

OPEN ALL HOURS

24-hour response
for people with mental
health emergencies

Edana Minghella
Richard Ford
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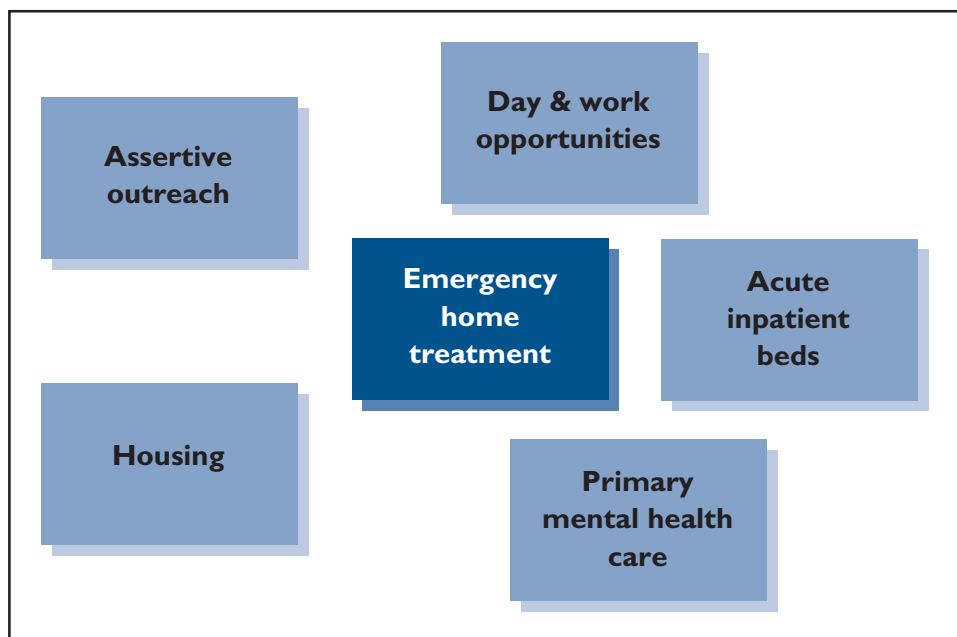
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Introduction

A comprehensive framework of mental health provision will include a range of services from acute inpatient care to continuing community provision, housing, day and work opportunities. The Sainsbury Centre is producing a series of reports addressing the development and evaluation of the full range of required services. *Working It Out* looks at day services, *Home from Home* examines housing services and *Keys to Engagement* investigates assertive outreach provision. This report is one of two focusing on acute mental health care: one reports on a study of acute inpatient care (ACIS), and this report presents evaluation findings from a study of emergency home treatment for people in acute mental health crisis.

Evaluating the framework of mental health service provision



It is commonly recognised, and is central policy, that mental health service provision must include 24-hour care for people in acute mental health crises (Department of Health *Spectrum of Care* 1996). With the decrease in hospital beds and the concurrent emphasis on developing a range of local services for service users, it is important that at least some crisis care must be delivered to people in their own homes. Coupled with this has been an increasing realisation that generic accident and emergency departments are unsuitable for dealing with psychiatric emergencies (Audit Commission *By Accident or Design* 1996). Yet community services have been slow to develop 24-hour crisis provision. A recent survey found that only 11% of Trusts had implemented community crisis services (Beadsmoore *et al.* 1996). Furthermore, planners and managers are faced with a confusing array of service models with little evidence as to their efficiency or effectiveness.

Dilemmas and questions include:

- ▶ who should services be for and what sort of crises should the service help with?
- ▶ should there be a separate crisis team or should existing generic teams provide 24 hour cover?
- ▶ which disciplines are needed to provide an effective service?
- ▶ what should the service actually provide ?
- ▶ how can the service target those most in need?
- ▶ who should run it?
- ▶ how should the service relate to continuing care and other acute services?
- ▶ how should it be funded?

These questions may be grouped into two main areas:

- ▶ firstly, what are the needs and demands that such services should respond to?
- ▶ secondly, how can these needs and demands be met effectively and efficiently?

This report presents a brief overview of needs and demands and then discusses how to meet these needs effectively and efficiently, drawing on a range of research and evaluations of crisis services. It describes in detail an evaluation of the model of service development in North Birmingham, as an example of how such a service can operate as part of a larger locally based system of comprehensive mental health care.

A note on terminology

Crisis – the breakdown of an individual’s normal coping mechanisms – occurs to all individuals several times during their lives (Caplan 1964). Such a common experience can result in a loose terminology which can be confusing, especially when applied to a broad range of mental health and non-specialist services. Table 1 lists a number of different terms which are often used interchangeably.

Table 1
A note on terminology

• Crisis service/team	These terms tend to be used interchangeably but can be applied quite differently and lead to confusion. This report refers to crisis or emergency services provided over a 24-hour period for people whose mental health has deteriorated to such an extent they are in need of urgent intensive specialist support and treatment. Such support may be provided at home, in the community or in hospital settings.
• Acute 24-hour service	
• Out-of-hours service	
• Rapid response service/team	
• Early intervention service/team	
• Psychiatric emergency service/team	
• Home treatment team	

According to Caplan, most crises are self-limiting and can even be an opportunity for change and growth. But a crisis in the context of severe mental health problems can be catastrophic. This report refers to services for supporting people in crisis when their mental health has deteriorated to such an extent they are likely to be at risk of harm to themselves or others, and are in need of urgent intensive specialist support and treatment. For a discussion of the use of terms ‘crisis’ and ‘emergency’, see Callahan (1994) and Duffett & Lelliott (1996). Clearly, a crisis does not always become an emergency, especially if it is well managed. The risk of it doing so will depend on a number of factors including the history of mental health problems suffered by the individual, and their coping skills.

