, as reflected in their use of different control services.

TABLE 5 *Summary of economic evaluations of community home-based care for mental health problems: UK*

Study name	**Type of study**	**Design**	**Sample size and follow-up period**	**Inclusion criteria**	**Comparison**	**Conclusions**
Gater – Manchester[32]	CEA	RCT (cluster)	*n* = 89 24 months	Diagnosis of schizophrenia; registered with GPs; age 16–65; onset of symptoms more than 3 years before start of study; on medication or symptomatic for 2 years prior to study	Multidisciplinary community-based team with primary care links versus standard hospital-based psychiatric service	Evidence of better client outcomes in experimental group and higher patient satisfaction. Mean social costs higher for experimental group, although no significance tests reported
Gournay – Middlesex[33]	CUA	RCT	*n* = 177 6 months	Patients with non-psychotic problems attending GPs' surgeries	CPN care in a primary care setting versus usual care delivered by GPs	Net costs of the CPN care versus GP option was negative (i.e. a net benefit). Based on the comparison with another study, the cost per additional QALY gained in this patient group using CPN care was more than that estimated for 'more serious' forms of mental illness
Merson – London[34]	CEA	RCT	*n* = 100 3 months	Psychiatric emergencies; age 16–65; psychotic disorder; local resident; not requiring mandatory inpatient services; not currently in contact with psychiatric services	Community Early Intervention Scheme versus hospital-based acute care	Early intervention service shown to be no less effective than hospital alternative with lower mean costs. However, no evidence of statistically significant differences in mean costs is presented
Muijen – London 1[35]	CEA	RCT	*n* = 181 45 months	Schizophrenia or severe affective disorder; age 17–64; not pregnant	DLP versus standard inpatient treatment	At 20 months the DLP was found to be more cost-effective, but this advantage disappeared after 45 months
Muijen – London 2[36]	CEA	RCT	*n* = 82 12 months	Two hospital admissions during the previous 2 years; schizophrenia or affective psychosis lasting more than 2 years; age 18–64	Community support team versus generic CPN care	CPN support team found to be more cost-effective at 6 months, but this was not sustained for the full 12-month follow-up period
Paykel – London[37]	CEA	RCT	*n* = 71 18 months	Discharged from hospital/day hospital or current outpatients with 6 months attendance; age 18–69; (ICD) neurosis; unipolar affective psychosis; personality disorder	Treatment from CPN versus standard outpatient treatment from a psychiatrist. Primarily patients with chronic neurotic mental health problems	No significant differences in mean total costs or clinical outcomes between interventions. However, psychiatric treatment costs significantly lower at 18 months, suggesting that it may be the more cost-effective option

DLP, Daily Living Programme; ICD, International Classification of Diseases

continued

TABLE 5 contd *Summary of economic evaluations of community home-based care for mental health problems: UK*

Study name	Type of study	Design	Sample size and follow-up period	Inclusion criteria	Comparison	Conclusions
PRiSM – London[38]	CEA	Prospective non-RCT	*n* = 123 24 months	Any individual with a psychotic disorder living in the two study catchment areas	Inter-sectoral comparison of intensive community-based mental health service versus 'standard' service	No significant difference in overall service costs between intensive and standard care sectors (however, mean comparisons based on service users only). Based on the results from companion papers, evidence on service outcomes is varied with no consistent evidence that either intensive or standard sector services were more effective along various outcome scales
Tyrer – London 2[39]	CEA	RCT	*n* = 155 12 months	Psychotic disorder or severe non-psychotic mood disorder; age 16–65; at least one psychiatric hospital admission within past 3 years	Multidisciplinary CMHTs versus hospital-based care	No differences in cost or outcome after 1 year
UK700[40]	CEA	RCT	*n* = 708 24 months	Psychotic illness for at least 2 years; age 18–65; admitted to hospital at least twice and once during past year	ICM versus standard CM	ICM not found to be significantly more cost-effective than standard CM

McCrone and colleagues (1994)[36] (Muijen – London 2) evaluated the cost-effectiveness of a local service development in south London involving the reorganisation of standard CPN services into a Case Management system. Compared with the standard CPN service, the new service arrangement was found to be no more cost-effective at 12 months, although over a shorter 6-month follow-up there was evidence that the Case Management approach was more efficient. McCrone and colleagues (1998)[38] (PRiSM – London) compared service utilisation and costs between two mental healthcare sectors in south London. One sector delivered 'standard' services provided by a generic mental health team involving a Case Management system of care and liaison with inpatient services. The other sector consisted of an acute/emergency psychiatric team and a team providing 'psychiatric assertive continuing care'. The study reports no significant differences in overall mean costs of service use (differences based on those reporting service use only). Based on the conclusions from a series of companion papers, there was no consistent evidence favouring either sector in terms of patient outcome.[42–46]

Tyrer and colleagues (1998)[39] (Tyrer – London 2) evaluated the cost-effectiveness of a system of Case Management utilising community multidisciplinary teams versus outpatient care. No cost or outcome differences were found between the groups. The UK700 study's economic evaluation is one of the largest multisite economic studies of its type (UK700 Group, 2000[40]). It tested whether ICM was more cost-effective than standard Case Management. No evidence was found to support this hypothesis.

The other three UK studies, all inpatient-control studies, evaluated different services for acute mental health problems. Merson and colleagues

(1996)[34] (Merson – London) compared the cost-effectiveness of an early intervention scheme to acute inpatient care and found no difference in costs or outcomes. Knapp and colleagues (Muijen – London 1) found the DLP to be more cost-effective than hospital-based care after 20 months,[47] but not after 45 months.[35] Gater and colleagues (1997)[32] (Gater – Manchester) looked at the costs and outcomes of multidisciplinary CMHTs with local primary care links against a standard service provided from the district general hospital psychiatric unit. Client outcomes were in general better in the experimental group than in the control group, and there was evidence of greater patient satisfaction with the experimental service. Net social costs per client (aggregated across all impacts) were higher for the experimental service. No formal statistical testing revealed whether this difference was statistically significant.

Quality of evidence from UK studies

Resource use

It is important in mental health service evaluation to take a comprehensive approach to the identification of resource use and costs. Patients are likely to utilise a wide 'package' of services delivered by health and social care agencies and possibly other providers (such as criminal justice system agencies). This is especially pertinent when evaluating Case Management arrangements, given case managers' remit to engage with other agencies in the interests of client health and general well-being. Failure to account for the costs of improved community service access could give a misleading indication.

Each of the UK studies generally took such a comprehensive approach. Each covered relevant health and social care contacts. Knapp and colleagues[35] (Muijen – London 1), McCrone and colleagues[38] (PRiSM – London), McCrone and colleagues[36] (Muijen – London 2) and the UK700 Group[40] (UK700) also allow for the cost of changes in specialised accommodation use. This would probably not have been a relevant consideration for Gournay and Brooking[33] (Gournay – Middlesex) or Mangen and colleagues[37] (Paykel – London), given their focus on patients with neurotic illness. Each of the studies that evaluated services specifically for psychotic illness included criminal justice system costs with varying degrees of detail (such as the value of police and court time).

Cost valuation

Each study appeared to have employed appropriate unit costing sources to value patients' resource utilisation; that is, each attempted to assess the marginal opportunity cost of resource use taking a long-run perspective.

Patient and carer costs

Two other sources of resource use that are often overlooked are patient costs and the impact of interventions on informal or family carers. Gournay and Brooking[33] (Gournay – Middlesex) included costs incurred by patients and relatives, covering the value of work loss from treatment attendance and travel expenses. Mangen and colleagues[37] (Paykel – London) considered patient travel costs incurred in seeking treatment. Gater and colleagues[32] (Gater – Manchester) made estimates of client costs of service attendance (in terms of time and money) and costs falling on informal carers. McCrone and colleagues[38] (PRiSM – London) cost the time devoted to informal care in their study sample using the cost of a paid home-help to proxy the value of time given up by informal care-givers. No other studies in the group of UK evaluations included either patient-related costs or the value of any effects of service arrangements on informal carer welfare.

Duration of follow-up

In three of the nine UK studies (Gater – Manchester[32]; Muijen – London 1[35]; UK700[40]), the follow-up period over which costs and outcomes were assessed exceeded 12 months. Only one (UK700) discounted future costs using the prevailing discount rate employed by the UK Treasury for public sector programmes (6%). This was also varied in a sensitivity analysis, which did not alter the main conclusions. The UK700 study was the only evaluation that exposed its cost-effectiveness estimates to a series of sensitivity tests. These included variation in assumptions regarding the value of unit costs, the level of capital overheads as a proportion of staff costs and the ratio of staff contact to non-contact time. As with the discount rate, these sensitivity analyses did not affect the study's conclusions.

Sample size and power

Given that classical statistical inference plays a central role in clinical and economic evaluations, the most worrying aspect of existing evidence (for economic evaluations as for effectiveness evaluations) relates to the number of individuals recruited for study. We would also stress that in *Tables 1* and *2* the sample size figures relate to the point at which patients were randomised, and do not account for sample attrition over the period of evaluation. Sample size at follow-up is obviously important for statistical power.[48,49] The typical finding in mental health evaluations of heavily right-skewed cost distributions (a small number of patients incurring disproportionate costs) and large standard deviations adds to the difficulty of achieving a fully-powered study.

Powering issues have only relatively recently come to the fore in health economic evaluations, and so it is perhaps not surprising that only one of the nine UK studies (UK700) conducted a prospective power calculation. This yielded a sample in excess of 700 participants split between two arms in the trial. In this case, a subjective judgement was made regarding the level of powering (80%), the significance levels to apply to tests of mean differences in cost between intensive and standard Case Management participants, and what was considered to be an adequate difference in mean costs (£45 in this instance, although any chosen difference is likely to be arbitrary). We shall refer to the UK700 evaluation as offering a standard because it was the only economic evaluation in this field to conduct a prospective power calculation for cost comparisons.

In recognition of the problems experienced with sample attrition in the DLP evaluation (Muijen – London 1), Knapp and colleagues[35] carried out a retrospective power calculation and concluded that the insignificance of the differences between the experimental and control patients may have been due to lack of statistical power. With the exception of the UK700 evaluation, therefore, insufficient sample size (at recruitment and after attrition) casts doubt on the reliability of those studies that find significant results.

Analysis

The UK700 evaluation employed bootstrapping methods to test for differences in mean costs between groups and also to generate 95% confidence intervals (95% CIs) for cost-effectiveness ratios. None of the other UK evaluations could be considered entirely satisfactory when judged by current guidelines on how to report economic data.[50] For example, four studies failed to report mean costs and standard deviations, one compared mean costs using *t* tests which are potentially unreliable on non-normally distributed cost data, and two reported comparisons of logarithmically transformed costs. The log-transformation of raw cost data was a popular approach for a while as a means to normalise skewed distributions, but it does not enable comparisons to be made of arithmetic mean costs, which are the relevant unit of account in economic evaluations.

North America (*Table 6*)

Of the 13 economic evaluations identified from North American studies, nine were community-control studies and four were inpatient-control studies. The same broad caveats apply here as for the UK studies, limiting the conclusions that can be drawn.

Two of the inpatient-control studies evaluated ACT programmes. Weisbrod and colleagues (1980)[62] (Stein – Madison) report an economic evaluation of the then newly developed ACT model in Madison. Despite being the earliest, pioneering study of ACT, this is one of the few attempts at conducting a full CBA. In a recent cost-effectiveness evaluation, Rosenheck and Neale (1998)[61] (Rosenheck – Connecticut) evaluate ten IPCCs, which were developed partly on the basis of advice received from experts based at the Wisconsin ACT programme. The third inpatient-control study, Fenton – Montreal (Fenton and colleagues, 1982[56]) evaluated the cost-effectiveness of ‘home-based’ care. In another, much earlier, Canadian evaluation, Coates and colleagues (1976)[53] (Coates – Vancouver) studied costs and outcomes of home treatment, hospital-based care and a combination of the two for different combinations of home care and hospitalisation. They show, for example, that a combination of high expenditures on home care with brief hospitalisation produces significant improvement in outcomes for the additional costs involved. All four inpatient-control economic evaluations delivered evidence that favoured the experimental services.

With one exception, all the community-control evaluations were concerned with the cost-effectiveness of variants of the ACT model against the ‘usual’ treatment, including what is described in some papers as ‘standard Case Management’. Two (Wolff – New Jersey[63]; Lehman – Baltimore[59]) were specifically concerned with evaluating whether ACT was an efficient means of coordinating care for homeless people with severe mental health problems. The evidence from these studies is generally favourable towards the implementation of ACT when supporting this specific client group.

In the remaining community-control studies of ACT, there is no consistent message that these services offer a more efficient alternative to what is usually provided. Bond and colleagues (1988)[51] (Bond – Indiana 1) and Clark and colleagues (1998)[54] (Drake – New Hampshire) both report results that favour neither ACT nor its alternative. In the cost-effectiveness evaluation conducted

TABLE 6 *Summary of economic evaluations of community home-based care for mental health problems: North America*

Study name	**Type of study**	**Design**	**Sample size and follow-up period**	**Inclusion criteria**	**Comparison**	**Conclusions**
Bond – Indiana 1[51]	CBA/CO	RCT	n = 167 6 months	DSM III diagnosis of psychotic disorder; age 17 years plus; discharged from state hospital. Patients also had to meet at least one of three risk factors for re-hospitalisation	Assertive CM versus usual care at each of the three sites	Evidence on cost-effectiveness of assertive CM was inconclusive
Chandler – California 1[52]	CEA	RCT	n = 439 36 months	Selection criteria not explicit. Patients severely disabled but did not have high level of service use	ISA (based on PACT) versus usual mental healthcare including limited CM and vocational and rehabilitative services	ISA more effective than usual care but also more costly
Coates – Vancouver[53]	CEA	Non-randomised study	n = 212 12 months	Meeting existing criteria for hospital admission; age 16–69; not in jail or under Magistrate's Warrant	Home-based care versus inpatient care versus a combination of the two	Cost-effectiveness results vary according to the combination of home care and hospital-based treatment received by clients. Authors note that significant improvements in outcome can be gained at low additional expense from a high-resourced home-based treatment with brief hospitalisation
Drake – New Hampshire[54]	CEA	RCT	n = 223 36 months	Schizophrenia; schizo-affective disorder; bipolar disorder; concurrent substance misuse disorder; age 18–60; no medical co-morbidities preventing study participation	ACT versus standard CM	No evidence of any cost-effectiveness advantage of ACT over 3 years – although there was evidence of increasing ACT efficiency with time
Essock – New York[55]	CEA	RCT	n = 262 18 months	Diagnosis of major depression, bipolar disorder, schizophrenia or schizo-affective disorder; two or more psychiatric admissions in past 2 years; homeless at some time in past year or requiring extensive assistance with personal care needs	ACT versus standard CM	Cost-effectiveness of ACT varies according to hospitalisation risk – with ACT demonstrating a cost-effectiveness advantage amongst patients who were in hospital at point of randomisation

CO, cost–offset analysis; DSM III, Diagnostic and statistical manual of mental disorders, version III; ISA, Integrated Service Agency

continued

TABLE 6 contd *Summary of economic evaluations of community home-based care for mental health problems: North America*

Study name	Type of study	Design	Sample size and follow-up period	Inclusion criteria	Comparison	Conclusions
Fenton – Montreal[56]	CEA	RCT	*n* = 155 24 months	Age 18 years plus; in contact with family	Home-based versus hospital-based care	Home-based care significantly less costly than hospital alternative and performed no worse along a series of outcome measures
Jerrell – S. Carolina 2[57]	CEA	RCT	*n* = 122 24 months	DSM III diagnosis with co-occurring substance use disorder. All clients recruited on discharge from acute or sub-acute care (at least two previous episodes in past year) or from lengthy residential stay or repeated emergency visits. At least two other criteria also had to be met from a list of clinical and social indicators	PACT versus clinical CM versus brokerage CM	No significant outcomes advantage for PACT other than role functioning. PACT was found to be no more costly than the control services
Jerrell – S. Carolina 1[58]	CEA	RCT	*n* = 132 18 months	DSM III diagnosis with co-occurring substance misuse (i.e. dual diagnosis). Patients were required to have undergone psychiatric treatment one or more times prior to referral. Patients also had to meet at least one of two additional clinical/social criteria for participation	Behavioural skills model versus ICM versus '12-steps' approach (this standard intervention available – AA and NA). All three were considered to be supplementary forms for care to other mental health services	Behavioural skills model was found to be the most cost-effective supplementary intervention. ICM was more cost-effective than the '12 steps' approach
Lehman – Baltimore[59]	CEA	RCT	*n* = 152 12 months	Severe and persistent mental illness; homelessness (streets and shelters)	ACT versus usual community-based care for homeless people with severe mental illness (inpatient acute care and crisis-orientated care, CM, outreach, advocacy, medical care, primary care – all specifically for the homeless)	No significant difference in mean total costs between interventions. However, ACT led to significantly more days of stable housing. Some evidence that incremental cost-effectiveness depends on racial characteristics (neutral for black patients)

DSM III, Diagnostic and statistical manual of mental disorders, version III; AA, Alcoholics Anonymous; NA, Narcotics Anonymous

continued

TABLE 6 contd *Summary of economic evaluations of community home-based care for mental health problems: North America*

Study name	**Type of study**	**Design**	**Sample size and follow-up period**	**Inclusion criteria**	**Comparison**	**Conclusions**
McGurrin – Philadelphia[60]	CEA	Quasi-experimental	*n* =183 36 months	Serious and persistent mental illness; eligible for CM	ICM versus standard community-based care	Lower mean total costs for ICM clients (although no significance tests reported). Better functioning reported for experimental group (no significance tests reported)
Rosenheck – Connecticut[61]	CEA	RCT	*n* = 873 24 months	Currently hospitalised on VA psychiatric research unit; primary psychiatric diagnosis; high rates of previous hospitalisation	IPCC versus standard care (inpatient care, psychopharmacological treatment, rehabilitation)	Evidence generally suggests that IPCC is a cost-effective alternative, after dropping two sites that failed to implement the appropriate care model fully
Stein – Madison[62]	CBA	RCT	*n* = 130 12 months	Non-chronically institutionalised population; age 18–62	TCL programme (PACT) versus standard hospital intervention with aftercare	Community-based treatment more costly in direct resource terms, but overall the additional benefits of this approach exceeded the additional costs. Significantly lower recorded symptoms in experimental group along four out of 13 clinical scales. No other significant differences found
Wolff – New Jersey[63]	CEA	RCT	*n* = 85 18 months	Currently homeless or at risk of homelessness; DSM-III-R axis I; no recent convictions for rape, homicide or serious assault; willing to engage in treatment	ACT with lay workers versus ACT alone versus brokered CM	ACT (with or without lay persons) was no more costly than brokered CM and was more effective along certain outcome scales, including patient satisfaction and reduced psychiatric symptoms

VA, Veterans Affairs; IPCC, Intensive Psychiatric Community Care; DSM III, Diagnostic and statistical manual of mental disorders, version III

by Chandler and colleagues (1996)[52] (Chandler – California 1), the ISA model (based on the ACT model) was generally more effective than limited Case Management and vocational and rehabilitative services, but also significantly more costly. Essock and colleagues (1998)[55] (Essock – New York) found that the cost-effectiveness of ACT depends on the type of patient, specifically those with a higher risk of hospitalisation. Jerrell (1995)[57] (Jerrell – S. Carolina 2) offers some evidence of the relative cost-effectiveness of ACT given its superior performance in terms of improved role functioning compared with an 'intensive broker' model of care. It was found to be no more effective along other outcome scales, although no more costly than the broker model.

One remaining community-control study, Jerrell (1996)[58] (Jerrell – S. Carolina 1), compared three approaches for dealing with the substance misuse problems of dual diagnosis patients. The authors evaluated the cost-effectiveness of Case Management compared to a behavioural skills approach as a supplementary intervention to standard community mental health services and compared to the standard '12-step' approach associated with Alcoholics Anonymous and Narcotics Anonymous. The behavioural skills intervention was found to be the most cost-effective of the three. In a non-randomised study, McGurrin and Worley (1993)[60] (McGurrin – Philadelphia) evaluated ICM against 'standard' services. The results imply limited improvements in client outcome but an overall reduced cost of care arising from the ICM model (although no significance testing is reported).

Quality of evidence from North American studies

Resource use

The comprehensiveness of the costings within each of the North American evaluations was variable. Most studies attempted to cover at the very least the cost of mental health services received by patients. The most comprehensive studies in a costing sense, covering mental health service use, medical service contacts, criminal justice system costs and welfare payments received by patients (although, excluding administrative resources, these are strictly economic transfers) were Stein – Madison (Weisbrod and colleagues, 1980[62]), Bond – Indiana 1 (Bond and colleagues, 1988[51]), Drake – New Hampshire (Clark and colleagues, 1998[54]), Essock – New York (Essock and colleagues, 1998[55]) and Rosenheck – Connecticut (Rosenheck and colleagues, 1998[61]). Weisbrod and colleagues[62] and Clark and colleagues[54] were the only evaluators who attempted to estimate informal carer costs. This mirrors the neglect of these costs in the UK studies.

Cost valuation

With the North American evaluations, unlike the UK ones, it was difficult to assess in many instances the extent to which resource use was valued using unit cost information that conformed to standard notions of opportunity costing. In a number of studies, no explicit references are made to the concept of long-run marginal opportunity costing. However, these studies detail the sources of information used when costing resource use, including, for example, provider and Medicaid financial records. However, without knowledge of the nature of the data contained within these systems it is difficult to appraise fully the appropriateness of the costing methods. Most were probably based on charges (prices) data, which may not always be very close to the costs of delivering services. Some studies do give a more explicit indication that the unit costs employed were formulated on the basis of economic principles. In the eight evaluations where the discounting of costs would have been relevant – that is, where the follow-up period exceeded 12 months – only one evaluation reported that mean cost estimates over the period of the study had been adjusted for timing.

Patient and carer costs

Weisbrod and colleagues[62] (Stein – Madison) estimated carer costs according to the value of any work-related absence, whilst Clark and colleagues[54] (Drake – New Hampshire) valued time given up in caring for family members with a mental illness (derived from informal carer interviews) using wage data in addition to family expenditures. None of the North American evaluations considered the patient costs associated with attending services.

Sample sizes and power

With the exception of Rosenheck and Neale,[61] all the North American evaluations were conducted on sample sizes at the point of randomisation that were considerably smaller than the UK700[40] trial, which suggested that at least 600 participants were needed. As with the UK evidence, we would therefore have to call into question conclusions that may be based on potentially spurious statistical inference.

Analysis

The great majority of papers included statistical details that gave some indication of within-sample variation around mean cost estimates. However, given the general finding of skewed cost distributions, many studies may have applied inappropriate statistical tests (such as *t* tests and ordinary least squares linear regression). In some instances, the exact methods employed to analyse cost data within a multivariate context were not spelt out, making it difficult to judge their appropriateness. The most sophisticated and robust analyses of cost and outcome data were reported in studies that invoked specific statistical methodologies to test for significant differences in sample cost-effectiveness ratios (Drake – New Hampshire; Essock – New York; Lehman – Baltimore; and Rosenheck – Connecticut).

Discussion: future pathways in the economic evaluation of home treatment

This review highlights a number of issues to be addressed when taking forward evaluative work in this area, some relating to the design of economic evaluations in order to improve their usefulness to policy-makers, and some concerning the appropriate analysis of economic data generated within trials and observational studies.

Statistical power

Most of the economic studies reviewed lacked a prospective power calculation. It is obviously desirable for sample sizes to be sufficient to detect any clinically meaningful differences in costs. The powering and significance levels employed in the UK700[40] study are a reflection of what has now become conventional in statistical analyses of trial data. However, careful consideration may be needed in deciding upon a meaningful cost difference. Guidance on this latter point would enable greater comparability between studies in specific areas if prospective power calculations become more commonplace.

The UK700 study based its power calculations and subsequent sample size on a single previous economic evaluation.[64] This highlights an additional problem for the implementation of reliable power calculations – the need for reliable prior information on the likely sample cost variance. Sturm and colleagues[49] conducted an exploratory analysis of sample sizes that would be required in order to detect substantial cost differences, reflecting on a number of high-profile US studies. They argue that sample sizes well in excess of those reported in large studies such as the UK700 evaluation would be needed in order to detect even large cost differences: an uncomfortable conclusion for mental health economic evaluations.

On these grounds, and assuming that classical statistical testing procedures are an acceptable guide to decision-making (see page 26), then there is an argument for directing scarce research resources away from small-scale evaluations towards those investigations that can convincingly demonstrate adequate statistical power. Unfortunately, even costly large-scale multicentre trials may fall short of what is required to avoid inadequate testing of cost and effect differences.[49]

Adequacy of cost-effectiveness analysis

The majority of the economic evaluations reviewed were CEAs. When comparing the efficiency of two home treatment services, CEA and CUA can offer unambiguous assessments of which intervention is the more efficient in cases where one ‘dominates’ the other (where one intervention costs less and is also more effective). However, it is perfectly plausible for one intervention or service model to be both more costly and more beneficial than the other in terms of measured patient outcomes. This was an issue, for example, in the evaluation of the ISA by Chandler and colleagues (1996)[52] (Chandler – California 1). CEA/CUA in such instances could promote inconsistencies in policy decision-making.[65]

Where an intervention is found to be both more costly and more effective, CEA/CUA cannot offer any guidance on whether the intervention should be delivered on efficiency grounds. This can only happen if there is some agreed explicit monetary price or value attached to measured units of mental health gain that can be directly compared with cost. Moreover, the presentation of cost-effectiveness information of this kind can lead to a set of implicit prices being adopted by decision-makers. Economists would traditionally advocate using money values for mental health and quality of life improvements in programme evaluations that reflect – in aggregate – how much patients are willing to pay for the changes identified. This embodies a system of value judgements that may not be palatable to all. For example, while willingness to pay embodies individuals’ strength of preferences over improved levels of health and functioning, it is also inextricably linked to ability to pay. As such, while policy-making guided by this criterion may encourage efficiency in resource allocations, there is likely to be some trade-off with what is deemed to be an equitable distribution of health and social care-related benefits.

Further research should be directed towards the development of an instrument that can be broadly applied to measure improvements in mental health-related quality of life. The application of techniques such as conjoint analysis[66–68] could in principle be used to generate a system of generic prices or valuations, uniquely applicable to changes in health status identified within this instrument.

Treatment protocol adherence

In contrast to the wider group of studies in this review, almost all of the economic studies reviewed were fairly explicit as to what constituted the experimental and control services. There was usually some reference to the nature of inputs, treatment processes and caseload sizes (a vital issue in Case Management evaluations) relating to services, and the settings within which services were delivered. Some had protocol guidelines to try to ensure that the service followed a consistent approach. Knapp and colleagues[35] (Muijen – London 1) suggest that departures from the DLP protocol may have explained the loss of cost-effectiveness in the longer term. However, hardly any of the other studies appeared to pay close attention to the extent to which the experimental services under evaluation remained consistent to the protocols during the evaluation period.

Treatment protocol adherence can have potentially important implications for the conclusions reached within an economic evaluation. In their evaluation of a model of IPCC, Rosenheck and Neale[61] randomised patients within each of ten different sites. Within the group of general medical sites that were included in the study, IPCC was found to be significantly more costly than treatment as usual. However, when two of the sites were excluded from the analysis on the basis that they did not follow the treatment protocol, no significant differences were detected in treatment group costs. Future evaluative work in this field should play closer attention to treatment processes and the sensitivity of results to service protocol adherence.

Valuing changes in inpatient resource use

An important part of any economic evaluation is to identify the broad implications of new services for resource use within other public, private and voluntary sector institutions. Residential care and inpatient bed days usually account for substantial proportions of total care package costs for people with mental problems.[69] The impact on hospital admissions and subsequent length of stay is an important outcome in evaluating community services for people with severe mental health problems.

The appropriate valuation of reductions in inpatient days is problematic. Most evaluations to date have used unit costs estimates that build in an allowance for fixed cost elements (staffing and capital-related costs) when looking at the economic value of an avoided inpatient day. These standard unit costs based on long-run marginal opportunity costing principles are useful in terms of evaluating the resource and cost implications of expanding services. However, it is dangerous to assume that the reduction of inpatient bed days will lead to subsequent reductions in the staffing required and to re-allocation of capital resources. Long-run marginal unit costs are therefore likely to overestimate true resource savings (at least in the immediate term) and will fail to address the true economic implications of reducing inpatient days.

Reducing hospital days is likely to reduce ‘congestion’ within the capacity-constrained inpatient system. Preventing admissions *per se* and shortening hospital stays (through early discharge into community aftercare) may free up bed space for patients in serious need of hospital admission who might otherwise have faced delay. It may be that in the long run effective home treatment services will lead to the requirement of fewer psychiatric inpatient beds and associated staffing and capital resources, and it would seem appropriate to value these impacts using long-run marginal unit cost estimates. This needs to be closely examined in future evaluations. Further research is also required into the appropriate valuation of reduced congestion within the inpatient care system.

The welfare of informal carers

When evaluating community-based care for people with severe mental health problems, it would seem that any exclusion of the effects of new service initiatives on their informal carers would be a major oversight. There are probably two main reasons why economic evaluations of home treatment have excluded their impact on informal carers. First, there are difficulties in identifying and measuring the implications of home treatment and alternative systems of treatment on carers. For example, more intensive case management and linkage with care services may enable a carer to work outside the home or increase the time they have to pursue recreational activities. Measuring these changes requires both interviews with carers and the deployment of a diary-based system of time-keeping.

The valuation of time savings is just as problematic. The most straightforward approach would be to apply a wage rate for those employed in the labour market on the basis that, at the margin, this is an adequate reflection of the value that people place on a unit of time sacrificed when attending work. However, there are reasons for arguing that wage rates may over-estimate the value of carer time. Where wage data are unavailable, perhaps because a carer is not in formal employment, then alternative methods will be needed to estimate their ‘shadow wage’. This may ultimately require the deployment of established survey methods to determine carers’ willingness to pay for the benefits afforded them by home treatment services.

Patient groups

Reporting outcomes across a wide patient group can mask important differences between subgroups of patients in terms of the services' cost-effectiveness. Only three of the economic evaluations performed subgroup analyses to detect whether cost-effectiveness varied across patient groups. Essock and colleagues[55] found that ACT was more cost-effective for patients who were specifically at high risk of re-hospitalisation. ACT was found to be no more cost-effective than standard care practices for other patient groups. Lehman and colleagues[59] found some evidence that the efficiency of ACT depended on patients' ethnic groups. By contrast, no cost-effectiveness differences according to ethnicity were found by the UK700 study.[40]

Notwithstanding the question of adequate statistical power, we would encourage subgroup analyses in order to identify whether home treatment services are more cost-effective for certain patients, and therefore to assist the efficient and equitable targeting of resources. For example, it would be interesting to see whether the conclusions reached by Essock and colleagues[55] on the impact of hospitalisation risk and illness severity hold up in other evaluative contexts.

Adequacy of follow-up periods

The mean follow-up period in the North American economic evaluations was 20.7 months (range 6–36) and for the UK it was 18 months (range 3–45). The extent to which these follow-up periods are adequate for testing for any sustainable efficiency gains is debatable. Extensive follow-up periods are problematic because they can add to the costs of conducting research and lead to lengthy periods before results can be disseminated. They can also introduce sample size problems through attrition. This was, for example, thought to be a threat to the reliability of the findings in Muijen – London 1,[35] which had a follow-up period of 45 months, the longest of any of the evaluations reviewed. Nevertheless, the chronic nature of most severe mental health problems that are likely to be dealt with by home treatment services necessitates longer-term perspectives.

Analytical issues

Given that clinical and economic evaluations rely on the sampling of patients drawn from relevant populations, it is important that for both cost and outcome data evaluators pay particular attention to reporting the uncertainty surrounding sample statistics as measures of true population values. In economic evaluation, we would typically want to see the reporting of standard errors, standard deviations, or 95% CIs around mean cost estimates. More importantly, researchers should make clear the statistical precision of mean differences in costs and outcomes between groups.

The analysis of economic data in clinical trials poses a number of statistical challenges.[50] It is now widely recognised that the distribution of cost data is often non-normal, but this is not always taken on board in practice. Future evaluative work on home treatment must ensure that appropriate statistical methods are adopted, such as the non-parametric bootstrapping used in the UK700 economic evaluation of ICM. It is interesting to note, however, that the use of this method did not produce different results in this study from standard *t* tests. This may imply that the more conventional approaches to hypothesis testing are robust to deviations from their distributional assumptions, an issue that warrants further investigation.

Whilst it is usual to analyse economic data generated from clinical trials using bivariate methods of comparison on the grounds that randomisation should avoid confounding group differences, **multivariate** analyses can also yield important insights. Multivariate methods designed specifically for the analysis of longitudinal (or panel) data yielded by clinical and economic evaluations are now beginning to be more widely used. These include, for example, random and fixed effects methods of analysis,[70,71] as used in the Drake – New Hampshire[54] study in its evaluation of an ACT programme. The interaction of a time variable with a treatment group variable enabled the authors to show that, controlling for other factors, the efficiency of ACT (measured according to cost-effectiveness ratios estimated for each patient) increased as the study progressed.

It was evident from the more recently published papers examined in this review that the estimation of incremental cost-effectiveness ratios using confidence intervals is becoming a more accepted practice (Essock – New York; Drake – New Hampshire; Rosenheck – Connecticut; Lehman – Baltimore; UK700). The traditional approach to confidence interval estimation relies upon the division of sample mean incremental effects by mean incremental costs. Criticisms of this approach point to the fact that economic data generated in clinical trials is open to sampling error and that this should be reflected in cost-effectiveness ratio estimation. Various methods have been recommended for dealing with this issue.[72–74] Polsky and colleagues (1997)[75] used a Monte Carlo simulation exercise to derive evidence, suggesting that the reliability of confidence intervals around incremental cost-effectiveness ratios generated by different methods may be sensitive to assumptions concerning the distribution of costs and effects data and the extent of correlation between costs and effects. This suggests that the methods used in future evaluations of home treatment should pay closer attention to distributional issues and the correlation between cost and outcomes when deciding on the most statistically reliable methodology to adopt.

These recent statistical advances have offered increasing levels of sophistication in the analysis of data generated in mental healthcare evaluations. The whole application of economic evaluation based on statistical inference, however, has been called into question. Claxton[65] argues that the choice of one treatment over another cannot ultimately be informed by a test of whether to accept the null hypothesis (no difference in mean net benefit). If the null hypothesis is accepted, decision-makers are given no guidance on which option to choose. Adopting this approach rather than simply choosing the service with the highest mean net benefit can be shown to impose unnecessary costs on patients in terms of lower aggregate health gains. As we know, standard statistics are likely to place heavy demands on the design of economic evaluations, particularly given the substantial numbers of patients required in order to detect significant differences in group costs. The decision-making approach adopted by Claxton may offer some way out of this problem. In order to inform the future direction of evaluative work in the mental health field, we would encourage further debate on this issue.

Chapter 4

Identifying service components (Delphi exercise)

Introduction

A three-round Delphi exercise, utilising expert opinion, was designed to identify the components of home-based services considered most important. The Delphi exercise is well established as a method of ascertaining expert opinion in a systematic way that allows free and equal expression of opinion through the anonymity of the procedure. An initial open question generates a range of ideas, submitted by each participant anonymously, and these ideas are then fed back to the whole group, who rate them for their importance. The group then re-rates the items in the light of information about the whole group's response.[76] Delphi exercises have been used to identify essential components of care for schizophrenia and components of ICM.[77,78] It should be noted that Delphi exercises are particularly useful at measuring consensus, rather than the range of opinion, and at avoiding the bias produced by often polemical, face-to-face debates.

Components rated as 'essential' or 'very important' were grouped into categories by three researchers (CW, TB, JC) according to clinical judgement, and these categories used to devise a 'service characterisation questionnaire' (appendix 6) to be sent to authors of the studies in the review. The components were also used to identify secondary research questions for the review (see page 4, 'Research questions').

Methods

A three-round 'conventional Delphi' method was used. It took place between November 1999 and January 2000. The panel of experts was drawn from consultant psychiatrists in the UK who were known to have an interest and expertise in community-based care. In all, 13 experts were invited to take part, and 12 agreed. They were asked to list between eight and ten components in response to the question:

> "In a community-based service that enables people with mental health problems to be treated outside hospital, what are the most important components that achieve this?"

They were instructed to exclude 'correct medication', 'integration of the service in the local healthcare network' and 'availability of accessible inpatient beds' as not being specific components of the service. The exercise was administered by a non-clinical researcher (JC).

Round 1

The 12 participants produced 98 items. One item was excluded because it concerned medication, leaving a total of 97 components. Items that were beyond the control of a service (such as 'supportive families') were retained on the grounds of their importance to the panel.

Round 2

The participants were asked to rate each of the 97 components on the scale of 1–5 (1 = essential, 2 = very important, 3 = important, 4 = less important, 5 = unimportant) and to use the full range of scores as far as possible. A total of 11 participants did so; the twelfth did not return the form in time and so did not complete the rest of the exercise. The participants were given the opportunity to add components at this stage, but none did so. Median scores were calculated for each component.

Round 3

The 11 participants were fed back their own ratings from Round 2 along with the group's median rating for each item. They were asked to re-rate each component in the light of this information, and to comment where their new rating differed from the median by more than two points.

Definitions

'Consensus' was defined as 80% of the participants being within one point of the median score. 'Strong consensus' was defined as 100% of participants being within one point of the median. This is intended only as a rule of thumb. The phrase "[83]% consensus" is used as shorthand below for '[83]% of the participants being within one point of the median rating'.

Results

Consensus

Of 97 components, 89 (92%) achieved consensus, with 49% achieving strong consensus. Of 16 'essential' components, 11 reached strong consensus (100% of participants giving a rating within one point of the median), four reached consensus with 91% of ratings within one point of the median, and one had 82% of ratings within one point of the median (*Table 7*). Of the 40 components rated as 'very important', all but two reached consensus, and 23 reached strong consensus (*Table 8*). Of 34 components rated 'important', all but three reached consensus, with 14 reaching strong consensus. Two of the four components rated 'less important' failed to achieve consensus; no components were rated 'unimportant' (*Table 9*).

Components rated 'essential' and 'very important'

Examination of components that were very close in meaning revealed a high level of internal consistency, with, for example, 'Regular home visiting' and 'Intensive as necessary *in vivo* treatments' scoring the same, and 'Skilled staff, well trained' scoring the same as 'Skilled staff'. Such pairings, where the rating and consensus were identical, are expressed henceforth with the near duplicate in brackets.

Components rated 'essential' and 'very important' were grouped into categories by researchers according to clinical judgement (*Table 10*). This produced the following six categories for items judged 'essential':

- home environment
- skill-mix
- psychiatrist involvement
- service management
- caseload size
- health/social care integration.

The 'very important' items were grouped into 13 categories, of which six matched the 'essential' component categories and the remaining seven were:

- hours
- cross-agency working
- crisis care
- housing/accommodation
- inpatient issues
- carer issues
- day care.