Needs and demands

How many people?

The potential pool of need for mental health services can be determined at three levels: the community, primary care and specialist mental health care levels. At the most inclusive level there are all people with mental health difficulties, whether in contact with any service or not. Community epidemiological studies estimate that the prevalence of people with these sorts of problems is between 260-315 people per 1,000 aged 16-64 over one year (Goldberg & Huxley, 1992). At the next level are those people who consult their GP because of psychological problems. Goldberg & Huxley estimate this to be 230 per 1,000 people aged 16-64 per year. At the least inclusive level are people with a recognised mental illness who are in contact with specialist mental health services (23 people per 1,000 population aged 16-64). However, there are regional variations and in inner cities and urban areas, the prevalence of mental health disorders is higher (Melzer *et al.* 1995).

People from all three levels may potentially seek a rapid response to crisis from mental health services. If a rapid response service is available and accessible at the community or primary care levels the demand could be extremely high.

What are their needs?

Of equal importance when considering the development of rapid response services is the type of problems that people may present with. What is a psychiatric emergency or crisis? Broadly speaking, problems can be categorised as (Phelan 1996):

- ▶ Newly-identified psycho-social crises involving people who have not had previous contact with specialist services. Many may not suffer from a formal mental illness.
- ▶ Recurring psycho-social crises for people with mild or moderate mental health problems, drug or alcohol problems and/or personality disorders.
- ▶ Problems relating to a long standing, probably psychotic disorder. These may include symptomatic relapse and/or social difficulties with potentially catastrophic consequences.

If a crisis service is accessible to all, the first two categories of problems are likely to form the majority of referrals. A service that may be accessed through GPs will tend to have referrals for many people with the second type of problem. This is because of the large numbers of people with such problems on a typical GP list. Only a small minority of these will have severe mental illness; for example, GPs are likely to see only between 4 and 12 people with schizophrenia per year (Strathdee and Jenkins 1996). A service that is only accessible to people already known to mental health services is likely to focus on the third type of problem. Slightly different categories are given by Katschnig (1995) and Strathdee *et al.* (1995). Studies have shown that services that increase their accessibility see very few extra people with severe mental illness but many more with less severe problems (eg. Gater & Goldberg 1991).

What do mental health service users want?

Mental health service users have been critical of the traditional crisis services on several fronts. For many people the available help at a time of crisis – especially out of normal office hours – is often limited to

- ▶ the GP;
- ▶ a duty psychiatrist and approved social worker (ASW), if the person is seen as a danger to self or others;
- ▶ the local accident and emergency (A&E) department, and finally
- ▶ emergency admission to a psychiatric ward.

Indeed, the A&E department has been found to be central to emergency psychiatric services, although the availability of specialist assessment is strictly limited there (Johnson & Thornicroft 1991).

Service users and their carers have been clamouring for a range of more sensitive services to be available 24 hours a day, 7 days a week. For example, a major goal of MIND's Breakthrough campaign was 24-hour access to services in every area. The demands made by these groups do not tend to distinguish between different types of need; rather, they want a service that meets all needs. Gray & Baulcombe (1996) have documented users' expressed wishes; essentially, they want a freely accessible peripatetic 24-hour mental health service (see table 2).

Table 2
User requirements for rapid response (after Gray & Baulcombe)

• accessible 24 hours a day
• face to face counselling
• service in own home
• able to self refer
• telephone counselling

User views are very much supported by recent reports and studies of the way in which the NHS deals with psychiatric emergencies. For example, the Audit Commission report on A&E Services (Audit Commission *By Accident or Design* 1996) states that:

“it is widely agreed that mentally ill patients receive poor care in A&E departments. Few A&E doctors and nurses have training in how to treat them or when referral to a psychiatrist is appropriate. Psychiatric support to A&E was inadequate at all except one hospital studied...”

The report goes on to conclude that

“Development of a good psychiatric crisis intervention service for patients which is not accessed through A&E should be a priority.”

Duffett and Lelliot (1996) agree, pointing in London, to the lack of emergency assessment services and the lack of alternatives to inpatient admission, amongst other deficits. These findings reflect and have contributed to the consensus that current responses to psychiatric emergencies are inadequate, inappropriate and ineffective.

Primary care

GPs play a crucial role in the early recognition and assessment of mental health problems. They have a typical list size of 1900-2000 patients each. Only one third of GPs will have undertaken any post-graduate training in psychiatry (Syles 1991). As well as a small group of people with severe mental health disorders, they are likely to see large numbers of people with less severe emotional and mental health problems; for example, it has been estimated that a typical practice sees between 60 and 100 patients a year with depression and between 70 and 80 with anxiety (Strathdee and Jenkins 1996).

Gray & Baulcombe (1996) asked GPs for their views on crisis services (see table 3).

Table 3
GP requirements (after
Gray & Baulcombe 1996)

- | |
|---|
| • 24-hour keyworker/community mental health nurse (CMHN) availability |
| • CMHNs attached to GP practice |
| • 24-hour mental health helpline |
| • easily accessible respite care |
| • patients able to self refer |
| • crisis counselling around the clock |

GPs saw themselves as the first port of call for crises and were critical of the support they received from specialist mental health services. Like mental health service users, they wanted an accessible 24-hour peripatetic mental health service that included community mental health nurses (CMHNs) and keyworkers. There is a consensus here with service users in that the need for rapid access to an experienced practitioner who understands the problems is seen as the highest priority.

Similar findings have been demonstrated in many other studies. GPs have said they want:

- ▶ a single point of access to the mental health services
- ▶ assessment by a senior clinician
- ▶ the availability of home assessment
- ▶ follow up, especially for those who attempt suicide and who fail to attend outpatient appointments.

Meeting needs

Demonstration services have shown that it is possible to provide community-based rapid response services through specialist teams such as the Daily Living Program (Marks *et al.* 1994) and the Early Intervention Service (Merson *et al.* 1993), or through extended generic teams (Dean *et al.* 1993). Home-based multi-disciplinary assessments as an alternative to hospital outpatient assessments have been shown to reduce the need for hospital beds (Burns *et al.* 1993). But how do service planners and developers choose the best approach to meet the needs of their community?

Separate or integrated community crisis services

Service planners and developers are faced with a bewildering range of possible models of crisis service provision. Services could be uni-professional, multi-disciplinary, home-based or clinic-based. Johnson and Thornicroft (1996) describe a large range of models of crisis services provided internationally. These include telephone help lines, user-run sanctuaries, family placement schemes and integrated components of larger service systems, such as community mental health centre drop-ins.

It has been suggested, though, that two broad approaches can be adopted (Johnson and Thornicroft 1996). One approach is the development of a separate, often centralised specialist service, exclusively for people in a crisis. Examples of this type of service might be psychiatric emergency clinics and home treatment teams. The alternative approach is the development of an emergency component as an integrated part of routine mental health care; here the crisis service is not the responsibility of a distinct team or clinic but of staff who undertake all aspects of mental health work with people who may or may not be in a crisis. Although Johnson & Thornicroft suggest the second approach is more likely to be sector- or locality-oriented, this need not be the case; for example, staff from locality teams may be used to provide out-of-hours cover across a whole district, thus having a generic locality role within office hours, whilst having a specialist district role out-of-hours. One recently reported service is staffed by a dedicated team during office hours with an on-call rota of generic CMHNs out-of-hours (Riseborough 1997). Hence these approaches do overlap.

Both approaches have advantages and disadvantages (see table 4). One of the biggest problems for incorporating out-of-hours care within an existing service or team is the issue of whether staff have the necessary skills and are willing and able to work different hours. The need for such a change of culture can seriously hinder the development of alternative ways of working and it has to a separate functional team, at least initially (Minghella & Ford 1997).

Table 4 Separate or integrated crisis services?

Separate – advantages	Separate – disadvantages	Integrated – advantages	Integrated – disadvantages
Staff are geared towards working with people in a crisis, can be trained and develop specific skills.	At risk of lack of integration with other services.	Same staff working with all clients – easier for continuity of care.	Same professional has to cope with quite disparate groups of people and will need a broad range of skills.
Team can be more flexible since not relying on staff who also have an ongoing caseload.	There may not be services to refer people on to so the crisis service becomes log-jammed with people whose crisis has resolved but there is no-one else who can see them.	Less likely that clients will 'fall through the net' since there is no need to refer people on to another team or service.	Stress on staff if have to work out-of-hours as well as run a caseload within hours. Staff who have chosen to work 9-5 may not want to work outside of these hours.
Easier to provide a rapid response since no other responsibilities.	Continuity of care may falter when clients are referred on.		Difficult to maintain contact with clients when have to go back to own caseload.
Staff opt/are recruited to work in a service providing 24-hour care.	May result in a confusing proliferation of different teams.		Potentially disruptive to everyday work of the team.

Staffing community crisis services

One of the key questions in developing crisis services is that of skill mix and competence. Clearly, a multi-disciplinary team allows for a variety of approaches and interventions and most studies report on teams which comprise at least mental health nurses and social workers (who can be approved social workers – ASWs – and therefore have an additional role under the Mental Health Act). However, of particular importance and sometimes forgotten when services are being developed, is the involvement of psychiatrists. Not only do they have control over hospital admission and discharge but they are also able to prescribe essential drugs to help stabilise the crisis and have the most experience and authority in risk assessment. Teams without a psychiatrist have found that the number of out-of-hours admissions increased as the service identified problems that may not have come to the notice of psychiatric services before. These newly identified patients would be taken to the ward and assessed outside of their home environment by a junior doctor (Ford & Kwakwa 1996). Conversely, studies have shown the importance of psychiatrists in reducing hospital admissions when attached to community-based psychiatric teams, by acting as gatekeeper to hospital beds (Hoult 1986, Reding & Raphelson 1995). Yet the orientation of the psychiatrist is important; one study, for example, found that psychiatrists may recognise the diagnostic and treatment value of home visits yet be reluctant to undertake them themselves, even when they were community-based (Reding, Raphelson & Montgomery 1994).

Does it need to be 24 hours?

The call for crisis response is often for a full 24-hour, 7 day a week service. But is this absolutely necessary? The key questions here are, who is the service for and what already exists? It could be argued that if the service is aimed primarily at the needs of people with the most severe mental illness, these people are usually known to services. To a large extent, if mainstream community services are working adequately with these people, their needs for rapid response or early intervention can be predicted and can usually be met within reasonable hours, eg. between 8am and 8pm each day. For example, a study into the North Birmingham Psychiatric Emergency Team (PET – full details in the following chapters) found that only 5% of their actual face-to-face contacts were at night. At that time, the proportion of referrals of people with psychotic disorders was 48%. Hence although an ‘oncall’ system was necessary and was indeed provided, it rarely operated as full ‘waking’ 24-hour care.