Home environment

'Home visiting' (and 'The capacity for frequent home visits') and 'Assessment and treatment in the home environment' were both rated essential, with 100% and 91% consensus respectively; and 'Regular home visits' and 'Intensive as necessary *in vivo* treatments' were rated very important, with 100% consensus. There was also 91% consensus

TABLE 7 *Components of care judged 'essential'*

Components	Median rating	% within 1 point of median
Home visiting	1	100
Capacity for frequent home visits	1	100
Assessment and treatment in the 'home' environment	1	91
Multidisciplinary team	1	91
Skilled staff, well trained	1	100
Skilled staff	1	100
Community mental health nurses	1	100
Psychiatrist as a member of the multidisciplinary team	1	100
Senior medical staff in community	1	100
Sufficient medical support	1	100
Experienced community-oriented psychiatrists	1	100
Flexibility of contact frequency	1	91
Well-organised and -managed team	1	100
Strong leadership	1	91
Reasonable caseloads	1	82
Attention to social as well as clinical needs	1	100

TABLE 8 *Components of care judged 'very important'*

Components	**Median rating**	**% within 1 point of median**
A team dedicated to intensive home treatment	2	73*
Regular home visits	2	100
Intensive as necessary *in vivo* treatments	2	100
Home-based care including home-based assessment from a psychiatrist	2	91
Team with broad range and special expertise	2	100
Expert community staff with evidence-based training to prevent relapse of known SMI patients	2	100
Visiting possible up to four times weekly	2	100
Regular multidisciplinary review	2	91
Comprehensive systematic physical, social, psychological assessment	2	91
Good gatekeeping and prioritisation	2	100
Flexible titration of 'case management' time according to need	2	82
An environment which tolerates risk-taking	2	100
Willingness to take reasonable risks	2	100
Reasonable case loads (less than 1:25)	2	100
Good liaison with social services, e.g. integration in teams	2	100
Integration of social and healthcare in multidisciplinary team	2	91
Good health and social services liaison	2	100
Financial management of clients (benefits)	2	82
Help with obtaining benefits	2	82
Care plan to address social, housing, benefits, etc. needs	2	91
Flexible working hours (6 am – 9 pm; not 24 hours)	2	82
7-day service – extended hours	2	91
Access to out-of-hours mental health workers	2	100
Rapid response services	2	100
Good links to primary care	2	100
Knowledge of local support systems	2	100
Coherent and integrated service framework (e.g. good integration with inpatient services, generic CMHTs)	2	100
Crisis element of team/team approach	2	82
Crisis services	2	82
Crisis availability	2	100
Community crisis response and treatment services	2	73*
Housing (supported and unsupported)	2	100
Range of adequate/supported accommodation	2	100
Range of supported accommodation	2	100
High staffed (24-hour) residential accommodation	2	100
Access to crisis accommodation for those who lack appropriate housing	2	91
Team's use of inpatient beds to focus on early discharge (if you want one admitted you need to take one out!)	2	82
Attention to needs of informal carers	2	91
Support for carers	2	100
Sufficient support services (day care)	2	100

* *Participants failed to reach consensus on this item*

SMI, severe mental illness

TABLE 9 *Components of care rated less than 'very important'*

Components	Median rating	% within 1 point of median
Skill-sharing across disciplines	3	91
Supportive families	3	91
Secure housing tenure	3	100
Early referral to services (short duration of untreated illness)	3	100
Readily accessed day care	3	91
Effective accident and emergency liaison mental health services	3	100
Good quality residential care	3	100
Effective substance abuse services	3	100
Keyworker with caseload of 1:15 maximum	3	82
Keyworker trained in psychoeducation, cognitive behavioural therapy family problem-solving, etc.	3	100
RMO with caseload of not more than 100	3	82
Residential alternative to hospital beds	3	91
Available 24 hours to a defined 'patch'	3	72*
Family/carer-focused education/information	3	100
Team large enough to provide same level of direct care as in inpatient setting	3	100
Multidisciplinary team should include approved social workers	3	73*
Out of hours capacity for home visits	3	91
Family support (psycho-education etc.)	3	100
Skilled diagnosis and management of personality disorders	3	91
Range of day care	3	100
Support workers	3	100
Effective drug and alcohol services	3	91
Senior psychiatrist involvement in all admissions	3	91
Good primary care liaison	3	82
Close multidisciplinary working, including primary care team members	3	91
Availability of resources outside of hospital to support and deliver structured daytime activities	3	100
Good clinical case management (e.g. CPA)	3	82
Systematic assessment and regular review of needs	3	91
Access to range of day care services	3	100
Good primary care services	3	73*
Help with drug and alcohol misuse	3	91
Structured daytime activities	3	100
Compliance enhancement procedures/therapy	3	82
Acute day hospitals	3	91
Definable, multi-axial goals, reviewable at least 3/12 in care plan	4	91
Vocational/employment staff within team	4	73*
24-hour availability (including weekends)	4	63*
Psychological services working with patients with borderline personality disorder	4	82

* *Participants failed to reach consensus on this item*

RMO, responsible medical officer

TABLE 10 *Development of the service characterisation questionnaire*

Components generated by the Delphi exercise	Question(s) in the service characterisation questionnaire
Home environment • Home visiting (1) • Assessment and treatment in the home environment (1) • Regular home visits (2) • Intensive as necessary *in vivo* treatment (2) • Home-based care including assessment from a psychiatrist (2)	• Did the team have a home treatment function? • Did team members regularly visit patients at home? • What proportion of patient contacts took place at home?
Skill-mix (excluding medical) • Multidisciplinary team (1) • Community mental health nurses (1) • Skilled staff, well trained (skilled staff) (1) • Team with broad range and special expertise (2) • Expert community staff with evidence-based training to prevent relapse of known SMI patients (2)	• Were the following part of the team: postgraduate qualified psychiatrist junior doctor psychiatric nurse OT social worker other (please state) • Did any of the staff have specific qualifications in community working? • Was there in-service training especially geared at community-based care?
Psychiatrist involvement • Psychiatrist as a member of the multidisciplinary team (1) • Senior medical staff in the community (1) • Sufficient medical support (1) • Experienced community-oriented psychiatrists (1)	• If there was a psychiatrist on the team, was s/he an integrated member? • How many hours of psychiatrist time were designated per week?
Service management • Flexibility of contact frequency (1) • Visiting possible up to four times weekly (2) • Regular multidisciplinary review (2) • Well-organised and -managed team (1) • Strong leadership (1) • Comprehensive systematic physical, social, psychological assessment (2) • Good gatekeeping and prioritisation (2) • Flexible titration of 'case management' time according to need (2) • An environment which tolerates risk-taking (2) • Willingness to take reasonable risks (2)	• What was the maximum contact frequency per patient per month? • What was the average contact frequency per patient per month? • Did the team have multidisciplinary review of patients at least once weekly?
Caseload size • Reasonable caseloads (1) • Reasonable caseloads (less than 1:25) (2)	• How many staff (approximately) were in the team? • What was the target number of patients on the team's books? • What was the target individual caseload size?
Health/social care integration • Attention to social as well as clinical needs (1) • Good liaison with social services, e.g. integration in teams (2) • Integration of social and healthcare in multidisciplinary team (2) • Good health and social services liaison (2) • Financial management of clients (benefits) (2) • Help with obtaining benefits (2) • Care plan to address social, housing, benefits, etc. needs (2)	• Did the team take responsibility for healthcare functions (e.g. medications)? • Did the team take responsibility for social care functions (e.g. housing, benefits)?

(1), rated 'essential'; (2), rated 'very important'

OT, occupational therapist

continued

TABLE 10 contd *Development of the service characterisation questionnaire*

Components generated by the Delphi exercise	Question(s) in the service characterisation questionnaire
Hours • Flexible working hours (6 am – 9 pm; not 24 hours) (2) • 7-day service – extended hours (2) • Access to out-of-hours mental health workers (2) • Rapid response services (2)	• How many hours did the team operate on weekdays? • How many days a week did the team operate?
Cross-agency working • Good links to primary care (2) • Knowledge of local support systems (2) • Coherent and integrated service framework (e.g. good integration with inpatient services, generic CMHTs) (2)	
Crisis care • Crisis element of team/team approach (2) • Crisis services (2) • Crisis availability (2) • Community crisis response and treatment services (2)	• Did the team have a specific crisis element?
Housing/accommodation • Housing (supported and unsupported) (2) • Range of adequate/supported accommodation (2) • Range of supported accommodation (2) • High staffed (24-hour) residential accommodation (2) • Access to crisis accommodation for those who lack appropriate housing (2)	
Inpatient issues • Team's use of inpatient beds to focus on early discharge (if you want one admitted you need to take one out!) (2)	
Carer issues • Attention to needs of informal carers (2) • Support for carers (2)	• Did the team have a protocol for meeting the needs of carers?
Day care • Sufficient support services (day care) (2)	
(1), rated 'essential'; (2), rated 'very important'	

that 'Home-based care including home-based assessment from a psychiatrist' was very important.

The idea of 'A team dedicated to intensive home treatment' was rated very important too, but failed to reach consensus (73%), with a range of ratings from 1 (essential) to 4 (less important). One participant commented that dedication to home treatment was not necessary and that in his area patients were "not at home but floating elsewhere"; another commented that the evidence base for home treatment was not strong.

Skill-mix (excluding medical)

There was 100% consensus that 'Skilled staff, well trained' ('Skilled staff'), and 'Community mental health nurses' were essential, and that having a 'Team with broad range and special expertise' and 'Expert community-based staff with evidence-based training to prevent relapse of known SMI patients' were very important. There was also 91% consensus that it was essential for the service to be a 'Multidisciplinary team'.

'Multidisciplinary team should include approved social workers' was rated important but participants failed to reach consensus on this item. One, who rated it essential, commented that social workers "are an essential resource if we are to integrate care". There was 100% consensus that having 'Support workers' was important.

Having 'Vocational/employment staff within team' was rated less important, but participants again failed to reach consensus. One commented that the availability of such staff was essential, but that they did not necessarily need to be part of a team.

Psychiatrist involvement

There was 100% consensus that having a 'Psychiatrist as a member of the multidisciplinary team', 'Experienced community-oriented psychiatrists', 'Sufficient medical support' and 'Senior medical staff in the community' were each essential for the service.

Service management

There was 100% consensus that a 'Well organised and managed team' was essential, and that 'Good gatekeeping and prioritisation' and 'An environment which tolerates risk-taking' (or 'Willingness to take reasonable risks') were very important. There was consensus (91%) that 'Strong leadership' was essential and that 'Regular multidisciplinary review' and 'Comprehensive systematic physical, social, [and] psychological assessment' were very important. There was a weaker consensus (82%) that 'Flexible titration of "case management" time according to need' was very important. One participant commented that Case Management had not worked. There was consensus that 'Flexibility of contact frequency' was essential (91%) and 100% consensus that 'Visiting possible up to four times weekly' was very important.

Caseload size

There was consensus (82%) that having 'Reasonable case loads' was essential, and 100% consensus that having 'Reasonable case loads (less than 1:25)' was very important. Having still smaller caseloads ('Keyworker with caseload of 1:15 maximum') was rated only as important, with a consensus of 82% and a range of 2 (very important) to 5 (unimportant). One participant said that caseloads of less than 15 were not important and that his team had always "coped on caseloads of over 20".

Health/social care integration

There was 100% consensus that 'Attention to social as well as clinical needs' was essential, and that 'Good health and social services liaison' and 'Good liaison with social services, e.g. integration in teams' were very important. However, one participant not in agreement said that the evidence base for this was not strong. There was also consensus that 'Integration of social and healthcare in multidisciplinary team' was very important (91%). There was consensus that a 'Care plan to address social, housing, benefits, etc. needs' was very important (91%), and that 'Financial management of clients (benefits)', and 'Help with obtaining benefits' were very important (both 82% consensus).

Hours

There was 100% consensus that 'Rapid response services' and 'Access to out-of-hours mental health workers' were very important. The idea of a '7-day service – extended hours' was considered very important, with 91% consensus, but 'Flexible working hours (6 am – 9 pm; not 24 hours)' reached weaker consensus (82%). One participant, however, said that there was not a strong evidence base for 7-day services, and 'Available 24 hours to a defined "patch"' failed to reach consensus, with a median rating of 3 (important); one person commented that "the evidence is that 24-hour services accessed through a wider provision are fully adequate. Mature services have very few 'input time' problems".

Cross-agency working

There was 100% consensus that 'Good links to primary care', 'Knowledge of local support systems', and 'Coherent and integrated service framework (e.g. good integration with inpatient services, generic CMHTs)' were all very important.

Crisis care

There was 100% consensus that 'Crisis availability' was very important. The consensus about having a specific crisis focus – 'Crisis element of team/team approach' and 'Crisis services' – was weaker (both 82%), but they were both rated very important. 'Community crisis response and treatment services' was rated very important but failed to reach consensus (73%), with ratings ranging from 1 (essential) to 4 (less important).

Housing/accommodation

There was 100% consensus that 'Housing (supported and unsupported)', a 'Range of supported accommodation' ('Range of adequate/supported accommodation') and 'High staffed (24 hour) residential accommodation' were all very important. However, one person argued that "there are different types of 24-hour staffed accommodation, some of which are useless". There was also consensus (91%) that 'Access to crisis accommodation for those who lack appropriate housing' was very important. One participant commented that this is "remarkably expensive and … not cost-effective".

Inpatient policy

There was consensus (82%) that it was very important that the 'Team's use of inpatient beds [should] focus on early discharge (if you want one admitted you need to take one out!)'. However, one participant felt that these were "secondary issues". 'Senior psychiatrist involvement in all admissions' was rated important with 91% consensus, but one person felt that involvement in all admissions was unnecessary.

Carers

There was 100% consensus that 'Support for carers' was very important, and consensus that 'Attention to needs of informal carers' was very important. There was strong consensus that 'Family/carer focused education/information' ('Family support (psycho-education etc.)') was important. Conversely, 'Supportive families' was thought to be important to the service (this item reached 91% consensus).

Day care

There was 100% consensus that 'Sufficient support services (day care)' was very important. The item 'Acute day hospitals' was rated as important, with 91% consensus, but one person commented that day hospitals were "not necessary for effective community treatment" and another that there were "hardly any available" and that they were "rarely integrated" into services.

Components rated less than 'very important'

Help with drug and alcohol misuse was rated important with 91% consensus. One person rated it essential but conceded that it did not necessarily have to be a part of the team. 'Early referral to services (short duration of untreated illness)' was rated important with 100% consensus, but one participant stated that the evidence base for this was not strong. 'Effective A & E liaison mental health services' was only rated important with 100% consensus, but one participant, who felt this rating was too low, said such services were "the key point of contact with services, generating a high proportion of admissions".

'Skilled diagnosis and management of personality disorders' was rated important with 91% consensus. One participant, rating it more highly, believed that this "is an underestimated issue in the UK". 'Psychological services working with patients with borderline personality disorder' was also rated important, though with less consensus (82%), and one person argued that the evidence base was not strong for this idea. 'Effective drug and alcohol services' was rated important with 91% consensus. One participant rated it unimportant, commenting that such services needed to be "part of the provision" available, though not as part of the team (*Table 9*).

Use of Delphi-generated components in service characterisation

Components rated 'essential' or 'very important' to the service were grouped into categories according to clinical judgement. They were then used (by JC, CW and TB) to construct the service characterisation questionnaire used to follow up authors of the studies in the review ('Follow-up of authors', page 37). In choosing which components to use as the basis for questions, priority was given to those that were rated essential and to those reflecting the original research priorities of the project. Thus, all the categories of items that were rated 'essential' were represented in the service characterisation questionnaire, while categories of items rated 'very important' were only represented where they matched our brief. Priority was also given to items that were more easily identifiable, and ideally quantifiable. *Table 10* details the 'essential' and 'very important' items and their correspondence to the questionnaire.

Discussion

This exercise was limited in being conducted only with psychiatrists, rather than a multidisciplinary panel. The panel's views have been used as a framework for the follow-up and analysis in this review. When considering them as findings in themselves, as we do in this chapter, the possible bias of the participants should be borne in mind. It should be noted that 'consensus' and 'strong consensus' were defined in order to provide a rule of thumb for interpreting the results. Although the panel was the usual size for a Delphi, one participant changing a rating by one point could potentially have the effect of altering the level of consensus achieved. The Delphi exercise, however, is a means of measuring the degree of consensus rather than the range of opinion on a given subject, and its anonymity avoids the bias that can be produced by face-to-face, often polemical, discussion between experts.

Despite being asked to list service components, the panel produced several items that were not components and are beyond the control of professionals (such as 'Supportive families') or of the team (such as 'Day care resources' or 'Good primary care services'). However, this serves to emphasise the importance of the wider context in which mental health services work. Where groups of components on the same theme were identified, the broader, less specific components tended to be rated more highly and with greater consensus, while the more specific components were more contentious. This is probably inevitable, given the calibre of the participants. Nevertheless, the disagreements over components are important for the light that they shed on current opinion about community services for the mentally ill.

Not surprisingly, the panel prioritised home visiting as an essential component of the service. However, they did not reach consensus on the idea of a service being dedicated to intensive home treatment. Similarly, while there was 100% consensus that general crisis availability was very important, the consensus was weaker on having crisis services, and consensus was not reached at all on the more specific component 'Community crisis response and treatment services'. These results suggest a more flexible approach to accommodating the components considered necessary for community-based care, and possibly a more generic team with these components incorporated. Having a 'crisis element to the team [or a crisis] team approach' did receive consensus, though not strong.

There has been considerable debate about the meaning of '24-hour cover' in services for those with serious mental illness in the community. Here, the panel considered 'Flexible working hours (6 am – 9 pm)' and a '7-day service – extended hours' to be very important. Actually being 'Available 24 hours to a defined patch' was rated only 'important', and indeed two specific comments addressed and challenged the need for 7-day, 24-hour services.

There was clear agreement about the need for 'Reasonable caseloads', also specified as being less than 25. Having smaller caseloads than this, however, was not considered to be as important, and this finding challenges current practice in some services.

The panel were in favour of multidisciplinary teams with a range of expertise and skills, integrating health and social care, and with good links to primary care. The weight given to psychiatrist involvement, including having 'Home-based assessments from a psychiatrist' has implications for skill-mix in teams, but may of course reflect the fact that this was a panel of psychiatrists. It would be important to see if other expert mental health professionals, users and GPs shared this view. It is also noteworthy that consensus was not reached on the need for inclusion of 'Vocational/ employment staff' in the team, nor was this rated highly. However, there was 100% consensus that 'Support workers' were important to include in a team.

As expected, the organisation and management of the team received considerable attention, and 'Strong leadership', 'Good gatekeeping and prioritisation', and a 'Willingness to take reasonable risks' were stated in particular. Good practice is clearly seen to include 'Regular multidisciplinary review' and 'Comprehensive physical, social, and psychological assessments'. 'Support for carers' and 'Attention to the needs of informal carers' were also both seen as very important, and this is in line with the growing awareness of carers' needs reflected in 'The National Service Framework for mental health'.[79]

Overall, the Delphi exercise was successful in identifying service components that the participants considered important in enabling people with mental health problems to be treated outside hospital. Components considered 'essential' and 'very important' were utilised to construct the service characterisation questionnaire used to follow up authors of studies in the systematic review. The exercise proved, however, to be valuable in itself for the level of detail it provided on service components and their perceived relative importance in the care of mental health patients in the community. Of particular note was the finding that teams specifically dedicated to home treatment and crisis intervention were considered less necessary, as were caseload sizes of less than 25, and that having flexible working hours across 7 days was considered more important than a 24-hour service.

Chapter 5

Follow-up of authors

Introduction

We report here a large-scale follow-up to authors of the studies in this review, in order to elicit information on service utilisation, service components and sustainability of the services.

The need for a comprehensive service profile is especially important in mental health research because of the wide-ranging impact of psychiatric disorders on individual abilities and needs, and because many people with mental health problems are supported by a number of healthcare professionals and other service agencies. We sought such information in order to provide as full a costing as possible of the services in each study, as a supplement to the conclusions that could be drawn from the specific economic evaluations reviewed in the 'Review of economic evaluations' (chapter 3).

The service components identified through the Delphi exercise as important for home-based services were used to construct a service characterisation questionnaire (page 34, 'Use of Delphi-generated components in service characterisation'). This aimed to provide us with a way of retrospectively characterising both the experimental and the control services at the level of service components, rather than labels. Moreover, this information was sought from the authors themselves, rather than from the papers, where it was often not reported.

The generalisability of study findings is a matter for concern for several reasons (page 1, 'Background'). The generalisability of services research is particularly undermined by doubts about the sustainability of the experimental programmes and their service components. In order to gain a picture of the sustainability of the experimental services in the studies, we asked the authors whether those services were still in operation. If they were, we asked them to answer each question about service components in relation to the service as it is operating today, as well as during the period of the study. If they were not, we sought information about how long they had operated after the end of the study.

Methods

Authors of the identified studies were contacted where possible and asked to complete a questionnaire comprising the following:

- General
  - whether the service was still identifiable or, if not, when it was disbanded
  - distinctive attributes of the experimental service which made it 'innovative' at the time of the study
  - which of these attributes were still being used and which had been dropped
  - whether or not the control service was a CMHT
  - characterisation of the control service if it was **not** a CMHT
- Service characterisation questionnaire (appendix 6, page 114)
  - 20 items, each to be answered for the experimental and control services during the study period (if the control service was a CMHT) and the experimental service today (if applicable)
- Service use data information questionnaire
  - whether service use data were collected (14 categories of service, chosen on the basis of the most frequently used services as reported in previous studies), for use in the cost analysis.

Country-specific versions of the service use data information questionnaire were used for the UK, the USA, Canada and Australia following piloting of the draft instrument and consultation with researchers in these countries. Authors from other countries were given the standard (UK) checklist.

Information from the general questionnaire and the service characterisation questionnaire was used to characterise services and answer questions about sustainability of services and components, and in the data analysis (page 62, 'Comparative analysis: service components' and page 66, 'Experimental services analysis: components'). Information from the service use data information questionnaire was passed on to a cost researcher (JH), who contacted the authors again for data if they had said that data were available. For each category of service, the author was asked to supply the mean and standard deviation service use for each time-point when data were reported to have been collected. For both service characterisation and service utilisation, data not supplied by authors were extracted from the papers wherever possible (by JC and JH respectively). UK unit costs were attached to these reported mean monthly service use measures by JH. Unit costs were taken from 'Unit costs of health and social care' (1999),[80] except for police cell costs (taken from McCrone and colleagues[38]) and prison costs (obtained from the Home Office).

Statistical methods

Data were analysed using SPSS (version 8). In comparing groups (responders versus non-responders, RCTs versus non-RCTs, North American versus UK studies), chi-squared tests were used for categorical data (proportions) and Mann–Whitney *U* exact tests for non-parametric continuous data (such as percentage of contacts made at home and caseload size). The associations between service components were measured using Spearman rank correlation coefficients to see whether a high proportion of home contacts, a smaller caseload, a higher contact frequency or longer hours of the service were correlated.

Results

Response rate and missing data

The authors of 55 studies (60%) responded to the request for further information through the follow-up questionnaire. More authors of RCTs responded (43 studies, 77% of RCTs) than did authors of non-randomised studies (12 studies, 34%). Some of the service characteristics were supplemented from the papers, but much information was not ascertainable in this way. (*Table 11*.) Percentages in the tables are for those studies for which we have the information.

Non-responders

Of the 36 studies whose authors did not respond to follow-up, eight could not be traced and one had died. Studies whose authors could not be contacted or who did not respond were significantly more likely to be non-randomised studies ($p < 0.001$). Studies by responders were published only 1 year later than those by non-responders. Responders were more commonly European than non-responders and less likely to be from 'other' countries than Europe or North America. They tended to have smaller numbers of participants. However, none of these differences reached statistical significance (*Table 12*).

Service utilisation data

The authors of 46 studies completed the service use data information questionnaire. Authors reported collecting fairly comprehensive service use data in their studies (appendix 7, *Table 52*). Of responding authors, 43 noted that their studies had collected inpatient data, 37 had collected outpatient data, 28 residential care data, 31 day care use, 31 employment patterns, 28 emergency service use, 24 CPN contacts, 27 social worker contacts, 18 medications, 28 prison stays and 21 police contacts.

Further follow-up letters were sent to all 46 authors requesting summary service utilisation data, corresponding to the data they had reported having collected. There were 12 replies. Some data were not available because authors had moved to other jobs and could not access it, and in some cases the data had been archived but were not

TABLE 11 *Results of the author follow-up*

Characteristics	**RCTs** *n* **= 56**		**Non-RCTs** *n* **= 35**		**Total** *n* **= 91**	
Author responded (%)	43	(77)	12	(34)	55	(60)
Some supplementary service information obtained from papers (%)	13	(23)	20	(57)	33	(36)
Control was a CMHT (%)	21	(38)	8	(24)	29	(33)
Some information about control given or extracted (%)	40	(71)	9	(26)	49	(54)
Hospitalisation data provided by author (%)	9	(16)	3	(9)	12	(13)
Hospitalisation data extracted from papers (%)	31	(55)	9	(26)	40	(44)
Hospitalisation data not in usable form (%)	14	(25)	20	(57)	34	(37)
Hospitalisation data not collected (%)	2	(4)	2	(6)	4	(4)

***TABLE 12** Author follow-up: responders versus non-responders*

Characteristics	**Responders** *n* **= 55**		**Non-responders** *n* **= 36**		***p*-value**
RCT (%)	43	(78)	13	(36)	< 0.001
Community-control (%)	46	(84)	26	(72)	0.190
European (%)	18	(33)	7	(19)	–
North American (%)	35	(64)	24	(67)	0.121*
Other (%)	2	(4)	5	(14)	–
Median year of 1st data publication	1994		1993		0.06
Mean number of participants (SD)	165.2	(165.1)	200.5	(245.1)	0.275

* *Compares responders to non-responders for breakdown by location of study*

readily available. Some authors simply did not have the time to respond to our detailed request.

From these replies and the published service utilisation results in the papers (extracted for 40 studies), costs were calculated based on UK 1998–99 price levels. This was possible for all service categories included in appendix 7, *Table 52* except two: employment patterns and medications. Employment patterns had been collected and reported in many different ways in the studies, and it was not possible to convert responses or reported figures to a common measure. Moreover, some studies collected employment information only at baseline and not subsequently. With medications, we decided not to ask for the details of medications taken because the task of converting these into cost measures was well beyond the scope of this study. For people with serious mental illness, medications are known to account for only a small percentage of the total cost (around 5% of total healthcare costs for people with schizophrenia[81]).

The calculated costs are reported in appendix 7, *Tables 53–58*. Of the 52 studies for which costs were computed, 12 sets of calculations were based on data provided by authors, and 40 from published papers. It is immediately obvious that there are very different patterns of costs compared with the patterns of reported data collection in *Table 52*. It can also be seen that there are very few non-randomised studies for which costs could be collected: only three authors of non-randomised studies returned our questionnaires, and so most of our data came from papers.

There are marked variations between studies within service categories. For example, the mean monthly cost of inpatient services ranged from £35 to £2737 for experimental groups, and from £64 to £4376 for control groups. There were also substantial differences between studies in relation to some of the other service categories, such as outpatient services, residential care, CPN and social workers. Most costs other than inpatient costs were very low relative to inpatient service use. Inter-study differences in such relative costs would be quite heavily influenced by the levels of disability of patients and by the date of the study because there is more reliance on community alternatives to inpatient accommodation services today than was the case one or two decades ago.

Service characterisation

Percentages given below are for those services for which we have information from the authors, supplemented in some cases from published articles.

Experimental services

Most of the services were staffed by multidisciplinary teams (comprising three or more disciplines) but 19% were not. Overall, the services had a mean of three disciplines represented, with a range of one to six. Slightly more of the services studied in RCTs were multidisciplinary (83% compared to 76% of non-randomised studies). Most of the services had a psychiatrist, a psychiatric nurse and a social worker; fewer had a junior doctor, OT or psychologist. Just over half had an 'other' worker on the team, including family liaison workers, vocational specialists, 'community workers', 'support workers' and substance misuse specialists where appropriate. Of those services with a psychiatrist on the team, just over half said he/she was an 'integrated member of the team', and the hours of 'dedicated psychiatrist time' per week ranged from one to 160 (mean 23.5) (*Table 13*).

TABLE 13 *Team structure (experimental services)*

Characteristics	RCTs		Non-RCTs		Total	
Multidisciplinary teams (%)	39	(83)	16	(76)	55	(81)
Psychiatrist on the team (%)	41	(79)	18	(78)	59	(79)
Junior doctor on the team (%)	12	(28)	4	(22)	16	(26)
Psychiatric nurse on the team (%)	39	(78)	20	(91)	59	(82)
OT on the team (%)	21	(46)	5	(24)	26	(39)
Social worker on the team (%)	38	(76)	13	(62)	51	(72)
Psychologist on the team (%)	13	(33)	4	(17)	17	(27)
Psychiatrist an integrated member of team (% of services with a psychiatrist)	26	(74)	6	(67)	32	(73)
Mean hours of dedicated psychiatrist time per week (SD)	19.5	(12.9)	50.7*	(63.4)	23.5*	(26.1)

* *This finding is affected by the substantial amount (160 hours) of dedicated psychiatrist time in one study (PRiSM – London)*

TABLE 14 *Training, caseloads and contacts (experimental services)*

Characteristics	RCTs		Non-RCTs		Total	
Specific qualifications in community working (%)	29	(69)	6	(67)	35	(69)
In-service training (%)	43	(90)	15	(88)	58	(89)
Mean number of staff on team (SD)	7.7	(4.3)	8.0	(6.0)	7.8	(4.8)
Mean target number of patients (SD)	81.5	(78.5)	140.6	(111.5)	90.5	(85.5)
Mean target individual caseload size (SD)	14.9	(9.7)	16.2	(7.8)	15.2	(9.2)
Mean maximum contact frequency per month (SD)	28.2	(27.5)	15.7	(13.9)	27.0	(26.6)
Mean average contact frequency per month (SD)	9.9	(12.1)	5.3	(2.4)	8.7	(10.7)

Most services had staff with ‘specific qualifications in community working’ and 89% had ‘in-service training’. The number of staff in the team ranged from two to 25, with a mean of eight, and the ‘target number of patients’ ranged from 20 to 400, with a mean of 91. The mean ‘target individual caseload size’ was 15, but ranged from two to 40. The experimental service with caseloads of only two (Godley – Illinois[82]) was an unusual one – ‘community support aides’ – which accounts for the unusually small caseload. Authors of six studies said that the experimental service had had shared caseloads, so that the question about caseload size was ‘irrelevant’. The mean ‘maximum contact frequency’ per patient per month was 27 contacts (ranging from two to 120), and the mean ‘average contact frequency’ was nine contacts, ranging from one to 60. Contact frequency was higher in the services studied in RCTs (10 mean contacts compared to five) (*Table 14*).

Almost all of the services had a ‘home treatment function’, with 95% ‘regular[ly] visit[ing] patients at home’. (For correlations between service components, see page 51, ‘Service classification’). The proportion of all contacts that were made in the patient’s home or home environment, however, ranged from none to 100%, with a mean of 59%. Almost two-thirds of the services operated 5 days a week, but a third operated 7 days a week. Over half (56%) operated 8 hours per weekday, 28% operated between 9 and 15 hours, and 16% operated 24 hours a day. Almost all services took responsibility for ‘healthcare functions’ and ‘social care functions’, but only 83% took responsibility for both. In 72%, the team had a ‘crisis element’ and in 90% it had ‘multidisciplinary review of patients at least once weekly’. All the services tested in non-randomised studies had weekly multidisciplinary review and took responsibility for social care, compared with 86% and 92% respectively in RCT services. Only a third of the services had a ‘protocol for meeting the needs of carers’ (*Table 15*).

Changes in experimental service components over time

To see whether key service components – ‘caseload size’, ‘average contact frequency’, ‘hours of

TABLE 15 *Team operation (experimental services)*

Characteristics	RCTs	Non-RCTs	Total
Home treatment function (%)	40 (95)	16 (100)	56 (97)
Regularly visit patients at home (%)	47 (94)	23 (96)	70 (95)
Mean proportion of visits made at home (SD)	58.8 (26.7)	59.0 (29.1)	58.8 (26.9)
Mean days per week (SD)	5.7 (1.0)	5.4 (0.9)	5.6 (1.0)
Mean hours per weekday (SD)	11.5 (5.5)	12.4 (7.0)	11.7 (5.9)
Responsibility for healthcare functions (%)	43 (92)	18 (90)	61 (91)
Responsibility for social care functions (%)	43 (92)	14 (100)	57 (93)
Responsibility for health and social care functions (%)	35 (83)	9 (82)	44 (83)
Crisis element to the team (%)	30 (71)	8 (73)	38 (72)
Multidisciplinary review at least weekly (%)	37 (86)	15 (100)	52 (90)
Protocol for meeting needs of carers (%)	13 (32)	4 (36)	17 (33)

TABLE 16 *Correlation with year of publication*

	Target individual caseload size	Average contact frequency	Hours of operation	% of contacts at home
Year of 1st data publication	–0.186	–0.235	–0.052	–0.145

operation' and 'proportion of contacts at home' – changed over time, we tested them for correlation with the year of first data publication (*Table 16*). Studies for which we had information (from the authors or papers) represented the full time span of the review. The association between average contact frequency and year of first data publication almost reached significance, with average contact frequency falling in progressively later studies. There were little or no associations between year of publication and target individual caseload size, hours of operation or proportion of contacts at home. We also tested the following components against year of data publication: psychiatrist on the team; multidisciplinary team; psychiatrist an integrated team member; home treatment function; regularly visiting at home; responsibility for both health and social care; specific crisis element; multidisciplinary review; protocol for meeting carers' needs. None of the differences was significant.

Control services

Of the authors who responded, 44% (24 services) stated that the control service was a CMHT (*Table 11*). This figure was supplemented where the information was in the papers, giving a figure of 32% of the total sample (27 services) being CMHTs. Of the authors who responded, three-quarters gave information about the control services. Overall, some information was obtainable on 54% of the control services, either through follow-up or in the papers.

The median year of publication for studies where the control service was a CMHT was very similar to studies where it was not (1994 and 1995 respectively; not statistically significant).

In the descriptions below, only control services that were CMHTs were included. Some authors gave information about characteristics of control services that they had said were not CMHTs, but this data had not been collected systematically so was excluded.

Of those control services described as CMHTs, most were multidisciplinary but 14% were not. The majority had a psychiatrist on the team and most had a psychiatric nurse and a social worker, but fewer had junior doctors and OTs. The psychiatrist was again an integrated member of the team in only about half (55%) of the services with psychiatrists. The mean hours of designated psychiatrist time (29 overall) varied between the two groups, with 22 hours for the services studied in RCTs compared to 56 for the other services (*Table 17*).

About half of the services had staff with specific qualifications in community working and 12 had in-service training. The teams had a mean

TABLE 17 *Team structure (CMHT control services)*

Characteristics	RCTs max. *n* = 21	Non-RCTs max. *n* = 6	Total max. *n* = 27
Multidisciplinary teams (%)	14 (82)	4 (100)	18 (86)
Psychiatrist on the team (%)	16 (80)	4 (66)	20 (77)
Junior doctor on the team (%)	6 (33)	3 (50)	9 (38)
Psychiatric nurse on the team (%)	14 (74)	3 (75)	17 (74)
OT on the team (%)	8 (42)	3 (60)	11 (46)
Social worker on the team (%)	16 (76)	3 (60)	19 (73)
Psychiatrist an integrated member of team (% of services with a psychiatrist)	13 (52)	3 (60)	16 (55)
Mean hours of dedicated psychiatrist time per week (SD)	21.6 (21.2)	56.3 (45.4)	28.5 (29.2)

TABLE 18 *Training, caseloads and contacts (CMHT control services)*

Characteristics	RCTs max. *n* = 21	Non-RCTs max. *n* = 6	Total max. *n* = 27
Specific qualifications in community working (%)	11 (52)	3 (60)	14 (54)
In-service training (%)	9 (43)	3 (43)	12 (43)
Mean number of staff on team (SD)	9.6 (7.6)	8.3 (2.9)	9.3 (6.9)
Mean target number of patients (SD)	225.1 (282.3)	151.0 (–)*	221.0 (274.7)
Mean target individual caseload size (SD)	27.3 (15.7)	46.0 (39.3)	31.8 (23.7)
Mean maximum contact frequency per month (SD)	17.8 (19.7)	5.7 (5.7)	15.6 (18.4)
Mean average contact frequency per month (SD)	6.7 (9.8)	2.1 (1.3)	5.7 (8.9)

* *One case only*

of nine staff and 221 patients, with a mean caseload size of 31.8 and a range from 4.5 to 100. ‘Maximum contact frequency’ ranged from one to 76 contacts per patient per month (mean 15.6). ‘Average contact frequency’ ranged from one to 40 contacts per patient per month (mean 5.7) (*Table 18*).

Seventeen (65%) of the services had a specific ‘home treatment function’ (70% of the RCT services compared to 50% of the others), and 17 regularly visited patients at home, with a third of contacts taking place there. For each of these variables, more of the results were accounted for by the services studied in RCTs than by those studied in non-randomised studies. Not surprisingly, the services operated a 5-day week on average and a 9-hour day. Most were responsible for healthcare and most for social care, with 58% responsible for both; in each case, the services studied in RCTs were more likely to have these roles. The team had a crisis element in 44% of cases and 46% had weekly multidisciplinary review. Only four services (16%) had a protocol for meeting carers’ needs (*Table 19*).

Changes in control service components over time

We tested the following control service components against the year of data publication, to see if we could detect developments in these services: psychiatrist on the team; multidisciplinary team; psychiatrist an integrated team member; home treatment function; regularly visiting at home; responsibility for both health and social care; specific crisis element; multidisciplinary review; protocol for meeting carers’ needs. Only ‘multidisciplinary review of patients at least weekly’ approached significance ($p = 0.065$), but services with this component were only an average of one and a half years later than studies without it. None of the other differences was significant. We also tested ‘proportion of contacts at home’, ‘caseload size’, ‘hours of operation’ and ‘average contact frequency’ for correlation with year of

TABLE 19 *Team operation (CMHT control services)*

Characteristics	**RCTs max. *n* = 21**		**Non-RCTs max. *n* = 6**		**Total max. *n* = 27**	
Home treatment function (%)	14	(70)	3	(50)	17	(65)
Regularly visit patients at home (%)	14	(70)	3	(50)	17	(65)
Mean proportion of visits made at home (SD)	38.6	(25.3)	16.7	(20.8)	35.2	(25.4)
Mean days per week (SD)	5.2	(0.7)	5.4	(0.9)	5.3	(0.7)
Mean hours per weekday (SD)	8.5	(1.9)	11.6	(7.0)	9.2	(3.7)
Responsibility for healthcare functions (%)	15	(75)	3	(50)	18	(69)
Responsibility for social care functions (%)	15	(79)	3	(60)	18	(75)
Responsibility for health and social care (%)	12	(63)	2	(40)	14	(58)
Crisis element to the team (%)	10	(50)	1	(20)	11	(44)
Multidisciplinary review at least weekly (%)	9	(47)	2	(40)	11	(46)
Protocol for meeting needs of carers (%)	3	(16)	1	(17)	4	(16)

TABLE 20 *Location and response rate*

	Europe	**North America**	**Other**
Total studies	25	59	7
Authors responded	18	35	2

publication. Only 'proportion of contacts at home' was significantly correlated with the year of publication (correlation coefficient 0.286, $p = 0.01$). This suggests that control services in later studies had higher proportions of contacts made at home.

Service characterisation by location

The majority of the studies were North American, mostly from the USA (four were Canadian) (*Table 20*). Of the 25 European studies, 21 were British, three Scandinavian and one German. Of the other studies, four were Australian, one was from New Zealand, one was Indian and one Chinese (appendix 2). There was no significant difference between European and North American studies in year of publication of data ($p = 0.14$).

Figures below (*Tables 21–26*) are from the follow-up questionnaires, supplemented from the papers wherever possible. Data have been presented for the 'Other' services followed up, but due to small numbers they have been excluded from the comparisons and statistical tests, which thus compare European and North American services only.

Experimental services

More of the North American services had a psychiatrist on the team, although psychiatrists on European teams were more likely to be integrated members than those on North American teams and had twice as much dedicated time. Significantly more European than North American teams had OTs. More European teams had psychologists, and more North American teams had social workers (*Table 21*).

All the North American services had in-service training, compared to 61% of the European services, and the difference was highly significant. The European services were larger, with a higher target number of patients. They also had a larger average caseload size: 18 compared to 14 for the North American services. The maximum and average contact frequencies for the North American teams were around twice the European contact frequencies, although only the latter was significant (*Table 22*).

Having a 'home treatment function', regularly visiting patients at home and the proportion of contacts made at home did not differ between the North American and European services. North American services operated the same number of days a week, but significantly longer hours than the European services: 11.4 hours compared to 8.7 hours. More of the North American services had responsibility for both

TABLE 21 *Team structure by location (experimental services)*

Characteristics	Europe		North America		Other		*p*-value
Multidisciplinary teams (%)	19	(86)	31	(80)	4	(67)	–
Psychiatrist on the team (%)	12	(67)	30	(88)	2	(100)	0.554
Junior doctor on the team (%)	7	(39)	7	(28)	1	(50)	–
Psychiatric nurse on the team (%)	17	(94)	24	(83)	2	(100)	–
OT on the team (%)	13	(72)	9	(32)	2	(100)	0.002
Social worker on the team (%)	11	(61)	26	(86)	2	(100)	0.097
Psychologist on the team (%)	7	(35)	7	(18)	3	(50)	0.209
Psychiatrist an integrated member of team (% of services with a psychiatrist)	10	(83)	21	(70)	1	(50)	0.464
Mean hours of dedicated psychiatrist time per week (SD)	34.6	(43.0)	18.9	(11.8)	20.0	(0)	0.234

TABLE 22 *Training, caseloads and contacts by location (experimental services)*

Characteristics	Europe		North America		Other		*p*-value
Specific qualifications in community working (%)	12	(67)	22	(73)	1	(50)	–
In-service training (%)	11	(61)	33	(100)	2	(100)	< 0.001
Mean number of staff on team (SD)	9.6	(6.6)	7.2	(3.2)	6.5	(0.7)	0.540
Mean target number of patients (SD)	117.2	(114.4)	82.3	(73.6)	55.0	(7.1)	0.314
Mean target individual caseload size (SD)	18.1	(11.2)	14.3	(7.7)	10.0	(–)[*]	0.271
Mean maximum contact frequency per month (SD)	17.3	(11.9)	32.5	(32.8)	39.0	(22.6)	0.245
Mean average contact frequency per month (SD)	4.5	(4.7)	11.0	(12.8)	15.5	(10.6)	0.003

[*] *One case only*

health and social care and had a crisis element and significantly more had weekly multidisciplinary review. More than twice as many North American services (41%) had a protocol for meeting carers' needs (*Table 23*).

Control services

The following figures are only for services where the control service was stated to be a CMHT: seven European, 20 North American and two 'Other' studies, both of which were Australian.

More European control services than North American had a psychiatrist on the team and more had a psychiatric nurse, with more dedicated psychiatrist hours, although these differences were not significant. Significantly more European services had a junior doctor on the team and significantly more had an OT. More North American services had social workers on the team (77% compared to 57%) (*Table 24*).

More European control services had in-service training, and the European control services were again larger, with more patients and staff, although these differences did not reach significance. The North American services had larger caseloads, but this result was not significant. The North American services had a significantly higher average contact frequency, with eight visits per month compared to 1.5 for European control services (*Table 25*).