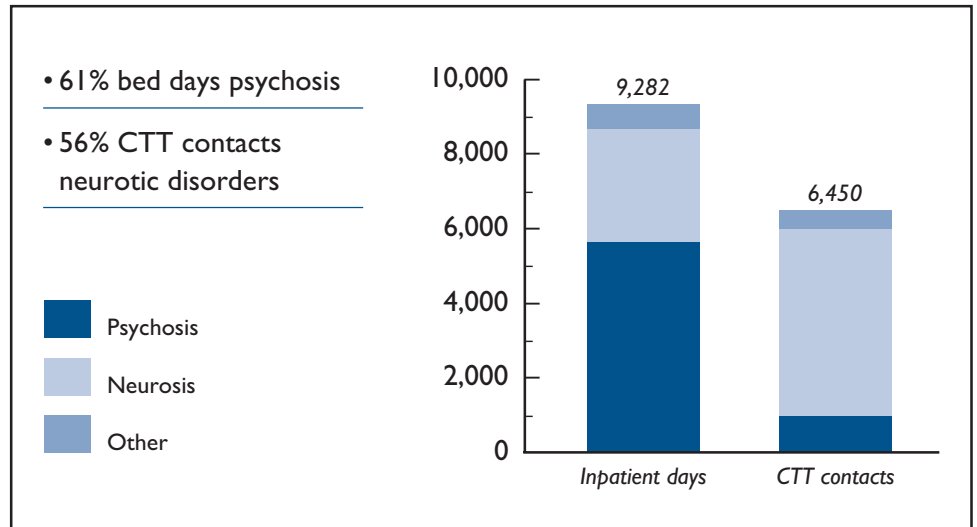
Finding the resources

At the time of writing it appears that Government may be willing to invest extra resources in mental health services, and it would be important to direct some of this money to crisis services. In the absence of new money for mental health care there is really only one place that money can come from for either extending current services or providing a new rapid response service. With inpatient care consuming two-thirds of resources (Audit Commission, 1994) an increase in rapid response peripatetic care may be funded through a careful, incremental reduction in inpatient care. This needs to be done as a part of a comprehensive re-organisation and redeployment of resources based on information from a full assessment of local user needs.

The most severely ill use the most inpatient care (64% of inpatient bed days for people with a psychosis in a recent 25% sample of English acute wards, Beadsmoore, 1996) and there is evidence that their use of beds can be reduced (Marks *et al.* 1994). The more focused the rapid response service is on people who may require hospitalisation – the most severely ill – the more likely it is to reduce hospital use. If the rapid response service extends to a broader client

group that includes many people who would not have been hospitalised, its potential to reduce hospital bed use reduces. The Cornwall community treatment team's activity (Ford & Kwakwa 1996) was directed towards a less severely ill group of people when compared to the inpatient ward activity (see table 5).

Table 5
Cornwall community treatment team (CTT) activity compared with acute ward



The Cornwall service had little impact on the use of beds, although it should be noted that at 19 beds per 100,000 total population the service was already running below the national average of 28 per 100,000 population (Shepherd *et al.* 1997). In comparison the North Birmingham PET team reported in this study was able to help bring about a reduction in beds from 30 to 16 per 100,000 total population (44 beds reduced to 23).

Closing one or two beds is unlikely to produce any resources for transfer. The degree of change from an inpatient orientated acute treatment service to a community-based service has to be great enough to close a whole ward, but again it is important to stress that this needs to be carried out in a staged and planned way. It is not possible to cut the beds one day and expect the rapid response team to start the next. Bridging funding for parallel service development is essential, and was provided to the North Birmingham service through the Sainsbury Mental Health Initiative as described in the following chapters. However, this was not an excessive amount. It represented £1 per person per annum (for three years) or an additional 2% on top of current mental health expenditure.

Meeting needs effectively & efficiently –

An evaluation of the North Birmingham Model

It has been argued that evaluations of model services are unrepresentative because, as innovative services, they often attract extra resources and highly skilled committed staff. Many function well for a limited period, fuelled by charismatic leaders and energetic staff, but may be unable to sustain this initial momentum. In addition, the model service may also be highly selective in its patient group because it is part of a study (Johnson & Thornicroft, 1996). This evaluation is of an everyday model of care, with only £1 per head of the adult population for 3 years to pump-prime its implementation. It was working without any specific requirements of a research study. The service had been operational for 6 months before the study started, and has now become an established component of the local comprehensive mental health services. The model has subsequently been extended to all localities in North Birmingham.

Introduction to the study

The Psychiatric Emergency Team (PET) in North Birmingham was one of 8 services awarded funding through the Sainsbury Mental Health Initiative in September 1994. The main reasons for funding this innovative service were:

- ▶ to support a home-based service with a multi-disciplinary psychiatric emergency team aiming to provide a safe, effective and economically viable alternative to inpatient care. However, it was always envisaged that there would still be a need for admission
- ▶ to support a model that would enable more people to receive acute treatment
- ▶ to enable less to be spent on acute care due to reduction in inpatient bed days so that resources could be released for longer term home-based care for those with the most severe needs (assertive outreach team).

The Sainsbury Initiative award amounted to bridging funds for the setting up of the new service, in the region of £500,000, over a three year period. Due to the introduction of PET, inpatient beds were to be reduced from 41 to 20 in a staged programme. Hence, the introduction of PET was both a service level and a client level development; that is to say, the effects were expected to have an impact on the service as a whole, and for individual clients using the service.

Table 6
**Statutorily funded
mental health services in
Yardley/Hodge Hill (at
time of study)**

• 41 acute inpatient beds on 2 sites – reduced to 20 on 1 site by end of project (<i>180 admissions during 1994/95</i>)
• Outpatients clinic (<i>3 consultants</i>)
• 5 intensive care beds
• 2 Community Mental Health Teams (health & social services)
• Continuing care/rehab team (<i>15 wte CMHNs, 12 social workers in total working in community</i>)
• Day hospital attached to acute unit
• Local authority day centre including work project (Workability) – not exclusively mental health
• Supported housing through Focus housing association (56 places with varying levels of support)

The context

The Sainsbury Initiative in Birmingham operated in the Yardley/Hodge Hill locality, formed during Trust restructuring from April 1995. The locality contains six electoral wards; Washwood Heath, Hodge Hill, Shard End, Sheldon, Yardley and Acock's Green. The locality covers a mainly white, working class area of inner city Birmingham. Most electoral wards have between 21-40% owner occupation, with only one ward with problems of overcrowding. The area has between 10 and 20% unemployment (Birmingham average 14%).

The York Psychiatric Index for this area is 128.86 (weighted by population) indicating a higher than average level of psychiatric need. Table 6 shows the statutorily funded mental health services provided in the area during the study period.

Other critical contextual features include the essential commitment of local purchasers, the vision and commitment of the Trust senior management team, a critical mass of practitioners willing to be involved and a wealth of experience from practitioners who had delivered the model before in other settings.

What is PET?

The Psychiatric Emergency Team (now known as the Home Treatment Team) was set up in the Yardley/Hodge Hill area of North Birmingham, and comprises the following characteristics:

- ▶ a multi-disciplinary community team of
 - 1 whole time equivalent (wte) Team leader ('I' grade nurse)
 - 8 wte community mental health nurses (CMHNs) (4 'G' grade, 3 'F' grade, 1 'E' grade)
 - 2 wte approved social workers
 - 0.4 wte psychologist
 - 2 wte community support workers
 - 1 wte administrator
 - consultant psychiatrist cover
- ▶ provides assessment and treatment for people at risk of hospitalisation or to facilitate early discharge
- ▶ 24-hour service including telephone contact (on call cover at night).

The consultant was initially dedicated to the team, but this changed after approximately 6 months into the study when consultant responsibility was retained by clients' own psychiatrists, with whom the PET team liaise.

Evaluating the service

This study set out primarily to discover whether a community-based service with a multi-disciplinary psychiatric emergency team (PET) can provide a safe and effective alternative to a hospital-oriented service for people in acute, severe mental health crises.

Evaluation questions

There were three main evaluation questions posed by the development of this service:

- ▶ Is such a community-based service economically viable?
- ▶ Can a home-based team provide an effective emergency service for people who would otherwise have been admitted?

Table 7
**Comparing localities:
 socio-demographic
 features**

	Yardley/Hodge Hill locality (implementation)	Erdington locality (comparison)
Adult population (15-64)	89,842	43,478
Ethnicity	Yardley – 92.5% white Hodge Hill – 83% white	89.8% white
MINI score	106.7	112.3
Adult population unemployed	13.84%	15.17%
Adult population permanently sick	4.53%	5.13%
York Psychiatric Index	128.86	145.76
Mental health spend per head (adult population) (estimate) at time of study	£58	£64.34

Table 8
**Comparing localities:
 acute crisis service
 provision during the
 study period**

	Yardley/Hodge Hill locality (implementation)	Erdington locality (comparison)
Adult population (15-64)	89,842	43,478
Acute beds per 100,000 adult population	28.93 until March, then 25.6 (n of beds = 26 until March then 23)	52.9 (n of beds = 23)
Acute 24 hour community service	PET	Out-of-hours on-call psychiatrist and ASW

- ▶ What does a home-based-based emergency service provide and to whom?

The aims of the evaluation were thus to examine the impact of the development of a community-oriented crisis service at both the service level and for individual service users. Such an evaluation cannot be complete without a consideration of costs (Knapp 1994); for a service to be sustainable, it must be seen to be economically viable. Hence, an economic component to the evaluation was considered to be essential.

Design and methods

The study set out to compare 2 acute services in North Birmingham:

- ▶ Yardley/Hodge Hill – Implementation locality providing a community-oriented acute service (PET team) as well as acute beds.
- ▶ Erdington – Comparison locality providing a traditional hospital-based acute service.

The localities were similar across socio-demographic features. Mental health spend was slightly higher in the Erdington locality (see table 7).

The difference between the localities lay in acute 24-hour service provision: the comparison locality functioned with acute inpatient beds only, whilst the implementation locality functioned with the PET team along with gradually decreasing numbers of acute beds (see table 8).

A consecutive sample of people admitted to an acute bed in Erdington (comparison group) was therefore compared with a sample of people accepted by PET or admitted to a ward in Yardley/Hodge Hill (implementation group). To ensure the implementation group was similar to those admitted to Erdington, the groups were then matched post entry to the study on:

- ▶ sex
- ▶ whether admitted in previous 18 months
- ▶ diagnosis of psychosis
- ▶ age \pm 10 years.

Comparisons were made over three time points:

- ▶ Time period 0 = 26 weeks before entry into study
- ▶ Time period 1 = 0 – 6 weeks after entry into the study
- ▶ Time period 2 = 6 – 26 weeks after entry into study.

Measures

Measures at each time point were:

Service use & costs

All mental health contacts, inpatient stays, day service and residential stays with Health and Social Services-funded services were recorded through use of medical notes, service databases, Trust database, and information provided by services and individual keyworkers. Contacts were defined as face-to-face contacts with a professional at home or in a clinic. This definition excluded telephone contacts, attempted appointments which did not result in face-to-face contact, and contacts such as multi-disciplinary CPA review meetings which a client might attend. For day services, if a client attended for all or part of a day this was counted as one attendance. Inpatient and residential stays were

calculated from day of admission to day of discharge and may have included periods of leave.