All seven of the European control services which were CMHTs and for which we had the information had a 'home treatment function' and all visited patients at home, compared to 53% and 47% of North American services respectively. Only 'regularly visit[ing] patients at home'

TABLE 23 *Team operation by location (experimental services)*

Characteristics	**Europe**		**North America**		**Other**		***p*-value**
Home treatment function (%)	16	(94)	33	(97)	2	(100)	–
Regularly visit patients at home (%)	17	(94)	32	(94)	2	(100)	–
Mean proportion of visits made at home (SD)	63.1	(22.3)	55.2	(26.6)	87.5	(10.6)	0.552
Mean days per week (SD)	5	(0.5)	5.6	(1.1)	6.5	(0.7)	–
Mean hours per weekday (SD)	8.7	(1.5)	11.4	(5.4)	12.0	(2.8)	0.013
Responsibility for healthcare functions (%)	15	(83)	30	(91)	2	(100)	–
Responsibility for social care functions (%)	16	(89)	32	(94)	2	(100)	–
Responsibility for health and social care functions (%)	14	(78)	34	(87)	2	(100)	0.442
Crisis element to the team (%)	9	(53)	22	(76)	22	(76)	0.124
Multidisciplinary review at least weekly (%)	13	(72)	33	(97)	33	(97)	0.022
Protocol for meeting needs of carers (%)	3	(18)	13	(41)	13	(41)	0.143

TABLE 24 *Team structure by location (control services)*

Characteristics	**Europe**		**North America**		**Other**		***p*-value**
Multidisciplinary team (%)	6	(86)	10	(83)	2	(100)	–
Psychiatrist on the team (%)	7	(100)	11	(55)	2	(100)	0.226
Junior doctor on the team (%)	6	(86)	2	(13)	1	(50)	0.003
Psychiatric nurse on the team (%)	7	(100)	8	(57)	2	(100)	0.239
OT on the team (%)	6	(86)	3	(20)	2	(100)	0.017
Social worker on the team (%)	4	(57)	13	(77)	2	(100)	0.255
Psychiatrist an integrated member of team (% of services with a psychiatrist)	6	(86)	8	(67)	1	(50)	0.110
Mean hours of dedicated psychiatrist time per week (SD)	31.4	(32.0)	19.5	(25.3)	57.5	(31.8)	0.354

TABLE 25 *Training, caseloads and contacts by location (control services)*

Characteristics	**Europe**		**North America**		**Other**		***p*-value**
Specific qualifications in community working (%)	4	(57)	9	(53)	1	(50)	–
In-service training (%)	5	(71)	6	(32)	1	(50)	0.205
Mean number of staff on team (SD)	9.7	(2.6)	6.4	(2.4)	29.0	(1.4)	0.033
Mean target number of patients (SD)	247.8	(199.1)	98.1	(60.3)	905.0	(63.6)	0.212
Mean target individual caseload size (SD)	21.5	(15.5)	33.9	(26.3)	30.0	(0)	0.559
Mean maximum contact frequency per month (SD)	8.4	(7.5)	21.2	(22.9)	8.0	(2.8)	0.298
Mean average contact frequency per month (SD)	1.5	(0.4)	8.0	(10.7)	4.0	(–)*	0.018

* *One case only*

approached significance ($p = 0.052$). European control services delivered almost half their contacts at home, compared to just under 30% for North American services. More European services took responsibility for both health and social care and more had weekly multidisciplinary review, but fewer had a crisis element in the team (*Table 26*).

Service classification

We tested components identified through the service characterisation questionnaire to see whether they were associated with each other or whether they clustered in ways that might point to a way of classifying the services.

There were no significant associations between the service characteristics 'target individual caseload size', 'average contact frequency', 'hours of operation' and 'proportion of contacts at home' (*Table 27*). Services with high proportions of home contacts were not more likely to have lower caseloads, for instance, or to be in more frequent contact with patients.

Most of the experimental services for which we had information on both components (56 out of 58) had both a 'home treatment function' and regularly visit[ed] patients at home. These components were thus almost interchangeable, although two respondents said that they had one and not the other (home treatment function but did not regularly visit at home: Jerrell – S. Carolina 1[83]; or regularly visited at home but did not have a home treatment function: Wood – California[84]). We tested 'regularly visit[ing] patients at home' against the other service components. As expected, those services that did regularly visit patients at home had significantly higher proportions of contact at home, with a difference of 55 percentage points more than those that did not regularly visit patients at home. There was no significant difference in days of

TABLE 26 *Team operation by location (control services)*

Characteristics	**Europe**		**North America**		**Other**		***p*-value**
Home treatment function (%)	7	(100)	9	(53)	1	(50)	0.121
Regularly visit patients at home (%)	7	(100)	8	(47)	2	(100)	0.052
Mean proportion of visits made at home (SD)	48.8	(19.3)	29.5	(25.7)	45.0	(35.4)	0.185
Mean days per week (SD)	5.0	(0)	5.3	(0.8)	5.5	(0.7)	–
Mean hours per weekday (SD)	8.0	(0)	9.5	(4.4)	12.0	(5.7)	–
Responsibility for healthcare functions (%)	7	(100)	9	(53)	2	(100)	0.146
Responsibility for social care functions (%)	5	(71)	11	(73)	2	(100)	–
Responsibility for health and social care functions (%)	5	(71)	7	(47)	2	(100)	0.381
Crisis element to the team (%)	2	(29)	8	(50)	1	(50)	0.320
Multidisciplinary review at least weekly (%)	5	(71)	5	(33)	1	(50)	0.314
Protocol for meeting needs of carers (%)	1	(14)	3	(19)	2	(100)	–

TABLE 27 *Correlation between service characteristics*

Correlation coefficient*	**Target individual caseload size**	**Average contact frequency**	**Hours of operation**	**% of contacts at home**
Target individual caseload size	1	–0.058	0.140	–0.134
Average contact frequency		1	0.237	0.058
Hours of operation			1	0.037
% of contacts at home				1

* *None is significant:* $p > 0.13$ *in each case*

operation between services that regularly visited at home and those that did not (means were 5.7 and 4.7 respectively) (*Table 28*).

Services that regularly visited at home had significantly smaller individual caseloads (14.2) than those that did not (33.3) ($p = 0.004$). Of the 70 services regularly visiting patients at home, 46 took responsibility for both health and social care (87% of those for which we had data on both components) compared to one of the three services that did regularly visit at home. This difference failed to reach significance, however ($p = 0.064$). There were no significant associations between regularly visiting patients at home and: hours of operation of the team; maximum and average contact frequencies; being a multidisciplinary team; having a psychiatrist on the team; the psychiatrist being an integrated team member; and the team having a crisis element (*Table 28*).

The majority of the services (83%) had both health and social care functions. We tested the associations between this and other components. It was a smaller majority than that for regularly visiting at home, which suggests the results of these tests are likely to be more robust. We expected the services with responsibility for both functions to be more likely to be multidisciplinary teams, and 93% of them were, compared to 67% of services that did not take responsibility for both functions. However, this difference just failed to reach significance ($p = 0.067$). Two-thirds of services with responsibility for both functions said the psychiatrist was an integrated team member, as opposed to one-third of services that did not ($p = 0.03$). Responsibility for both health and social care was not significantly associated with the components: caseload size; proportion of contacts made at home; maximum and average contact frequencies; home treatment function; and the team having a crisis element (*Table 29*).

This would seem to provide some evidence for a group of service components – multidisciplinarity, psychiatrist on the team as an integrated member, small caseloads, regularly visiting patients at home and taking responsibility for both health and social care – linked by patterns of association, though not strongly cohesive (*Figure 2*). This group of components could be seen as a subset of components identified as belonging to ACT (page 51, 'Service classification'). We examined whether those studies in our review for which we had full information and which had been reported as having these service components were the same studies that had identified themselves as being studies of ACT, ICM or TCL.

TABLE 28 *Associations between service components (regular home visits)*

	Regularly visit at home		***p*-value**
	Yes ***n* = 53**[*]	**No** ***n* = 3**	
% of contacts at home (SD)	62 (24.2)	8 (7.6)	0.001[*]
Mean days of operation (SD)	5.7 (0.96)	4.7 (0.58)	0.056
Mean caseload size (SD)	14.2 (8.0)	33.3 (11.5)	0.004[*]
Responsible for health and social care (%)	46 (87)	1 (33)	0.064

[*] *Data on the other components was not available for all 53 services, so valid percentages are given*

TABLE 29 *Associations between service components (responsibility for health and social care)*

	Responsibility for both health and social care		***p*-value**
	Yes ***n* = 43**[*]	**No** ***n* = 9**	
Multidisciplinary team (%)	37 (93)	6 (67)	0.067
Psychiatrist an integrated member of the team (%)	28 (65)	3 (33)	0.03

[*] *Data on the other components was not available for all services, so valid percentages are given*

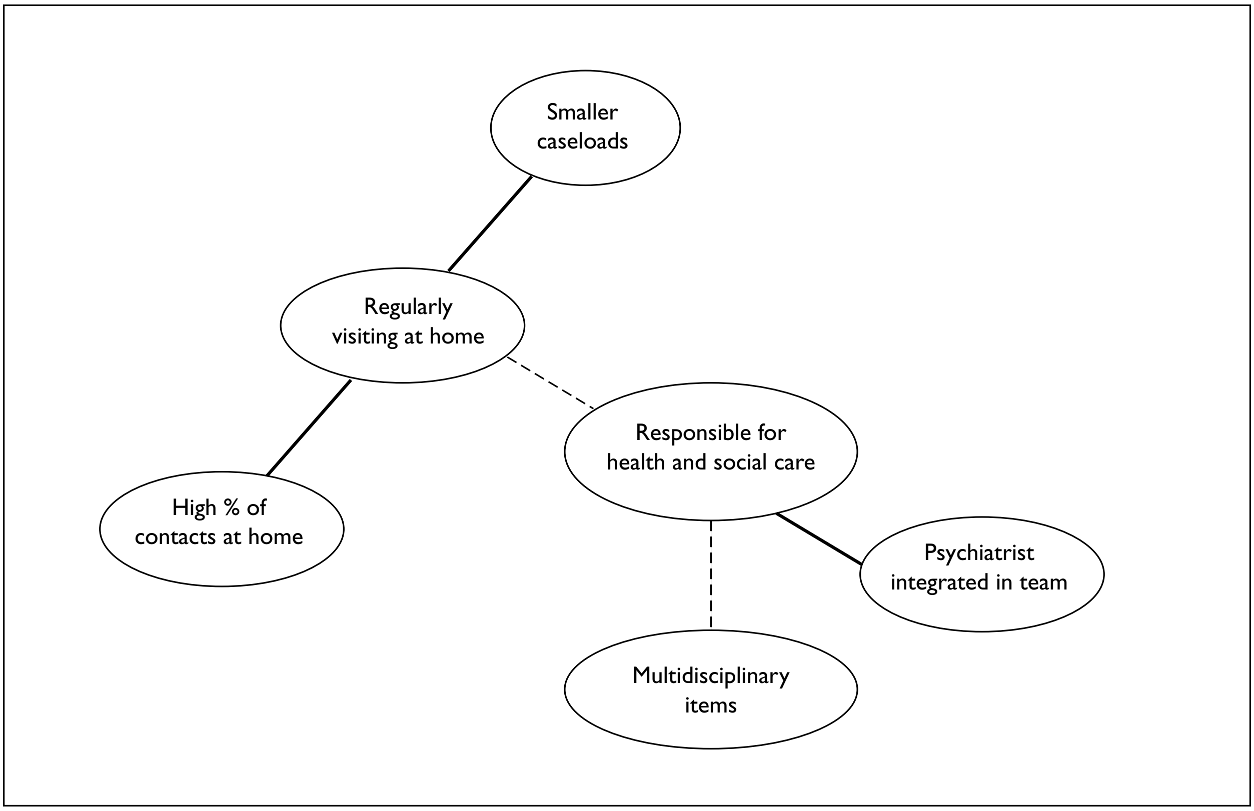

***FIGURE 2** Associations between service components (——, significant association; – – –, association approached significance)*

This was not the case. When we defined 'small caseloads' as being 15 or under (the smallest size mentioned by participants in the Delphi exercise), we found that 12 experimental services for which we had information qualified for inclusion in our group. Ten of these (Drake – New Hampshire[85]; Holloway – London[86]; Jerrell – San Jose[87]; Jerrell – S. Carolina 2[57]; Korr – Pittsburgh[88]; Lehman – Baltimore[59]; McFarlane – Maine[89]; Muijen – London 1 [90]; Solomon – Philadelphia 2[91]; UK700[92]) had named themselves varieties of ACT or ICM, but two had not: one (Christensen – Svendborg[93]) called itself 'community psychiatric care', the other 'intensive psychiatric community care' (Rosenheck – Connecticut[61]).

Conversely, 23 studies labelled as ACT/ICM, for which we had information on service components from the authors, did **not** appear in this group of studies. This number was reduced on further scrutiny, which revealed that:

- there was insufficient information on five of the studies (usually on team composition to assess multidisciplinarity), although the authors had responded to follow-up;
- three studies (Bond – Chicago 1[94]; Ford – London 1[95]; Johnston – New South Wales[96]) were excluded from our group only because the psychiatrists on their teams were not integrated team members;
- nine further studies could be included when caseload size was calculated from figures given for the number of staff on the team and the target number of patients (Chandler – California 2[97]; Herinckx – Oregon[21]; Lafave – Ontario[98]; Marx – Madison[27]; Mowbray – Michigan[99]; PRiSM – London[46]; Sands – Philadelphia[100]; Stein – Madison[11]; Test – Wisconsin[101]);
- five authors, accounting for six of the above studies (Lafave – Ontario[98]; Marx – Madison[27]; Mowbray – Michigan[99]; Sands – Philadelphia[100]; Stein – Madison[11]; Test – Wisconsin[101]) said that the question about caseload size was irrelevant as the team had shared caseloads. Thus, although the staff to client ratio qualified them for inclusion, their management of caseloads was a different one.

This left us with a group of 21 studies that would be included in our group of services with multidisciplinary teams, integrated psychiatrists, caseloads smaller than 15, regularly visiting patients at home and taking responsibility for both health and social care, all but two of which had labelled themselves a variety of ACT, ICM or TCL. There were then nine studies for which we had sufficient information, which gave themselves an 'ACT/ICM/TCL' label but did not 'qualify' for inclusion in our group. Moreover, had we defined 'small caseloads' as ten or under (the 'ideal' caseload size[4]), four more studies (Drake – New Hampshire[85]; Jerrell – San Jose[87]; Jerrell – S. Carolina 2[57]; UK700[92]) would have dropped out.

Sustainability

Services

Of the 55 studies whose authors responded to follow-up, 24 of the services were 'still identifiable' (44%). Two authors said the team was not identifiable but the practices were; one said the team was "sort of" identifiable; and three said the teams were still running at some but not all of the sites involved in the original study. All but one of these provided information about the current services, so are included in the figures below. Two authors were no longer connected with the service and could not comment. The median year of publication was only 2 years different for the services that were still running compared with those that were not (1996 compared to 1994), and this difference was not significant. Ten of those services that were not still running had ended when or before the study was published, three had run for up to 3 years after publication and three had run for 4 or 5 years after publication.

Services were more likely to be in operation if the study had found a significant reduction in hospitalisation in their favour than if they had had non-significant hospitalisation results ($p = 0.003$). In all, 13 studies of the 29 still or 'sort of' in operation (45%) had found significant results in favour of the experimental service and nine (31%) had non-significant results. Of those which were no longer in operation (25), only two (8%) had significant findings in favour of the experimental service, while 15 (63%) had non-significant findings. The findings on which this calculation is based are whatever hospitalisation measure was reported in the study, days in hospital where available.

Service components

Of the 29 experimental services still in operation, or in operation at some sites or identifiable in practice, 15 had retained all the features the authors identified in the follow-up questionnaire as having 'made the service innovative' at the time of the study. Authors of ten studies identified features of the experimental services that they had since 'found unhelpful and decided to drop'. Three had abandoned their earlier emphasis on small caseloads, and one on 'intensive working'. One had found offering a 24-hour service unhelpful because clients did not make use of it. Two had abandoned 'home treatment', but one of these emphasised that this was because of 'insufficient personnel' and was regrettable. They also mentioned features not explicitly tested in this review. One had "worked with families to break pathological dependency relationships" but had since ceased to do so. One had offered a time-limited service (14 months); he now felt that there should be no time limits on patients and that discharge should be based on the patient being "well stabilised and integrated". Another had abandoned the previous emphasis on 'speed of assessment'. One service had originally not had responsibility for inpatient beds, but had taken this on. Finally, one service had not found 'assertive outreach' to be helpful.

Most of the services still identifiable had retained most of the key components identified in the service characterisation questionnaire. Most had not changed their multidisciplinarity, with only one service ceasing to be multidisciplinary. No services with a psychiatrist reported a change in whether the psychiatrist was an integrated member, but three services had gained hours of dedicated psychiatrist time (*Table 30*). In one service, the staff were now qualified in community working where they had not been before, but three services had ceased to deliver in-service training. Staff and patient numbers had risen in eight and ten services respectively, and fallen in three services each. The average caseload size had risen in six cases and fallen in two; where it had fallen, it was only by two or three patients, but where it had risen the difference ranged from one patient to ten, with a mean rise of four patients. Five services had decreased their maximum contact frequency and one their average contact frequency. Fewer had increased contact frequency (*Table 31*). Where the average contact frequency had dropped, it was by five contacts per month, and where it had increased it was only by two contacts in each case. In the services where the maximum contact frequency had decreased, the difference ranged from two contacts a month to 30, with a mean difference of nine; in the case where it had increased, it was by 18 contacts a month.

Only one service reported no longer having a home treatment function, and two had ceased to visit patients regularly at home, while one had started to. While the majority of services reported no change in the proportion of contacts made at

TABLE 30 *Team structure (sustainability)*

Component	Dropped (%)		Gained (%)		No change (%)	
Multidisciplinary teams	1	(5)	0	0	19	(95)
Psychiatrist on the team	1	(5)	0	0	22	(95)
Junior doctor on the team	0	0	2	(1)	18	(99)
Psychiatric nurse on the team	1	(4)	0	0	22	(96)
OT on the team	0	0	1	(5)	21	(95)
Social worker on the team	1	(5)	1	(5)	20	(90)
Psychiatrist an integrated member of team (proportion of services with a psychiatrist)	0	0	0	0	25	(100)
Hours of dedicated psychiatrist time per week	0	0	3	(19)	13	(81)

TABLE 31 *Training, caseloads and contacts (sustainability)*

Component	Dropped (%)		Gained (%)		No change (%)	
Specific qualifications in community working	0	0	1	(4)	22	(96)
In-service training	3	(13)	0	0	20	(87)
Number of staff on team	3	(14)	8	(38)	10	(48)
Target number of patients	3	(18)	10	(59)	4	(23)
Target individual caseload size	2	(15)	6	(46)	5	(39)
Maximum contact frequency per month	5	(28)	1	(6)	12	(66)
Average contact frequency per month	1	(7)	3	(21)	11	(72)

TABLE 32 *Team operation (sustainability)*

Component	Dropped (%)		Gained (%)		No change (%)	
Home treatment function	1	(4)	0	0	24	(96)
Regularly visit patients at home	2	(8)	1	(4)	22	(88)
Proportion of visits made at home	6	(32)	1	(5)	12	(63)
Days per week	1	(4)	3	(13)	20	(83)
Hours per weekday	0	0	3	(12)	22	(88)
Responsible for healthcare functions	0	0	0	0	23	(100)
Responsible for social care functions	0	0	0	0	24	(100)
Responsible for health and social care functions	0	0	0	0	23	(100)
Crisis element to the team	1	(4)	1	(4)	23	(92)
Multidisciplinary review at least weekly	0	0	0	0	21	(100)
Protocol for meeting needs of carers	0	0	3	(14)	19	(86)

home, six services made fewer home contacts (ranging from 15 to 95 percentage points, with a mean of 33) and one made more (increasing by 40 percentage points). The days and hours of operation had changed in only a few services and where they had done so they had usually increased (from 5- to 6- or 7-day opening, and by 1–3 hours a day). No services had changed their roles with regard to healthcare and social care functions, but two had gained or dropped a crisis element in the team. No services had changed whether they had regular multidisciplinary review. Three services had gained a protocol for meeting carer needs (*Table 32*).

Discussion

Response rate

The response rate from study authors was high (60%). It was significantly higher for the authors of RCTs, of whom 77% responded, than for the authors of non-randomised studies, of whom only 34% responded. This may have been because RCTs are in general more demanding of people's time and resources, so that authors are more involved and committed and consequently more inclined to respond to requests for information. Alternatively, the authors of non-randomised studies may have doubted that their results would be included in a systematic review and so been reluctant to involve themselves in the process of completing follow-up questionnaires. Responses did, however, cover the full range of studies in terms of control service, number of participants, location and year of first publication.

Some authors admitted to knowing little about the services they had used as controls. Overall, we obtained some (though not complete) data on 54% of the control services, mostly through follow-up. It is likely that little of this information would have been available in the published papers.

Service utilisation and costing

Given the need for a comprehensive service profile in mental health research, it was encouraging that so many of the authors who responded had collected service utilisation data on a range of services. This reported coverage, however, stands in contrast to the availability of evidence in practice. Relatively few of the study authors who had reported collecting the service use data (12 out of 46) were able to provide us with it when we requested it. Moreover, in many cases where authors had stated that service use data had been collected, the published papers did not report it. This information would give a fuller picture of the services, as well as allowing a substantial costing of all their constituent parts. It must be of some concern that so many data are collected, but either not analysed, or analysed but not published. This raises certain ethical issues, particularly the question of whether policy and practice decisions based on the results of these research studies are as well-informed as they could be.

Service components

Despite meeting our broad inclusion criteria, the services under study were fairly heterogeneous in terms of the size of the service, caseload size, contact frequency and other service components, although largely homogeneous in terms of 'home treatment function'. Almost a fifth of the experimental services were not multidisciplinary teams, and more than a fifth did not have psychiatrists on the team. This finding is contrary to the importance attached to psychiatrist input by the experts consulted in the Delphi exercise (page 28, 'Components rated "essential" and "very important"'), albeit that they were themselves psychiatrists.

There was no evidence that these various components had become more common in experimental or control services over time, other than proportions of home contacts in control services. Control services in later studies had higher proportions of contacts made at home.

Impact of location on service components

The North American experimental and control teams were more likely than the European ones to include social workers and to take responsibility for social care as well as healthcare. They were less likely to include OTs and junior doctors. They were open for longer hours than the European services (9.5 hours per day compared to 8 hours) and made contact with the patients more frequently (8 contacts compared to 1.5 contacts per patient per month). More of the European control services had an explicit home treatment function, but the number of studies for which this information was available was small. For experimental services, there was no difference between North America and Europe in whether the team had a 'home treatment function'.

Service classification

We had hoped to be able to develop a new taxonomy of services on the basis of our findings. We used a Delphi exercise to identify important components of care rather than identifying the components of each of the services and then attempting to reclassify them (a top-down rather than bottom-up approach). The bottom-up approach was simply not possible, as the information on service components is not reported sufficiently systematically or in detail in the papers. That substantial numbers of authors were able to provide information on these components (such as contact frequency and caseload size) indicates that these are pertinent questions. Where authors did not respond to follow-up, however, it was frequently impossible to obtain information from the papers in a standard form. It is also notable that even when authors had responded to follow-up, it was not always possible for them to provide sufficient information for us to attempt a classification. Retrospectively characterising services by these components is therefore difficult. We would suggest that studies routinely collect information on service components,[102] and that for home treatment studies the components we have identified be used prospectively in future.

It has thus not proved possible to present a new classification system for the services covered by our term 'home treatment', since the few associations found between key service components did not present clear evidence for a particular cluster of components. This is illustrative of the reviewed area, in that service models within 'home treatment' have not been defined or operationalised with sufficient clarity to permit such a classification. There was limited evidence, however, for a group of services that were multidisciplinary, had psychiatrists as integrated team members, had small caseloads, visited patients at home regularly and took responsibility for both health and social care. This cannot be seen as a cohesive group, however, as within this group each component was linked to some of the others but not all.

These service components – multidisciplinarity, psychiatrist on the team as an integrated member, small caseloads, regularly visiting patients at home and taking responsibility for both health and social care – might be seen as a subset of the components associated with ACT as a service model. In fact, all have been explicitly listed by McGrew and Bond,[3] Teague and colleagues[4] and Marshall and Lockwood[6] as components of ACT, except for small caseloads (McGrew and Bond[3] and Teague and colleagues[4] only), and taking responsibility for both health and social care (Teague and colleagues[4] only). It should be noted, however, that these components are only a subset of those that have been identified as part of ACT. Moreover, the eponymous ACT component, 'assertive outreach', was not tested in this review because it did not appear in the Delphi exercise. The spirit of assertive outreach might be argued to be captured in the ideas of small caseloads and home visiting, in that these suggest a close knowledge of patients by clinicians. This is debatable, however, and should not be assumed.

The component 'psychiatrist as an integrated member of the team', moreover, is not specified in the ACT models. It could not be assumed to be synonymous with 'having a psychiatrist on the team', since only half the teams with psychiatrists who responded to our survey said that the psychiatrists were integrated team members. This component was found to be associated with others in the group, where simply having a psychiatrist on the team had not. This component filtered out three studies.

Our component 'smaller caseloads' (whether defined as fewer than 10 or fewer than 15 patients) was not given for six studies of ACT whose authors said that the teams had shared responsibility for patients, rather than individual caseloads. This included the pioneering studies of ACT (Stein – Madison[11]; Marx – Madison[27]). It is important to bear in mind this original feature of ACT, which is not reflected in the preoccupation with small (but implicitly individual) caseloads.

Our group of loosely associated service components is thus not put forward here as an alternative, simplified configuration of models of ACT. In fact, this set of components that we had identified as loosely associated did not robustly identify studies in our review that labelled themselves ACT or ICM, even though it appeared to be a subset of ACT components. It should be emphasised that we were not here applying an ACT scale, such as the Dartmouth ACT scale,[4] to the studies in our review that label themselves ACT, or variants of that name. This would not be within the scope of this review. What we seem to have identified tentatively is a group of services linked by this group of components: most of the studies identify themselves as based on ACT or ICM principles, but not all do, and the group excludes a large number of studies that also identify themselves as being based on ACT or ICM.

It is clear that the ACT model comes closest to a distinct service configuration, although this review provides some evidence of studies using the ACT label unjustifiably. This review, however, looks at a wider range of services: those which aim to 'treat patients outside hospital as far as possible and to stay in their usual place of residence'. 'ACT', even if it were defined clearly enough, would only be a subsection of the services in this review. Having attempted to test for clustering of service components, we found both that the links of association between the components were weak, and that the group of studies identified was not a clear subsection of ACT/ICM-labelled studies.

Sustainability of services and their components

Less than half of the services whose authors responded to follow-up were still in operation. We had imagined that services from earlier studies were less likely to be still enduring, but this does not seem to be the case, since there was no difference in the year of publication between those that were still running and those that were not. Whether the study had found a significant reduction in hospitalisation (measured in various ways), however, was significantly associated with whether the experimental service was still in operation.

More than half of the services still in existence had dropped features that had been seen as 'innovative' at the time of the study, sometimes because they were not sustainable in terms of resources and sometimes because the services had evolved and they were no longer considered useful. Three had abandoned their previous emphasis on smaller caseloads, but the small number of studies for which we have information makes this difficult to generalise from. Where services were still operating, most of the components in our service characterisation questionnaire had not changed in most of the services, suggesting that these components are largely sustainable. Only a quarter of the services for which we had information, however, were running in approximately their original form: that is, had not dropped features originally seen as making that service innovative. Although nothing is known about the sustainability of the services whose authors did not respond to the follow-up, it is probable that they are less likely to be still in operation. Overall, therefore, the sustainability of home treatment services does not seem to have been very great.

Chapter 6

Data analysis

Introduction

This review has provided a comprehensive overview of studies of home treatment, in terms of both their study features and the components of the experimental and control services they evaluate. The review has a further aim: to use the data on hospital days and costs obtainable from the papers and the authors themselves in a series of analyses. We aimed to test the effectiveness of home treatment services over inpatient care and over other community-based services (a conventional meta-analysis based on Cochrane methodology). The review is unusual in also testing the service components identified through the Delphi exercise (page 34, 'Use of Delphi-generated components in service characterisation') and collected through follow-up (chapter 5) for association with the outcome days in hospital. We hoped to ascertain whether the following service features were more likely to reduce hospitalisation for their patients:

- multidisciplinary teams
- smaller caseloads
- higher contact frequency
- more contacts made at home
- longer hours of operation
- responsibility for both health and social care.

In the 'Review of economic evaluations' (chapter 3), we present the results of a review of those studies which themselves contain a specific economic evaluation. Here, however, we use further data on service utilisation (collected through follow-up of authors) in order to attempt a more comprehensive cost analysis.

It will be clear from the details already given that the studies included in this review cover a wide range of services. The control services studied constitute a heterogeneous group, while some of them would themselves qualify as 'home treatment' services according to our wide definition. These factors make meaningful meta-analysis difficult and may call into question the validity of calculating the overall difference between experimental and control data (the conventional meta-analysis). These difficulties and their implications are discussed below. Where we compared data from different locations, and where we tested for associations between service components and days in hospital, however, the analyses are more robust. We present below two alternative analytical strategies, along with the results of these analyses.

Methods

Analytical methods

Each study had been allocated into one of the following groups:

Inpatient-control (Type I): individuals already in hospital or presenting to hospital when selected; control service was an initial period of inpatient treatment for all patients, with patients being discharged when appropriate (with the possibility of readmission if necessary).

Community-control (Type II): individuals selected either at the point of discharge or by other means; control service was not inpatient treatment (although patients might be admitted if deemed necessary).

Studies were only included in the analysis if data were available in the form of mean hospital days. Where necessary the outcome variable mean hospital days per patient per month was calculated from the information given. In order to analyse all studies with data on mean hospital days, an outcome variable was used for which we calculated a monthly figure for the entire period of the study (or the longest period for which we had data). Where studies presented data for more than one time-point, the interim data were used to calculate the average monthly mean across the entire period. It was hypothesised that studies of less than a year's duration would give misleading results, and for this reason they were excluded from all the analyses, except where we specify otherwise. High quality non-randomised studies were included in the comparative analysis only (Strategy 1). As well as having data on mean hospital days, they were required to be prospective studies, with matched controls or clinically comparable groups.

Within each group (inpatient-control studies or community-control studies), all studies were analysed, regardless of the range of diagnostic categories of the individuals within that study. The analysis was then repeated, omitting the studies with predominately neurotic patients, to test the difference this made.

Data on mean hospital days was available for 52 studies (71% of the RCTs (40 studies) and 34% of the non-randomised studies (12 studies)): 57% of all the studies. A total of 34 studies (37%) reported findings on hospitalisation in another form, such as the percentage of patients re-hospitalised during the study period or the mean number of admissions (page 10, 'Outcome variables'). This was more common with the non-randomised studies (20 studies or 57%) than the RCTs (14 studies or 25%, $p = 0.007$). These findings could not be used in our analysis. Four studies did not collect hospitalisation data at all (*Table 11*).

Statistical analyses were performed by HW using SPSS version 9.

Studies with three treatment conditions

Where studies had three treatment conditions, it was not possible to include all three groups. The analysis requires that all the data points are independent, and this is only satisfied when each data point is taken from a separate study. It was decided that combining groups where the authors had not done so would be unjustifiable. Instead, we chose either the second experimental group or the control group as the control for the purposes of our analysis. This decision was based entirely on the pragmatic grounds of which choice would yield data for the maximum number of analyses, blind to the results of the studies. This meant that when the control service was not a CMHT and the second experimental group was, we chose the latter to include in the analysis, as some analyses were restricted to studies where the control service was a CMHT. We collected information on service components for all three arms of these studies where possible. We were thus able to use data on components from the second experimental arms where necessary (appendix 8).

Two analytical strategies were used, the 'comparative analysis' and the 'experimental services analysis'.

Strategy 1: comparative analysis (*Figure 3*)

This whole analysis was conducted with the RCTs alone, and then repeated including non-randomised studies of sufficient methodological rigour (prospective; matched controls or comparable groups).

The primary outcome measure was difference in mean hospital days (per patient per month) between patients in the experimental and control services. The requirement in some studies that all control patients had at least an initial period of inpatient treatment as the control service was thought likely to impact on this outcome. For this reason, inpatient-control and community-control studies were analysed separately. We then calculated the difference in this mean between the experimental and control arms of each study. We calculated the overall mean difference across the different studies, weighting by $1/(1/n_1 + 1/n_2)$, where n_1 and n_2 are the numbers of patients with hospital days in the control and experimental arms of each study. The same weighting was used in all the comparative analyses, unless specified otherwise. This summary mean difference was calculated for studies of all durations (including those of less than a year) and subsequently restricted to studies of at least a year's duration (both results reported). For the inpatient-control studies, we calculated this mean for studies with data on hospital days at one year only, since the duration of follow-up could have a particularly strong effect here. Study-specific standard deviations were only available for about half of the data on mean hospital days. Without having them for all studies analysed, it was not possible to put confidence intervals on the weighted mean differences.

Fortunately, the subsequent analyses testing for associations with service components, duration of the study and year of publication are not affected by this lack of standard deviations. These analyses do not use the standard deviations between patients within individual studies in calculating significance.

To test whether or not the duration of the study had an influence on this outcome measure, the difference in mean hospital days was regressed on the duration of the study, including studies with a duration of less than a year, using the weighting specified above. To test for the effect of the length of the study, this variable was tested for its association with the outcome measure, and for this test the studies of less than a year's duration were included.

We looked for an association between several components of the services and the difference in mean hospital days per month. The difference in

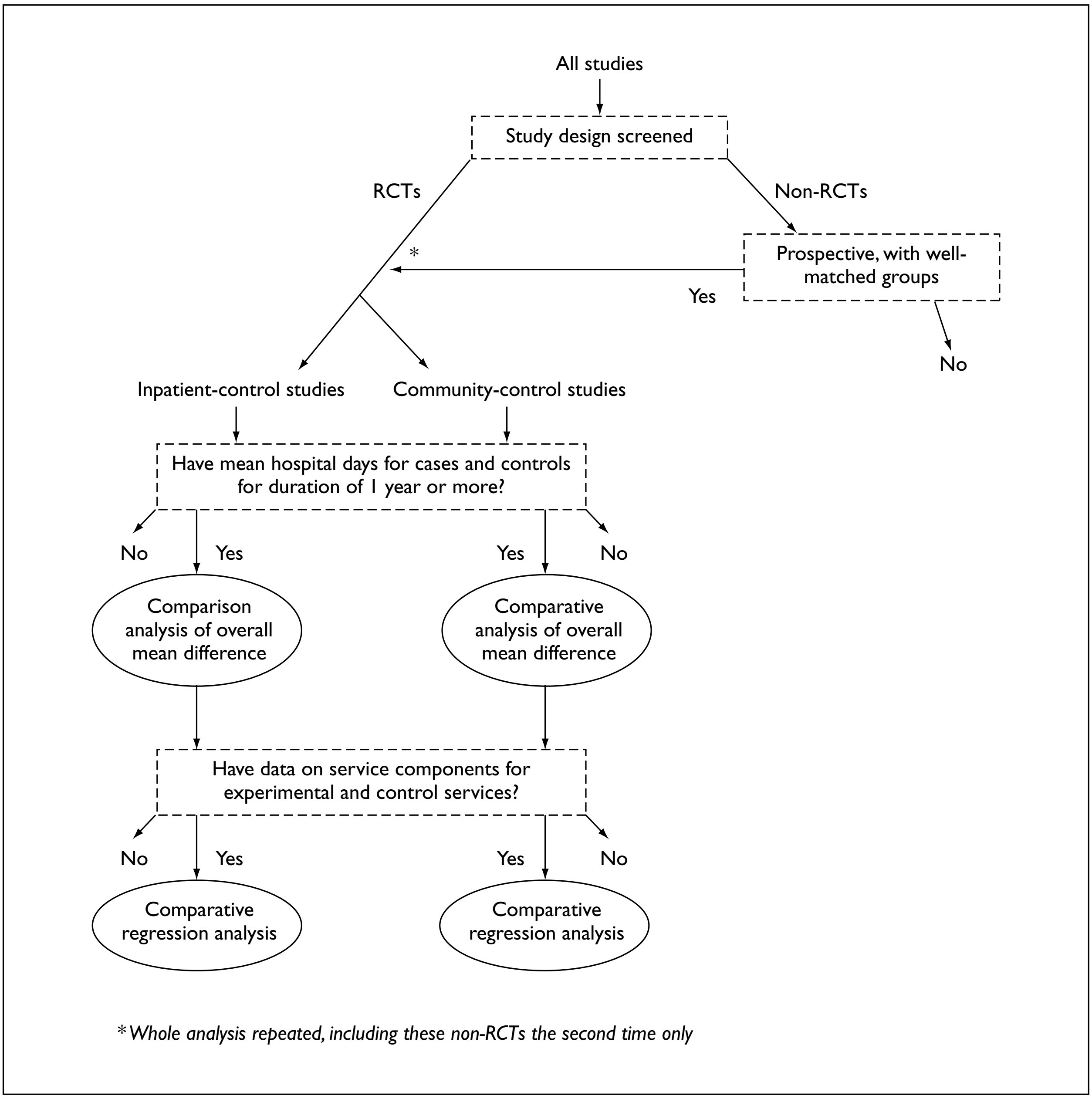

FIGURE 3 *Comparative analysis*

mean hospital days was plotted against the difference between the experimental and control services in terms of caseload size, average contact frequency per patient per month and proportion of contacts at home. In the latter case, all control services that were not CMHTs were taken to have no contacts at home, and the analysis was conducted with all studies with available data. This was the only analysis with sufficient data available for a formal statistical analysis. Weighted regressions were used.

We further tested to see whether the difference in mean hospital days was affected by whether both the control and experimental service satisfied the following criteria, or whether only the experimental service satisfied it. The criteria tested were hours of operation of the team (at least 10 hours per weekday compared with fewer than 10 hours per weekday), whether the team took responsibility for both health and social care, whether the authors described the team as having a ‘home treatment function’, and whether the team regularly visited patients at home. Weighted unpaired t tests were used, or an unweighted Mann–Whitney U exact test where the numbers were smaller. Nearly all the experimental and control services were multidisciplinary (three or more disciplines) so this could not be tested.

These components could only be tested where we had information on both the experimental and the control services, in order to calculate the difference between them. They could not be tested for inpatient-control studies if they did not apply to inpatient treatment. Thus, caseload size, for example, could not be tested. The exceptions were 'proportion of contacts at home', where the inpatient services and other services that were not CMHTs could be scored as zero, and 'home treatment function' and 'regularly visiting patients at home', where they could be scored as 'No'.

The location of the study (Europe or North America) and the year of first publication of data were also tested for their association with the difference in hospital days, using an unpaired *t* test and a weighted regression analysis respectively.

Strategy 2: experimental services analysis (*Figure 4*)

This analytical strategy aimed to avoid the problems created by the wide range and poor definition of control services, by omitting all control service data from the analysis. Only experimental service data were included in this analysis in order to assess the relationship between components of the experimental services and mean hospital days per patient per month. All studies were analysed together, whether they were inpatient-control or community-control studies. The outcome measure was mean days in hospital per patient per month for patients in the experimental arm of the trial. This was not a randomised comparison. Its validity was based on the methodological rigour of the study data. For that reason, we included only RCTs in this analysis and did not repeat it including non-randomised studies. The analyses were weighted by the number of patients with hospital days in the experimental arm of the study.

We performed weighted regressions of the mean hospital days per patient per month on each of the following: year of first data publication, duration of follow-up of the study, caseload size, average contact frequency per patient per month, and the percentage of contacts which took place at home. We then adjusted for severity of illness of the patients in each of the studies as far as was possible. To do this, we adjusted for whether or not the authors described the study as specifically

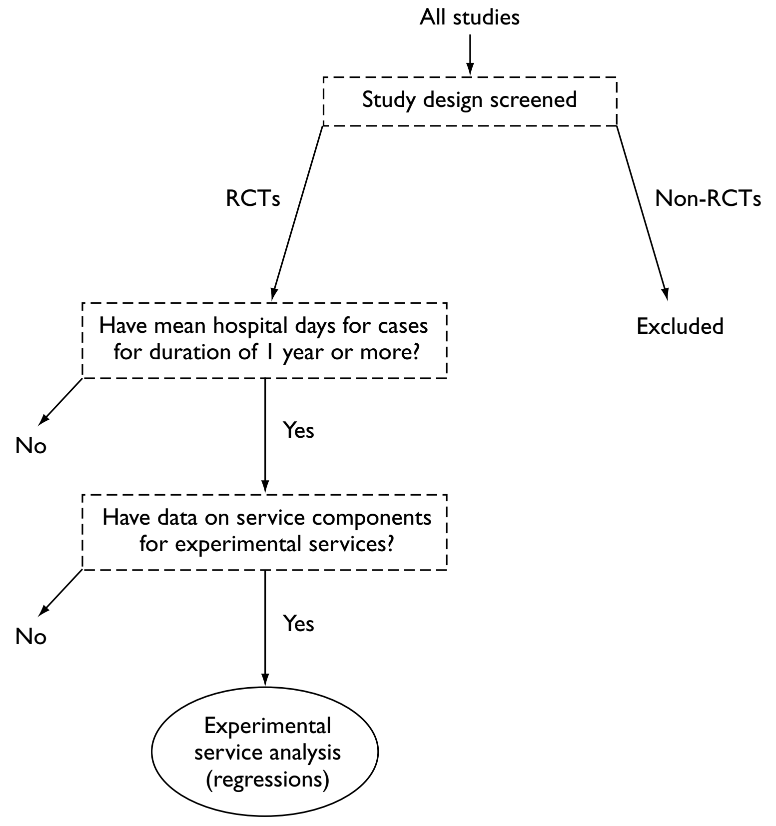

FIGURE 4 *Experimental services analysis*

a trial of high service users, and repeated the regression analyses. The influence of location was also studied, to determine whether or not this influenced the mean hospital days, using a weighted *t* test, and then a weighted analysis of variance, adjusting for whether or not the study focused on high service users.

Cost analysis

Data on service utilisation obtained from the follow-up process (page 38, 'Service utilisation data') were used to provide detailed costing of the studies in the analysis. The cost analysis aimed to mirror the analysis of hospital days as far as possible: analysing inpatient-control studies separately from community-control studies, and mirroring both the comparative analysis and the experimental services analysis (see above). It aimed to cost the findings of the regression analyses used to test for associations between service components, wherever possible. These cost analyses were only performed, however, when data were available for more service utilisation than just days in hospital. To provide a costing based on inpatient treatment alone would not have added anything to the analysis of days in hospital above.

Results

Details of studies put into the different analyses are given in appendix 9.

Comparative analysis: reduction in hospital days

For this analysis, inpatient-control studies were analysed separately from community-control studies. The outcome was the difference in mean hospital days per patient per month between the experimental and control services, for the longest available follow-up period. Analyses are restricted to studies of at least a year in duration unless otherwise specified.

Inpatient-control studies

Eight RCTs had usable data overall. The mean difference between experimental and control service outcomes when all eight were included, using the longest available follow-up, was 6 days per patient per month. For the reasons given above, we could not measure the significance of this finding. When four non-randomised studies were included in the analysis, the difference found across studies of any duration was 3 days per patient per month: about half that found when only RCTs were analysed (*Table 33*).

Impact of non-psychotic studies

No inpatient-control studies contained predominately neurotic patients.

Duration of follow-up

Because in these studies the control service was inpatient treatment, we hypothesised that the duration of follow-up would have a greater impact here than with the other studies. For this reason, we also calculated the mean difference for only studies of a year's duration, and the mean difference in this case was 4.9 days. Only one non-randomised study had a follow-up duration of a year. Not surprisingly, this did not affect the result, which decreased by only 0.1 days. We also tested the follow-up duration against the difference in days in hospital for all studies (of any duration). This is presented in *Figure 5*.

Year of study

The difference in hospital days was also regressed against the year of first data publication (*Figure 6*).

Community-control studies

We had usable data for 29 community-control RCTs. The mean difference in hospital days between experimental and control services for these studies was much smaller: 0.5 days per month. When we excluded studies of less than a year's duration, the mean difference dropped still further, to 0.2 days per month. Again, we cannot measure the statistical significance of this finding, but it is clearly not significant clinically (*Table 34*).

Three non-randomised studies were eligible for inclusion in the analysis. Inevitably, since the figures were very small, including them made little difference.

TABLE 33 *Inpatient-control studies: difference in hospital days*

Length of study	*n*	RCTs only*	*n*	RCTs and non-RCTs*
Any duration of study	8	6.01 (3.54)	12	3.31 (3.74)
1-year follow-up only	5	4.86 (4.30)	6	4.75 (4.04)

* *Mean (SD) days per patient per month*

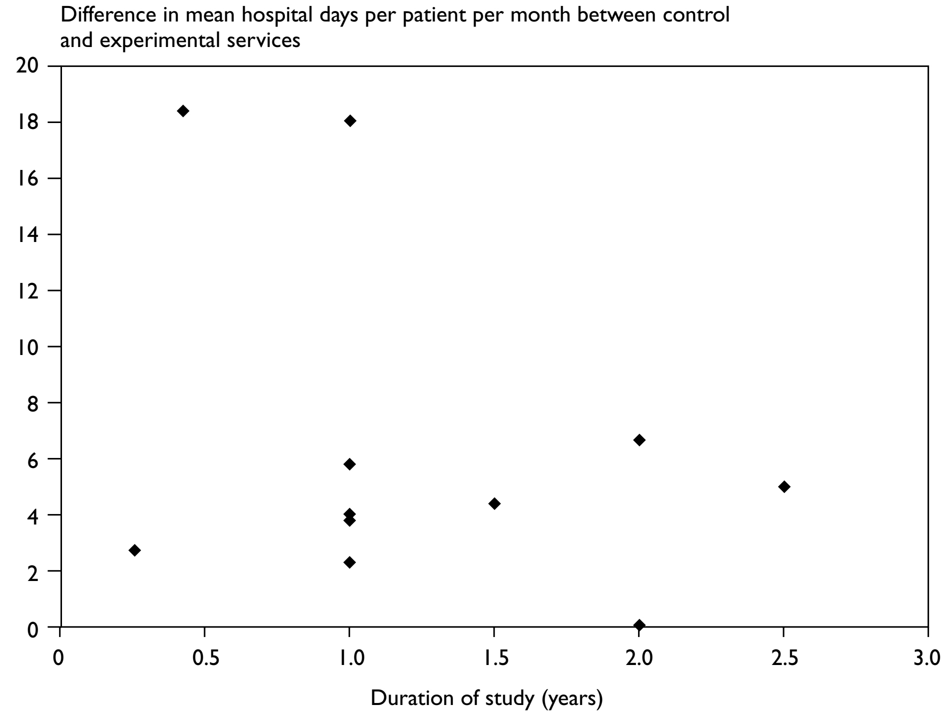

FIGURE 5 *Inpatient-control studies: the difference in hospital days against the duration of the study*

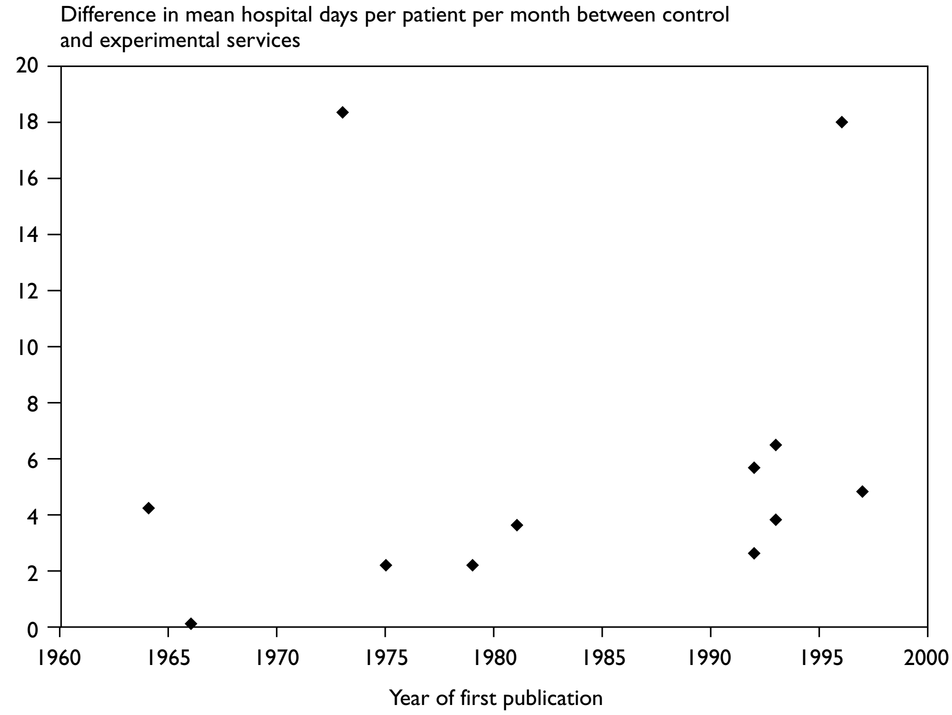

FIGURE 6 *Inpatient-control studies: the difference in hospital days against the year of first data publication*

TABLE 34 *Community-control studies: difference in hospital days*

Length of study	*n*	RCTs only*	*n*	RCTs and non-RCTs*
Any duration of study	29	0.46 (1.13)	32	0.40 (1.23)
Only durations of 1 year or more	25	0.18 (0.80)	28	0.12 (0.94)
Only predominantly psychotic studies with a duration of 1 year or more	23	0.19 (0.82)	26	0.13 (0.97)

* *Mean (SD) days per patient per month*

Impact of non-psychotic studies
Two community-control RCTs (Burns – London[103]; Paykel – London[104]) were predominately of neurotic patients. Excluding them did not alter the mean difference (*Table 34*). Since our aim was to examine the effect of home treatment on the treatment of all people with mental health problems, we included them in all further analyses.

Duration of follow-up
Duration of follow-up was tested against days in hospital (using the aggregate outcome variable for the longest available time-point) for every community-control study, including those of less than a year's duration. The association was highly statistically significant. It suggested that as the duration of a study increases by a year, it finds a difference in hospitalisation between experimental and control services of 0.6 fewer days per patient per month. The difference in the findings of a 1-year study compared to a 3-year study would thus be just over 1 day (1.2) per patient per month. (*Table 35*.) The results including non-randomised studies were very similar.

Year of study
The year of publication of data was not significantly associated with difference in days in hospital. When three non-randomised studies were added to the analysis of the year of publication against the outcome, the result was still not significant (*Table 36*).

Comparative analysis: service utilisation data and costs

Although there were a number of apparent differences between experimental and control groups in relation to the usage made of individual services, it was not possible to conduct formal statistical tests, as with the data on hospital days. Again, very few authors were able to send us standard deviations in addition to means when reporting service use levels, and standard deviations were rarely reported in published papers. We were only able to aggregate costs across (a few) service categories for a small subset of studies because the patterns of data availability were so very different. For example, although there were 40 RCTs for which we had inpatient usage data, there were only 13 for which there was inpatient **and** outpatient data. Other cost combinations were even rarer. This further service use data was required for meaningful cost analysis. The second most common type of service use data available was outpatient attendance, so we costed inpatient and outpatient services for each analysis where

TABLE 35 *Community-control studies: regression of difference in hospital days on duration of follow-up*

Duration of follow-up (years)	*n*	Regression coefficient*	95% CI	*p*-value
RCTs	29	–0.612	–1.077 to –0.148	0.012
RCTs and non-RCTs	32	–0.580	–1.080 to 0.080	0.021

* *Measures change in hospital days per month for each year of duration of follow-up*

TABLE 36 *Community-control studies: regression of difference in hospital days against year*

Year of first publication (years)	*n*	Regression coefficient*	95% CI	*p*-value
RCTs	25	–0.026	–0.130 to 0.078	0.61
Non-RCTs	28	–0.031	–0.146 to 0.084	0.59

* *Measures hospital days (per patient per month) for each year (date of study)*

these data were available. We do not report the differences between inpatient costs alone because these would have exactly the same results as the tests of inpatient days.

No inpatient-control studies (either RCTs or non-randomised studies) had available outpatient data; 12 community-control RCTs had both inpatient and outpatient data. The overall difference in costs between the experimental and control services was £41 per patient per month in favour of the experimental services (*Table 37*). As noted, it is not possible to measure the significance of this difference because of the lack of standard deviations.

Only one non-randomised community-control study (PRiSM – London[46]) provided us with outpatient as well as inpatient data. This study was added to the 12 RCTs and the cost analysis repeated. Its inclusion reduced the overall cost difference finding by £7 per patient per month (*Table 38*).

The costs for each type of service in each study for which we had the information are reported individually in appendix 7.

Comparative analysis: location

For community-control studies, the results were significantly different for European studies compared with North American ones. North American studies found an overall reduction of 0.8 days in hospital in favour of the experimental services, while the European studies found a difference of only 0.3 days in favour of the control services. Neither finding, however, is very significant clinically. When three non-randomised studies were added, the result just failed to reach significance (*Table 39*). There were insufficient inpatient-control studies to test for differences in location.

Comparative analysis: service components

To see if any service components were associated with reducing days in hospital, the difference in hospital days between the two services was tested against the difference between the experimental and control service in terms of the service component (for instance, the difference in caseload size or contact frequency) using weighted regression analyses.

Inpatient-control studies

The components 'caseload size', 'contact frequency', 'multidisciplinarity' and 'hours of operation' were not relevant to inpatient treatment, so they were not tested for association with the outcomes of the inpatient-control studies. There were too few studies in this category to test the remaining service components for association with the outcome, or to compare North American to European study findings.

Community-control studies

The components were tested using all community-control studies for which we had sufficient information; that is, mean hospital days

TABLE 37 *Community-control RCTs: inpatient and outpatient mean monthly cost per patient*

Weighted cost (*n* = 12)	**Experimental**	**Control**	**Difference**
Inpatient	£524.93	£590.20	£65.27
Outpatient	£79.97	£55.73	–£24.24*
Total	£604.90	£645.93	£41

* *Difference favours controls*

TABLE 38 *Community-control RCTs and non-RCTs: inpatient and outpatient mean monthly cost per patient*

Weighted cost (*n* = 13)	**Experimental**	**Control**	**Difference**
Inpatient	£509	£567	£58
Outpatient	£76	£52	–£24*
Total	£585	£619	£34

* *Difference favours controls*

TABLE 39 *Community-control studies: difference in hospital days by location*

Type of study	**North America (*n*)**	**Mean difference (days)**	**Europe (*n*)**	**Mean difference (days)**	***p*-value***
RCTs	16	0.78	8	–0.30†	0.01
RCTs and non-RCTs	18	0.57	9	–0.28†	0.056

* *Weighted unpaired* t *test*
† *Difference favours the control service*

and information on the relevant components for the experimental and control services.

The two service characteristics found to be significantly associated with fewer days in hospital were ‘regularly visiting patients at home’ and ‘taking responsibility for both health and social care’. The former was only significant when non-randomised studies were included. Studies in which the experimental service regularly visited patients at home, while the control service did not, demonstrated a small difference of 0.6 days per patient per month in favour of the experimental service. By contrast, studies where both services regularly visited patients at home (so that there was no difference in this variable) found a difference of only 0.03 days per patient per month in favour of the control service. The difference between the two results was significant. It should be noted that no significance can be placed on the reduction in hospital days within each category (*Table 40*). Multidisciplinarity was not tested because the number of studies where one service was not multidisciplinary was too small.

A significant association was found between the difference in whether the services took responsibility for both health and social care and the difference in hospital days between the services (*Table 41*). Studies where only the experimental service took both roles found a mean difference of 1.3 days per patient per month in favour of the experimental service, whereas studies where both services took both roles found a mean difference of 0.4 days – in favour of the control service. The numbers of studies here, however, are small. Moreover, when one non-randomised study was added to the analysis, the finding ceased to be significant.

The other components tested were not found to be significantly associated with a reduction in hospitalisation (*Tables 40* and *42*). No non-randomised studies had data on the percentage of contacts made at home. Average contact frequency and caseload size against difference in hospital days are presented in *Figures 7* and *8* respectively.

Costs

None of the regression analyses could be mirrored by a corresponding cost analysis due to the scarcity of service use data other than inpatient days. The significant finding that ‘regularly visiting patients at home’ was associated with a greater reduction in hospital days could be costed. The reduction in hospital days found in studies where the experimental service regularly visited patients at home and the control service did not was 0.6 days per month. Examining only long-run inpatient costs,

TABLE 40 *Community-control studies: difference in hospital days by regularly visiting at home and home treatment function*

Both services	***n***	**Mean difference**	**Experimental only**	***n***	**Mean difference**	***p*-value**[*]
Regularly visit: RCTs	10	–0.03[†]	Regularly visit: RCTs	13	0.58	0.07
Regularly visit: RCTs and non-RCTs	11	–0.036[†]	Regularly visit: RCTs and non-RCTs	14	0.64	0.046
Home treatment function: RCTs	8	0.05	Home treatment function: RCTs	10	0.60	0.47
Home treatment function: RCTs and non-RCTs	9	0.03	Home treatment function: RCTs and non-RCTs	11	0.68	0.36

[*] *Weighted unpaired* t *test for comparison of mean differences*
[†] *Favours control service*

TABLE 41 *Community-control studies*[*]*: difference in hospital days by responsibility for health and social care*

Both services	***n***	**Mean difference**	**Experimental only**	***n***	**Mean difference**	***p*-value**[†]
RCTs	7	–0.35[‡]	RCTs	3	1.31	0.02
RCTs and non-RCTs	7	–0.35[‡]	RCTs and non-RCTs	4	0.95	0.07

[*] *Only studies where the control service was a CMHT*
[†] *p-value for comparison of mean differences; unweighted Mann–Whitney U exact test (numbers are very small)*
[‡] *Difference in favour of control*

TABLE 42 Community-control RCTs: regressions of difference in hospital days

	n	Regression coefficient*	95% CI	*p*-value
Difference in % of contacts 'at home' between experimental and control services	16	–0.008	–0.026 to 0.010	0.35

* *Measures hospital days (per patient per month) for each percentage point of contacts made at home*

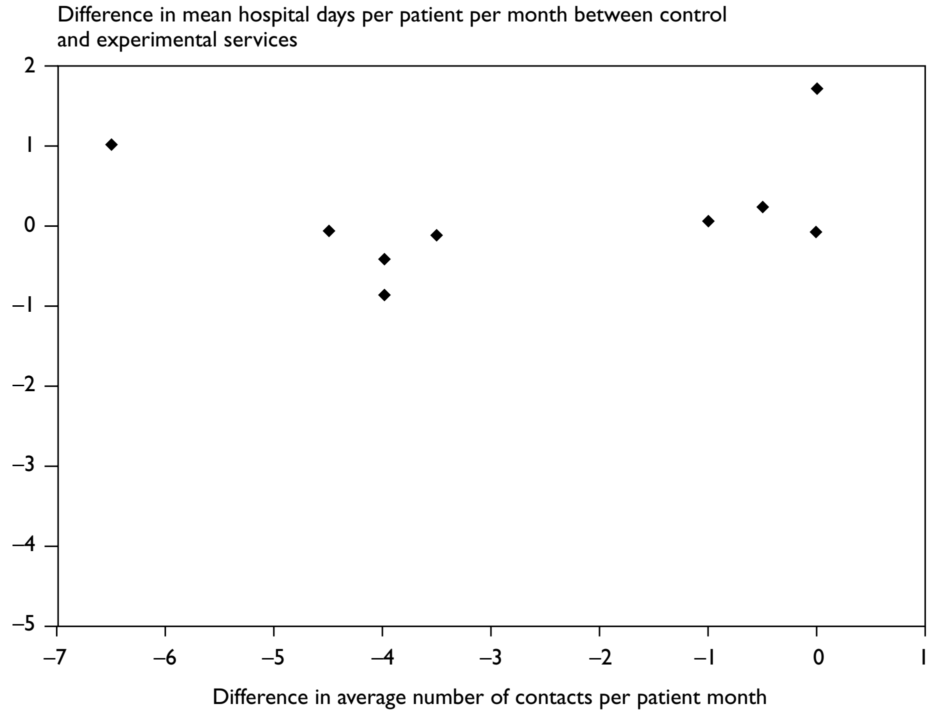

FIGURE 7 Community-control studies (CMHT controls): the difference in hospital days against the difference in the average number of contacts per patient per month

this represents a saving of £133 per patient per month (1999 prices[80]).

Experimental services analysis: duration and year of study

Only the experimental service data were used in this analysis, and for this reason all studies were analysed together, regardless of whether the control service was inpatient treatment or not (type). One study (Rosenheck – Connecticut[61]) was excluded because its finding for days in hospital for patients in the experimental arm was much greater than the other studies, so that it constituted an outlier. This was because it was a study of a Veterans Affairs hospital, which does not have the usual pressures to discharge patients.

Duration of study

The duration of the study was not significantly associated with days in hospital in the experimental condition, whether adjusted for high service use or not (*Table 43*).

Year of study

The year of first data publication was significantly associated with outcome ($p = 0.008$), with earlier studies achieving fewer days in hospital. The difference was only small, however: studies published 10 years later had mean days in hospital which were an average 0.9 days per patient per month higher (*Table 44*). The studies used in this analysis had publication dates ranging from 1973 to 1999 (median 1994), but the majority (72%)

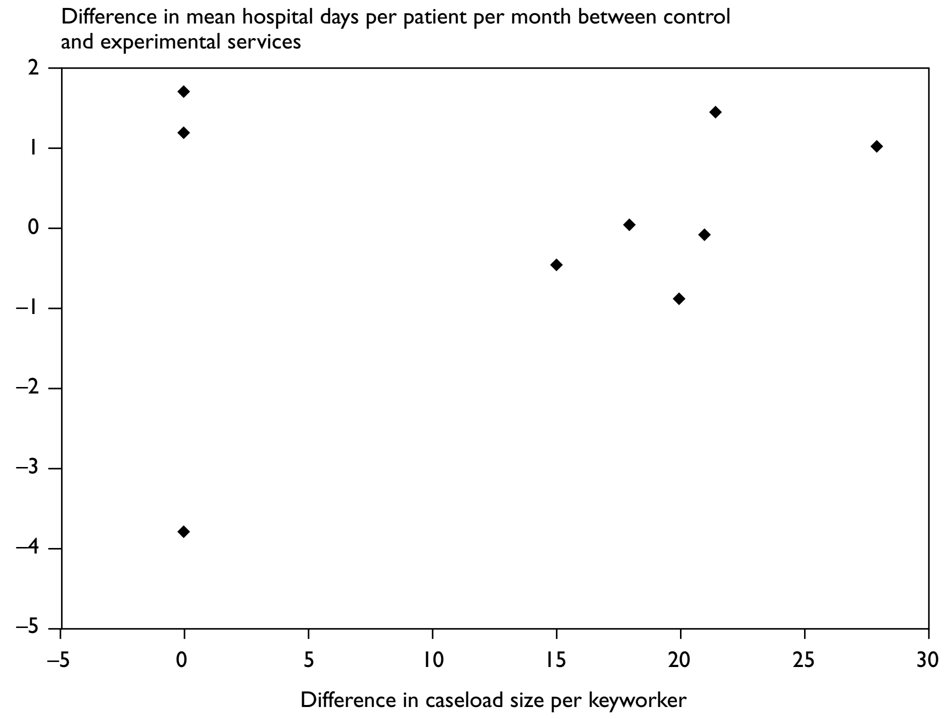

FIGURE 8 *Community-control studies (CMHT controls): the difference in hospital days against the difference in caseload size per keyworker*

TABLE 43 *Regression of duration of follow-up against hospital days*

Duration of follow-up (years)	***n***	**Regression coefficient**[*]	**95% CI**	***p*-value**
Unadjusted	36	0.076	–0.368 to 0.519	0.73
Adjusted for high service use	36	0.076	–0.279 to 0.432	0.66

[*] *Measures hospital days (per patient per month) for each year of duration of follow-up*

TABLE 44 *Regression of year of study against hospital days*

Year of first data publication	***n***	**Regression coefficient**[*]	**95% CI**	***p*-value**
Unadjusted results	30	–0.090	–0.156 to –0.025	0.008
Adjusted for high service use	30	–0.052	–0.106 to 0.001	0.055

[*] *Measures hospital days (per patient per month) for each year (date)*

were from 1990 or later, making this finding less robust.

The analyses were repeated, adjusting for whether or not each study was focused on high service users (based on studies' inclusion criteria). It was not possible to use baseline hospital days' data (mean hospital days per month in the period before entering the study) for this adjustment because insufficient data were available. When adjusted, the association between year of the study and outcome ceased to be significant (*Table 44*).

Experimental services analysis: location

In this experimental services analysis, the difference in mean hospital days by location of study approached significance, but was only of the magnitude of 0.2 days per month (*Table 45*). (These differences became even smaller after adjusting for whether or not the study stated that it was specifically for high users of services.)

TABLE 45 *Hospital days by location*

	North America (n = 19)	Europe (n = 9)	p-value*
Mean days	1.57	1.75	0.064

* *Analysis of variance, weighted by numbers in experimental arm*

Experimental services analysis: service utilisation and costs

The experimental services analysis could not be mirrored in the cost analysis. There were no inpatient-control studies with data usable in the cost analysis, so combining inpatient-control with community-control studies would have been no different from the cost analysis performed in the comparative analysis (pages 61/2). There was insufficient service use data to mirror any of the regression analyses (including those for components, below).

Experimental services analysis: components

Of the service characteristics tested, only caseload size was significantly associated with days in hospital. For caseload size, the direction of effect was the opposite of that predicted – namely, that smaller caseloads were associated with more days in hospital. The size of the effect, however, was modest – an increase in caseload size of ten patients, reducing hospitalisation by 0.7 days per patient per month. Moreover, all but three experimental services in this analysis had a caseload size of 22 or under, so the range was small (*Table 46*).

Three service characteristics, 'home treatment function', 'regularly visiting patients at home' and 'responsibility for both health and social care' could not be tested because all the studies for which we had usable data had answered 'yes' to these questions (all but two for 'health and social care'). We also tested whether having a service open for 10 hours or more per weekday (compared to fewer than 10 hours) was associated with fewer days in hospital. Data from 25 studies could be used for this analysis, but the difference found was negligible (0.08 days) and non-significant. There was also no significant association between multidisciplinarity and days in hospital ($p = 0.66$).

When the analysis was adjusted for 'high service use', again only caseload size was significantly associated with outcome (*Table 47*).

Discussion

Implications of meta-analysis

Great emphasis has been placed on meta-analysis in recent years as a means of establishing definitive

TABLE 46 *Associations between experimental RCT service characteristics and hospital days (unadjusted results)*

	n	Regression coefficient*	95% CI	p-value
Caseload size	21	–0.071	–0.113 to –0.030	0.002
Average contact frequency (per month)	19	–0.025	–0.091 to 0.041	0.43
Percentage of contacts 'at home'	19	0.013	–0.005 to 0.031	0.14

* *Measures hospital days (per patient per month) for each extra patient on the caseload, contact per month, and percentage point of contacts at home (respectively)*

TABLE 47 *Associations between experimental RCT service characteristics and hospital days (adjusted for 'high service use')*

	n	Regression coefficient*	95% CI	p-value
Caseload size	21	–0.050	–0.089 to –0.011	0.016
Average contact frequency (per month)	19	–0.018	–0.070 to 0.034	0.47
Percentage of contacts 'at home'	19	–0.005	–0.021 to 0.011	0.53

* *Measures hospital days (per patient per month) for each extra patient on the caseload, contact per month, and percentage point of contacts at home (respectively)*

answers about an area under review, so far as current research allows. It presupposes a homogeneity of the services or interventions and of the patient groups studied which is unwarranted in the case of mental health services research currently. Mental health interventions and services are notoriously, and necessarily, difficult to standardise. The benefits of pooling the results of studies that purport to be considering the same kind of service or intervention is already questionable for this reason. Services research is further complicated by clinicians using a range of different specific interventions within any given service configuration. These may be controlled for within individual studies that take place at a specific time and place where certain interventions are in vogue, but even this may not be fully achieved. When comparing a number of services in different studies, there can be no such confidence that the content of services as well as their configuration is identical.

Even in reviews where it is possible to define the reviewed area more narrowly than in the present study, the meta-analysis of data from large numbers of studies is a questionable activity. The conclusions that may be drawn from such meta-analyses risk being misleading by implying certainty about areas in which in fact no such certainty exists. At present it is widely believed that research to date has already reached a verdict concerning the effects of home treatment that is generalisable to a wide range of services. Our findings do not support such certainty with regard to hospitalisation data and cost-effectiveness.

Our systematic search of the literature produced a pool of studies that were fairly heterogeneous in terms of such service components as caseload size and contact frequency, although identifiable as 'home treatment services'. They were also heterogeneous in terms of their controls. As we had anticipated, there was a range of control services, some very poorly defined. Some were similar, at least in label, to the experimental services in other (usually earlier) studies. We analysed separately those studies in which the control condition was at least an initial period of hospitalisation. This is not always done in meta-analyses (see, for example, Tyrer and colleagues[7]), but our findings suggest it is justified when using days in hospital as an outcome measure (see below). The community-control group, however, comprised a range of control services, as reported above.

The problems of analysing such a heterogeneous group of studies were compounded by the limited availability of data. Only 57% of the studies yielded data that were usable in our meta-analysis, even with the intensive follow-up conducted. This is typical for Cochrane Reviews in this area, and severely limits generalisability. We chose to use a particular outcome measure – days in hospital. This is the most commonly collected hospitalisation measure, but not all the studies had collected it. We considered creating a proxy for hospitalisation from the range of different hospital measures reported (percentage of patients hospitalised; admissions; number in hospital at the end of the study period), which would have included more studies. This would have been a much cruder and less reliable measure, however, with no clear scaling, and would have been difficult to interpret.

Very few standard deviations were available for hospital days, either in the papers or directly from the authors. This further limited the generalisability of our findings because confidence intervals could not be placed around the differences in means found between experimental and control services. Cochrane Reviews include in their meta-analyses only outcome data for which standard deviations are available. We did not follow this policy, however, as this would have severely limited the number of studies we could include. We have included all studies for which data on hospital days were available, but with a serious caveat about the disadvantages of so doing.

It was not the aim of this review to perform separate analyses of, say, studies of programmes labelled 'ACT' versus those labelled 'case management', or of those labelled 'strengths case management' versus those described as outpatient treatment, since these labels are not clearly defined. The great number of studies that simply use the labels 'standard care' or 'usual services' for their control conditions would render this m/eaningless in many cases. Recent Cochrane Reviews have already performed analyses of some such areas, relying mainly on the labels given to services by authors. Our intention was to find a way of reviewing the whole area of 'home treatment'. We aimed to consider the feasibility of assessing its effectiveness and the extent to which it constitutes a distinct service model (page 51, 'Service classification'). The evidence concerning its effectiveness is at present not sufficient to answer the original research questions.

With the community-control studies (the majority of the studies in the review), the inadequacy of the evidence base is largely due to the fact that many studies use as their control conditions services that would themselves meet our criteria for 'home treatment', and which may also have been studied as experimental conditions, or that are simply not clearly defined. In pooling their results in our conventional meta-analysis, we were aware that all we could test was what difference studies had found between 'home treatment' services and the 'existing' services to which they had compared them. This militates against drawing any conclusions from the conventional meta-analysis of the community-control studies, which should be regarded instead as an intellectual exercise and is discussed as such below.

The meta-analysis of the inpatient-control studies was not affected by these difficulties to the same degree, as we knew that all the control services in the studies involved at least an initial period of inpatient treatment. It was limited, however, by the small number of such studies with appropriate available data. This may have been because inpatient-control studies were earlier studies on average, making follow-up of authors more difficult.

It is thus not possible for us to offer a robust meta-analysis of the studies in this review along conventional lines (pooling all their results for the outcome of reduction in hospitalisation). Indeed, questions could be raised about the value of meta-analysis in this area. The results we present are illustrative of the difficulties of the task and the inadequacy of the evidence base, and as such constitute an important finding. However, this review also offers an analysis of the study findings against service components and other variables (location of the study, year of publication and duration of follow-up). The attempt to determine whether such components as caseload size, contact frequency and home visiting were associated with a reduction in hospitalisation is unprecedented. None of these analyses (of components or of variables such as duration, year and location) are hampered by the lack of standard deviations, so that we have been able to place significance values on the associations found. The regressions using duration, year and location of study are limited by the range of service models used. However, the analyses of components are not limited by heterogeneity of studies. We were able to pose more focused research questions, based on the Delphi exercise, and use data reliably collected from the authors. In considering the community-control studies, we included only those for which the components were relevant to the control services (usually where they were CMHTs) and for which we had information on the control service components. The conclusions that can be drawn from this exercise, however, are limited: again, probably due to insufficient available data.

Days in hospital (conventional meta-analysis)

The difference in mean hospital days in favour of the experimental over the control services found by community-control studies was only a tiny proportion of that found by inpatient-control studies: 0.2 days per patient per month compared to 4.9. This confirms our hypothesis that studies where the control service involved an initial period of inpatient treatment would show greater differences in hospitalisation. This may have been exacerbated by the fact that the inpatient-control studies were significantly earlier than the community-control studies, so more likely to be conducted at a time when inpatient treatment was the norm and patients were less likely to be discharged quickly. Differences between locations are discussed on page 69.

Duration of follow-up

We had hypothesised that the duration of follow-up would have a greater impact on days in hospital when the control service was inpatient treatment (that is, with a guaranteed initial period in hospital). There were too few studies of this type, however, to test this hypothesis in a regression analysis of duration of follow-up against reduction in hospitalisation. When two studies of less than a year's duration and one of 2 years' duration were omitted from the analysis, the overall difference dropped by 2 days per patient per month.

The association between duration of study and days in hospital across community-control studies was highly significant. Studies with a longer duration of follow-up found smaller reductions in days in hospital (a difference of 0.6 fewer days per further year of follow-up). This might imply that the effect of the experimental service is diluted over time. Possibly, initial staff commitment to maintaining patients in the community fades. Alternatively, the difficulties of collecting data reliably over longer periods may lead to greater proportions of missing data, introducing random bias. This finding should be treated with caution because it used a range of heterogeneous studies. In the experimental services analysis, which used only experimental arm data, no significant association was found with the duration of follow-up.

Changes over time

In the comparative analysis, no significant association was found between the year of the study and reduction in hospitalisation, perhaps due to dividing up the studies depending on whether or not the control service was an initial period of inpatient treatment, and thus having insufficient numbers. In the experimental services analysis, however, experimental group patients were found to spend fewer days in hospital in earlier studies, as we had expected. The difference was only small, however: 0.9 days per patient per month for each 10 years later that the study was published. This finding should also be treated with caution because it used a range of heterogeneous studies. Moreover, the majority of studies for which we had usable data included studies from the 1990s, although some were published as early as 1973.

We do not therefore have robust evidence to confirm the hypothesis that later studies find smaller reductions in hospitalisation. The hypothesis that improving control services may account for smaller reductions in hospitalisation in later studies can also not be confirmed or refuted through this analysis. The analysis that found an association between year of publication and days in hospital (the experimental services analysis) was not only not robust, but had used only days in hospital in the experimental arm as its outcome measure, rather than the difference between the experimental and control arms.

Location

There was some suggestion that North American studies demonstrated greater reductions in hospitalisation than European ones, using their experimental services, but the evidence was not conclusive. In the comparative analysis, it was not possible to test the difference by location for inpatient-control studies due to small numbers of studies with available appropriate data. For community-control studies the difference was statistically significant, but clinically small: only about a day fewer in hospital per patient per month. This may reflect a greater disparity between the experimental and control services in North America compared with Europe. This finding should be treated with caution, however, as it may be confounded by the range of services included and the fact that services used as the experimental condition in some studies are used as the control condition in others. When we analysed all studies with available data, using only experimental condition data (the experimental services analysis), we found no significant difference in days in hospital between North American and European studies.

Service components

In the comparative analysis, no inpatient-control studies could be used to test for associations between service components and days in hospital due to the small numbers of studies with appropriate available data. The only components found to be significantly associated with reduced hospitalisation for community-control studies in this analysis were 'regularly visiting patients at home' and 'responsibility for both health and social care'.

Studies where only the experimental service took responsibility for both health and social care found a reduction of 1.6 more hospital days than studies where both services had those roles. This difference ceased to be statistically significant, however, when non-randomised studies were added. On the other hand, 'regularly visiting at home' was only significant when non-randomised study data were included, which may call the result into question. The difference in mean hospital days found by studies where only the experimental service regularly visited at home compared with where both services did, was about 0.6 fewer days per patient per month. Moreover, this service component is an unquantified one. The continuous measure associated with it, 'proportion of contacts delivered at home', was not significantly associated with the difference in days in hospital. Thus, while the hypothesis received confirmation, the difference is not very meaning-ful for service planning. 'Regularly visiting patients at home' could not be tested in the experimental services analysis because all the experimental services with available data said that they did regularly visit their patients at home.

There were insufficient data available for analysis of the difference in caseload size against the mean difference in hospital days between the experimental and control services. In the experimental services analysis, paradoxically, lower caseloads were actually associated with slightly increased days in hospital for experimental patients, although the magnitude of the difference was small (0.7 more days per patient per month for every ten patients removed from the caseload). Despite the small magnitude of this difference, this is a strikingly counter-intuitive finding. Most intensive community services have assumed that smaller caseloads lead to reduced inpatient care. Indeed, it was this conclusion from Stein and

Test's landmark study (Stein – Madison[11]) that fuelled much of the service and research activity.

Two explanations are possible. Smaller caseloads may enable clinicians to detect relapse more quickly, resulting in increased hospital use,[14] or to maintain contact with patients who might otherwise be lost to contact. Alternatively, it may be that services with smaller caseloads serve more severely ill people. This would not have been controlled for in this analysis, since it was based on experimental data alone rather than on randomised comparisons. We did make an attempt to adjust for 'high service use'. There were, however, insufficient data on hospital use prior to the study, so we were obliged to construct a proxy for high service use, incorporating a range of inclusion criteria from the studies. Studies that did not specify high service use as an inclusion criterion might have included patients whose hospital use was equal to those in the 'high service use' studies. Our attempt to adjust for services with smaller caseloads having more ill people in them was therefore limited. It made no difference to the result: caseload size was still negatively associated with hospital days. Overall, we do not have sufficient evidence to draw conclusions about the effect of working with smaller caseloads.

The lack of evidence for lower caseloads may be seen as supporting the Delphi participants' view that caseloads of less than 15 were not particularly important in successfully treating patients out of hospital (page 33, 'Caseload size'). Their view that caseloads of fewer than 25 **were** important is not tested in this review because most of the experimental services for which we had information had caseloads of fewer than 25.

Patient groups

Our findings are based primarily on studies where the majority of the patients suffered from psychotic illness. These findings should be extrapolated to services focused on neurotic patients only with caution. The few studies predominately of neurotic patients were included in the analysis to reflect our brief of reviewing studies of patients with 'mental health problems' rather than psychotic illness. Excluding them would have been problematic in any case, given that the studies predominately of psychotic patients sometimes included neurotic and other patient groups. The heterogeneity of patients, even in those studies where the majority suffered from psychotic illness, may be a weakness of the studies, which, where they lack stratified samples, may fail to detect significant impacts of services on specific subgroups of patients, limiting the reliable extrapolation of findings to these patients.

Impact of non-randomised studies

It was not a primary aim of this review to test the robustness of non-randomised studies in comparison to RCTs. In the event, the small number of prospective non-randomised studies with well-matched patient groups made this impossible. We had relatively few non-randomised studies with appropriate data to add to the analyses. Inevitably, their inclusion usually had little impact on the results. Where they did affect the results, however, it was often, though not always, in lessening their significance or reducing the magnitude of the finding. This is the opposite of what might be expected, since concerns are often raised that non-randomised studies may be more likely to detect bigger or significant differences. However, the numbers of non-randomised studies in these analyses were too small to draw any firm conclusions about their impact.

Chapter 7

Conclusions and recommendations

This review provides an overview of the range of studies of 'home treatment' services and assesses the current state of research into their effectiveness. Through a process of intensive follow-up, we supplemented the information available in the papers (published and unpublished) and retrospectively identified key service components, generated using a Delphi exercise. Through this process we also aimed to ascertain the sustainability of the services and their key components. We consider the main focus of this review to be these elements – review of the state of research, and characterisation and sustainability of the services – rather than the limited meta-analysis that was possible.

This review uses Cochrane methodology as its starting point, but builds on it in several ways. First, we chose not to include in our meta-analyses only studies for which we had standard deviations for the data on mean hospital days. This would have severely compromised the generalisability of the findings. It was our policy instead to include all studies for which we had data on mean hospital days, but to contextualise our findings in an understanding of the limitations of such a meta-analysis in this area. These limitations have been made clear, along with the implications of this for our findings. Secondly, we included high-quality non-randomised studies in our analyses, although always analysing the RCT findings separately too. The implications of this are discussed below. This review is also unprecedented in its attempt to test service components for their association with days in hospital. The conclusions that can be drawn from this, however, are limited.

Review of the state of research

We chose to review a broad area, 'home treatment' (defined as 'services that enable the patient to be treated outside hospital as far as possible and to remain in their usual place of residence'), in response to the movement of mental healthcare from the hospital to the community over the last three decades and the urgent need to provide an evidence base for further community mental health service provision. We found 91 studies, including non-randomised ones, conducted over a 30-year period. This is quite a large number for mental health services research. On the other hand, given that these studies need to provide the evidence base for crucial policy decisions, it might be seen as a relatively small number. Moreover, it might be expected that it would be possible to provide evidence for the effectiveness of home treatment from the findings of 91 studies, however heterogeneous. This is not the case.

Our finding that inpatient-control studies found a difference of nearly 5 days in hospital per patient per month in favour of home treatment (at 1 year) was open to question due to the difficulties of meta-analysis. Despite (or perhaps owing to) the huge influence of the pioneering studies moving mental healthcare into the community, there were relatively few studies comparing home treatment to inpatient treatment with appropriate available data for use in this analysis, so the finding was not based on many studies. Moreover, no statistical significance could be calculated owing to the lack of standard deviations. Nevertheless, if this finding is valid, its magnitude is extremely significant clinically. Its implications, however, are circular: it demonstrates that home treatment services result in patients spending less time in hospital than services that (at least initially) treat them in hospital.

For studies comparing a home treatment service to another (commonly the 'usual') community service, the heterogeneity of the control services used, the wide range of outcome measures, even for hospitalisation alone, and the limited availability of data, may all confound the attempt to ascertain effectiveness. The difference found between experimental and control services was close to zero.

While many individual studies may be of a high quality, the lack of uniformity of outcome measures (even for hospitalisation alone) militates against meta-analysis of their results in order to ascertain their generalisability. Many studies, moreover, had small sample sizes, giving them inadequate power to detect statistically significant outcome differences. Moreover, the 'Review of economic evaluations' (chapter 3) found that when authors themselves conducted tests of differences between control and experimental groups, the tests were not always appropriate.

Costs

This review attempted to evaluate the cost-effectiveness of home treatment by two complementary means: a review of economic evaluations (chapter 3) and the inclusion of service utilisation data in the larger analysis (chapter 6).

The review of economic evaluations undertook an evaluation of the subgroup of studies in this review that had published cost analyses. It was notable that only 22 of the 91 studies were found to have cost analyses adequate by the criteria used. It found the evidence in favour of home treatment in general to be largely inconclusive, due both to the heterogeneity of the included studies and to problems in study design such as sample size, protocol adherence, duration of follow-up, and difficulties with the choice of CEA in the majority of the studies.

Even when attempting to draw conclusions regarding the cost-effectiveness of a more specific service model such as ACT (the model in most of the studies for which there were cost analyses), drawing conclusions is hampered by inter-study variations in: location (including urban/rural); selection criteria; controls; service models; outcome measures; follow-up periods; and quality of analysis. Conclusions about the wider focus of this review, 'home treatment', are still more difficult to draw.