Service use costs were the best estimates for all services, in order to be as comprehensive as possible. Costs were based on published estimated unit costs of health and social care for 1995/1996 (Netten & Dennett 1996) where available, or estimated according to national benchmarks. Only services funded through health and/or social services were included.

Mental health: Brief Psychiatric Rating Scale

All clients were approached to be interviewed using the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham 1962) on entry into the study and 6 weeks later. This is a well-established scale which has been modified over the years, and involves a semi-structured clinical interview. The 19 item version used here covers symptoms and behaviours that can be rated on a 7 point scale (0=not present, 6=extremely severe). Some of the items are rated according to the service user's subjective experiences (eg. guilt feelings) whilst others are based on clinical impression and observation (eg. emotional withdrawal). Therefore, it is advisable for interviewers to have sufficient clinical experience and skills to be able to elicit relevant information (Bech *et al.* 1988).

Local qualified mental health staff were recruited and trained by the Sainsbury Centre to use the BPRS. Training included standardisation of ratings.

Socio-demographic data & other information including 'untoward events'

These events were categorised as follows: violence to others, deliberate self-harm, trouble with the police, and homelessness. All information came from medical notes, supplemented by keyworkers.

PET interventions

In order to understand the nature of PET a further aspect of the study involved a qualitative and quantitative review of PET interventions. PET notes (where available) were examined systematically for each client in the sample. Medical notes were used to supplement information as necessary.

Findings – comparing the two services

Baseline findings

The groups

Data collection took place until there were 200 episodes of care included in the study (45 weeks) – 90 in the comparison group and 110 in the intervention group. In the Yardley/Hodge Hill locality, the implementation group comprised a computer-generated random selection of one in three admissions to an acute bed or to PET, resulting in 110 episodes (all admissions n=140, all PET acceptances n=208). The comparison group comprised 90 consecutive admissions of Erdington residents to acute wards. Any repeated admissions were excluded from the final sample (repeats n=8), leaving a total of 192 people, 86 in the comparison group and 106 in the implementation group.

The greater number in the implementation group allowed for post-matching against the comparison group. The samples were then matched exactly, with 32 people in the comparison group who could not be adequately matched. The final figure was therefore 58 matched pairs (116 clients in all). Tables 9a-9c describe the design of the study.

The findings described in this chapter represent an overall picture without showing statistical analyses. Details of findings of statistical significance are shown in detail in Appendix One.

Table 9a
Design & methods

<ul style="list-style-type: none">• Comparison of 2 acute services in North Birmingham:<ul style="list-style-type: none">- Yardley/Hodge Hill - Implementation locality providing a community-oriented acute service (PET team) and acute beds- Erdington - Comparison locality providing a traditional hospital-based acute service- Localities with similar socio-demographic features• Plus a study of PET interventions
--

Table 9b
Design & methods 2

- Groups:
 - Implementation group: a matched sample of people accepted by PET or admitted to a ward in Yardley/Hodge Hill, randomly selected for the study (1 in 3)
 - Comparison group: a consecutive sample of people admitted to an acute bed in Erdington
-
- Groups post matched on:
 - Sex
 - Whether admitted in previous 18 months
 - Diagnosis of psychosis
 - Age ± 10 years

Table 9c
Design & methods 3

- Comparisons over three time points:
 - Time period 0 = 26 weeks before entry into study
 - Time period 1 = 0-6 weeks after entry into the study
 - Time period 2 = 6-26 weeks after entry into study
-
- Measures:
 - Service use and costs (all mental health services funded through Health & Social Services)
 - Mental health - HoNOS at t1 & BPRS at t1 & t2
 - Socio-demographic & other information including untoward events

Table 10
Demographic summary
(n=58 in each group)

	Implementation	Comparison
Mean age	38 yrs	37 yrs
Gender	58.6% men	58.6% men
Ethnicity	92% white	90% white
Marital status	37.9% single	55% single
Living alone	30%*	53%
BPRS score	15.76 (sd 8.29) (n=31, 54%)	13.41 mean (sd 8.38) (n=40, 69%)

*significant difference

Mental health measures – baseline

Table 10 presents the main characteristics of the sample. There was little difference between the two groups, although people in the implementation group were less likely to be living alone.

Diagnostic categories of each group are presented in Table 11. The picture is broadly similar across the two groups.

The two groups were assessed using the BPRS within one week of entry into the study.

The response rate at baseline for the BPRS was 61.2% (n=71), with a slightly higher response rate in the comparison group than the implementation group (n=40, 69.0% in comparison group compared with n=31, 53.4%). This is not surprising since the comparison group were inpatients and therefore easier to gain access for interview. There was no difference in the mean scores across the two groups.

Service Use

This section refers to clients' use of services in hospital and community. PET is treated as a separate team and is not included in the figures for the CMHNs, social workers or other professionals.

Acute response

Acute inpatient bed use

In the 6 months before entry into the study, there was no significant difference between the two groups. Only a small number of people from each sample had hospital admissions. On entry into the study the picture changed. In Yardley/Hodge Hill 20 people were admitted on entry into the study and a further 7 were admitted within 6 weeks. There were 58 initial admissions in Erdington, with a further 3 admissions within the subsequent 6 weeks.

There was a significant difference between the two groups in the proportion of people who spent time in hospital from entry into the study up to 6 weeks afterwards. During this period there were fewer people in hospital from the implementation group. This continued into the period between 6 and 26 weeks after entry into the study, where 15 people from the implementation group spent time in hospital, compared with 30 in the comparison group. Table 12 shows acute inpatient bed use.