The analysis of service utilisation data attempted in chapter 6 aimed to complement the review of economic evaluations with a different approach. It aimed to combine service utilisation data, where available, from the full range of studies in order to mirror the meta-analyses (both more and less conventional) undertaken for the hospitalisation outcome. This process was severely hampered, however, by the lack of data available in the papers and from the authors. The conclusions that can be drawn from it are minimal as, again due to the lack of standard deviations available, the statistical significance of the only analyses that were possible cannot be measured.

Other outcomes

In this review we have not analysed outcomes other than days in hospital. We acknowledge that using hospitalisation as a proxy for clinical outcome is problematic but, for reasons given previously (page 3), it was the most feasible option. The studies also collected data on a wide range of clinical, social and other outcomes, but (as with hospitalisation outcomes) used a variety of forms and scales. Extrapolating from these results would be difficult.

Patient groups

The remit for this review was a widely defined patient group: people with 'mental health problems'. Despite the breadth of the search strategy, we found far more studies focusing on patients with severe mental illness and with psychotic illness: the vast majority of the studies (87 out of 91) were made up predominately of people with psychotic disorders. This was inevitable, given the loading of the research base at the 'severe' end of the spectrum of mental illness. The findings of our analysis should be extrapolated to patients with neurotic illness only with caution. Similarly, only a few studies tested home treatment services for other narrower patient groups such as homeless mentally ill people or people with severe mental illness and substance misuse. Within the subgroup of studies that had an economic evaluation, there was evidence in favour of ACT for homeless mentally ill people, but this was based on only two studies.

Carers

Only one of the economic evaluations reviewed included costs for relatives and carers, perhaps due to difficulties in measuring the effects of treatment on carer well-being and in valuing time-savings. We did not analyse carer-related outcomes for the whole pool of studies, but it is possible to comment on carer support on the basis of this review.

The role of carers and relatives was identified as important in the Delphi exercise. This may reflect the growing awareness of their needs of which 'The National Service Framework for mental health'[79] gives evidence. The National Service Framework recommends that carers of the severely mentally ill be seen by keyworkers every year for an assessment of their caring, physical and mental health needs and have their own care plan. It is less clear, however, how carers are to be identified and exactly what their care plans are to involve. This may be mirrored in the findings of the Delphi exercise, which rated 'support for carers' and 'attention to the needs of informal carers' as very important, but identified few specific ideas for supporting them and rated these ideas only as 'important', rather than 'very important' or 'essential' (page 34, 'Carers').

Results from the UK700 trial suggest that even intensive services rarely see carers as often as the National Service Framework stipulates.[105] Although we did not analyse carer contact across the studies in our review, we can comment on the proportion of the services that had a 'protocol for meeting the needs of carers'. Only 24% of the authors who responded to our follow-up said that their experimental service had such a protocol during the period under study. Of the control services whose authors had the information, only 7% had a protocol. More of the experimental services still in operation (as at February 2000) had a carer protocol, but still only a minority (35%). Moreover, we cannot comment on the specificity of such protocols in detailing the support to be offered to the carers. Our review did not survey current 'home treatment' services, and it is not clear how representative the 29 services still in operation are of current practice. Nevertheless, it seems likely that most services do not have a formal protocol for meeting carer needs.

Non-randomised studies

The possibility that RCTs may not necessarily be generalisable to the 'real world' of service provision has been discussed earlier (page 2). It may be that this problem could be addressed by high-quality non-randomised (observational) studies. This review, however, highlights some of the problems involved in seeking evidence from such studies. The diffi-culties associated with searching for non-randomised studies have been discussed above. We found far fewer non-randomised studies than RCTs (35 compared to 56), and only one of these included an economic evaluation. The non-randomised studies found also included retrospective studies and studies of groups that were not similar at baseline, reducing the number appropriate for analysis. This imbalance was then compounded by the relatively poor response rate of non-randomised study authors to our follow-up survey (only a third responded). Including the few non-randomised studies in our analyses had little impact on the findings and gives rise to no definite conclusions. The issue of the reliability of non-randomised study findings warrants further investigation. It should also be noted that alternative solutions have been proposed, such as 'pragmatic' RCTs.[106]

Location

There were some differences between North American and European studies with respect to team composition. North American services operated significantly longer hours and made contact with their patients more often. Neither of these features was itself associated with a difference in days in hospital, however. It is unlikely that these differences between the two locations account for the significant difference found in hospitalisation, the magnitude of which was only 1 day per patient per month.

The two groups tested were dominated by US and UK studies, with few studies from Canada or elsewhere in Europe. Of the 22 economic evaluations, all but one (Fenton – Montreal[56]) were from these two countries. There were very few studies from outside North America and Europe, and for this reason their results could not be used in either our descriptive or our meta-analyses to test the effect of location. The meagre number of studies from other areas may have been due to an English language bias in our methodology. Nevertheless, it is a cause for concern that so little is known about home treatment services outside of the USA and UK.

Service components and classification

There was no evidence for the service components changing over time, in either the experimental or the control services, with the exception of the percentage of contacts at home, which had increased for control services over time. It was not possible to provide a new taxonomy of services on the basis of our retrospective characterisation of services in terms of these components. We would recommend, however, that they be used prospectively in future.

'Home treatment service' is defined broadly as the inclusion criterion for this review. On the strength of the Delphi, however, we also looked at service components that imply a more focused definition of home treatment, namely 'explicit home treatment function', 'regularly visit[ing] patients at home' and 'percentage of contacts made at home'. Having a 'home treatment function' and 'regularly visit[ing] patients at home' turned out to be virtually synonymous and to be loosely associated with being a multidisciplinary team, having psychiatrists as integrated team members, having smaller caseloads and taking responsibility for both health and social care. These components thus comprise a more tightly defined 'home treatment' service.

Among leading UK psychiatrists, opinion on the merits of 'home treatment' according to the narrower definition was mixed (page 35). Our analysis, however, found that services that regularly visited patients at home achieved significantly greater reductions in days in hospital than services that did not (when we considered community-control studies alone). There was also some evidence that taking responsibility for both health and social care was associated with reduced hospitalisation. However, there was no evidence that multidisciplinarity, having a 'home treatment function', smaller caseloads, or greater proportions of contacts delivered at home were individually associated with reduced hospitalisation. While there is some evidence for a distinct model of home treatment comprised of these components, the evidence base for its effectiveness is clearly inadequate.

Sustainability of home treatment services

Only a quarter of the services whose authors responded to follow-up – likely to represent less than a quarter overall – were still enduring in approximately their original form, without having dropped their 'innovative' features.

Only half of the responding authors reported that the services were still running at all. For those services, the components identified through follow-up had largely not changed in most cases. Where services endured, therefore, they are likely to have retained the components identified through our Delphi exercise as central to community-based care. This may be because our components had been generated from an exercise (the Delphi) ascertaining what psychiatrists currently consider to be important to community-based services. By contrast, the services were less likely to have retained specific individual features that marked them out as innovative at the time of inception. Overall, such innovative features seem short-lived. Many of them were no longer perceived as useful, however, so that the changes were seen as being part of service evolution.

Nevertheless, the sustainability of home treatment services as a whole does not seem to have been high. The fact that finding a significant reduction in hospitalisation was significantly associated with still being operational suggests that studies having non-significant results may lead to disbanding of the experimental service. This trend, however, might also be due to the innovative nature of the experimental services studied. We did not ascertain how long each service had been operational before the study began, but this would be a useful area for future research. Moreover, many of the services tested in earlier studies were used as controls later on, when they had become standard practice. We did not collect components for the control services currently, anticipating insurmountable difficulties with the changing nature of 'standard care', although it would have been interesting to do so. We did find, however, that control services in more recent studies were more likely to make higher proportions of contacts with patients in their homes. There is thus some evidence to suggest that some components originally found in innovative services gradually become standard practice.

Cochrane reviews

The present review complements the work of four existing Cochrane reviews: ACT (Marshall and Lockwood[6]), Case Management (Marshall and colleagues[5]), CMHTs (Tyrer and colleagues[7]) and Crisis Intervention (Joy and colleagues[8]). Here we briefly outline the differences between our approach and findings and theirs.

Assertive community treatment[6]

This review included studies of services labelled ACT, assertive Case Management, PACT or as based on the Madison, TCL, ACT or Stein and Test models. It divided up the analysis on the basis of whether the control service was 'standard care', 'hospital-based rehabilitation' or 'case management'. The separate treatment of hospital-based rehabilitation matches ours of inpatient-control studies. The further division of controls into 'standard' care and Case Management, however, contrasts with our analysis. We avoided using labels given to services as the basis for subanalysis and this is in contrast with the inclusion criteria used in this ACT review for both experimental services and non-hospital controls. The ACT review thus looks at a subset of the studies in our home treatment review, selected by different means. For these studies, they found ACT reduced days in hospital. For other outcomes, they reported a range of measures collected and a great deal of data that were of insufficient quality for analysis. ACT was superior on a few measures (such as employment and accommodation status), but for most clinical and social outcomes there were either insufficient high-quality data or no significant differences were found. Despite this, the authors conclude that ACT is "clinically effective" and should become the service of preference over Case Management. While ACT was cheaper than the alternatives in terms of hospital costs, Case Management was actually cheaper in terms of total costs. The overall cost-effectiveness of the two is by no means clear from this analysis.

While the present authors would endorse the recommendation of the ACT review that a clear distinction be made between ACT and other community-based service models, this is not robustly achieved by the ACT review. Contrary to received wisdom, ACT has not been clearly and robustly defined; the ACT review has not tested only studies of 'the whole model' for this reason, and because the labels applied to the studied services are simply taken on trust.

Case management[5]

Again using the labels given by authors to the services, this reviews 11 studies comparing 'case' or 'care management' to 'standard care', excluding ACT and 'home-based care' (by a different definition to that used here). It found some evidence that patients in Case Management were more likely to remain in contact with psychiatric services, and found that they were twice as likely to be admitted to hospital. Since these two features may well be related, the analysis of duration of hospital stay is potentially more useful. Only six studies, however, had appropriate data. Four of these suggested that length of stay was longer for Case Management patients, but the authors admit that they cannot reach definitive conclusions on this subject without recourse to individual patient data. For clinical and social outcomes, there were again no significant differences, or insufficient data. The data on costs were also inconclusive. It suggested that Case Management increases healthcare costs but slightly reduces total costs.

Community mental health teams[7]

Studies of CMHT care, defined to exclude ACT and Case Management, were reviewed, and only five studies were included. Data on hospitalisation were inconclusive: while duration of admission was less for experimental patients in each study, distribution of the data was unclear; for admissions, the data were significantly heterogeneous due to one study (Hoult – Sydney) – perhaps a result of analysing inpatient-control and community-control studies together. Data suggested that more CMHT patients than controls were satisfied with care and stayed in the studies, but there were no clear differences for clinical and social outcomes, which were recorded using different scales or could not be analysed due to lack of standard deviations. Interpretation of the cost data was problematised by skewed data, although there was a suggestion that the total care costs were lower for CMHT patients.

Crisis intervention[8]

This review defined 'crisis intervention' as "any crisis-oriented treatment … by staff with a specific remit ... in and beyond 'office hours' ". In practice, this was always combined with a home care package, so that the review's findings cannot be attributed to crisis intervention alone. Only five studies were included, including one (Pasamanick – Ohio[18]) considered to have flawed randomisation in the present review. The criterion that services must operate out-of-hours was problematic. Three studies were described as having on-call staff 24 hours a day, but the remaining two had only answering machines referring patients to the hospital emergency clinic or the police. Our detailed follow-up of authors, however, revealed a different picture. Only one of these three confirmed that they had operated 24 hours a day; one said they had operated 14 hours on weekdays, although it was a 7-day service with a 'specific crisis element'; the third said it did not have a 'specific crisis element' and operated 7 days a week, but for 15 hours per weekday. While all thus operated 'out of hours', they cannot be said to be '24-hour' services, as claimed.

This information was not available to the Cochrane reviewers. It demonstrates, however, the disparity between service details reported (and summarised) in published papers and the reality of actual practice during the studies. This and the fact that two of the five services did not in effect operate 'out of hours' at all (as the Cochrane authors admit) throws the conclusions of the review into some doubt.

The reviewers reported a wealth of non-validated outcome scales. They did not compare admissions because the studies were all inpatient-control and the controls therefore had an index admission. In comparing repeat admissions there was a 'slightly significant' difference, but significant heterogeneity. No differences were found in global state or mental state, but the experimental patients were more satisfied overall and less family 'burden' was reported. The reporting of cost data was problematic and no definite conclusions could be drawn from it, although the experimental care packages seemed to be cheaper.

In summary, the present review is intended in part to complement these four Cochrane reviews by analysing the data in a different way and avoiding the problems created by division of the field into narrower service models on the basis of poor definitions. Our intensive follow-up yielded information that not only provided a way of comparing all the studies in this field, but also directly contradicted the categorisation and description of services in one of the existing reviews. Scrutiny of the Cochrane reviews also reveals the same problems with heterogeneity of outcome measures, poor quality data and absence of standard deviations as we report here. Both are illustrative of this field of mental health research. For this reason, the Cochrane reviewers, despite analysing narrower subject areas, were able to find only a few statistically significant results, based on fewer studies. While their findings have been formative of mental health service planning and continue to provide useful information, the present review should be seen as complementary to them in providing an alternative approach, as well as underlining the lack of clarity which has so far been achieved in home treatment research.

Recommendations

Research recommendations

- coordinated research strategy, nationally driven
- economics evaluations to be included in studies, reporting health and social service utilisation
- service components to be collected and reported for both experimental and control services
- studies to be designed with adequate statistical power
- multicentre studies
- studies to be designed with longer duration of follow-up
- comparable measures to be used, to facilitate meta-analysis
- instrument for measuring mental health-related quality of life should be developed
- subanalysis for different patient groups to be performed
- study protocols should be adhered to
- independent researchers to conduct studies
- no further studies of home treatment compared to inpatient admission
- no further localised replications of more highly powered studies.

Recommendations for commissioners

There is not yet a strong evidence base in the area of home treatment for mental health problems, particularly in the UK. This highlights the need for further research into home treatment. The inadequacy of the evidence base affects economic conclusions as well as clinical ones.

Scope of future research: economic studies

We would recommend that future studies include economic evaluations that are comprehensive in their approach to care, reporting utilisation of both health and social care services, as well as the input of other agencies and user and carer costs. Further research should also be directed towards the development of an instrument that can be broadly applied to measure improvements in mental health-related quality of life. Techniques such as conjoint analysis should then be used to generate a system of valuations applicable to changes in health status measured by this instrument. The appropriateness of using long-run marginal cost estimates should be more closely examined in future economic studies in order to value any reduction in inpatient stay appropriately. Further research should be directed into the appropriate valuation of reduced congestion within the inpatient system. We would also encourage further work on appropriate analytical techniques for economic data.

Study design

It is clear that the days of funding small, localised studies of existing service models (replicating more highly powered existing studies) should now be over, except for the purposes of audit. They remain valid, however, for innovative services. In severe mental illness in particular, mental health evaluations must be sufficiently powered to take account of the positive skew on inpatient and cost outcomes. Multisite studies may be a solution to this problem. Resources should be directed towards studies that convincingly demonstrate adequate statistical power; we would recommend that prospective power calculations become the norm, allowing for relatively high attrition rates. Studies should also be designed with a longer duration of follow-up in order to evaluate longer-term effectiveness robustly, and with comparable measures and methodologies.

In order to test the effectiveness of home treatment for different patient groups, more studies should be conducted into specific diagnostic groups, or *a priori* subanalyses performed.

Most studies of home treatment are reported by the clinicians who run the services. Our review attempted to control for the enthusiasm of the experimental team by analysing all experimental services against each other (experimental services analysis). Nevertheless, it would be appropriate for independent research experts, rather than the providing clinicians, to test mental health services in future.

The National Service Framework recommends that there be more government direction of research in the NHS. The findings of the present review would seem to support this view. At present, small pieces of research may add little to the overall picture. A nationally driven coordinated research strategy is advisable, allowing both for prioritisation of subject and for overall standards for methodological rigour.

Home treatment services achieved fewer days in hospital than services involving at least an initial period of inpatient treatment (inpatient-control studies). Although such studies were likely to be earlier, there were some recent examples. We recommend that studies of home treatment compared with admission are no longer initiated, at least where hospitalisation is used as an outcome measure.

Service components

In the short-term, defining service components will allow for more meaningful prospective comparison between services and studies. Studies should routinely collect information on service components. We would suggest that the components used in this review (as identified in the Delphi exercise) be recorded prospectively. This approach should replace that of analysing services according to their label (both in individual evaluations and in reviews), which up to now has necessarily been the only option. In the longer-term, the description of certain key components of care offered by a service should offer the possibility of a new taxonomy of services around which future research may be based.

It is recommended that control services in studies also be clearly defined. In reviews, studies using inpatient treatment as the control should be analysed separately from those using other services. Adherence to the service protocol should also be measured.

Implications for clinicians

This review does not give rise to many implications for clinicians. The evidence suggests, however, that visiting patients at home regularly and taking responsibility for both health and social care may each reduce hospitalisation for severely mentally ill patients. These findings should be extrapolated to all patients with mental health problems only with caution. These components were loosely associated with having multidisciplinary teams, psychiatrists as integrated team members and small caseloads, but this was not a cohesive group of components. We cannot provide evidence that the other components are individually associated with reduced hospitalisation.

Other recommendations for clinicians cannot be made on the basis of the evidence from this review. Comparing home treatment services to admission, unsurprisingly, showed that the former were superior in reducing hospital days. When comparing home treatment to other community-based services, no evidence can be provided on their overall effectiveness.

Expert psychiatrists' opinions ascertained in the Delphi exercise supported flexible working hours across 7 days rather than 24-hour services, and caseloads under 25 rather than under 15. This was supported by our analysis, which found no evidence supporting lower caseloads (within a limited range) and no correlation between hours of operation and hospitalisation. The Delphi panel considered home visiting to be essential, which was supported by our findings, but was not strongly in favour of teams specifically dedicated to home treatment or crisis care. They recognised skill-mix on teams as essential, with psychiatrists 'integrated' in multidisciplinary teams, along with good management and organisation.

Implications for consumers

This review does not give rise to many implications for consumers of mental health services due to the lack of a strong evidence base. It seems, however, that home treatment services that visit patients at home regularly and those that take responsibility for both health and social care are more effective in reducing days spent in hospital.

Our Delphi exercise showed that expert psychiatrists in this field thought that visiting a patient in his/her home or home environment was essential for the patient's care, and that teams should attend to social needs such as housing and finance as well as to clinical ones. They also considered support for relatives and carers to be important. The evidence of our review, however, is that only a small proportion of home treatment services currently have an established protocol for addressing carers' needs.

Acknowledgements

This study was commissioned by the NHS R&D Health Technology Assessment Programme, project number 97/27/02.

The authors should like to thank Clive Adams of the CSG for his advice concerning the design of this review, and for invaluable training of researchers in Cochrane methodology. We should also like to thank Martin Bland for statistical advice, Rachel Churchill and Steve Milan for advice on methodology, and Sarajane Bhattachary and Adelina Comas for research support.

The authors are very grateful to the following for their participation in the Delphi exercise: Tom Craig, Frank Holloway, Andrew Kent, David Kingdon, Max Marshall, Matt Muijen, Mike Phelan, Geraldine Strathdee, George Szmukler, Graham Thornicroft, Peter Tyrer and Tom Burns.

Finally, we are indebted to the referees for their meticulous reading of the report and for their many helpful comments.

The views expressed in this report are those of the authors, who are also responsible for any errors.

References

1. Scott JE, Dixon LB. Assertive community treatment and case management for schizophrenia. *Schizophr Bull* 1995;**21**:657–67.

2. Kluiter H. Inpatient treatment and care arrangements to replace or avoid it – searching for an evidence-based balance. *Curr Opin Psychiatry* 1997;**10**:160–7.

3. McGrew JH, Bond GR. Critical ingredients of assertive community treatment: judgements of the experts. *J Ment Health Adm* 1995;**22**:113–25.

4. Teague GB, Bond GR, Drake RE. Program fidelity in assertive community treatment: development and use of a measure. *Am J Orthopsychiatry* 1998;**68**:216–32.

5. Marshall M, Gray A, Lockwood A, Green R. Case management for people with severe mental disorder. The Cochrane Library. Oxford: Update Software; 1997.

6. Marshall M, Lockwood A. Assertive community treatment for people with severe mental disorders. The Cochrane Library. Oxford: Update Software; 1998.

7. Tyrer P, Coid J, Simmonds S, Joseph P, Marriott S. Community mental health teams for people with severe mental illnesses and disordered personality. The Cochrane Library. Oxford: Update Software; 1998.

8. Joy CB, Adams CE, Rice K. Crisis intervention for people with severe mental illnesses. The Cochrane Library. Oxford: Update Software; 1998.

9. Fenton FR, Tessier L, Struening EL. A comparative trial of home and hospital psychiatric care. One-year follow-up. *Arch Gen Psychiatry* 1979;**36**:1073–9.

10. Hoult J, Reynolds I, Charbonneau Powis M, Weekes P, Briggs J. Psychiatric hospital versus community treatment: the results of a randomised trial. *Aust N Z J Psychiatry* 1983;**101**:160–7.

11. Stein LI, Test MA. Alternative to mental hospital treatment: I. Conceptual model, treatment program, and clinical evaluation. *Arch Gen Psychiatry* 1980;**37**:392–7.

12. Holloway F, Oliver N, Collins E, Carson J. Case management: a critical review of the outcome literature. *Eur Psychiatry* 1995;**10**:113–28.

13. Burns T, Fahy T, Thompson S, Tyrer P, White I. Intensive case management for severe psychotic illness: authors' reply. *Lancet* 1999;**354**:1385–6.

14. Rössler W, Löffler W, Fätkenheuer B, Riecher-Rössler A. Does case management reduce the rehospitalization rate? *Acta Psychiatr Scand* 1992;**86**:445–9.

15. Mulrow CD, Oxman A, editors. How to conduct a Cochrane systematic review. San Antonio Cochrane Collaboration; 1997. Version 3.0.2.

16. MacLehose RR, Reeves BC, Harvey IM, Sheldon TA, Russell IT, Black AMS. A systematic review of comparisons of effect sizes derived from randomised and non-randomised studies. *Health Technol Assess* 2000;**4**(34).

17. Coid J. Failure in community care: psychiatry's dilemma. *BMJ* 1994;**308**:805–6.

18. Pasamanick B, Scarpitti FR, Frank R, Lefton M, Dinitz S, Wernert JJ, *et al.* Home vs hospital care for schizophrenics. *JAMA* 1964;**187**:177–81.

19. Weinman B, Sanders R, Kleiner R, Wilson S. Community based treatment of the chronic psychotic. *Community Ment Health J* 1970;**6**:13–21.

20. Curtis JL, Millman EJ, Struening E, D'Ercole A. Effect of case management on rehospitalization and utilization of ambulatory care services. *Hosp Community Psychiatry* 1992;**43**:895–9.

21. Herinckx HA, Kinney RF, Clarke GN, Paulson RI. Assertive community treatment versus usual care in engaging and retaining clients with severe mental illness. *Psychiatr Serv* 1997;**48**:1297–306.

22. De Cangas JPC. Le 'case management' affirmatif: une evaluation complete d'un programme du genre en milieu hospitalier. [Assertive case management: a comprehensive evaluation of a hospital based case management programme.] *Sante Ment Que* 1994;**19**:75–92.

23. Hu X, Xiong W, Fei L, Wang R. Comprehensive family treatment for schizophrenic patients: a prospective, randomised, single-blind control trial of 63 patients. *Chin Ment Health J* 1994;**8**:210–15.

24. Kluiter H, Giel R, Nienhuis FJ, Ruphan M, Wiersma D. Predicting feasibility of day treatment for unselected patients referred for inpatient psychiatric treatment: results of a randomized trial. *Am J Psychiatry* 1992;**149**:1199–205.

25. Otero V, Rebolledo S. Evaluacion de un programa de rehabilitacion psiquiatrica. [Assessment of a psychiatric rehabilitation program.] *Psiquis* 1993;**14**(6–8):273–80.

26. Van Minnen A, Hoogduin CA, Broekman TG. Hospital vs. outreach treatment for patients with mental retardation and psychiatric disorders: a controlled study. *Acta Psychiatr Scand* 1997;**95**:515–22.

27. Marx A, Stein L, Test A. Extrohospital management of severe mental illness. *Arch Gen Psychiatry* 1973;**29**:505–11.

28. Drummond MF, O'Brien B, Stoddart GL, Torrance G. Methods for the economic evaluation of health care programmes. Oxford: Oxford University Press; 1997.

29. Williams A. Economics of coronary artery bypass grafting. *BMJ* 1985;**291**:326–9.

30. Torrance GW. Measurement of health state utilities for economic appraisal. *J Health Econ* 1986;**5**:1–30.

31. Chisholm D, Healey A, Knapp M. QALYs and mental health care. *Soc Psychiatry Psychiatr Epidemiol* 1997;**32**:68–75.

32. Gater R, Goldberg D, Jackson G, Jennett N, Lowson K, Ratcliffe J, *et al.* The care of patients with chronic schizophrenia: a comparison between two services. *Psychol Med* 1997;**27**:1325–36.

33. Gournay K, Brooking J. The community psychiatric nurse in primary care: an economic analysis. *J Adv Nurs* 1995;**22**:769–78.

34. Merson S, Tyrer P, Carlen D, Johnson T. The cost of treatment of psychiatric emergencies: a comparison of hospital and community services. *Psychol Med* 1996;**26**:727–34.

35. Knapp MR, Marks IM, Wolstenholme J, Beecham JK, Astin J, Audini B, *et al.* Home-based versus hospital-based care for serious mental illness: controlled cost-effectiveness study over four years. *Br J Psychiatry* 1998;**172**:506–12.

36. McCrone P, Beecham J, Knapp M. Community psychiatric nurse teams: cost-effectiveness of intensive support versus generic care. *Br J Psychiatry* 1994;**165**:218–21.

37. Mangen SP, Paykel BS, Griffith JH, Burchell A, Mancini P. Cost-effectiveness of community psychiatric nurse on out-patient psychiatric care of neurotic patients. *Psychol Med* 1983;**13**:407–16.

38. McCrone P, Thornicroft G, Phelan M, Holloway F, Wykes T, Johnson S. Utilisation and costs of community mental health services. PRiSM Psychosis Study 5. *Br J Psychiatry* 1998;**173**:391–8.

39. Tyrer P, Evans K, Gandhi N, Lamont A, Harrison RP, Johnson T. Randomised controlled trial of two models of care for discharged psychiatric patients. *BMJ* 1998;**316**:106–9.

40. UK700 Group. Cost-effectiveness of intensive v. standard case management for severe psychotic illness: UK700 case management trial. *Br J Psychiatry* 2000;**176**:537–43.

41. Wilkinson G, Piccinelli M, Falloon I, Krekorian H, McLees S. An evaluation of community-based psychiatric care for people with treated long-term mental illness. *Br J Psychiatry* 1995;**167**:26–37.

42. Wykes T, Leese M, Taylor R, Phelan M. Effects of community services on disability and symptoms. PRiSM Psychosis Study 4. *Br J Psychiatry* 1998;**173**:385–90.

43. Becker T, Holloway F, McCrone P, Thornicroft G. Evolving service interventions in Nunhead and Norwood. PRiSM Psychosis Study 2. *Br J Psychiatry* 1998;**173**:371–5.

44. Leese M, Johnson S, Slade M, Parkman S, Kelly F, Phelan M, *et al.* User perspective on needs and satisfaction with mental health services. PRiSM Psychosis Study 8. *Br J Psychiatry* 1998;**173**:409–15.

45. Taylor R, Leese M, Clarkson P, Holloway F, Thornicroft G. Quality of life outcomes for intensive versus standard community mental health services. PRiSM Psychosis Study 9. *Br J Psychiatry* 1998;**173**:416–22.

46. Thornicroft G, Wykes T, Holloway F, Johnson S, Szmukler G. From efficacy to effectiveness in community mental health services. PRiSM Psychosis Study 10. *Br J Psychiatry* 1998;**173**:423–7.

47. Knapp M, Beecham J, Koutsogeorgopoulou V, Hallam A, Fenyo A, Marks IM, *et al.* Service use and costs of home-based versus hospital-based care for people with serious mental illness. *Br J Psychiatry* 1994;**165**:195–203.

48. Barber J, Thompson S. Analysis and interpretation of cost data in randomised controlled trial: a review of published studies. *BMJ* 1998;**317**:1195–200.

49. Sturm R, Unutzer J, Katon W. Effective research and implications for study design: sample size and statistical power. *Gen Hosp Psychiatry* 1999;**21**:274–83.

50. Thompson S, Barber JA. How should cost data in pragmatic randomised trials be analysed? *BMJ* 2000;**320**:1197–200.

51. Bond GR, Miller LD, Krumwied RD, Ward RS. Assertive case management in three CMHCs: a controlled study. *Hosp Community Psychiatry* 1988;**39**:411–18.

52. Chandler D, Meisel J, Hu TW, McGowen M, Madison K. Client outcomes in a three-year controlled study of an integrated service agency model. *Psychiatr Serv* 1996;**47**:1337–43.

53. Coates DB, Kendall LM, McCurdy EA. Evaluating hospital and home treatment for psychiatric patients. A one-year follow-up. *Can Ment Health* 1976;**24**:28–32.

54. Clark RE, Teague GB, Ricketts SK, Bush PW, Xie H, McGuire TG, *et al.* Cost-effectiveness of assertive community treatment versus standard case management for persons with co-occurring severe mental illness and substance use disorders. *Health Serv Res* 1998;**33**:1285–308.

55. Essock SM, Frisman LK, Kontos NJ. Cost-effectiveness of assertive community treatment teams. *Am J Orthopsychiatry* 1998;**68**:179–90.

56. Fenton FR, Tessier L, Contandriopoulos AP, Nguyen H, Struening EL. A comparative trial of home and hospital psychiatric treatment: financial costs. *Can J Psychiatry* 1982;**27**:177–87.

57. Jerrell JM. Towards managed care for persons with severe mental illness: implications from a cost-effectiveness study. *Health Aff* 1995;**14**:197–207.

58. Jerrell JM. Towards cost-effective care for persons with dual diagnosis. *Cost-effective Care* 1996;**23**:329–37.

59. Lehman AF, Dixon L, Hoch JS, Deforge B, Kernan E, Frank R. Cost-effectiveness of assertive community treatment for homeless persons with severe mental illness. *Br J Psychiatry* 1999;**174**:346–52.

60. McGurrin MC, Worley N. Evaluation of intensive case management for seriously and persistently mentally ill persons. *J Case Manag* 1993;**2**:59–65.

61. Rosenheck R, Neale M. Cost-effectiveness of intensive psychiatric community care for high users of inpatient services. *Arch Gen Psychiatry* 1998;**55**:459–65.

62. Weisbrod BA, Test MA, Stein LI. Alternatives to mental hospital treatment: II. Economic benefit cost analysis. *Arch Gen Psychiatry* 1980;**37**:400–5.

63. Wolff N, Helminiak TW, Morse GA, Calsyn RJ, Klinkenberg WD, Trusty ML. Cost-effectiveness evaluation of three approaches to case management for homeless mentally ill clients. *Am J Psychiatry* 1997;**154**:341–8.

64. Knapp M. Community mental health services: towards an understanding of cost-effectiveness. In: Creed F, Tyrer P, editors. Evaluation of community psychiatric services. Cambridge: Cambridge University Press; 1995. p. 111–45.

65. Claxton K. The irrelevance of inference: a decision-making approach to the stochastic evaluation of health care technologies. *J Health Econ* 1999;**18**:341–64.

66. Hanley N, Wright RE, Adamowicz V. Using choice experiments to value the environment: design issues, current experience and future prospects. *Environ Resource Econ* 1998;**11**(3–4):413–28.

67. Ryan M. Using conjoint analysis to take account of patient preferences and go beyond health outcomes: an application to *in vitro* fertilisation. *Soc Sci Med* 1998;**48**:535–46.

68. Healey A, Chisholm D. Willingness to pay as a measure of the benefits of mental health care. *J Ment Health Policy Econ* 1999;**2**:55–8.

69. Knapp M, Beecham J. Reduced list costings: examination of an informed short cut in mental health research. *Health Econ* 1993;**2**:313–22.

70. Greene WH. Econometric analysis. New York: McMillan; 1991.

71. Gibbons R, Hedeker D, Elkin I, Waternaux C, Kraemer HC, Greehouse JB, *et al.* Some conceptual and statistical issues in analysis of longitudinal psychiatric data. *Arch Gen Psychiatry* 1993;**50**:739–50.

72. O'Brien BJ, Drummond MF, Labelle RJ, Willan A. In search of power and significance: issues in the design and analysis of stochastic cost-effectiveness studies in health care. *Med Care* 1994;**32**:150–63.

73. Waaker P, Klaassen MP. Confidence intervals for cost/effectiveness ratios. *Health Econ* 1995;**4**:373–81.

74. Chaudhary MA, Stearns SC. Estimating confidence intervals for cost-effectiveness ratios: an example from a randomised controlled trial. *Stat Med* 1996;**15**:1447–58.

75. Polsky D, Glick HA, Willke R, Schulman K. Confidence intervals for cost-effectiveness ratios: a comparison of four methods. *Health Econ* 1997;**6**:243–52.

76. Linstone HA, Turoff M. The Delphi method: techniques and applications. Reading (MA): Addison-Wesley Publishing Company; 1975.

77. Fiander M, Burns T. Essential components of schizophrenia care: a Delphi approach. *Acta Psychiatr Scand* 1998;**98**:400–5.

78. Fiander M, Burns T. A Delphi approach to describing service models of community mental health practice. *Psychiatr Serv* 2000;**51**:656–8.

79. Department of Health. The National Service Framework for mental health. London: DoH; 1999.

80. Netten A, Dennett J, Knight J. Unit costs of health and social care. Canterbury: Personal Social Services Research Unit, University of Kent; 1999.

81. Knapp M. Costs of schizophrenia. *Br J Psychiatry* 1997;**171**:509–18.

82. Godley SH, Sabin MC, McClure C, Smerken M, Manion L. Paid friends for frequent recidivists: an evaluation of a multifaceted community aide program. *Psychosoc Rehabil J* 1988;**11**(3):29–39.

83. Jerrell JM, Ridgely MS. Comparative effectiveness of three approaches to serving people with severe mental illness and substance abuse disorders. *J Nerv Ment Dis* 1995;**183**:566–76.

84. Wood PA, Hurlburt MS, Hough RL, Hofstetter CR. Longitudinal assessment of family support among homeless mentally ill participants in a supported housing program. *J Community Psychol* 1998; **26**:327–44.

85. Drake RE, McHugo GJ, Clark RE, Teague GB, Xie H, Miles K, *et al.* Assertive community treatment for patients with co-occurring severe mental illness and substance use disorder: a clinical trial. *Am J Orthopsychiatry* 1998;**68**:201–15.

86. Holloway F, Carson J. Intensive case management for the severely mentally ill. Controlled trial. *Br J Psychiatry* 1998;**172**:19–22.

87. Jerrell JM, Hu T. Cost-effectiveness of intensive clinical and case management compared with an existing system of care. *Inquiry* 1989;**26**:224–34.

88. Korr WS, Joseph AL. Housing the homeless mentally ill: findings from Chicago. *J Soc Serv Res* 1995;**21**:53–68.

89. McFarlane WR, Stastny P, Deakins S. Family-aided assertive community treatment: a comprehensive rehabilitation and intensive case management approach for persons with schizophrenic disorders. *New Dir Ment Health Serv* 1992;**53**:43–54.

90. Muijen M, Marks I, Connolly J. Home-based care and standard hospital care for patients with severe mental illness: a randomised control trial. *BMJ* 1992;**304**:749–54.

91. Solomon P, Draine J, Meyerson A. Jail recidivism and receipt of community mental health services. *Hosp Community Psychiatry* 1994;**45**:793–7.

92. Burns T, Creed F, Fahy T, Thompson S, Tyrer P, White I, for the UK700 Group. Intensive versus standard case management for severe psychotic illness: a randomised trial. *Lancet* 1999;**353**:2185–9.

93. Christensen AB, Rasmussen EM, Brodsgaard MA, Westergaard H, Dahl O, Magelund CG. Sengedagsforbruget for patienter tilknyttet Distriktspsykiatrisk Center i Svendborg. En kontrolleret undersogelse. [A controlled investigation of the bed-day employment for patients connected with the District Psychiatric Centre in Svendborg.] *Ugeskr Laeger* 1992;**154**:1703–8.

94. Bond GR, Witheridge TF, Dincin J, Wasmer D, Webb J, De Graaf-Kaser R. Assertive community treatment for frequent users of psychiatric hospitals in a large city: a controlled study. *Am J Community Psychol* 1990;**18**:865–91.

95. Ford R, Ryan P, Beadsmoore A, Craig T, Muijen M. Intensive case management for people with serious mental illness – Site 2: clinical and social outcome. *J Ment Health* 1997;**6**:181–90.

96. Johnston S, Salkeld G, Sanderson K, Issakidis C, Teesson M, Buhrich N. Intensive case management: a cost-effectiveness analysis. *Aust N Z J Psychiatry* 1998;**32**:551–9.

97. Chandler D, Spicer G, Wagner M, Hargreaves W. Cost-effectiveness of a capitated assertive community treatment program. *Psychiatr Rehabil J* 1999;**22**(4):327–36.

98. Lafave HG, de Souza HR, Gerber GJ. Assertive community treatment of severe mental illness: a Canadian experience. *Psychiatr Serv* 1996;**47**:757–9.

99. Mowbray CT, Collins ME, Plum TB, Masterton T, Mulder R. Harbinger I: The development and evaluation of the first PACT replication. *Adm Policy Ment Health* 1997;**25**:105–23.

100. Sands RG, Cnaan RA. Two modes of case management: assessing their impact. *Community Ment Health J* 1994;**30**:441–57.

101. Test MA, Knoedler WH, Allness DJ, Burke S, Brown R, Wallisch LS. Community care of schizophrenia: two year findings. *Schizophr Res* 1989;**3**:1–16.

102. Burns T, Priebe S. Mental health care systems and their characteristics: a proposal. *Acta Psychiatr Scand* 1996;**94**:381–5.

103. Burns T, Beadsmoore A, Bhat AV, Oliver A, Mathers C. A controlled trial of home-based acute psychiatric services. I: Clinical and social outcome. *Br J Psychiatry* 1993;**163**:49–54.

104. Paykel ES, Mangen SP, Griffith JH, Burns TP. Community psychiatric nursing for neurotic patients: a controlled trial. *Br J Psychiatry* 1982;**140**:573–81.

105. Harvey K, Burns T, Fiander M, Huxley P, Manley C, Fahy T. The national service framework for mental health: meeting the standards for carers. Submitted.

106. Gilbody S, Wahlbeck K, Adams CE. Randomised controlled trials in schizophrenia: a critical perspective on the literature. *Acta Psychiatr Scand.* In press 2001.

Appendix 1

Included studies

Randomised controlled trials

Aberg-Wistedt – Stockholm

Aberg-Wistedt A, Cressell T, Lidberg Y, Liljenberg B, Osby U. Two-year outcome of team-based intensive case management for patients with schizophrenia. *Psychiatr Serv* 1995;**46**:1263–6.

Bond – Chicago 1

Bond GR, Witheridge TF, Dincin J, Wasmer D, Webb J, De Graaf-Kaser R. Assertive community treatment for frequent users of psychiatric hospitals in a large city: a controlled study. *Am J Community Psychol* 1990;**18**:865–91.

Bond – Indiana 1

Bond GR, Miller LD, Krumwied RD, Ward RS. Assertive case management in three CMHCs: a controlled study. *Hosp Community Psychiatry* 1988;**39**:411–18.

Burns – London

Burns T, Raftery J. Cost of schizophrenia in a randomized trial of home-based treatment. *Schizophr Bull* 1991;**17**:407–10.

Burns T, Beadsmoore A, Bhat AV, Oliver A, Mathers C. A controlled trial of home-based acute psychiatric services. I: Clinical and social outcome. *Br J Psychiatry* 1993;**163**:49–54.

Burns T, Raftery J, Beadsmoore A, McGuigan S, Dickson M. A controlled trial of home-based acute psychiatric services. II: Treatment patterns and costs. *Br J Psychiatry* 1993;**163**:55–61.

Bush – Atlanta

Bush CT, Langford MW, Rosen P, Gott W. Operation outreach: intensive case management for severely psychiatrically disabled adults. *Hosp Community Psychiatry* 1990;**41**:647–9.

Chandler – California 1

Chandler D, Meisel J, Hu TW, McGowen M, Madison K. Client outcomes in a three-year controlled study of an integrated service agency model. *Psychiatr Serv* 1996;**47**:1337–43.

Chandler D, Meisel J, McGowan M, Mintz J, Madison K. Client outcomes in two model capitated integrated service agencies. *Psychiatr Serv* 1996;**47**:175–80.

Chandler D, Hu T-W, Meisel J, McGowan M, Madison K. Mental health costs, other public costs, and family burden among mental health clients in capitated integrated service agencies. *J Ment Health Adm* 1997;**24**:178–88.

Chandler D, Meisel J, Hu T-W, McGowan M, Madison K. A capitated model for a cross-section of severely mentally ill clients: employment outcomes. *Community Ment Health J* 1997;**33**:501–16.

Chandler D, Meisel J, Hu T-W, McGowen M, Madison K. A capitated model for a cross-section of severely mentally ill clients: hospitalization. *Community Ment Health J* 1998;**43**:13–26.

Chandler D, Levin S, Barry P. The menu approach to employment services: philosophy and five-year outcomes. *Psychiatr Rehabil J* 1999;**23**(1):24–32.

Chandler – California 2

Chandler D, Spicer G, Wagner M, Hargreaves W. Cost-effectiveness of a capitated assertive community treatment program. *Psychiatr Rehabil J* 1999;**22**(4):327–36.

Chandler D, Spicer G. STRIDES year two evaluation. Oakland, CA: Alameda County Behavioral Health Care Services & Telecare Corporation; 1998.

Candler D, Spicer G. STRIDES four year evaluation. Oakland, CA: Alameda County Behavioral Health Care Services; 2000.

Curtis – New York

Curtis JL, Millman EJ, Struening E, D'Ercole A. Effect of case management on rehospitalization and utilization of ambulatory care services. *Hosp Community Psychiatry* 1992;**43**:895–9.

Curtis JL, Millman EJ, Struening E, D'Ercole A. Deaths among former psychiatric inpatients in an outreach case management program. *Psychiatr Serv* 1996;**47**:398–402.

Curtis JL, Millman EJ, Struening EL, D'Ercole A. Does outreach case management improve patients' quality of life? *Psychiatr Serv* 1998;**49**:351–4.

D'Ercole A, Struening E, Curtis JL, Millman EJ, Morris A. Effects of diagnosis, demographic characteristics, and case management on rehospitalization. *Psychiatr Serv* 1997;**48**:682–8.

Drake – New Hampshire

Clark RE, Drake RE, McHugo GJ, Ackerson TH. Incentives for community treatment. Mental illness management services. *Med Care* 1995;**33**:729–38.

Clark RE, Teague GB, Ricketts SK, Bush PW, Xie H, McGuire TG, *et al.* Cost-effectiveness of assertive community treatment versus standard case management for persons with co-occurring severe mental illness and substance use disorders. *Health Serv Res* 1998;**33**:1285–308.

Drake RE, Teague GB, Warren RS. Hampshire's dual diagnosis program for people with severe mental illness and substance abuse. *Addict Recovery* 1990;**10**:35–9.

Drake RE, McHugo GJ, Clark RE, Teague GB, Xie H, Miles K, *et al.* Assertive community treatment for patients with co-occurring severe mental illness and substance use disorder: a clinical trial. *Am J Orthopsychiatry* 1998;**68**:201–15.

McHugo GJ, Drake RE, Teague GB, Xie H. Fidelity to assertive community treatment and client outcomes in the New Hampshire dual disorders study. *Psychiatr Serv* 1999;**50**:818–24.

Teague GB, Drake RE, Ackerson TH. Evaluating use of continuous treatment teams for persons with mental illness and substance abuse. *Psychiatr Serv* 1995;**46**:689–95.

Essock – New York

Essock SM, Kontos N. Implementing assertive community treatment teams. *Psychiatr Serv* 1995;**46**:679–83.

Essock SM, Frisman LK, Kontos NJ. Cost-effectiveness of assertive community treatment teams. *Am J Orthopsychiatry* 1998;**68**:179–90.

Fenton – Montreal

Fenton FR, Tessier L, Struening EL. A comparative trial of home and hospital psychiatric care. One-year follow-up. *Arch Gen Psychiatry* 1979;**36**:1073–9.

Fenton FR, Tessier L, Contandriopoulos AP, Nguyen H, Struening EL. A comparative trial of home and hospital psychiatric treatment: financial costs. *Can J Psychiatry* 1982;**27**:177–87.

Fenton FR, Tessier L, Struening EL, Smith FA, Benoit C, Contandriopoulos A-P, *et al.* A two-year follow-up of a comparative trial of the cost-effectiveness of home and hospital psychiatric treatment. *Can J Psychiatry* 1984;**29**:205–11.

Ford – London 1

Ford R, Beadsmoore A, Ryan P, Repper J. Providing the safety net: case management for people with a serious mental illness. *J Ment Health* 1995;**4**:91–7.

Ford R, Raftery J, Ryan P, Beadsmoore A, Craig T, Muijen M. Intensive case management for people with serious mental illness – site 2: cost-effectiveness. *J Ment Health* 1997;**6**:191–9.

Ford R, Ryan P, Beadsmoore A, Craig T, Muijen M. Intensive case management for people with serious mental illness – site 2: clinical and social outcome. *J Ment Health* 1997;**6**:181–90.

Franklin – Texas

Dozier M, Lee SW, Toprac M, Mason M. A case management program in Texas revisited. *Psychosoc Rehabil J* 1993;**17**(2):183–99.

Franklin JL, Solovitz B, Mason M, Clemons JR, Miller GE. An evaluation of case management. *Am J Public Health* 1987;**77**:674–8.

Gater – Manchester

Gater R, Goldberg D, Jackson G, Jennett N, Lowson K, Ratcliffe J, *et al.* The care of patients with chronic schizophrenia: a comparison between two services. *Psychol Med* 1997;**27**:1325–36.

Godley – Illinois

Godley SH, Sabin MC, McClure C, Smerken M, Manion L. Paid friends for frequent recidivists: an evaluation of a multifaceted community aide program. *Psychosoc Rehabil J* 1988;**11**(3):29–39.

Gournay – Middlesex

Gournay K, Brooking J. Community psychiatric nurses in primary health care. *Br J Psychiatry* 1994;**165**:231–8.

Gournay K, Brooking J. The community psychiatric nurse in primary care: an economic analysis. *J Adv Nurs* 1995;**22**:769–78.

Hauenstein – Virginia

Hauenstein EJ. Testing innovative nursing care: home intervention with depressed rural women. *Issues Ment Health Nurs* 1996;**17**:33–50.

Herinckx – Oregon

Herinckx HA, Kinney RF, Clarke GN, Paulson RI. Assertive community treatment versus usual care in engaging and retaining clients with severe mental illness. *Psychiatr Serv* 1997;**48**:1297–306.

Paulson RI, Clarke G, Herinckx HA, Kinney R, Lewis K, Oxman E. First year outcomes from a randomised trial comparing consumer and non-consumer assertive community treatment teams with usual care. Proceedings of Schizophrenia 1996: Breaking down the Barriers, 4th International Conference; 1996 Oct 6–9; Vancouver, BC, Canada.

Paulson R, Henrickx H, Demmler J, Clarke G, Cutler D, Birecree E. Comparing practice patterns of consumer and non-consumer mental health service providers. *Community Ment Health J* 1999;**35**:251–69.

Holloway – London

Cullen D, Waite A, Oliver N, Carson J, Holloway F. Case management for the mentally ill: a comparative evaluation of client satisfaction. *Health Soc Care Community* 1997;**5**:106–15.

Holloway F, Carson J. Intensive case management for the severely mentally ill. Controlled trial. *Br J Psychiatry* 1998;**172**:19–22.

Hoult – Sydney

Hoult J, Reynolds I, Charbonneau Powis M, Weekes P, Briggs J. Psychiatric hospital versus community treatment: the results of a randomised trial. *Aust N Z J Psychiatry* 1983;**101**:160–7.

Hoult J, Reynolds I. Schizophrenia: a comparative trial of community orientated and hospital orientated psychiatric care. *Acta Psychiatr Scand* 1984;**69**:359–72.

Hoult J, Reynolds I, Charbonneau Powis M, Coles P, Briggs J. A controlled study of psychiatric hospital versus community treatment – the effect on relatives. *Acta Psychiatr Scand* 1984;**69**:359–72.

Hoult J, Rosen A, Reynolds I. Community orientated treatment compared to psychiatric hospital orientated treatment. *Soc Sci Med* 1984;**18**:1005–10.

Hoult J. Community care of the acutely mentally ill. *Br J Psychiatry* 1986;**149**:137–44.

Reynolds I, Hoult JE. The relatives of the mentally ill: a comparative trial of community-oriented and hospital-oriented psychiatric care. *J Nerv Ment Dis* 1984;**172**:480–9.

Ivarsson – Gothenburg

Ivarsson B, Karrang L, Malm U. Implementing the integrated care model in a Swedish setting. *Nord J Psychiatry* 1998;**41** suppl:164.

Malm U, Ivarsson B, Allebeck P, Soderstrom L, Falloon I, and OTP Research Group. A two year controlled study on outcomes of integrated care in schizophrenia. Manuscript.

Jerrell – San Jose

Jerrell JM, Hu T. Cost-effectiveness of intensive clinical and case management compared with an existing system of care. *Inquiry* 1989;**26**:224–34.

Jerrell – S. Carolina 1

Jerrell JM, Hu TW, Ridgely MS. Cost-effectiveness of substance disorder interventions for people with severe mental illness. *J Ment Health Adm* 1994;**21**:283–97.

Jerrell JM, Ridgely MS. Comparative effectiveness of three approaches to serving people with severe mental illness and substance abuse disorders. *J Nerv Ment Dis* 1995;**183**:566–76.

Jerrell JM. Towards cost-effective care for persons with dual diagnosis. *Cost-effective Care* 1996;**23**:329–37.

Ridgely MS, Jerrell JM. Analysis of three interventions for substance abuse treatment of severely mentally ill people. *Community Ment Health J* 1996;**32**:561–72.

Jerrell – S. Carolina 2

Jerrell JM. Towards managed care for persons with severe mental illness: implications from a cost-effectiveness study. *Health Aff* 1995;**14**:197–207.

Jerrell JM. Skill, symptom, and satisfaction changes in three service models for people with psychiatric disability. *Psychiatr Rehabil J* 1999;**22**(4):342–8.

Schmidt-Posner J, Jerrell JM. Qualitative analysis of three case management programs. *Community Ment Health J* 1998;**34**:381–92.

Johnston – New South Wales

Issakidis C, Sanderson K, Teesson M, Johnston S, Buhrich N. Intensive case management in Australia: a randomized controlled trial. *Acta Psychiatr Scand* 1999;**99**:360–7.

Johnston S, Salkeld G, Sanderson K, Issakidis C, Teesson M, Buhrich N. Intensive case management: a cost-effectiveness analysis. *Aust N Z J Psychiatry* 1998;**32**:551–9.

Korr – Pittsburg

Hampton B, Korr W, Bond G. Integration services system approach to avert homelessness; CSP intervention project for HMI adults. 1992; unpublished report. [Available from the authors.]

Korr WS, Joseph AL. Housing the homeless mentally ill: findings from Chicago. *J Soc Serv Res* 1995;**21**:53–68.

Lafave – Ontario

Lafave HG, de Souza HR, Gerber GJ. Assertive community treatment of severe mental illness: a Canadian experience. *Psychiatr Serv* 1996;**47**:757–9.

Lehman – Baltimore

Dixon LB, Krauss N, Kerman E. Modifying the PACT model to serve homeless persons with severe mental illness. *Psychiatr Serv* 1995;**46**:684–8.

Lehman AF, Dixon LB, Kernan E, DeForge BR, Postrado LT. A randomized trial of assertive community treatment for homeless persons with severe mental illness. *Arch Gen Psychiatry* 1997;**54**:1038–43.

Lehman AF, Dixon L, Hoch JS, Deforge B, Kernan E, Frank R. Cost-effectiveness of assertive community treatment for homeless persons with severe mental illness. *Br J Psychiatry* 1999;**174**:346–52.

Lehman – Maryland

Lehman AF, Herron JD, Schwartz RP, Myers CP. Rehabilitation for adults with severe mental illness and substance use disorders. A clinical trial. *J Nerv Ment Dis* 1993;**181**:86–90.

Macias – Utah 1

Macias C, Kinney R, Farley OW, Jackson R, Vos B. The role of case management within a community support system: partnership with psychosocial rehabilitation. *Community Ment Health J* 1994; **30**:323–39.

Marshall – Oxford

Gray AM, Marshall M, Lockwood A, Morris J. Problems in conducting economic evaluations alongside clinical trials. Lessons from a study of case management for people with mental disorders. *Br J Psychiatry* 1997;**170**:47–52.

Marshall M, Lockwood A, Gath D. Social services case-management for long-term mental disorders: a randomised controlled trial. *Lancet* 1995;**345**: 409–12.

Marx – Madison

Marx A, Stein L, Test A. Extrohospital management of severe mental illness. *Arch Gen Psychiatry* 1973;**29**:505–11.

McDonel – Indiana

Fekete DM, Bond GR, McDonel EC, Salyers M, Chen A, Miller L. Rural assertive community treatment: a field experiment. *Psychiatr Rehabil J* 1998;**21**(4):371–9.

McDonel EC, Bond GR, Salyers M, Fekete D, Chen A, McGrew JH, *et al.* Implementing assertive community treatment programs in rural settings. *Adm Policy Ment Health* 1997;**25**:153–73.

McFarlane – Maine

McFarlane WR, Stastny P, Deakins S. Family-aided assertive community treatment: a comprehensive rehabilitation and intensive case management approach for persons with schizophrenic disorders. *New Dir Ment Health Serv* 1992;**53**:43–54.

McFarlane WR, Dushay RA, Stastny P, Deakins SM, Link B. A comparison of two levels of family-aided assertive community treatment. *Psychiatr Serv* 1996;**47**:744–50.

McFarlane WR. FACT: integrating family psychoeducation and assertive community treatment. *Adm Policy Ment Health* 1997;**25**:191–8.

Merson – London

Merson S, Tyrer P, Onyett S, Lack S, Birkett P, Lynch S, *et al.* Early intervention in psychiatric emergencies: a controlled clinical trial. *Lancet* 1992;**339**:1311–14.

Merson S, Tyrer P, Carlen D, Johnson T. The cost of treatment of psychiatric emergencies: a comparison of hospital and community services. *Psychol Med* 1996;**26**:727–34.

Tyrer P, Merson S, Onyett S, Johnson T. The effect of personality disorder on clinical outcome, social networks and adjustment: a controlled clinical trial of psychiatric emergencies. *Psychol Med* 1994;**24**:731–40.

Modrcin – Kansas

Modrcin M, Rapp CA, Poertner J. The evaluation of case management services with the chronically mentally ill. *Eval Program Plann* 1988;**11**:307–14.

Morse – St Louis 1

Morse G, Calsyn R, Allen G, Tempelhoff B, Smith R. Experimental comparison of the effects of three treatment programs for homeless mentally ill people. *Hosp Community Psychiatry* 1992;**3**:1005–10.

Morse GA, Calsyn RJ, Allen G, Kenny DA. Helping homeless mentally ill people: what variables mediate and moderate program effects? *Am J Community Psychol* 1994;**22**:661–83.

Morse – St Louis 2

Calsyn RJ, Morse GA, Klinkenberg WD, Trusty ML, Allen G. The impact of assertive community treatment on the social relationships of people who are homeless and mentally ill. *Community Ment Health J* 1998;**34**:579–93.

Morse GA, Calsyn RJ, Klinkenberg WD, Trusty ML, Gerber F, Smith R, *et al.* An experimental comparison of three types of case management for homeless mentally ill persons. *Psychiatr Serv* 1997;**48**:497–503.

Muijen – London 1

Audini B, Marks IM, Lawrence RE, Connolly J, Watts V. Home-based versus out-patient/in-patient care for people with serious mental illness. Phase II of a controlled study. *Br J Psychiatry* 1994;**164**:204–10.

Connolly J, Marks I, Lawrence R, McNamee G, Muijen M. Observations from community care for serious mental illness during a controlled study. *Psychiatr Bull* 1996;**20**:3–7.

Knapp M, Beecham J, Koutsogeorgopoulou V, Hallam A, Fenyo A, Marks IM, *et al.* Service use and costs of home-based versus hospital-based care for people with serious mental illness. *Br J Psychiatry* 1994;**165**:195–203.

Knapp MR, Marks IM, Wolstenholme J, Beecham JK, Astin J, Audini B, *et al.* Home-based versus hospital-based care for serious mental illness: controlled cost-effectiveness study over four years. *Br J Psychiatry* 1998;**172**:506–12.

Marks I, Connolly J, Muijen M. The Maudsley Daily Living Programme. A controlled cost-effectiveness study of community based versus standard in-patient care of serious mental illness. *Bull R Coll Psychiatrists* 1988;**12**:22–4.

Marks IM, Connolly J, Muijen M, Audini B, McNamee G, Lawrence RE. Home-based versus hospital-based care for people with serious mental illness. *Br J Psychiatry* 1994;**165**:179–94.

Marks IM. Synopsis of the Daily Living Programme for the seriously mentally ill: a controlled comparison of home and hospital based care. In: Tyrer P, Creed F, editors. Community psychiatry in action: analysis and prospects. Cambridge: Cambridge University Press; 1995. p. 29–44.

Muijen M, Marks I, Connolly J. Home-based care and standard hospital care for patients with severe mental illness: a randomised control trial. *BMJ* 1992;**304**:749–54.

Muijen M, Marks IM, Connolly J, Audini B. The Daily Living Programme: preliminary comparison of community versus hospital-based treatment for the seriously mentally ill facing emergency admission. *Br J Psychiatry* 1992;**160**:379–84.

Muijen – London 2

McCrone P, Beecham J, Knapp M. Community psychiatric nurse teams: cost-effectiveness of intensive support versus generic care. *Br J Psychiatry* 1994;**165**:218–21.

Muijen M, Cooney M, Strathdee G, Bell R, Hudson A. Community psychiatric nurse teams: intensive support versus generic care. *Br J Psychiatry* 1994;**165**:211–17.

Paykel – London

Mangen SP, Paykel BS, Griffith JH, Burchell A, Mancini P. Cost-effectiveness of community psychiatric nurse on out-patient psychiatric care of neurotic patients. *Psychol Med* 1983;**13**:407–16.

Paykel ES, Mangen SP, Griffith JH, Burns TP. Community psychiatric nursing for neurotic patients: a controlled trial. *Br J Psychiatry* 1982;**140**:573–81.

Quinlivan – California

Quinlivan R, Hough R, Crowell A, Beach C, Hofstetter R, Kenworthy K. Service utilization and costs of care for severely mentally ill clients in an intensive case management program. *Psychiatr Serv* 1995;**46**:365–71.

Rosenheck – Connecticut

Neale MS, Rosenheck RA. Therapeutic alliance and outcome in a VA intensive case management program. *Psychiatr Serv* 1995;**46**:719–21.

Rosenheck R, Neale M, Gallup P. Community-oriented mental health care: assessing diversity in clinical practice. *Psychosoc Rehabil J* 1993;**16**(4):39–50.

Rosenheck R, Neale M, Leaf P, Milstein R, Frisman L. Multisite experimental cost study of intensive psychiatric community care. *Schizophr Bull* 1995;**21**:129–40.

Rosenheck R, Neale M. Cost-effectiveness of intensive psychiatric community care for high users of inpatient services. *Arch Gen Psychiatry* 1998;**55**:459–65.

Rosenheck RA, Neale M. Inter-site variation in the impact of intensive psychiatric community care on hospital use. *Am J Orthopsychiatry* 1998;**68**:191–200.

Rosenthal – New York

Rosenthal RN, Miner C, Hellerstein DJ. Effects of targeted assertive outreach in patients with schizophrenia and substance use disorders [abstract]. From the 150th Annual Meeting of the American Psychiatric Association; 1997; San Diego, CA, USA.

Salkever – Baltimore

Salkever D, Domino ME, Burns BJ, Santos AB, Deci PA, Dias J, *et al.* Assertive community treatment for people with severe mental illness: the effect on hospital use and costs. *Health Serv Res* 1999;**34**:577–601.

Sellwood – Manchester

Sellwood W, Thomas CS, Tarrier N, Jones S, Clewes J, James A, *et al.* A randomised controlled trial of home-based rehabilitation versus outpatient-based rehabilitation for patients suffering from chronic schizophrenia. *Soc Psychiatry Psychiatr Epidemiol* 1999;**34**:250–53.

Solomon – Philadelphia 1

Solomon P, Draine J. Family perceptions of consumers as case managers. *Community Ment Health J* 1994;**30**:165–76.

Solomon P, Draine J. Satisfaction with mental health treatment in a randomized trial of consumer case management. *J Nerv Ment Dis* 1994;**182**:179–84.

Solomon P, Draine J. Consumer case management and attitudes concerning family relations among persons with mental illness. *Psychiatr Q* 1995;**66**:249–61.

Solomon P, Draine J. One-year outcomes of a randomized trial of consumer case management. *Eval Program Plann* 1995;**18**:117–27.

Solomon P, Draine J. The efficacy of a consumer case management team: 2-year outcomes of a randomized trial. *J Ment Health Adm* 1995;**22**:135–46.

Solomon P, Draine J. Perspectives concerning consumers as case managers. *Community Ment Health J* 1996;**32**:41–6.

Solomon P, Draine J. Service delivery differences between consumer and nonconsumer case managers in mental health. *Res Soc Work Pract* 1996;**6**:193–207.

Solomon – Philadelphia 2

Solomon P, Draine J, Meyerson A. Jail recidivism and receipt of community mental health services. *Hosp Community Psychiatry* 1994;**45**:793–7.

Solomon P, Draine J. One-year outcomes of a randomized trial of case management with seriously mentally ill clients leaving jail. *Eval Rev* 1995;**19**:256–73.

Stein – Madison

Stein LI, Test MA, Marx AJ. Alternative to the hospital: a controlled study. *Am J Psychiatry* 1975;**132**:517–22.

Stein L, Test MA. Training in community living: one-year evaluation. *Am J Psychiatry* 1976;**133**:917–18.

Stein LI, Test MA. Alternative to mental hospital treatment: I. Conceptual model, treatment program, and clinical evaluation. *Arch Gen Psychiatry* 1980;**37**:392–7.

Stein LI, Diamond RJ. A program for difficult-to-treat patients. *New Dir Ment Health Serv* 1985;**26**:17–26.

Test MA, Stein LI. Training in community living: a follow-up look at a Gold-Award program. *Hosp Community Psychiatry* 1976;**27**:193–4.

Test MA, Stein LI. Training in community living: research design and results. In: Stein LI, Test MA, editors. Alternatives to mental hospital treatment. New York: Plenum; 1976. p. 57–74.

Test MA, Stein LI. Alternative to mental hospital treatment. III. Social cost. *Arch Gen Psychiatry* 1980;**37**:409–12.

Weisbrod BA, Test MA, Stein LI. Alternatives to mental hospital treatment: II. Economic benefit–cost analysis. *Arch Gen Psychiatry* 1980;**37**:400–5.

Weisbrod BA. Benefit–cost analysis of a controlled experiment: treating the mentally ill. *J Hum Res* 1981;**16**:523–48.

Weisbrod BA. A guide to benefit–cost analysis, as seen through a controlled experiment in treating the mentally ill. *J Health Polit Policy Law* 1983;**7**:808–45.

Test – Wisconsin

Cohen LJ, Test MA, Brown RL. Suicide and schizophrenia: data from a prospective community treatment study. *Am J Psychiatry* 1991;**147**:602–7.

Test MA, Knoedler WH, Allness DJ, Burke S, Brown R, Wallisch LS. Community care of schizophrenia: two year findings. *Schizophr Res* 1989;**3**:1–16.

Tyrer – London 1

Tyrer P, Morgan J, van Horn E, Jayakody M, Evans K, Brummell R, *et al.* A randomised controlled study of close monitoring of vulnerable psychiatric patients. *Lancet* 1995;**345**:756–59.

Tyrer – London 2

Tyrer P, Evans K, Gandhi N, Lamont A, Harrison RP, Johnson T. Randomised controlled trial of two models of care for discharged psychiatric patients. *BMJ* 1998;**316**:106–9.

UK700

Burns T, Creed F, Fahy T, Thompson S, Tyrer P, White I, for the UK700 Group. Intensive versus standard case management for severe psychotic illness: a randomised trial. *Lancet* 1999;**353**:2185–9.

Tyrer P, Hassiotis A, Ukoumunne O, Piachaud J, Harvey K. Intensive case management for psychotic patients with borderline intelligence. *Lancet* 1999;**354**:999–1000.

UK700 Group. Comparison of intensive and standard case management for patients with psychosis. Rationale of the trial. *Br J Psychiatry* 1999;**174**:74–8.

UK700 Group. Cost-effectiveness of intensive v. standard case management for severe psychotic illness: UK700 case management trial. *Br J Psychiatry* 2000;**176**:537–43.

Vaccaro – LA

Vaccaro JV, Liberman RP, Wallace CJ, Blackwell G. Combining social skills training and assertive case management: the social and independent living skills program of the Brentwood Veterans Affairs Medical Center. *New Dir Ment Health Serv* 1992;**53**:33–41.

Wolff – New Jersey

Wolff N, Helminiak TW, Diamond RJ. Estimated societal costs of assertive community mental health care. *Psychiatr Serv* 1995;**46**:898–906.

Wolff N, Helminiak TW, Morse GA, Calsyn RJ, Klinkenberg WD, Trusty ML. Cost-effectiveness evaluation of three approaches to case management for homeless mentally ill clients. *Am J Psychiatry* 1997;**154**:341–8.

Wood – California

Wood PA, Hurlburt MS, Hough RL, Hofstetter CR. Longitudinal assessment of family support among homeless mentally ill participants in a supported housing program. *J Community Psychol* 1998;**26**:327–44.

Non-randomised studies

Barker – Kentucky

Barker E, Robinson D, Brautigan R. The effect of psychiatric home nurse follow-up on readmission rates of patients with depression. *J Am Psychiatr Nurs Assoc* 1999;**5**(4):111–16.

Bigelow – Victoria

Bigelow DA, Young DJ. Effectiveness of a case management program. *Community Ment Health J* 1991;**27**:115–23.

Bond – Indiana 2

Bond GR, McDonel EC, Miller LD, Pensec M. Assertive community treatment and reference groups: an evaluation of their effectiveness for young adults with serious mental illness and substance abuse problems. *Psychosoc Rehabil J* 1991;**15**(2):31–43.

McDonel EC, Bond GR, Pensec-Salyers MA, Halter CA, Campbell C. NIMH young adults with mental illness demonstration grants: evaluation of controlled approaches for dually diagnosed young adults. Final report; 1991. [Available from the authors.]

Bond – Indiana 3

Bond GR, Pensec M, Dietzen L, McCafferty D, Grezza R, Sipple H. Intensive case management for frequent users of psychiatric hospitals in a large city: a comparison of team and individual caseloads. *Psychosoc Rehabil J* 1991;**15**(1):90–8.

Buhrich – New South Wales

Buhrich N, Teesson M. Impact of a psychiatric outreach service for homeless persons with schizophrenia. *Psychiatr Serv* 1996;**47**:644–6.

Champney – Ohio

Champney TF, Dzurec LC. Involvement in productive activities and satisfaction with living situation among severely mentally disabled adults. *Hosp Community Psychiatry* 1992;**43**:899–903.

Christensen – Svendborg

Christensen AB, Rasmussen EM, Brodsgaard MA, Westergaard H, Dahl O, Magelund CG. Sengedagsforbruget for patienter tilknyttet Distriktspsykiatrisk Center i Svendborg. En kontrolleret undersogelse. [A controlled investigation of the bed-day employment for patients connected with the District Psychiatric Centre in Svendborg.] *Ugeskr Laeger* 1992;**154**:1703–8.

Christensen AB. [Community psychiatric treatment and needs of admission of psychiatric patients. A controlled study 5 years after introduction of a community psychiatric center.] *Ugeskr Laeger* 1997;**159**:2702–10.

Christensen AB. Community mental health services and sex: utilization of psychiatric services by men and women treated in the Community Mental Health Centre in Svendborg, Funen, Denmark. *Nord J Psychiatry* 1999;**53**:313–17.

Coates – Vancouver

Coates DB, Kendall LM, McCurdy EA. Evaluating hospital and home treatment for psychiatric patients. A one-year follow-up. *Can Ment Health* 1976;**24**:28–32.

Goodacre RH, Coles EM, MaCurdy EA, Coates DB, Kendall LM. Hospitalization and hospital bed replacement. *Can Psychiatr Assoc J* 1975;**20**:7–14.

Cutler – Oregon

Cutler D, Tatum E, Shore J. A comparison of schizophrenia patients in different community support treatment approaches. *Community Ment Health J* 1987;**23**:103–13.

Dean – Birmingham 1

Dean C, Gadd EM. An inner city home treatment service for acute psychiatric patients. *Bull R Coll Psychiatrists* 1989;**13**:667–9.

Dean C, Gadd EM. Home treatment for acute psychiatric illness. *BMJ* 1990;**301**:1021–3.

Dean – Birmingham 2

Dean C, Phillips J, Gadd EM, Joseph M, England S. Comparison of community based services with hospital based service for people with acute, severe psychiatric illness. *BMJ* 1993;**307**:473–6.

Drake – Washington

Drake RE, Bebout RR, Roach JP. A research evaluation of social network case management for homeless persons with dual disorders. In: Harris M, Bergman H, editors. Case management: theory and practice. New York: Harwood Academic Publishers; 1993. p. 83–98.

Clark RE, Drake RE, Teague GB. The costs and benefits of case management. In: Harris M, Bergman H, editors. Case management for mentally ill patients: theory and practice. New York: Hardwood Academic Publishers; 1993. p. 217–35.

Felton – New York

Felton CJ, Stastny P, Shern DL, Blanch A, Donahue SA, Knight E, *et al.* Consumers as peer specialists on intensive case management teams: impact on client outcomes. *Psychiatr Serv* 1995;**46**:1037–44.

Ford – London 2

Ford R, Ryan P, Norton P, Beadsmoore A, Craig T, Muijen M. Does intensive case management work? Clinical, social and quality of life outcomes from a controlled study. *J Ment Health* 1996;**5**:361–8.

Goering – Ontario

Goering PN, Wasylenki DA, Farkas M, Lancee WJ, Ballantyne R. What difference does case management make? *Hosp Community Psychiatry* 1988;**39**:272–6.

Wasylenki D, Goering P, Lancee W, Ballantyne R, Farkas M. Impact of a case manager program on psychiatric aftercare. *J Nerv Ment Dis* 1985;**173**:303–8.

Grad – Chichester

Grad J, Sainsbury P. The effects that patients have on their families in a community care and a control psychiatric service – a two-year follow-up. *Br J Psychiatry* 1968;**114**:265–78.

Sainsbury P, Grad J. Evaluating the community psychiatric service in Chichester. *Milbank Mem Fund Q* 1966;**44**:231–77.

Hornstra – Missouri

Hornstra RK, Bruce-Wolfe V, Sagduyu K, Riffle DW. The effect of intensive case management on hospitalization of patients with schizophrenia. *Hosp Community Psychiatry* 1993;**44**:844–7.

Macias – Utah 2

Macias C, Farley OW, Jackson R, Kinney R. Case management in the context of capitation financing: an evaluation of the strengths model. *Adm Policy Ment Health* 1997;**24**:535–43.

McGorry – Victoria

McGorry PD, Edwards J, Mihalopoulos C, Jackson H. Is early intervention effective and cost effective? 6th International Congress on Schizophrenia Research; 1997; Colorado Springs, CO, USA. *Schizophr Res* (special issue) 1997.

McGurrin – Philadelphia

McGurrin MC, Worley N. Evaluation of intensive case management for seriously and persistently mentally ill persons. *J Case Manag* 1993;**2**(2):59–65.

Melzer – London

Melzer D, Hale AS, Malik SJ, Hogman GA, Wood S. Community care for patients with schizophrenia one year after hospital discharge. *BMJ* 1991;**303**:1023–36.

Mowbray – Michigan

Mowbray CT, Collins ME, Plum TB, Masterton T, Mulder R. Harbinger I: The development and evaluation of the first PACT replication. *Adm Policy Ment Health* 1997;**25**:105–23.

Mowbray CT, Plum TB, Masterton T. Harbinger II: Deployment and evolution of assertive community treatment in Michigan. *Adm Policy Mental Health* 1997;**25**:125–39.

Mulder R. Evaluation of the Harbinger Programme. Unpublished report; 1995. [Available from the authors.]

Pai – Bangalore

Pai S, Kapur N. Impact of treatment intervention on the relationship between dimensions of clinical psychopathology, social dysfunction and burden on the family of psychiatric patients. *Psychol Med* 1982;**12**:651–8.

Pai S, Kapur N. Evaluation of home care treatment for schizophrenic patients. *Acta Psychiatr Scand* 1983;**67**:80–8.

Pai S, Roberts EJ. Follow-up study of schizophrenic patients initially treated with home care. *Br J Psychiatry* 1983;**143**:447–50.

Pasamanick – Ohio

Davis AE, Dinitz S, Pasamanick B. The prevention of hospitalization in schizophrenia: five years after an experimental program. *Am J Orthopsychiatry* 1972;**42**:375–88.

Pasamanick B, Scarpitti FR, Frank R, Lefton M, Dinitz S, Wernert JJ, *et al.* Home vs hospital care for schizophrenics. *JAMA* 1964;**187**:177–81.

Pasamanick B, Scarpitti FR, Dinitz S. Schizophrenics in the community: an experimental study in the prevention of hospitalisation. New York: Appleton-Century-Crofts; 1967.

PRiSM – London

Becker T, Holloway F, McCrone P, Thornicroft G. Evolving service interventions in Nunhead and Norwood. PRiSM Psychosis Study 2. *Br J Psychiatry* 1998;**173**:371–5.

Becker T, Leese M, McCrone P, Clarkson P, Szmukler G, Thornicroft G. Impact of community mental health services on users' social networks. PRiSM Psychosis Study 7. *Br J Psychiatry* 1998;**173**:404–8.

Johnson S, Leese M, Brooks P, Clarkson P, Guite H, Thornicroft G, *et al.* Frequency and predictors of adverse events. PRiSM Psychosis Study 3. *Br J Psychiatry* 1998;**173**:376–84.

Leese M, Johnson S, Slade M, Parkman S, Kelly F, Phelan M, *et al.* User perspective on needs and satisfaction with mental health services. PRiSM Psychosis Study 8. *Br J Psychiatry* 1998;**173**:409–15.

McCrone P, Thornicroft G, Phelan M, Holloway F, Wykes T, Johnson S. Utilisation and costs of community mental health services. PRiSM Psychosis Study 5. *Br J Psychiatry* 1998;**173**:391–8.

Szmukler G, Wykes T, Parkman S. Care-giving and the impact on carers of a community mental health service. PRiSM Psychosis Study 6. *Br J Psychiatry* 1998;**173**:399–403.

Taylor R, Leese M, Clarkson P, Holloway F, Thornicroft G. Quality of life outcomes for intensive versus standard community mental health services. PRiSM Psychosis Study 9. *Br J Psychiatry* 1998;**173**:416–22.

Thornicroft G, Strathdee G, Phelan M, Holloway F, Wykes T, Dunn G, *et al.* Rationale and design. PRiSM Psychosis Study 1. *Br J Psychiatry* 1998;**173**:363–70.

Thornicroft G, Wykes T, Holloway F, Johnson S, Szmukler G. From efficacy to effectiveness in community mental health services. PRiSM Psychosis Study 10. *Br J Psychiatry* 1998;**173**:423–7.

Wykes T, Leese M, Taylor R, Phelan M. Effects of community services on disability and symptoms. PRiSM Psychosis Study 4. *Br J Psychiatry* 1998;**173**:385–90.

Rössler – Mannheim

Rössler W, Loffler W, Fatkenheuer B, Reicher-Rössler A. Does case management reduce the rehospitalization rate? *Acta Psychiatr Scand* 1992;**86**:445–9.

Rössler W, Loffler W, Fatkenheuer B, Riecher-Rössler A. Case management for schizophrenic patients at risk for rehospitalization: a case control study. *Eur Arch Psychiatry Clin Neurosci* 1995;**246**:29–36.

Sands – Philadelphia

Sands RG, Cnaan RA. Two modes of case management: assessing their impact. *Community Ment Health J* 1994;**30**:441–57.

Santiago – Arizona

Santiago JM, McCall-Perez F, Bachrach LJ. Integrated services for chronic mental patients. *Gen Hosp Psychiatry* 1985;**7**:309–15.

Slavinsky – Connecticut

Slavinsky AT, Krauss JB. Two approaches to the management of long-term psychiatric outpatients in the community. *Nurs Res* 1982;**31**:284–9.

Stanard – Georgia

Stanard RP. The effect of training in a strengths model of case management on client outcomes in a community mental health center. *Community Ment Health J* 1999;**35**:169–79.

Tyrer – London 3

Ferguson B, Cooper S, Brothwell J, Markantonakis A. The clinical evaluation of a new community psychiatric service based on general practice psychiatric clinics. *Br J Psychiatry* 1992;**160**:493–7.

Tyrer P. Psychiatric clinics in general practice: an extension of community care. *Br J Psychiatry* 1984;**145**:9–14.

Tyrer P, Seivewright N, Wollerton S. General practice psychiatric clinics: impact on psychiatric services. *Br J Psychiatry* 1984;**145**:15–19.

Vincent – New York

Vincent P, Price JR. Evaluation of a VNA Mental Health Project. *Nurs Res* 1977;**26**:361–7.

Weinman – Philadelphia

Weinman B, Sanders R, Kleiner R, Wilson S. Community based treatment of the chronic psychotic. *Community Ment Health J* 1970;**6**:13–21.

Weinman B, Kleiner R, Yu JH, Tillson VA. Social treatment of the chronic psychotic patient in the community. *J Community Psychol* 1974;**2**:358–65.

Wood – Dunedin

Wood K, Anderson J. The effect on hospital admissions of psychiatric case management involving general practitioners: preliminary results. *Aust N Z J Psychiatry* 1995;**29**:223–9.

Zhang – Shanghai

Zhang M, Yan H, Phillips MR. Community-based psychiatric rehabilitation in Shanghai. Facilities, services, outcome, and culture-specific characteristics. *Br J Psychiatry* 1994;**24** Suppl: 70–9.