Another way of looking at this data set is to calculate the occupied bed days for each group rather than number of admissions. Occupied bed days for the Yardley/Hodge Hill group were only 38.2% of those in the Erdington sample during the period between entry into the study and 6 weeks later and 48% of the Erdington sample in the period between 6 weeks and 6 months afterwards. Again the difference was statistically significant.

In summary, there was lower bed use in the implementation group compared with the control group in both time periods following entry into the study.

PET contacts

Only the implementation group (Yardley/Hodge Hill) had contact with the psychiatric emergency team (PET). Full details on their contact with clients are presented in the next chapter, but the basic figures are presented here.

In the six months before entry into the study, 16 people (27.6%) had already had contact with the PET team. The average (median) number of contacts with PET during this period was 4.5.

Table 11
Diagnoses

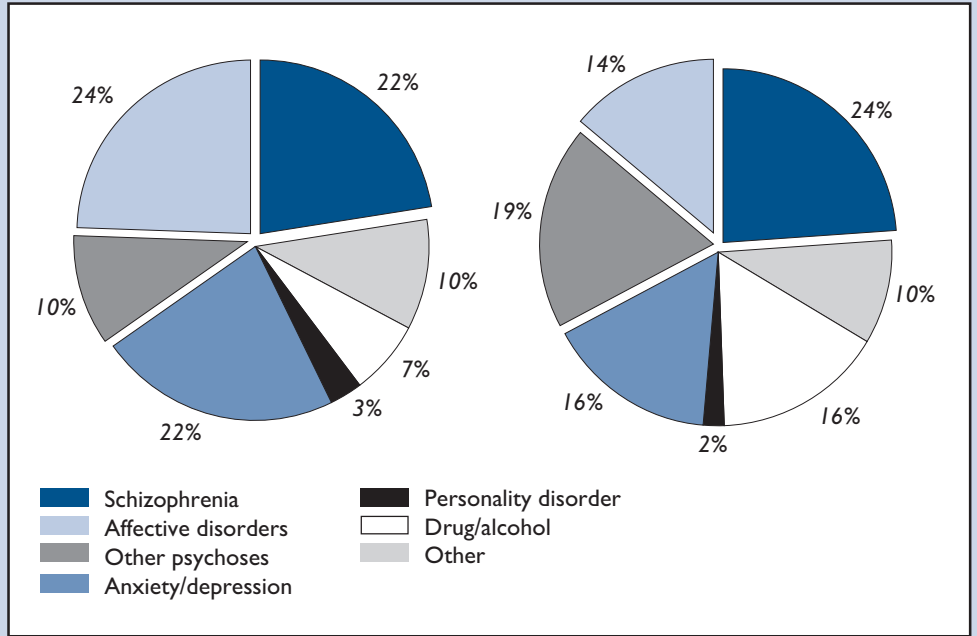


Table 12
Acute admissions and occupied bed days – implementation v comparison groups

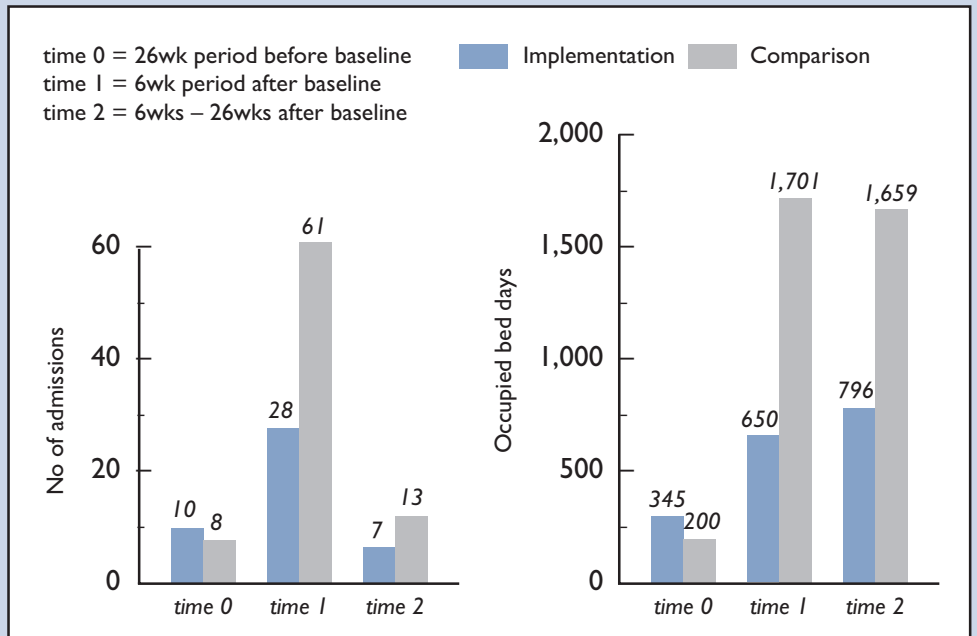
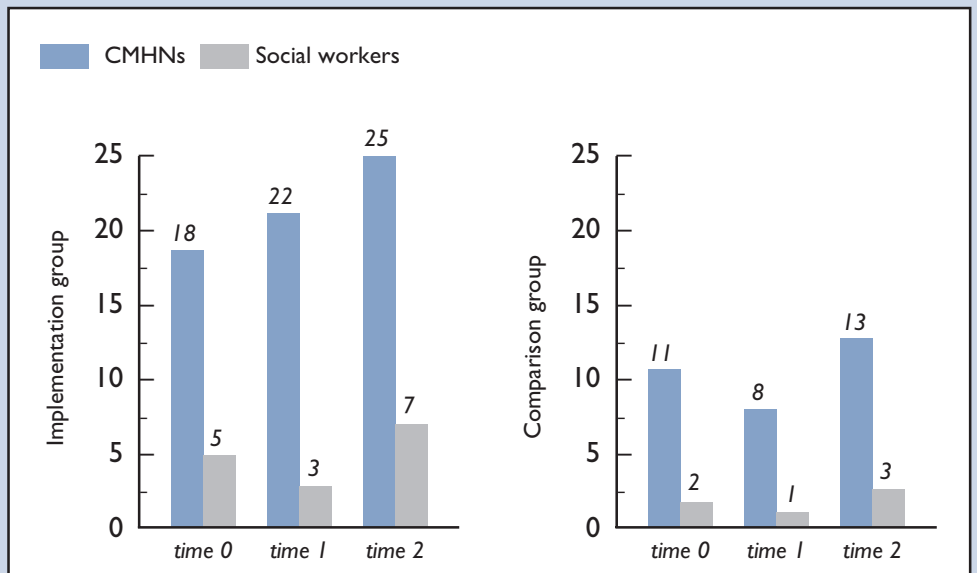