Appendix 2

Study characteristics

TABLE 48 *Randomised controlled trials*

Study	Year of first data publication	Country	Experimental service	Second experimental service (if applicable)	Control service (type)	Control service (label)	Predominant diagnostic profile of individuals	Special patient group (where applicable)	Total number of individuals in study
Aberg-Wistedt – Stockholm	1995	Scandinavia	ICM	NA	Community	Outpatients	Psychotic	No	40
Bond – Chicago 1	1990	USA	ACT	NA	Community	Drop-in centre	Psychotic	No	88
Bond – Indiana 1	1988	USA	Assertive CM	NA	Community	CMHC care	Psychotic	No	167
Burns – London	1991	UK	Home-based	NA	Community	Outpatients	Neurotic	No	332
Bush – Atlanta	1990	USA	ICM	NA	Community	CM	Psychotic	High service users	28
Chandler – California 1	1996	USA	ISA	NA	Community	CM	Psychotic	No	516
Chandler – California 2	1999	USA	Capitated ACT (ISA)	NA	Community	Standard care	Psychotic	No	60
Curtis – New York	1992	USA	Assertive outreach CM	CM	Community	Standard care	Psychotic	No	430
Drake – New Hampshire	1998	USA	ACT	NA	Community	CM	Psychotic	Dual diagnosis*	223
Essock – New York	1995	USA	ACT	NA	Community	CM	Psychotic	High services users	262
Fenton – Montreal	1979	Canada	Home	NA	Inpatient	Inpatient	Psychotic	No	162
Ford – London 1	1995	UK	ICM	NA	Community	Standard care	Psychotic	High service users	77
Franklin – Texas	1987	USA	CM	NA	Community	Any services but CM	Psychotic	High service users	417
Gater – Manchester	1997	UK	CMHT	NA	Inpatient	Inpatient care	Psychotic	No	108
Godley – Illinois	1988	USA	Community support aide	NA	Community	CMHC care	Psychotic	No	24
Gournay – Middlesex	1994	UK	CPN	Waiting list then CPN	Community	GP	Neurotic	No	177
Hauenstein – Virginia	1996	USA	WAIT (outreach for depressed rural women)	NA	Community	Psycho-education + support	Neurotic	No	NA (in progress)
Herinckx – Oregon	1997	USA	Consumer ACT	Non-consumer ACT	Community	Standard care	Psychotic	No	178
Holloway – London	1998	UK	ICM/assertive CM	NA	Community	CPN service	Psychotic	No	70
Hoult – Sydney	1981	Australia	Community treatment	NA	Inpatient	Inpatient care	Psychotic	No	65
Ivarsson – Gothenburg	1998	Sweden	Integrated care (including home)	NA	Community	'Rational rehabilitation'	Psychotic	No	88

* *Dual diagnosis indicates dual diagnosis with substance misuse*

NA, not applicable; WAIT, Women's Affective Illness Treatment

continued

TABLE 48 contd *Randomised controlled trials*

Study	Year of first data publication	Country	Experimental service	Second experimental service (if applicable)	Control service (type)	Control service (label)	Predominant diagnostic profile of individuals	Special patient group (where applicable)	Total number of individuals in study
Jerrell – San Jose	1989	USA	ICM	NA	Community	Standard care	Psychotic	No	35
Jerrell – S. Carolina 1	1994	USA	ACT	Behavioural skill training	Community	12-step recovery	Psychotic	Dual diagnosis*	132
Jerrell – S. Carolina 2	1995	USA	PACT	Hybrid CM	Community	CM	Psychotic	No	185
Johnston – New South Wales	1998	Australia	ICM	NA	Community	CM	Psychotic	High service users	73
Korr – Pittsburgh	1995	USA	Assertive CM	NA	Community	Standard care	Psychotic	Homeless	114
Lafave – Ontario	1996	Canada	ACT	NA	Inpatient	Inpatient	Psychotic	High service users	65
Lehman – Baltimore	1997	USA	ACT	NA	Community	Standard care	Psychotic	Homeless	152
Lehman – Maryland	1993	USA	ICM + rehabilitation	NA	Community	CMHC care	Psychotic	Dual diagnosis*	54
Macias – Utah 1	1994	USA	Strengths CM + psychosocial rehabilitation	NA	Community	Psychosocial rehabilitation	Psychotic	No	41
Marshall – Oxford	1995	UK	Social services CM	NA	Community	Standard care	Psychotic	Homeless	80
Marx – Madison	1973	USA	Total in-community treatment	Research unit	Inpatient	Inpatient	Psychotic	No	61
McDonel – Indiana	1997	USA	ACT	Rural ACT	Community	CM	Psychotic	No	200
McFarlane – Maine	1996	USA	Family-aided ACT + multifamily group	NA	Community	ACT	Psychotic	High service users	68
Merson – London	1992	UK	Early intervention (multidisciplinary CMHT)	NA	Inpatient	Inpatient	Psychotic	No	100
Modrcin – Kansas	1988	USA	Strengths CM	NA	Community	CM	Psychotic	No	89
Morse – St Louis 1	1992	USA	ICM / 'continuous treatment'	Drop-in centre	Community	Outpatients	Psychotic	Homeless	178
Morse – St Louis 2	1997	USA	ACT with community worker	ACT only	Community	CM	Psychotic	Homeless	165
Muijen – London 1	1992	UK	Home-based care	NA	Inpatient	Inpatient	Psychotic	No	189
Muijen – London 2	1994	UK	CPN teams	NA	Community	Generic teams	Psychotic	High service users	82

* *Dual diagnosis indicates dual diagnosis with substance misuse*

continued

TABLE 48 contd *Randomised controlled trials*

Study	Year of first data publication	Country	Experimental service	Second experimental service (if applicable)	Control service (type)	Control service (label)	Predominant diagnostic profile of individuals	Special patient group (where applicable)	Total number of individuals in study
Paykel – London	1982	UK	CPN	NA	Community	Outpatients	Neurotic	No	122
Quinlivan – California	1995	USA	ICM	Standard CM	Community	Standard care	Psychotic	High service users	90
Rosenheck – Connecticut	1993	USA	IPCC	NA	Inpatient	Standard care	Psychotic	High service users	873
Rosenthal – New York	1997	USA	Targeted assertive outreach + integrated services	NA	Community	Standard care	Psychotic	Dual diagnosis*	42
Salkever – Baltimore	1999	USA	PACT at CMHC	PACT at another location	Community	CMHC care	Psychotic	No	173
Sellwood – Manchester	1999	UK	Home-based rehabilitation	NA	Community	Outpatients	Psychotic	No	75
Solomon – Philadelphia 1	1994	USA	Consumer CM	NA	Community	CM	Psychotic	High service users	96
Solomon – Philadelphia 2	1994	USA	ICM by ACT team	Individual ICM	Community	CMHC care	Psychotic	Homeless	200
Stein – Madison	1975	USA	TCL	NA	Inpatient	Inpatient	Psychotic	No	Not known
Test – Wisconsin	1989	USA	TCL	NA	Community	Standard care	Psychotic	No	122
Tyrer – London 1	1995	UK	Close supervision	NA	Community	Standard care	Psychotic	No	400
Tyrer – London 2	1998	UK	Multidisciplinary CMHT	NA	Community	Outpatients	Psychotic	High service users	155
UK700	1999	UK	ICM	NA	Community	CM	Psychotic	High service users	708
Vaccaro – LA	1992	USA	Social and independent living skills programme (including CM)	NA	Community	Psychosocial OT	Psychotic	No	Not known
Wolff – New Jersey	1995	USA	ACT + community worker	ACT only	Community	CM	Psychotic	Homeless	165
Wood – California	1998	USA	Comprehensive CM	Housing certificate	Community	CM	Psychotic	Homeless	362

* *Dual diagnosis indicates dual diagnosis with substance misuse*

TABLE 49 *Non-randomised studies*

Study	Year of first publication	Country	Study type	Experimental service	Second experimental service	Control service (type)	Control service (label)	Predominant diagnostic profile of individuals	Special patient group	Total number of individuals in study
Barker – Kentucky	1999	USA	Prospective	Psychiatric nurse home follow-up	NA	Community	Standard care	Neurotic	No	69
Bigelow – Victoria	1991	Canada	Prospective	CM	NA	Community	Standard care	Neurotic	No	68
Bond – Indiana 2	1991	USA	RCT – compromised	ACT	Reference groups	Community	CMHC care	Psychotic	Dual diagnosis* + high service users	146
Bond – Indiana 3	1991	USA	Prospective	ACT (team)	NA	Community	CM (individual)	Psychotic	High service users	40
Buhrich – New South Wales	1996	Australia	Retrospective	24-hour outreach service	NA	Community	Nothing	Psychotic	Homeless	506
Champney – Ohio	1992	USA	RCT – compromised	ICM	Subsidised housing	Community	CM	Psychotic	No	83
Christensen – Svendborg	1997	Denmark	Not clear	CMHT	NA	Community	Outpatients	Psychotic	No	192
Coates – Vancouver	1975	Canada	RCT – compromised	Home treatment	Combination	Inpatient	Inpatient	Psychotic	No	219
Cutler – Oregon	1987	USA	Retrospective	Living in community (including ICM)	Aftercare clinic	Community	Drop-in centre	Psychotic	No	30
Dean – Birmingham 1	1990	UK	Retrospective	Home	NA	Inpatient	Inpatient	Psychotic	No	99
Dean – Birmingham 2	1993	UK	Prospective	Home	NA	Inpatient	Inpatient	Psychotic	No	124
Drake – Washington	1993	USA	Prospective	Social network CM	Cognitive behavioural therapy (ICM approach)	Community	Standard care	Psychotic	Dual diagnosis* + homeless	Not known
Felton – New York	1995	USA	Prospective	CM + peer specialists	CM + non-consumer assistants	Community	CM	Psychotic	No	170
Ford – London 2	1996	UK	Prospective	ICM	NA	Community	Standard care	Psychotic	No	94
Goering – Ontario	1988	USA	Prospective	Rehabilitation-oriented CM	NA	Community	Standard care	Psychotic	No	164
Grad – Chichester	1966	UK	Prospective	Community care	NA	Inpatient	Inpatient	Psychotic	No	1416
Hornstra – Missouri	1993	USA	Retrospective	ICM	NA	Community	CM	Psychotic	No	224
Macias – Utah 2	1997	USA	Prospective	CM	NA	Community	Standard care	Psychotic	No	97

* *Dual diagnosis indicates dual diagnosis with substance misuse*

continued

TABLE 49 contd *Non-randomised studies*

Study	Year of first publication	Country	Study type	Experimental service	Second experimental service	Control service (type)	Control service (label)	Predominant diagnostic profile of individuals	Special patient group	Total number of individuals in study
McGorry – Victoria	1997	Australia	Prospective	Intensive community follow-up + early detection	NA	Inpatient	Inpatient	Psychotic	No	Missing
McGurrin – Philadelphia	1993	USA	Prospective	ICM	NA	Community	Registered but not participating	Psychotic	No	183
Melzer – London	1991	UK	Prospective	CMHC	NA	Community	Standard care	Psychotic	No	140
Mowbray – Michigan	1997	USA	RCT – compromised	PACT	NA	Inpatient	Inpatient	Psychotic	No	121
Pai – Bangalore	1982	India	RCT – compromised	Home care by nurse	NA	Inpatient	Inpatient	Psychotic	No	54
Pasamanick – Ohio	1964	USA	RCT – compromised	Drug home care	Placebo home care	Inpatient	Inpatient	Psychotic	No	193
PRiSM – London	1998	UK	Prospective	Intensive (PACT)	NA	Community	Generic team	Psychotic	No	302
Rössler – Mannheim	1992	Germany	Retrospective	Assertive/ICM	NA	Community	No aftercare	Psychotic	No	194
Sands – Philadelphia	1994	USA	Retrospective	Community treatment teams	NA	Community	ACT	Psychotic	High service users	60
Santiago – Arizona	1985	USA	RCT – compromised	Treatment network team	NA	Community	ACT	Psychotic	High service users	159
Slavinsky – Connecticut	1982	USA	RCT – compromised	Nursing social support programme	NA	Community	Medication clinic	Psychotic	No	47
Stanard – Georgia	1999	USA	Prospective	Strengths CM	NA	Community	CM	Psychotic	High service users	Missing
Tyrer – London 3	1992	UK	Prospective	GP psychiatric clinics	NA	Community	Outpatients	Neurotic	No	Missing
Vincent – New York	1977	USA	RCT – compromised	Community service	NA	Community	Standard care	Psychotic	No	162
Weinman – Philadelphia	1970	USA	RCT – compromised	Enabler	Socio-environmental ward	Inpatient	Inpatient	Psychotic	No	Missing
Wood – Dunedin	1995	New Zealand	Prospective	ACT with GPs	NA	Community	Outpatients	Psychotic	High service users	128
Zhang – Shanghai	1994	China	Prospective	Guardianship networks	NA	Community	Outpatients	Psychotic	No	204

Appendix 3

Search strategies

Cochrane Schizophrenia Group

The CSG's terms for psychotic illness are as follows:

[(((TARDIV* near DYSKINE*) or (AKATHISI*) or (ACATHISI*) or (NEUROLEPTIC* and (MALIGNANT near2 SYNDROME)) or (NEUROLEPTIC* and MOVEMENT and DISORDER*) or (PARKINSONI*) or (NEUROLEPTIC-INDUC*)) not (PARKINSON'S near1 (DISEASE in TI))) or ('DYSKINESIA-DRUG-INDUCED' / all subheadings) or ('AKATHISIA-DRUG-INDUCED' / all subheadings) or ('NEUROLEPTIC-MALIGNANT-SYNDROME' / all subheadings) or ((explode 'SCHIZOPHRENIA' / all subheadings) or (explode 'PARANOID-DISORDERS' / all subheadings) or (SCHIZO*) or (HEBEPHRENI*) or (OLIGOPHRENI*) or (PSYCHOTIC*) or (PSYCHOSIS) or (PSYCHOSES) or (((CHRONIC* or SEVER*) near2 MENTAL*) near2 (ILL* or DISORDER*)))].

Database-specific search strategies

CINAHL

CINAHL (1982–10.99) was searched using the CSG's terms for RCTs combined with the term for mental health problems and the term for home treatment, plus:

[or explode 'Community-Assessment' / all topical subheadings / all age subheadings or explode 'Community-Health-Nursing' / all topical subheadings / all age subheadings or explode 'Rehabilitation-Community-Based' / all topical subheadings / all age subheadings or explode 'Community-Networks' / all topical subheadings / all age subheadings or explode 'Community-Health-Centers' / all topical subheadings / all age subheadings or explode 'Community-Health-Services' / all topical subheadings / all age subheadings or explode 'Community-Living' / all topical subheadings / all subheadings or explode 'Community-Mental-Health-Nursing' / all topical subheadings/ all age subheadings or explode 'Community-Programs' / all topical subheadings / all age subheadings or explode 'Community-Reintegration' / all topical subheadings / all age subheadings or explode 'Community-Service' / all topical subheadings / all age subheadings or explode 'Community-Special-Programs-(Saba-HHCC)' / all topical subheadings / all age subheadings or explode 'Community-Trials' / all topical subheadings / all age subheadings or explode 'Home-Rehabilitation' / all topical subheadings / all age subheadings or explode 'Psychiatric-Home-Care' / all topical subheadings / all age subheadings or explode 'Home-Health-Care' / all topical subheadings / all age subheadings or explode 'Home-Health-Agencies' / all topical subheadings / all age subheadings or 'Home-Nursing' / all topical subheadings / all age subheadings or explode 'Home-Nursing-Professional' / all topical subheadings / all age subheadings or explode 'Home-Occupational-Therapy' / all topical subheadings / all age subheadings or explode 'Home-Rehabilitation' / all topical subheadings / all age subheadings or explode 'Home-Visits' / all topical subheadings / all age subheadings or explode 'Crisis-Intervention' / all topical subheadings / all age subheadings or explode 'Crisis-Intervention-(Iowa-NIC)' / all topical subheadings / all age subheadings or explode 'Crisis-Management-(Iowa-NIC)-(Non-Cinahl)' / all topical subheadings / all age subheadings or explode 'Mobile-Health-Units' / all topical subheadings / all age subheadings].

Cochrane Schizophrenia Group Register

The Cochrane Schizophrenia Group Register (–9.99) was searched using the term for home treatment.

EMBASE

EMBASE (1980–10.99) was searched using the CSG's terms for RCTs combined with the term for mental health problems and the term for home treatment, plus:

[or explode ' community-care' / all subheadings or explode 'health-center' / all subheadings or explode 'community-mental-health' / all subheadings or explode 'community-mental-health-center' / all subheadings or explode 'mental-health-service' / all subheadings or explode 'social-psychiatry' / all subheadings or explode 'home-care' / all subheadings or explode 'crisis-intervention' / all subheadings or explode 'preventive-health-service' / all subheadings].

MEDLINE

MEDLINE (1966–12.99) was searched using the CSG's terms for RCTs combined with the term for mental health problems and the term for home treatment, plus:

[or 'Community-Mental-Health-Services / all subheadings or explode 'Community-Psychiatry' / all subheadings or explode 'Home-Care-Services' / all subheadings or explode 'Crisis Intervention' / all subheadings or 'Mobile-Health-Units' / all subheadings].

PsycLIT

PsycLIT (1887–9.99) was searched using the CSG's terms for RCTs combined with the term for mental health problems and the term for home treatment, plus:

[or explode 'Community-Mental-Health-Centers' / all subheadings or 'Community-Mental-Health-Services / all subheadings or explode 'Community-Psychiatry' / all subheadings or explode 'Home-Care-Services' / all subheadings or explode 'Crisis-Intervention' / all subheadings or 'Mobile-Health-Units' / all subheadings].

Appendix 4

Excluded studies

The following studies were found in the systematic literature search but were excluded from the review because they did not meet our inclusion critieria.

In the annotations below, **home treatment** is defined as "a service that enables the patient to be treated out of hospital as far as possible and to stay in their usual place of residence" (excluding, for example, day, foster and residential care), and a **comparative study** is defined as one that compares two services (excluding, for example, within-subject comparisons).

Armstrong HE, Cox GB, Short BA, Allmon DJ. A comparative evaluation of two day treatment programs. *Psychosoc Rehabil J* 1991;**14**(4):53–67.
Reason for exclusion: not a home treatment study (day care).

Beard JH, Pitt RB, Fisher SH, Goertzel V. Evaluating the effectiveness of a psychiatric rehabilitation program. *Am J Orthopsychiatry* 1963;**33**:701–12.
Reason for exclusion: not a home treatment study (day care).

Bedell J, Ward JC. An intensive community-based treatment alternative to state hospitalization. *Hosp Community Psychiatry* 1989;**40**:533–5.
Reason for exclusion: not a home treatment study (residential).

Bell M, Lysaker P. Levels of expectation for work activity in schizophrenia: clinical and rehabilitation outcomes. *Psychiatr Rehabil J* 1996;**19**(3):71–6.
Reason for exclusion: not a home treatment study.

Bond GR. An economic analysis of psychosocial rehabilitation. *Hosp Community Psychiatry* 1984;**35**:356–62.
Reason for exclusion: not a home treatment study (day care).

Bond GR, Witheridge TF, Setze PJ, Dincin J. Preventing rehospitalization of clients in a psychosocial rehabilitation agency. *Hosp Community Psychiatry* 1985;**36**:993–5.
Reason for exclusion: not a comparative study.

Bond GR, Dincin J. Accelerating entry into transitional employment in a psychosocial rehabilitation agency. *Rehabil Psychol* 1986;**31**:143–55.
Reason for exclusion: not a home treatment study.

Bond GR, Witheridge TF, Wasmer D, Dincin J, McRae SA, Mayes J, *et al.* A comparison of two crisis housing alternatives to psychiatric hospitalization. *Hosp Community Psychiatry* 1989;**40**:177–83.
Reason for exclusion: not a home treatment study.

Boomsma J, Dassen T, Dingemans C, van den Heuvel W. Nursing interventions in crisis-oriented and long-term psychiatric home care. *Scand J Caring Sci* 1999;**13**:41–8.
Reason for exclusion: not a home treatment study; not a comparative study.

Borland A, McRae J, Lycan C. Outcomes of five years of continuous intensive case management. *Hosp Community Psychiatry* 1989;**40**:369–76.
Reason for exclusion: not a comparative study.

Bowers L. Trends in the psychosocial problems of those with serious and enduring mental illness under the Care Programme Approach: a three and a half year follow up. *Psychiatr Care* 1998;**5**:6–11.
Reason for exclusion: not a comparative study.

Brekke J, Test MA. An empirical analysis of services delivered in a model community support program. *Psychosoc Rehabil J* 1987;**10**(4):51–61.
Reason for exclusion: not a comparative study.

Brooker C, Molyneux P, Deverill M, Repper J. Evaluating clinical outcome and staff morale in a rehabilitation team for people with serious mental health problems. *J Adv Nurs* 1999;**29**:44–51.
Reason for exclusion: not a comparative study.

Brown G, Bone M, Dalison B. Schizophrenia and social care: a comparative follow-up study of 339 schizophrenic patients. Maudsley Monograph. London: Oxford University Press; 1966.
Reason for exclusion: not a comparative study.

Buchkremer G, Klingberg S, Holle R, Schulze MH, Hornung WP. Psychoeducational psychotherapy for schizophrenic patients and their key relatives or care-givers: results of a 2-year follow-up. *Acta Psychiatr Scand* 1997;**96**:483–91.
Reason for exclusion: not a home treatment study.

Bybee D, Mowbray CT, Cohen E. Short versus longer term effectiveness of an outreach program for the homeless mentally ill. *Am J Community Psychol* 1994;**22**:181–209.
Reason for exclusion: not a comparative study.

Caffey EMJ, Galbrecht CR, Klett CJ. Brief hospitalizaion and aftercare in the treatment of schizophrenia. *Arch Gen Psychiatry* 1971;**24**:81–6.
Reason for exclusion: not a home treatment study.

Caton CL, Wyatt RJ, Grunberg J, Felix A. An evaluation of a mental health program for homeless men. *Am J Psychiatry* 1990;**147**:286–9.
Reason for exclusion: community housing; not a comparative study.

Claghorn JL, Kinross-Wright J. Reduction in hospitalization of schizophrenics. *Am J Psychiatry* 1971;**28**:344–7.
Reason for exclusion: not a home treatment study.

Coelho RJ, Kelley PS, Deatsman-Kelley C. An experimental investigation of an innovative community treatment model for persons with a dual diagnosis (DD/MI). *J Rehabil* 1993;**59**:37–42.
Reason for exclusion: dual diagnosis of mental retardation and mental illness.

Coffey M. Provision of out-of-hours support to a forensic population: strategies and research potential. *J Psychiatr Ment Health Nurs* 1998;**5**:367–75.
Reason for exclusion: not a comparative study.

Conway AS, Melzer D, Hale AS. The outcome of targeting community mental health services: evidence from the West Lambeth schizophrenia cohort. *BMJ* 1994;**308**:627–30.
Reason for exclusion: not a comparative study.

Cotroneo M, Outlaw FH, King J, Brince J. Advanced practice psychiatric–mental health nursing in a community-based nurse-managed primary care program. *J Psychosoc Nurs Ment Health Serv* 1997;**35**:18–25.
Reason for exclusion: not a comparative study.

Creed F, Anthony P, Godbert K, Huxley P. Treatment of severe psychiatric illness in a day hospital. *Br J Psychiatry* 1989;**154**:341–7.
Reason for exclusion: not a home treatment study (day care).

Crosby C. Health Services Research Unit (HSRU) University College of North Wales: evaluation of the strategy for mental health services in North Wales. *J Ment Health* 1993;**2**:85–8.
Reason for exclusion: not a comparative study.

Cuffel BJ. Violent and destructive behaviour among the severely mentally ill in rural areas: evidence from Arkansas' community mental health system. *Community Ment Health J* 1994;**30**:495–504.
Reason for exclusion: not a comparative study.

Davidson L, Tebes JK, Rakfeldt J, Sledge WH. Differences in social environment between inpatient and day hospital–crisis respite settings. *Psychiatr Serv* 1996;**47**:714–20.
Reason for exclusion: not a home treatment study (day care/crisis respite).

De Cangas JPC. Le 'case management' affirmatif: une evaluation complete d'un programme du genre en milieu hospitalier. [Assertive case management: a comprehensive evaluation of a hospital based case management programme.] *Sante Ment Que* 1994;**19**:75–92.
Reason for exclusion: not a home treatment study ('case management' programme is hospital-based).

Deci PA, Santos AB, Hiott DW, Schoenwald S, Dias JK. Dissemination of assertive community treatment programs. *Psychiatr Serv* 1995;**46**:676–8.
Reason for exclusion: not a comparative study.

De Haan L, Linszen DH, Gorsira R. Early intervention, social functioning and psychotic relapse of patients with recent-onset schizophrenic disorders. *Int Clin Psychopharmacol* 1998;**13** Suppl 1:S63–6.
Reason for exclusion: not a comparative study.

Dharwandkar M. Effectiveness of an assertive outreach community treatment program. *Aust N Z J Psychiatry* 1994;**28**:244–9.
Reason for exclusion: not a comparative study.

Dick PH, Sweeney ML, Crombie IK. Controlled comparison of day-patient and out-patient treatment for persistent anxiety and depression. *Br J Psychiatry* 1991;**158**:24–7.
Reason for exclusion: not a home treatment study (day care).

Dickey B, Cannon NL, McGuire TG, Gudeman JE. The Quarterway House: a two-year cost study of an experimental residential program. *Hosp Community Psychiatry* 1986;**37**:1136–43.
Reason for exclusion: not a home treatment study (residential care + psychosocial programme).

Dickey B, Gonzalez O, Latimer E, Powers K, Schutt R, Goldfinger S. Use of mental health services by formerly homeless adults residing in group and independent housing. *Psychiatr Serv* 1996;**47**:152–8.
Reason for exclusion: not a home treatment study.

Dickey B, Latimer E, Powers K, Gonzalez O, Goldfinger SM. Housing costs for adults who are mentally ill and formerly homeless. *J Mental Health Adm* 1997;**24**:291–305.
Reason for exclusion: not a home treatment study.

Donlon PT, Rada RT, Knight SW. A therapeutic aftercare setting for "refractory" chronic schizophrenic patients. *Am J Psychiatry* 1973;**130**:682–4.
Reason for exclusion: not a home treatment study.

Drake RE, Becker DR, Biesanz JC, Torrey WC, McHugo GJ, Wyzik PF. Rehabilitative day treatment vs. supported employment: I. Vocational outcomes. *Community Ment Health J* 1994;**30**:519–32.
Reason for exclusion: not a home treatment study (day care versus supported employment).

Durbin J, Goering P, Wasylenki D, Roth J. Meeting the challenge: field evaluations of community support programs. *Psychosoc Rehabil J* 1995;**19**(1):19–26.
Reason for exclusion: not a comparative study.

Durbin J, Goering P, Wasylenki D, Roth J. Who gets how much of what: a description of intensive case management. *Psychiatr Rehabil J* 1997;**20**(3):49–56.
Reason for exclusion: not a comparative study.

Durell J, Lechtenberg B, Corse S, Frances RJ. Intensive case management of persons with severe mental illness who abuse substances. *Hosp Community Psychiatry* 1993;**44**:415–16.
Reason for exclusion: not a comparative study.

Durst R, Teitelbaum A, Bar-El Y, Shlafman M, Ginath Y. Evaluation of compulsory ambulatory treatment in Israel. *Psychiatr Serv* 1999;**50**:698–700.
Reason for exclusion: not a comparative study.

Endicott J, Cohen J, Nee J, Fleiss JL, Herz MI. Brief vs standard hospitalization: for whom? *Arch Gen Psychiatry* 1979;**36**:706–12.
Reason for exclusion: not a home treatment study.

Falloon IH, Boyd JL, McGill CW. Family management in the prevention of morbidity of schizophrenia. Clinical outcome of a two-year longitudinal study. *Arch Gen Psychiatry* 1985;**42**:887–96.
Reason for exclusion: not a home treatment study.

Fenton WS, Mosher LR, Herrell JM, Blyler CR. Randomized trial of general hospital and residential alternative care for patients with severe and persistent mental illness. *Am J Psychiatry* 1998;**155**:516–22.
Reason for exclusion: not a home treatment study (residential).

Field G, Yegge L. A client outcome study of a community support demonstration project. *Psychosoc Rehabil J* 1982;**6**(2):15–22.
Reason for exclusion: not a comparative study.

Fitzgerald P, Kulkarni J. Home-oriented management programme for people with early psychosis. *Br J Psychiatry Suppl* 1998;**172**(33):39–44.
Reason for exclusion: not a comparative study.

Freeman D, Garety P, Fowler D, Kuipers E, Dunn G, Bebbington P, *et al.* The London–East Anglia randomized controlled trial of cognitive-behaviour therapy for psychosis IV: Self-esteem and persecutory delusions. *Br J Clin Psychol* 1998;**37**:415–30.
Reason for exclusion: not a home treatment study.

Freeman H, Cheadle AJ, Korer JR. A method for monitoring the treatment of schizophrenics in the community. *Br J Psychiatry* 1979;**134**:412–16.
Reason for exclusion: not a home treatment study.

Gill KJ, Pratt CW, Librera L. The effects of consumer vs. staff administration on the measurement of consumer satisfaction with psychiatric rehabilitation. *Psychiatr Rehabil J* 1998;**21**(4):365–70.
Reason for exclusion: not a home treatment study.

Glick ID, Fleming L, DeChillo N. A controlled study of transitional day care for non-chronically-ill patients. *Am J Psychiatry* 1986;**143**:1551–6.
Reason for exclusion: not a home treatment study (day care).

Goldman HH, Morrissey J, Ridgely S. Evaluating the Robert Wood Johnson Foundation Program on chronic mental illness. *Milbank Q* 1994;**71**:37–47.
Reason for exclusion: not a home treatment study.

Gudeman JE, Dickey B, Rood L, Hellman S, Grinspoon L. Alternative to the back ward: the quarter-way house. *Hosp Community Psychiatry* 1981;**32**:330–4.
Reason for exclusion: not a home treatment study (residential).

Guy W, Gross M, Hogarty GE, Dennis H. A controlled evaluation of day hospital effectiveness. *Arch Gen Psychiatry* 1969;**20**:329–38.
Reason for exclusion: not a home treatment study (day care).

Heitger B, Saameli W. Wirksamkeit einer psychiatrischen Tagesklinikbehandlung. Eine empirische Untersuchung aus den Psychiatrischen Diensten des Regionalspitals Thun. [Effectiveness of treatment in a psychiatric day hospital.] *Schweiz Arch Neurol Psychiatr* 1995;**146**:33–8.
Reason for exclusion: not a home treatment study (day care).

Hemming M, Yellowlees P. An evaluation study of clinical case management using clinical case management standards. *J Ment Health* 1997;**6**:589–98.
Reason for exclusion: not a comparative study.

Herz MI, Endicott J, Spitzer RL, Mesnikoff A. Day versus inpatient hospitalization: a controlled study. *Am J Psychiatry* 1971;**127**(10):107–18.
Reason for exclusion: not home treatment (day care).

Herz MI, Endicott J, Gibbon M. Brief hospitalization: two-year follow-up. *Arch Gen Psychiatry* 1979;**36**:701–5.
Reason for exclusion: not a home treatment study.

Hogarty GE, Goldberg SC. Drug and sociotherapy in the aftercare of schizophrenic patients. One-year relapse rates. *Arch Gen Psychiatry* 1973;**28**:54–64.
Reason for exclusion: not a home treatment study.

Hogarty GE, Kornblith SJ, Greenwald D, DiBarry AL, Cooley S, Ulrich RF, *et al.* Three-year trials of personal therapy among schizophrenic patients living with or independent of family, I: description of study and effects on relapse rates. *Am J Psychiatry* 1997;**154**:1504–13.
Reason for exclusion: not a home treatment study.

Hu T, Jerrell JM. Cost-effectiveness of alternative approaches in treating severely mentally ill in California. *Schizophr Bull* 1991;**17**:461–7.
Reason for exclusion: review.

Hu X, Xiong W, Fei L, Wang R. Comprehensive family treatment for schizophrenic patients: a prospective, randomised, single-blind control trial of 63 patients. *Chinese Ment Health J* 1994;**8**:210–15.
Reason for exclusion: trial type not clear: '2-year follow-up study'; family-based treatment vs standard care; Chinese – translation not possible.

Husted J, Wentler SA, Bursell A. The effectiveness of community support programs for persistently mentally ill in rural areas. *Community Ment Health J* 1994;**30**:595–600.
Reason for exclusion: not a comparative study.

Jones R, Goldberg D, Hughes B. A comparison of two different services treating schizophrenia: a cost–benefit approach. *Psychol Med* 1980;**10**:493–505.
Reason for exclusion: not a home treatment study (two hospital services).

Khefner KW, van-der-Kheiden V, Klug I. The assessment of a community-based care system for mental patients. *Zh Nevropatol Psikhiatr Im S S Korsakova* 1985;**85**:116–21.
Reason for exclusion: not a comparative study.

Kluiter H, Giel R, Nienhuis FJ, Ruphan M, Wiersma D. Predicting feasibility of day treatment for unselected patients referred for inpatient psychiatric treatment: results of a randomized trial. *Am J Psychiatry* 1992;**149**:1199–205.
Reason for exclusion: not a home treatment study (day care).

Krupinski J, Lippmann L. Multi-disciplinary or non-disciplinary: evaluation of staff functioning in a community mental health centre. *Aust N Z J Psychiatry* 1984;**18**:172–8.
Reason for exclusion: not a comparative study.

Kuldau JM, Dirks SJ. Controlled evaluation of a hospital-originated community transitional system. *Arch Gen Psychiatry* 1977;**34**:1331–40.
Reason for exclusion: not a home treatment study.

Kwakwa J. Alternatives to hospital-based mental health care. *Nurs Times* 1995;**91**:38–9.
Reason for exclusion: not a comparative study.

Lamb HR, Goertzel V. Discharged mental patients – are they really in the community? *Arch Gen Psychiatry* 1971;**24**:29–34.
Reason for exclusion: not a home treatment study (residential and day care).

Lamb HR. The new state mental hospitals in the community. *Psychiatr Serv* 1997;**48**:1307–10.
Reason for exclusion: not a home treatment study (residential); not a comparative study.

Leff HS, Lieberman M, Mulkern V, Raab B. Outcome trends for severely mentally ill persons in capitated and case managed mental health programs. *Adm Policy Ment Health* 1996;**24**:3–23.
Reason for exclusion: not a home treatment study.

Leff J, Trieman M, Gooch C. Team for the assessment of psychiatric services (TAPS) project 33: prospective follow-up study of patients discharged from two psychiatric hospitals. *Am J Psychiatry* 1996;**153**:1318–24.
Reason for exclusion: not a home treatment study (residential); not a comparative study.

Levenson AJ. Acute schizophrenia: an efficacious outpatient treatment approach as an alternative to full-time hospitalization. *Dis Nerv Sys* 1977;**38**:242–5.
Reason for exclusion: not a home treatment study.

Linn MW, Caffey-EM J, Klett CJ, Hogarty G. Hospital vs community (foster) care for psychiatric patients. *Arch Gen Psychiatry* 1977;**34**:78–83.
Reason for exclusion: not a home treatment study (foster care).

Linn MW, Caffey EM, Klett CJ. Day treatment and psychotropic drugs in the aftercare of schizophrenic patients. A veterans administration cooperative study. *Arch Gen Psychiatry* 1979;**36**:1055–66.
Reason for exclusion: not a home treatment study (day care).

Linn MW, Klett CJ, Caffey J. Foster home characteristics and psychiatric patient outcome: the wisdom of Gheel confirmed. *Arch Gen Psychiatry* 1980;**37**:129–32.
Reason for exclusion: not a home treatment study (foster care).

Linn MW, Gurel L, Williford WO, Overall J, Gurland B, Laughlin P, Barchiesi A. Nursing home care as an alternative to psychiatric hospitalization. A Veterans Administration cooperative study. *Arch Gen Psychiatry* 1985;**42**:544–51.
Reason for exclusion: not a home treatment study.

Luo K, Yu D. Enterprise-based sheltered workshops in Nanjing. A new model for the community rehabilitation of mentally ill workers. *Br J Psychiatry Suppl* 1994; **165** Suppl 24:89–95.
Reason for exclusion: not a home treatment study.

Matthews SM, Roper MT, Mosher LR, Menn AZ. A non neuroleptic treatment for schizophrenia: analysis of the two year postdischarge risk of relapse. *Schizophr Bull* 1979;**5**:322–33.
Reason for exclusion: not a home treatment study (residential).

McClary S, Lubin B, Evans C, Watt B. Evaluation of a community treatment program for young adult schizophrenics. *J Clin Psychol* 1989;**45**:806–8.
Reason for exclusion: not a comparative study.

McRae J, Higgins M, Lycan C, Sherman W. What happens to patients after five years of intensive case management stops? *Hosp Community Psychiatry* 1990;**41**:175–83.
Reason for exclusion: not a comparative study.

Meisler N, Blankertz L, Santos AB, McKay C. Impact of assertive community treatment on homeless persons with co-occurring severe psychiatric and substance use disorders. *Community Ment Health J* 1997;**33**:113–22.
Reason for exclusion: not a comparative study.

Michaux MH, Chelat MR, Foster SA, Pruin RJ. Day and full-time psychiatric treatment: a controlled comparison. *Curr Ther Res* 1972;**14**:279–92.
Reason for exclusion: not a home treatment study (day care).

Mierlak D, Galanter M, Spivack N, Dermatis H, Jurewicz E, De LG. Modified therapeutic community treatment for homeless dually diagnosed men. Who completes treatment? *J Subst Abuse Treat* 1998;**15**:117–21.
Reason for exclusion: not a home treatment study (residential).

Morris M. Patients' perceptions of psychiatric home care. *Arch Psychiatr Nurs* 1996;**10**:176–83.
Reason for exclusion: not a comparative study.

Mosher LR, Menn A. Community residential treatment for schizophrenia: two-year follow up. *Hosp Community Psychiatry* 1978;**29**:715–23.
Reason for exclusion: not a home treatment study (residential).

Mosher LR, Vallone R, Menn A. The treatment of acute psychosis without neuroleptics: six-week psychopathology outcome data from the Soteria project. *Int J Soc Psychiatry* 1995;**41**:157–73.
Reason for exclusion: not a home treatment study (residential).

Mowbray CT, Wellwood R, Chamberlain P. Project stay: a consumer-run support service. *Psychosoc Rehabil J* 1988;**12**(1):33–42.
Reason for exclusion: not a comparative study.

Munroe BH, Marziali E. A controlled trial of short-term group treatment for borderline personality disorder. *J Personal Disord* 1995;**9**:190–8.
Reason for exclusion: not a home treatment study.

Newman SJ, Reschovsky JD, Kaneda K, Hendrick AM. The effects of independent living on persons with chronic mental illness: an assessment of the Section 8 certificate program. *Milbank Q* 1994;**72**:171–98.
Reason for exclusion: not a comparative study.

Nikkel RE, Smith G, Edwards D. A consumer-operated case management project. *Hosp Community Psychiatry* 1992;**43**:577–9.
Reason for exclusion: not a comparative study.

Nuttbrock LA, Rahav M, Rivera JJ, Ng MD, Link BG. Outcomes of homeless mentally ill chemical abusers in community residences and a therapeutic community. *Psychiatr Serv* 1998;**49**:68–76.
Reason for exclusion: not a home treatment study.

Otero V, Rebolledo S. Evaluacion de un programa de rehabilitacion psiquiatrica. [Assessment of a psychiatric rehabilitation program.] *Psiquis* 1993;**14**(6–8):273–80.
Reason for exclusion: not a home treatment study (day care); not a comparative study.

Piper WE, Rosie JS, Azim HFA, Joyce AS. A randomized trial of psychiatric day treatment for patients with affective and personality disorders. *Hosp Community Psychiatry* 1993;**44**:757–63.
Reason for exclusion: not a home treatment study (day care).

Price J, Karim I. An evaluation of psychiatric after-care in a developing country (Fiji). *Br J Psychiatry* 1976; **129**:155–7.
Reason for exclusion: not a comparative study.

Purvis SA, Miskimmins RW. Effects of community follow-up on post-hospital adjustment of psychiatric patients. *Community Ment Health J* 1970;**6**:374–82.
Reason for exclusion: not a home treatment study.

Reibel S, Herz MI. Limitations of brief hospital treatment. *Am J Psychiatry* 1976;**133**:518–21.
Reason for exclusion: not a home treatment study.

Rosenheck R, Frisman L, Gallup P. Effectiveness and cost of specific treatment elements in a program for homeless mentally ill veterans. *Psychiatr Serv* 1995;**46**:1131–9.
Reason for exclusion: not a comparative study.

Ruphan M, Kluiter H, Nienhuis FJ, Wiersma D, Giel R. Opnamevervangende dagbehandelung bij psychiatrische patienten: effecten op het sociale functioneren, twee jarr na de start van een gecontroleerd experiment. [Day treatment versus inpatient treatment for psychiatric patients in need of admission: longitudinal effects on social role-functioning studied by means of randomized trial.] *Tijdschr vor Psychiatr* 1992;**34**:571–83.
Reason for exclusion: not a home treatment study (day care).

Santos AB, Deci PA, Lachance KR. Providing assertive community treatment for severely mentally ill patients in a rural area. *Hosp Community Psychiatry* 1993;**44**:34–9.
Reason for exclusion: not a comparative study.

Schene AH, van Wijngaarden B, Poelijoe NW, Gersons BPR. The Utrecht comparative study on psychiatric day treatment and inpatient treatment. *Acta Psychiatr Scand* 1993;**87**:427–36.
Reason for exclusion: not a home treatment study (day care).

Sheldon A. An evaluation of psychiatric after-care. *Br J Psychiatry* 1964;**110**:662–7.
Reason for exclusion: not a home treatment study (aftercare and day care).

Sledge WH, Tebes J, Rakfeldt J, Davidson L, Lyons L, Druss B. Day hospital/crisis respite care versus inpatient care, Part I: clinical outcomes. *Am J Psychiatry* 1996;**153**:1065–73.
Reason for exclusion: not a home treatment study (day care).

Smith WG, Kaplan J, Siker D. Community mental health and the seriously disturbed patient: first admission outcomes. *Arch Gen Psychiatry* 1974;**30**:693–6.
Reason for exclusion: not a home treatment study (regional mental health centre vs state hospital); not a comparative study.

Swartz MS, Burns BJ, George LK, Swanson J, Hiday VA, Borum R, *et al.* The ethical challenges of a randomized controlled trial of involuntary outpatient commitment. *J Ment Health Adm* 1997;**24**:35–43.
Reason for exclusion: not a home treatment study.

Taylor J, Bhumgara K. The Safety Net Project. *Psychiatr Bull* 1989;**13**:677–9.
Reason for exclusion: not a comparative study.

Teesson M, Gallagher J. Evaluation of a treatment programme for serious mental illness and substance use in an inner city area. *J Ment Health* 1999;**8**:19–28.
Reason for exclusion: not a comparative study.

Test MA, Knoedler WH, Allness DJ, Burke SS. Characteristics of young adults with schizophrenic disorders treated in the community. *Hosp Community Psychiatry* 1985;**36**:853–8.
Reason for exclusion: not a comparative study.

Thornicroft G, Breakey WR. The COSTAR programme 1: improving social networks of the long-term mentally ill. *Br J Psychiatry* 1991;**159**:245–9.
Reason for exclusion: not a comparative study.

Tooney BG, First RJ, Rife JC. Evaluating community care for homeless mentally ill people. *Soc Work Res Abstr* 1989;**25**(4):21–6.
Reason for exclusion: not a comparative study.

Toro PA, Bellavia CW, Wall DD, Passero-Rabideau JM, Daeschler CV, Thomas DM. Evaluating an intervention for homeless persons: results of a field experiment. *J Consult Clin Psychol* 1997;**65**:476–84.
Reason for exclusion: not predominately about mental illness.

Van Minnen A, Hoogduin CA, Broekman TG. Hospital vs. outreach treatment for patients with mental retardation and psychiatric disorders: a controlled study. *Acta Psychiatr Scand* 1997;**95**:515–22.
Reason for exclusion: patients have mental retardation as well as severe mental illness.

Vermeiren H, Van OP. People at higher risk for a psychiatric emergency dealing with a psychosocial crisis: preventing hospital admission by a short stay crisis stabilization service. *New Trends Exp Clin Psychiatry* 1999;**15**(2–3):115–19.
Reason for exclusion: not a home treatment study (residential/crisis).

Vidalis AA, Preston TD, Baker GH. Is day hospital treatment effective, and can success be predicted? *Int J Soc Psychiatry* 1990;**36**:137–42.
Reason for exclusion: not a home treatment study; not a comparative study.

Ward MF, Armstrong C, Lelliott P, Davies M. Training, skills and caseloads of community mental health support workers involved in case management: evaluation from the initial UK demonstration sites. *J Psychiatr Ment Health Nurs* 1999;**6**:187–97.
Reason for exclusion: not a comparative study.

Washburn S, Vannicelli M, Longabaugh R, Scheff B-J. A controlled comparison of psychiatric day treatment and inpatient hospitalization. *J Consult Clin Psychol* 1976;**44**:665–75.
Reason for exclusion: not a home treatment study (day care).

Wasylenki D, Gehrs M, Goering P, Toner B. A home-based program for the treatment of acute psychosis. *Community Ment Health J* 1997;**33**:151–62, 163–5.
Reason for exclusion: not a comparative study.

Wiersma D, Kluiter H, Nienhuis FJ, Ruphan M, Giel R. Costs and benefits of day treatment with community care for schizophrenic patients. *Schizophr Bull* 1991;**17**:411–19.
Reason for exclusion: not a home treatment study (day care).

Wilder JF, Levin G, Zwerling I. A two-year follow-up evaluation of acute psychotic patients treated in a day hospital. *Am J Psychiatry* 1966;**122**:1095–101.
Reason for exclusion: not a home treatment study (day care).

Wilkinson G, Piccinelli M, Falloon I, Krekorian H, McLees S. an evaluation of community-based psychiatric care for people with treated long-term mental illness. *Br J Psychiatry* 1995;**167**:26–37.
Reason for exclusion: not a comparative study.

Wing JK, Giddens RG. Industrial rehabilitation of male chronic schizophrenic patients. *Lancet* 1959;**ii**:505–7.
Reason for exclusion: not a home treatment study.

Wright RG, Heiman JR, Shupe J, Olvera G. Defining and measuring stabilization of patients during four years of intensive community support. *Am J Psychiatry* 1989;**146**:1293–8.
Reason for exclusion: not a comparative study.

Zwerling I, Wilder JF. An evaluation of the applicability of the day hospital in treatment of acutely disturbed patients. *Isr Ann Psychiatr Relat Discip* 1964;**2**:162–85.
Reason for exclusion: not a comparative study (day care).

Appendix 5

Hospitalisation measures

Measures of hospitalisation

The tables below list all the studies in this review. Where studies use mean days in hospital as their hospitalisation measure, the significance of their findings is not reported here because they are included in our meta-analysis (see chapter 6, ‘Results’). The exception to this is when no data were available, in which case the significance of the finding is reported in *Tables 50* and *51*.

TABLE 50 *RCTs: hospitalisation measures*

	Study	Hospitalisation measures available	Significance
1	Aberg-Wistedt – Stockholm	Emergency room visits	Yes (favours experimental service)
		Reduction in hospital days (within-group)	NS
2	Bond – Chicago 1	Days in hospital	
3	Bond – Indiana 1	Days in hospital	
4	Burns – London	Days in hospital	
5	Bush – Atlanta	Days in hospital	
6	Chandler – California 1	Days in hospital	
7	Chandler – California 2	Days in hospital	
8	Curtis – New York	Days in hospital	
9	Drake – New Hampshire	Days in hospital	NS*
10	Essock – New York	Days in hospital	
11	Fenton – Montreal	Days in hospital	Yes (favours experimental service)
12	Ford – London 1	Days in hospital	
13	Franklin – Texas	Days in hospital	Yes (favours control service)*
14	Gater – Manchester	None available	
15	Godley – Illinois	Days in hospital	
16	Gournay – Middlesex	None available	
17	Hauenstein – Virginia	None available	
18	Herinckx – Oregon	None available	
19	Holloway – London	Days in hospital	
20	Hoult – Sydney	Days in hospital	
21	Ivarsson – Gothenburg	[In progress]	
22	Jerrell – San Jose	Days in hospital	
23	Jerrell – S. Carolina 1	Days in hospital	
24	Jerrell – S. Carolina 2	Days in hospital	
25	Johnston – New South Wales	Days in hospital	
26	Korr – Pittsburg	Days in hospital	
27	Lafave – Ontario	Days in hospital	
28	Lehman – Baltimore	Days in hospital	
29	Lehman – Maryland	Days in hospital	
30	Macias – Utah 1	Number of patients hospitalised (within-group)	Yes (within-group only)
31	Marshall – Oxford	Days in hospital	
32	Marx – Madison	Days in hospital	
33	McDonel – Indiana	'Hospital use'	NS*
34	McFarlane – Maine	Rate of re-hospitalisation	NS
35	Merson – London	Days in hospital	
36	Modrcin – Kansas	None available	

* *Figures not reported*

NS, not significant

continued

TABLE 50 contd *RCTs: hospitalisation measures*

	Study	Hospitalisation measures available	Significance
37	Morse – St Louis 1	None available	
38	Morse – St Louis 2	% of individuals receiving hospital contacts (within-group)	[Significant decrease over time]
39	Muijen – London 1	Days in hospital	
40	Muijen – London 2	Days in hospital	
41	Paykel – London	Days in hospital	
42	Quinlivan – California	Days in hospital	
43	Rosenheck – Connecticut	Days in hospital	
44	Rosenthal – New York	None available	
45	Salkever – Baltimore	Days in hospital	
46	Sellwood – Manchester	Days in hospital	
47	Solomon – Philadelphia 1	Days in hospital	
48	Solomon – Philadelphia 2	None available	
49	Stein – Madison	Days in hospital	
50	Test – Wisconsin	Days in hospital	
51	Tyrer – London 1	Days in hospital	
52	Tyrer – London 2	Days in hospital	
53	UK700	Days in hospital	
54	Vaccaro – LA	None available	
55	Wolff – New Jersey	% of patients receiving 1+ units of inpatient treatment: between groups	NS
56	Wood – California	Days in hospital	

NS, not significant

TABLE 51 *Non-randomised studies: hospitalisation measures*

	Study	Hospitalisation measures available	Significance
1	Barker – Kentucky	Readmissions	Yes (favours experimental service)
2	Bigelow – Victoria	% of possible community days spent in hospital	Yes (favours experimental service)
3	Bond – Indiana 2	Days in hospital	
4	Bond – Indiana 3	Days in hospital	
5	Buhrich – New South Wales	Rate and duration of admission	Yes (favours experimental service)
6	Champney – Ohio	None available	
7	Christensen – Svendborg	Days in hospital	
8	Coates – Vancouver	% of individuals admitted	NS
		Duration of initial admissions	NS
		Readmissions	NS
9	Cutler – Oregon	Hospitalisations	Yes (favours experimental service)
10	Dean – Birmingham 1	Days in hospital	
11	Dean – Birmingham 2	Days in hospital	
12	Drake – Washington	None available	
13	Felton – New York	Days in hospital	
14	Ford – London 2	None available	
15	Goering – Ontario	Total readmissions and recidivism rate	NS
		Length of stay	NS
16	Grad – Chichester	Days in hospital	
17	Hornstra – Missouri	Days in hospital	
18	Macias – Utah 2	None available	
19	McGorry – Victoria	None available	
20	McGurrin – Philadelphia	Units of inpatient care	Fewer used by experimental group (significance not reported)
21	Melzer – London	Number of patients in hospital at follow-up	[odds ratio]
22	Mowbray – Michigan	Days in hospital	
23	Pai – Bangalore	Readmissions	
24	Pasamanick – Ohio	Days in hospital	
25	PRiSM – London	Days in hospital	
26	Rössler – Mannheim	Total length of key hospitalisation	NS
		Length of 2nd hospitalisation (if applicable)	NS
		Probability of still being in hospital 5 weeks after admission	
27	Sands – Philadelphia	Days in hospital	
28	Santiago – Arizona	None available	
29	Slavinsky – Connecticut	Percentage re-hospitalised	NS
30	Stanard – Georgia	Hospital days	NS*
31	Tyrer – London 3	Number of admissions	Not clear
32	Vincent – New York	Readmissions	Not clear
33	Weinman – Philadelphia	Readmissions	Yes (favours experimental service)
34	Wood – Dunedin	Number of individuals with no admissions	Yes (favours experimental service)
35	Zhang – Shanghai	Readmissions	NS

* *Figures not given: authors report no difference between groups*

NS, not significant

Appendix 6

Follow-up questionnaires

Systematic review of home treatment for mental health problems

Study: ____

Name of respondent: ____

Tel: ______________________________

Please answer the following questions:

Is the team or service evaluated in the above study still identifiable? Yes / No

(If it is, please complete the 3rd [final] column in the 'Service characterisation questionnaire' table as well as the 1st column)

If the service is no longer running, could you tell us in what year it ceased to operate?

Was the control service a community mental health team? Yes/ No

(If yes, please also complete the 2nd column in the 'Service characterisation questionnaire' table)

If not, please describe the control service briefly here:

Please list around six features of the experimental service at the time of the study that made it innovative in your area:

Which of the characteristics of the service as described in your study or above do you still find useful and carry out now?

Were there any that you found unhelpful and decided to drop?

Home treatment review

Service characterisation questionnaire

Please answer each question, if possible, for the *Experimental service at the time of the study* [column 1], the *Control service at the time of the study* (if it was a team) [column 2] and the *Experimental service today* (if it still exists) [column 3]	**Experimental service during the study period**	**Control service during the study period**	**Experimental service today**
1 Were the following part of the team?			
Postgraduate qualified psychiatrist	Yes / No	Yes / No	Yes / No
Junior doctor	Yes / No	Yes / No	Yes / No
Psychiatric nurse	Yes / No	Yes / No	Yes / No
OT	Yes / No	Yes / No	Yes / No
Social worker	Yes / No	Yes / No	Yes / No
Other (please state)	Yes / No	Yes / No	Yes / No
2 Did any of the staff have specific qualifications in community working?	Yes / No	Yes / No	Yes / No
3 Was there in-service training especially geared at community-based care?	Yes / No	Yes / No	Yes / No
4 How many staff (approximately) were in the team?			
5 What was the target number of patients on the team's books?			
6 What was the target individual caseload size?			
7 If there was a psychiatrist on the team, was s/he an integrated member?	Yes / No	Yes / No	Yes / No
8 How many hours of psychiatrist time were designated per week? (1/2 day = 3.5 hours)	h	h	h
9 Did the team have a home treatment function?	Yes / No	Yes / No	Yes / No
10 Did team members regularly visit patients at home?	Yes / No	Yes / No	Yes / No
11 If so, approximately what proportion of patient contacts took place at home? (%)	%	%	%
12 How many days a week did the team operate?	days	days	days
13 How many hours did the team operate on weekdays?	h	h	h
14 Did the team take responsibility for healthcare functions (e.g. medication)?	Yes / No	Yes / No	Yes / No
15 Did the team take responsibility for social care functions (e.g. housing, benefits)?	Yes / No	Yes / No	Yes / No
16 Did the team have a specific crisis element?	Yes / No	Yes / No	Yes / No
17 What was the maximum contact frequency per patient per month?			
18 What was the average contact frequency per patient per month?			
19 Did the team have multidisciplinary review of patients at least once weekly?	Yes / No	Yes / No	Yes / No
20 Did the team have a protocol for meeting the needs of carers?	Yes / No	Yes / No	Yes / No

Data information: UK studies

Below is a list of services that people with severe mental health problems might typically come into contact with. Please tick all relevant boxes if data on **frequency of contact and/or average contacts** were collected in your study.

Type of service	**Tick only if contact frequency and/or average contacts were collected**
Inpatient attendances	
Outpatient attendances	
Residential care/rehabilitation	
Day care/occupational rehabilitation	
Employment patterns	
Emergency services	
Community psychiatric nurse	
Local authority social worker	
Contact to issue medication	
Prison	
Police cell	

Did you collect medication dosage? Yes / No

Data information: USA

Below is a list of services that people with severe mental health problems might typically come into contact with. Please tick all relevant boxes if data on **frequency of contact and/or average contacts** were collected in your study.

Type of service	**Tick only if contact frequency and/or average contacts were collected**
Inpatient attendances private	
Inpatient attendances Medicaid	
Outpatient attendances private	
Outpatient attendances Medicaid	
Residential care/rehabilitation	
Day activities/occupational rehabilitation	
Employment patterns	
Emergency room attendances	
Mental health worker	
Social worker	
Contacts to deliver medication	
Jail	
Overnight in police jail	

Did you collect medication dosage? Yes / No

Data information: Australia

Below is a list of services that people with severe mental health problems might typically come into contact with. Please tick all relevant boxes if data on **frequency of contact and/or average contacts** were collected in your study.

Type of service	**Tick only if contact frequency and/or average contacts were collected**
Inpatient attendances public	
Inpatient attendances private	
Outpatient attendances public	
Outpatient attendances private	
Residential support/rehabilitation	
Day activities/occupational rehabilitation	
Employment status	
Emergency room attendances	
Community-based staff/mental health worker	
Social worker	
Contacts to deliver medication	
Jail	
Overnight in police jail	

Did you collect medication dosage? Yes / No

Data information: Canada

Below is a list of services that people with severe mental health problems might typically come into contact with. Please tick all relevant boxes if data on **frequency of contact and/or average contacts** were collected in your study.

Type of service	**Tick only if contact frequency and/or average contacts were collected**
Inpatient stays	
Outpatient visits	
Supervised residences	
Day activities/day centres	
Employment patterns	
Emergency room visits	
Mental health worker	
Social worker	
Contacts to deliver medication	
Prison/jail	
Overnight in police jail	

Did you collect medication dosage? Yes / No

Appendix 7

Service utilisation and costs

TABLE 52 *Service use data collected, by study (authors' reports)*

Study	IP – state	IP – private	OP – state	OP – private	Res. care	Day care	Emp. pattern	Emerg. service	CPN	Social worker	Med.	Prison	Police
RCTs													
Bond – Chicago 1	✓	✓	✓	✓			✓					✓	
Burns – London	✓		✓			✓				✓	✓		
Chandler – California 1	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	
Drake – New Hampshire	✓	✓		✓			✓	✓				✓	✓
Ford – London 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gournay – Middlesex	✓		✓		✓	✓	✓	✓	✓	✓	✓		
Hauenstein – Virginia	✓	✓	✓	✓			✓	✓	✓	✓	✓		
Herinckx – Oregon	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Holloway – London	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	
Hoult – Sydney	✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
Ivarsson – Gothenburg	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	
Jerrell – S. Carolina 1	✓	✓	✓	✓	✓	✓		✓			✓	✓	✓
Jerrell – S. Carolina 2	✓	✓	✓	✓	✓	✓		✓			✓	✓	✓
Johnston – New South Wales	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓
Korr – Pittsburg											✓		
Lefave – Ontario	✓												
Lehman – Baltimore	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	
Macias – Utah 1				✓					✓	✓			
Marshall – Oxford	✓		✓	✓	✓	✓		✓	✓	✓		✓	
Marx – Madison	✓				✓	✓	✓	✓				✓	✓
McFarlane – Maine			✓		✓	✓	✓		✓	✓	✓	✓	
Merson – London	✓		✓					✓	✓	✓			
Muijen – London 1	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓

IP – state, inpatient services provided by state; IP – private, inpatient services provided privately; OP – state, outpatient services provided by state; OP – private, outpatient services provided privately; Res. care, residential care; Emp. pattern, employment patterns; Emerg. service, emergency services; Med., medication; Prison, prison, jail or similar; Police, stayed in police cell

continued

TABLE 52 contd *Service use data collected, by study (authors' reports)*

Study	IP – state	IP – private	OP – state	OP – private	Res. care	Day care	Emp. pattern	Emerg. service	CPN	Social worker	Med.	Prison	Police
***RCTs* contd**													
Muijen – London 2	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Paykel – London	✓		✓			✓							
Quinlivan – California	✓	✓	✓	✓		✓	✓						
Rosenheck – Connecticut	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Rosenthal – New York	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Solomon – Philadelphia 1	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
Solomon – Philadelphia 2	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
Stein – Madison	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Test – Wisconsin	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Tyrer – London 1	✓		✓										
Tyrer – London 2	✓		✓		✓	✓	✓	✓	✓	✓		✓	✓
UK700	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓
Wolff – New Jersey	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓
Wood – California	✓	✓	✓	✓			✓			✓		✓	✓
Totals	34	20	32	22	22	26	27	26	21	23	17	27	20
Non-randomised studies													
Bigelow – Victoria	✓												
Christensen – Svendborg	✓				✓								
Cutler – Oregon	✓												
Mowbray – Michigan	✓				✓		✓						
PRiSM – London	✓		✓		✓	✓		✓	✓	✓		✓	✓
Rössler – Mannheim	✓		✓		✓	✓	✓			✓	✓		
Sands – Philadelphia	✓	✓	✓	✓		✓	✓	✓	✓				
Santiago – Arizona	✓		✓		✓	✓				✓			
Stanard – Georgia	✓	✓	✓	✓	✓	✓	✓		✓	✓			
Totals	9	2	5	2	6	5	4	2	3	4	1	1	1

IP – state, inpatient services provided by state; IP – private, inpatient services provided privately; OP – state, outpatient services provided by state; OP – private, outpatient services provided privately; Res. care, residential care; Emp. pattern, employment patterns; Emerg. service, emergency services; Med., medication; Prison, prison, jail or similar; Police, stayed in police cell

TABLE 53 *Inpatient, outpatient, and accident and emergency: mean monthly cost (£) for RCTs*

Study	Date of first publication	Inpatient		Outpatient		Accident and emergency	
		Experimental	Control	Experimental	Control	Experimental	Control
Bond – Chicago 1	1990	715	1178	–	–	–	–
Bond – Indiana 1*	1988	340	1139	–	–	–	–
Burns – London*	1993	124	100	28	29	–	–
Bush – Atlanta	1990	349	531	–	–	–	–
Chandler – California 1	1996	169	213	–	–	–	–
Chandler – California 2	1999	175	457	–	–	–	–
Curtis – New York	1992	113	64	–	–	–	–
Drake – New Hampshire	1998	271	171	–	–	6	13
Essock – New York	1995	635	955	–	–	–	–
Fenton – Montreal	1979	266	770	–	–	–	–
Ford – London 1	1995	682	391	13	8	–	–
Godley – Illinois	1988	466	481	–	–	–	–
Holloway – London	1998	555	295	–	–	–	–
Hoult – Sydney	1983	155	988	–	–	–	–
Jerrell – San Jose	1989	451	482	182	108	8	14
Jerrell – S. Carolina 1*	1994	127	244	119	194	4	3
Jerrell – S. Carolina 2*	1995	426	650	232	189	2	4
Johnston – New South Wales	1998	888	688	27	3	–	–
Lafave – Ontario	1996	721	4735	–	–	–	–
Lehman – Baltimore	1997	825	1376	538	207	–	–
Marshall – Oxford	1995	224	333	–	–	–	–
Marx – Madison	1973	280	4376	–	–	–	–
Merson – London	1992	89	688	–	–	–	–
Muijen – London 1	1992	311	1598	–	–	–	–
Muijen – London 2*	1994	502	548	57	34	0	0

* *Data supplied by authors; other (non-asterisked) data extracted from papers*

continued

TABLE 53 contd *Inpatient, outpatient, and accident and emergency: mean monthly cost (£) for RCTs*

Study	Date of first publication	Inpatient		Outpatient		Accident and emergency	
		Experimental	Control	Experimental	Control	Experimental	Control
Paykel – London*	1982	35	98	7	34	–	–
Quinlivan – California*	1995	241	624	37	12	7	9
Rosenheck – Connecticut	1993	2737	4198	309	149	–	–
Salkever – Baltimore	1999	246	289	–	–	–	–
Sellwood – Manchester	1999	229	413	–	–	–	–
Solomon – Philadelphia 1	1994	200	464	81	107	–	–
Stein – Madison	1975	38	542	–	–	–	–
Test – Wisconsin	1989	80	639	–	–	–	–
Tyrer – London 1	1995	360	204	–	–	–	–
Tyrer – London 2	1998	89	688	–	–	–	–
UK700*	1999	710	693	10	10	3	5
Wood – California*	1998	306	315	–	–	–	–

* *Data supplied by authors; other (non-asterisked) data extracted from papers*

TABLE 54 *CPN, social worker and day care: mean monthly cost (£) for RCTs*

Study	Date of first publication	CPN		Social worker		Day care	
		Experimental	Control	Experimental	Control	Experimental	Control
Drake – New Hampshire	1998	–	–	0	374	360	699
Ford – London 1	1995	23	47	4	3	–	–
Jerrell – San Jose	1989	–	–	369	247	–	–
Jerrell – S. Carolina 1	1994	–	–	–	–	17	30
Jerrell – S. Carolina 2	1995	–	–	–	–	28	42
Johnston – New South Wales	1998	463	184	–	–	–	–
Lehman – Baltimore	1997	–	–	–	–	6	–
Muijen – London 2	1994	69	30	22	42	130	108
Paykel – London	1982	34	0	–	–	–	–
Quinlivan – California	1995	–	–	–	–	26	42
UK700*	1999	225	103	78	100	108	93

* *Data supplied by authors; other (non-asterisked) data extracted from papers*

TABLE 55 *Residential care, police cell and prison: mean monthly cost (£) for RCTs*

Study	Date of first publication	Residential care		Police cell		Prison	
		Experimental	Control	Experimental	Control	Experimental	Control
Drake – New Hampshire	1998	1218	1426	–	–	89	221
Ford – London 1	1995	831	196	–	–	–	–
Jerrell – San Jose	1989	1125	146	–	–	–	–
Jerrell – S. Carolina 1*	1994	526	347	–	–	82	44
Jerrell – S. Carolina 2*	1995	842	466	–	–	0	44
Johnston – New South Wales	1998	–	–	0	0	0	0
Muijen – London 2*	1994	10	142	0	0	0	25
UK700*	1999	–	–	82	49	–	–

* *Data supplied by authors; other (non-asterisked) data extracted from papers*

TABLE 56 *Inpatient, outpatient, and accident and emergency: mean monthly costs (£) for non-randomised studies*

Study	Date of first publication	Inpatient		Outpatient		Accident and emergency	
		Experimental	Control	Experimental	Control	Experimental	Control
Bond – Indiana 2	1991	535	357	–	–	–	–
Bond – Indiana 3	1991	639	–	–	–	–	–
Christensen – Svendborg	1997	357	–	–	–	–	–
Dean – Birmingham 1	1990	380	1254	–	–	–	–
Dean – Birmingham 2	1993	1257	381	–	–	–	–
Felton – New York	1995	1323	1028	–	–	–	–
Grad – Chichester	1966	688	704	–	–	–	–
Hornstra – Missouri	1993	33	56	–	–	–	–
Pasamanick – Ohio	1964	344	1310	–	–	–	–
PRiSM – London*	1998	297	266	43	26	1	0

* *Data supplied by authors; other (non-asterisked) data extracted from papers*

TABLE 57 *CPN, social worker and day care: mean monthly costs (£) for non-randomised studies*

Study	Date of first publication	CPN		Social worker		Day care	
		Experimental	Control	Experimental	Control	Experimental	Control
PRiSM – London*	1998	126	36	11	8	172	144

* *Data supplied by authors; other (non-asterisked) data extracted from papers*

TABLE 58 *Residential care, police cell and prison: mean monthly costs (£) for non-randomised studies*

Study	Date of first publication	Residential care		Police cell		Prison	
		Experimental	Control	Experimental	Control	Experimental	Control
PRiSM – London*		175	24	0	0	0	0

* *Data supplied by authors; other (non-asterisked) data extracted from papers*

Appendix 8

Studies with three treatment conditions

Only studies for which we had appropriate data are listed here.

TABLE 59 *Randomised controlled trials*

Study	Conditions	Data used in our analyses
Curtis – New York	Assertive outreach; CM; standard care	Assertive outreach; CM
Gournay – Middlesex	CPN; waiting list for CPN; GP	CPN; GP
Jerrell – S. Carolina 1	ACT vs behavioural skills vs 12-step	ACT; 12-step
Jerrell – S. Carolina 2	PACT; hybrid CM; broker CM	PACT; broker CM
Marx – Madison	Total in-community treatment; research unit; inpatients	Total in-community treatment; inpatients
Quinlivan – California	ICM; standard CM; usual services	ICM; standard CM
Salkever – Baltimore	PACT at CMHC; PACT at another location; standard care	PACT (both combined); standard care*
Wood – California	ICM; standard CM – each with and without housing certificate	ICM; standard CM†

* *Data from the two experimental conditions is combined in the authors' own analysis*

† *Author provided data for groups combined (ICM with and without housing certificate, and CM with and without housing certificate)*

TABLE 60 *Non-randomised studies*

Study	Conditions	Data used in our analyses
Bond – Indiana 2	ACT; reference groups; CMHC	ACT; reference groups
Felton – New York	ICM with peer specialist; ICM with non-peer assistant; standard CM	ICM with non-peer assistant; standard CM
Pasamanick – Ohio	Drug home care; placebo home care; inpatient	Drug home care; inpatient

Appendix 9

Studies used in the analysis

The information given below relates to the tables and four figures in chapter 6, 'Results', and is not intended to stand alone.

Table 33: any duration

RCTs

Fenton – Montreal; Hoult – Sydney; Lafave – Ontario; Marx – Madison; Merson – London; Muijen – London 1; Rosenheck – Connecticut; Stein – Madison

Non-RCTs

Dean – Birmingham 2; Grad – Chichester; Mowbray – Michigan; Pasamanick – Ohio

Table 33: 1-year follow-up only

RCTs

As above, dropping Merson – London; Marx – Madison; Rosenheck – Connecticut

Non-RCTs

Dean – Birmingham 2 only

Figure 5

RCTs

Fenton – Montreal; Hoult – Sydney; Lafave – Ontario; Marx – Madison; Muijen – London 1; Muijen – London 2; Rosenheck – Connecticut; Stein – Madison

Non-RCTs

Dean – Birmingham 2; Grad – Chichester; Mowbray – Michigan; Pasamanick – Ohio

Figure 6

As in *Figure 5*

Table 34: any duration

RCTs

Bond – Chicago 1; Bond – Indiana 1; Burns – London; Bush – Atlanta; Chandler – California 1; Chandler – California 2; Curtis – New York; Drake – New Hampshire; Essock – New York; Ford – London 1; Godly – Illinois; Holloway – London; Jerrell – San Jose; Jerrell – S. Carolina 1; Jerrell – S. Carolina 2; Johnston – New South Wales; Lehman – Baltimore; Marshall – Oxford; Muijen – London 2; Paykel – London; Quinlivan – California; Salkever – Baltimore; Sellwood – Manchester; Solomon – Philadelphia 1; Test – Wisconsin; Tyrer – London 1; Tyrer – London 2; UK700; Wood – California

Non-RCTs

Bond – Indiana 2; Felton – New York; PRiSM – London

Table 34: 1 year or more

RCTs

As in '*Table 34*: any duration', dropping Bond – Indiana 1; Sellwood – Manchester; Test – Wisconsin; Tyrer – London 2

Non-RCTs

As in '*Table 34*: any duration' (none dropped)

Table 34: only predominately neurotic studies

RCTs

As in '*Table 34*: 1 year of more', dropping Burns – London; Paykel – London

Non-RCTs

None dropped

Table 35

RCTs

All RCTs used in '*Table 34*: any duration'

Non-RCTs

All non-RCTs used in '*Table 34*: any duration'

Table 36

RCTs
All RCTs used in '*Table 34*: 1 year or more'

Non-RCTs
All non-RCTs used in '*Table 34*: 1 year or more'

Table 37

RCTs
Burns – London; Ford – London 1; Jerrell – San Jose; Jerrel – S. Carolina 1; Jerrell – S. Carolina 2; Johnston – New South Wales; Lehman – Baltimore; Muijen – London 2; Paykel – London; Quinlivan – California; Solomon – Philadelphia 1; UK700

Table 38

Non-RCT
Added: PRiSM – London

Table 39

RCTs
All RCTs used in '*Table 34*: 1 year or more', dropping Hoult – Sydney

Non-RCTs
All non-RCTs used '*Table 34*: 1 year or more'

Table 40: regularly visiting at home

RCTs
Both regularly visit
Burns – London; Drake – New Hampshire; Holloway – London; Johnston – New South Wales; Muijen – London 2; Quinlivan – California; Solomon – Philadelphia 1; Tyrer – London 1; UK700; Wood – California

Only experimental service regularly visits
Bond – Chicago 1; Bush – Atlanta; Chandler – California 1; Chandler – California 2; Curtis – New York; Ford – London 1; Godley – Illinois; Jerrell – San Jose; Jerrell – S. Carolina 2; Lehman – Baltimore; Marshall – Oxford; Paykel – London; Salkever – Baltimore

Non-RCTs
Both regularly visit
PRiSM – London

Only experimental service visits
Dean – Birmingham 2

Table 40: home treatment function

RCTs
Both services have home treatment function
Burns – London; Drake – New Hampshire; Holloway – London; Johnston – New South Wales; Muijen – London 2; Quinlivan – California; Solomon – Philadelphia 1; UK700

Experimental service only
Bond – Chicago 1; Chandler – California 1; Chandler – California 2; Ford – London 1; Jerrell – San Jose; Jerrell – S. Carolina 1; Jerrell – S. Carolina 2; Lehman – Baltimore; Paykel – London; Tyrer – London 1

Non-RCTs
Both services have home treatment function
PRiSM

Experimental service only
Bond – Indiana 2

Table 41

RCTs
Both services take responsibility for health and social care
Burns – London; Drake – New Hampshire; Holloway – London; Johnston – New South Wales; Muijen – London 2; UK700; Wood – California

Experimental service only
Jerrell – S. Carolina 2; Quinlivan – California; Solomon – Philadelphia 1

Non-RCTs
Both services take responsibility for health and social care
None added

Experimental service only
PRiSM

Table 42

RCTs
Bond – Chicago 1; Burns – London; Chandler – California 1; Chandler – California 2; Drake – New Hampshire; Ford – London 1; Jerrell –

San Jose; Jerrell – S. Carolina 1; Jerrell – S. Carolina 2; Johnston – New South Wales; Lehman – Baltimore; Paykel – London; Quinlivan – California; Tyrer – London 1; UK700; Wood – California

Non-RCTs

None added

Figure 7

RCTs

Drake – New Hampshire; Essock – New York; Jerrell – S. Carolina 2; Johnston – New South Wales; Quinlivan – California; Solomon – Philadelphia 1; UK700; Wood – California

Non-RCTs

Felton – New York

Figure 8

RCTs

Burns – London; Drake – New Hampshire; Jerrell – S. Carolina 2; Johnston – New South Wales; Muijen – London 2; Quinlivan – California; UK700; Wood – California

Non-RCTs

PRiSM

Table 43

29 RCTs as in *Table 34* (any duration) omitting Rosenheck – Connecticut, and eight studies in *Table 33* (any duration)

Table 44

25 RCTs as in *Table 34* (1 year only) and five RCTs in *Table 33* (1 year only)

Table 45

As in *Table 44*

Table 46

Caseload size

Bond – Chicago 1; Curtis – New York; Drake – New Hampshire; Essock – New York; Ford – London 1; Godley – Illinois; Holloway – London; Jerrell – San Jose; Jerrell – S. Carolina 1; Jerrell – S. Carolina 2; Johnston – New South Wales; Lehman – Baltimore; Marshall – Oxford; Muijen – London 1; Muijen – London 2; Paykel – London; Quinlivan – California; Salkever – Baltimore; Solomon – Phildelphia 1; UK700; Wood – California

Average contact frequency

Bond – Chicago 1; Burns – London; Chandler – California 1; Drake – New Hampshire; Ford – London 1; Hoult – Sydney; Jerrell – San Jose; Jerrell – S. Carolina 1; Jerrell – S. Carolina 2; Johnston – New South Wales; Lehman – Baltimore; Muijen – London 2; Paykel – London; Quinlivan – California; Solomon – Philadelphia 1; Stein – Madison; Tyrer – London 1; UK700; Wood – California

Percentage of contacts at home

Bond – Chicago 1; Burns – London; Chandler – California 1; Chandler – California 2; Drake – New Hampshire; Ford – London 1; Hoult – Sydney; Jerrell – San Jose; Jerrell – S. Carolina 1; Jerrell – S. Carolina 2; Johnston – New South Wales; Lafave – Ontario; Lehman – Baltimore; Paykel – London; Quinlivan – California; Stein – Madison; Tyrer – London 1; UK700; Wood – California

Table 47

As in *Table 46*

Health Technology Assessment Programme

Prioritisation Strategy Group

Members

Chair
Professor Kent Woods
Director,
NHS HTA Programme, &
Professor of Therapeutics
University of Leicester

Professor Bruce Campbell
Consultant General Surgeon
Royal Devon & Exeter Hospital

Professor Shah Ebrahim
Professor of Epidemiology
of Ageing
University of Bristol

Dr John Reynolds
Clinical Director
Acute General Medicine SDU
Oxford Radcliffe Hospital

Dr Ron Zimmern
Director, Public Health
Genetics Unit
Strangeways Research
Laboratories, Cambridge

HTA Commissioning Board

Members

Programme Director
Professor Kent Woods
Director, NHS HTA
Programme, &
Professor of Therapeutics
University of Leicester

Chair
Professor Shah Ebrahim
Professor of Epidemiology
of Ageing
University of Bristol

Deputy Chair
Professor Jon Nicholl
Director, Medical Care
Research Unit
University of Sheffield

Professor Douglas Altman
Director, ICRF Medical
Statistics Group
University of Oxford

Professor John Bond
Director, Centre for Health
Services Research
University of Newcastle-upon-Tyne

Ms Christine Clark
Freelance Medical Writer
Bury, Lancs

Professor Martin Eccles
Professor of
Clinical Effectiveness
University of Newcastle-upon-Tyne

Dr Andrew Farmer
General Practitioner &
NHS R&D
Clinical Scientist
Institute of Health Sciences
University of Oxford

Professor Adrian Grant
Director, Health Services
Research Unit
University of Aberdeen

Dr Alastair Gray
Director, Health Economics
Research Centre
Institute of Health Sciences
University of Oxford

Professor Mark Haggard
Director, MRC Institute
of Hearing Research
University of Nottingham

Professor Jenny Hewison
Senior Lecturer
School of Psychology
University of Leeds

Professor Alison Kitson
Director, Royal College of
Nursing Institute, London

Dr Donna Lamping
Head, Health Services
Research Unit
London School of Hygiene
& Tropical Medicine

Professor David Neal
Professor of Surgery
University of Newcastle-upon-Tyne

Professor Gillian Parker
Nuffield Professor of
Community Care
University of Leicester

Dr Tim Peters
Reader in Medical Statistics
University of Bristol

Professor Martin Severs
Professor in Elderly
Health Care
University of Portsmouth

Dr Sarah Stewart-Brown
Director, Health Services
Research Unit
University of Oxford

Professor Ala Szczepura
Director, Centre for Health
Services Studies
University of Warwick

Dr Gillian Vivian
Consultant in Nuclear
Medicine & Radiology
Royal Cornwall Hospitals Trust
Truro

Professor Graham Watt
Department of
General Practice
University of Glasgow

Dr Jeremy Wyatt
Senior Fellow
Health Knowledge
Management Centre
University College London

Current and past membership details of all HTA 'committees' are available from the HTA website (see inside front cover for details)

continued

continued

Diagnostic Technologies & Screening Panel

Members

Chair
Dr Ron Zimmern
Director, Public Health
Genetics Unit
Strangeways Research
Laboratories
Cambridge

Dr Philip J Ayres
Consultant in Epidemiology
& Public Health
The Leeds Teaching Hospitals
NHS Trust

Mrs Stella Burnside
Chief Executive, Altnagelvin
Hospitals Health & Social
Services Trust
Londonderry
Northern Ireland

Dr Paul O Collinson
Consultant Chemical
Pathologist & Senior Lecturer
St George's Hospital, London

Dr Barry Cookson
Director, Laboratory of
Hospital Infection
Public Health
Laboratory Service, London

Professor Howard Cuckle
Professor of Reproductive
Epidemiology
University of Leeds

Dr Carol Dezateux
Senior Lecturer in
Paediatric Epidemiology
Institute of Child Health
London

Professor Adrian K Dixon
Professor of Radiology
Addenbrooke's Hospital
Cambridge

Mr Steve Ebdon-Jackson
Head, Diagnostic Imaging &
Radiation Protection Team
Department of Health, London

Dr Tom Fahey
Senior Lecturer in
General Practice
University of Bristol

Dr Andrew Farmer
General Practitioner &
NHS Clinical Scientist
Institute of Health Sciences
University of Oxford

Mrs Gillian Fletcher
Antenatal Teacher & Tutor
National Childbirth Trust
Reigate

Professor Jane Franklyn
Professor of Medicine
University of Birmingham

Dr JA Muir Gray
Joint Director, National
Screening Committee
NHS Executive, Oxford

Dr Peter Howlett
Executive Director –
Development
Portsmouth Hospitals
NHS Trust

Professor Alistair McGuire
Professor of Health Economics
City University, London

Mrs Kathlyn Slack
Professional Support
Diagnostic Imaging &
Radiation Protection Team
Department of Health
London

Mr Tony Tester
Chief Officer, South
Bedfordshire Community
Health Council
Luton

Pharmaceuticals Panel

Members

Chair
Dr John Reynolds
Clinical Director –
Acute General Medicine SDU
Oxford Radcliffe Hospital

Dr Felicity J Gabbay
Managing Director,
Transcrip Ltd
Milford-on-Sea, Hants

Mr Peter Golightly
Director, Trent Drug
Information Services
Leicester Royal Infirmary

Dr Alastair Gray
Director, Health Economics
Research Centre
Institute of Health Sciences
University of Oxford

Mrs Jeannette Howe
Senior Principal Pharmacist
Department of Health, London

Dr Andrew Mortimore
Consultant in Public
Health Medicine
Southampton & South West
Hants Health Authority

Mr Nigel Offen
Head of Clinical Quality
NHS Executive – Eastern
Milton Keynes

Professor Robert Peveler
Professor of Liaison Psychiatry
Royal South Hants Hospital
Southampton

Mrs Marianne Rigge
Director, College of Health
London

Dr Frances Rotblat
Manager, Biotechnology Group
Medicines Control Agency
London

Mr Bill Sang
Chief Executive
Salford Royal Hospitals
NHS Trust

Dr Eamonn Sheridan
Consultant in Clinical Genetics
St James's University Hospital
Leeds

Mrs Katrina Simister
New Products Manager
National Prescribing Centre
Liverpool

Dr Ross Taylor
Senior Lecturer
Department of General
Practice & Primary Care
University of Aberdeen

Dr Richard Tiner
Medical Director
Association of the British
Pharmaceutical Industry
London

Professor Jenifer
Wilson-Barnett
Head, Florence Nightingale
Division of Nursing
& Midwifery
King's College, London

Mr David J Wright
Chief Executive
International Glaucoma
Association, London

Therapeutic Procedures Panel

Members

Chair
Professor Bruce Campbell
Consultant General Surgeon
Royal Devon & Exeter Hospital

Professor John Bond
Professor of
Health Services Research
University of Newcastle-upon-Tyne

Ms Judith Brodie
Head of Cancer
Support Service
Cancer BACUP, London

Ms Tracy Bury
Head of Research
& Development
Chartered Society of
Physiotherapy, London

Mr Michael Clancy
Consultant in A&E Medicine
Southampton General Hospital

Professor Collette Clifford
Professor of Nursing
University of Birmingham

Dr Katherine Darton
Information Unit
MIND – The Mental Health
Charity, London

Mr John Dunning
Consultant Cardiothoracic
Surgeon
Papworth Hospital NHS Trust
Cambridge

Mr Jonothan Earnshaw
Consultant Vascular Surgeon
Gloucestershire Royal Hospital

Professor David Field
Professor of Neonatal Medicine
The Leicester Royal Infirmary
NHS Trust

Professor FD Richard Hobbs
Professor of Primary Care
& General Practice
University of Birmingham

Mr Richard Johanson
Consultant & Senior Lecturer
North Staffordshire Infirmary
NHS Trust, Stoke-on-Trent

Dr Duncan Keeley
General Practitioner
Thame, Oxon

Dr Phillip Leech
Principal Medical Officer
Department of Health, London

Professor James Lindesay
Professor of Psychiatry for
the Elderly
University of Leicester

Professor Rajan Madhok
Director of Health Policy
& Public Health
East Riding & Hull
Health Authority

Dr Mike McGovern
Branch Head
Department of Health
London

Dr John C Pounsford
Consultant Physician
Frenchay Healthcare Trust
Bristol

Dr Mark Sculpher
Senior Research Fellow in
Health Economics
University of York

Dr Ken Stein
Consultant in Public
Health Medicine
North & East Devon
Health Authority, Exeter

Expert Advisory Network

Members

Professor John Brazier
Director of Health Economics
University of Sheffield

Mr Shaun Brogan
Chief Executive, Ridgeway
Primary Care Group
Aylesbury, Bucks

Mr John A Cairns
Director, Health Economics
Research Unit
University of Aberdeen

Dr Nicky Cullum
Reader in Health Studies
University of York

Professor Pam Enderby
Chair of Community
Rehabilitation
University of Sheffield

Mr Leonard R Fenwick
Chief Executive
Freeman Hospital
Newcastle-upon-Tyne

Ms Grace Gibbs
Deputy Chief Executive
West Middlesex
University Hospital

Dr Neville Goodman
Consultant Anaesthetist
Southmead Hospital, Bristol

Professor Robert E Hawkins
CRC Professor & Director of
Medical Oncology
Christie Hospital NHS Trust
Manchester

Professor Allen Hutchinson
Director of Public Health &
Deputy Dean, ScHARR
University of Sheffield

Professor David Mant
Professor of General Practice
Institute of Health Sciences
University of Oxford

Professor Alexander Markham
Director
Molecular Medicine Unit
St James's University Hospital
Leeds

Dr Chris McCall
General Practitioner
Corfe Mullen, Dorset

Dr Peter Moore
Freelance Science Writer
Ashtead, Surrey

Dr Sue Moss
Associate Director, Cancer
Screening Evaluation Unit
Institute of Cancer Research
Sutton, Surrey

Mrs Julietta Patnick
National Coordinator
NHS Cancer Screening
Programmes, Sheffield

Professor Jennie Popay
Professor of Sociology &
Community Health
University of Salford

Professor Chris Price
Professor of
Clinical Biochemistry
St Bartholomew's & The
Royal London School of
Medicine & Dentistry

Mr Simon Robbins
Chief Executive
Camden & Islington
Health Authority, London

Dr William Rosenberg
Senior Lecturer &
Consultant in Medicine
University of Southampton

Dr Sarah Stewart-Brown
Director, Health Services
Research Unit
University of Oxford

Dr Gillian Vivian
Consultant in Nuclear
Medicine & Radiology
Royal Cornwall Hospitals Trust
Truro

Mrs Joan Webster
Former Chair
Southern Derbyshire
Community Health Council
Nottingham

Feedback

The HTA Programme and the authors would like to know your views about this report.

The Correspondence Page on the HTA website (http://www.ncchta.org) is a convenient way to publish your comments. If you prefer, you can send your comments to the address below, telling us whether you would like us to transfer them to the website.

We look forward to hearing from you.

Copies of this report can be obtained from:

The National Coordinating Centre for Health Technology Assessment,
Mailpoint 728, Boldrewood,
University of Southampton,
Southampton, SO16 7PX, UK.
Fax: +44 (0) 23 8059 5639 Email: hta@soton.ac.uk
http://www.ncchta.org

ISSN 1366-5278