Table 13
Contact with CMHNs and social workers: implementation v comparison groups



On entry into the study, 38 (65.5%) of the 58 people in the implementation group were seen by the PET team while the remainder were admitted to hospital. Three of those 38 were admitted to hospital after minimal contact with PET. PET contacts were particularly intense during this acute stage of care (from entry into the study until 6 weeks afterwards) with each client who had PET contact averaging 17 visits (median).

In the final time period, from 6 weeks after entry into the study until 6 months afterwards, 14 people remained in contact with PET. The median number of contacts for people seen was 17.5 per client over the 20 week period.

In all, clients spent an average of 20.5 days (median) with PET, ranging from 1 to 114 days.

Ongoing care

The two key community professionals who had contact with the clients in both groups were CMHNs and psychiatrists (outpatients). Although there were recorded contacts with social workers this was for the minority of clients. Other community contacts included psychologists, OTs, psychotherapists and day care.

Community mental health nurse and social worker contacts

Table 13 depicts contacts with CMHNs and social workers and shows how contacts increased for both groups after the six weeks following entry into the study.

Before entry into the study a large proportion in each group had contact with either a CMHN or a social worker (40% in the Yardley/Hodge Hill sample and 22% in the Erdington sample), with no significant differences between the two groups.

There were, however, significant differences at the next two time points, in relation to contact with CMHNs. People in the Yardley/Hodge Hill sample were more likely to be in contact with CMHNs during both periods.

It is important to remember that PET CMHNs are not included in these figures, so the significant difference in community contacts reflects a difference at the level of integration between the acute 24-hour services (hospital or PET) and generic community mental health services. However, it is integration with community *health* services rather than social services that is demonstrated here, and, as the table shows, there were relatively few recorded contacts with social workers amongst the 58 pairs of clients in either Erdington or Yardley/Hodge Hill.

Outpatient contacts

Table 14 presents the number of people attending outpatients. In Yardley/Hodge Hill, the proportion was significantly lower before and after admission than in Erdington. Outpatient care was clearly a key part of the service provided to clients in the comparison area. In the period from six weeks to six months after entry into the study, 12 people (20.7%) in the implementation group had attended outpatient appointments, compared with 56.9% of the Erdington sample.

Other contacts

Contact with other services included day care, work projects and residential care. Only a few clients were in contact with these services. For all ongoing

Table 14
Contact with outpatients

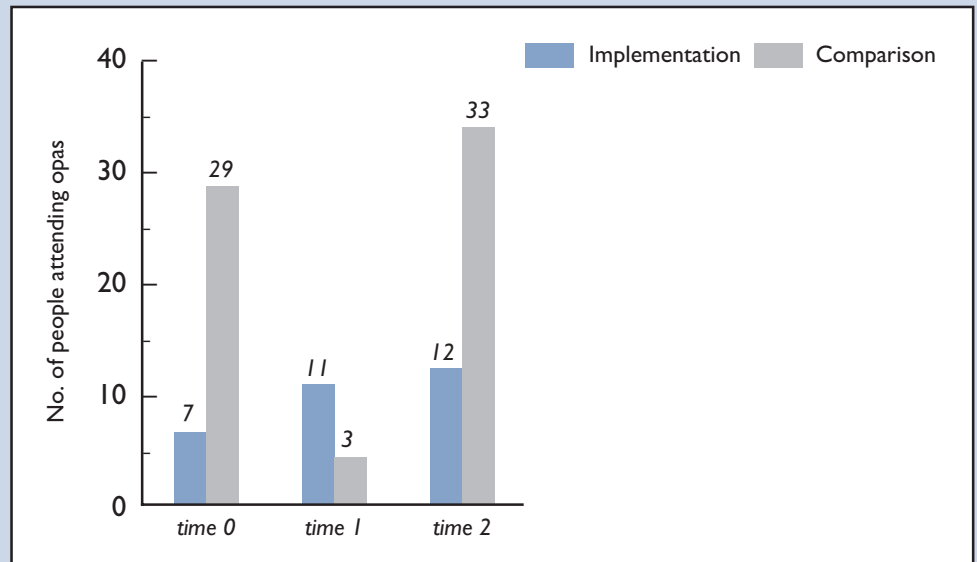


Table 15
BPRS scores on entry and 6 week follow-up

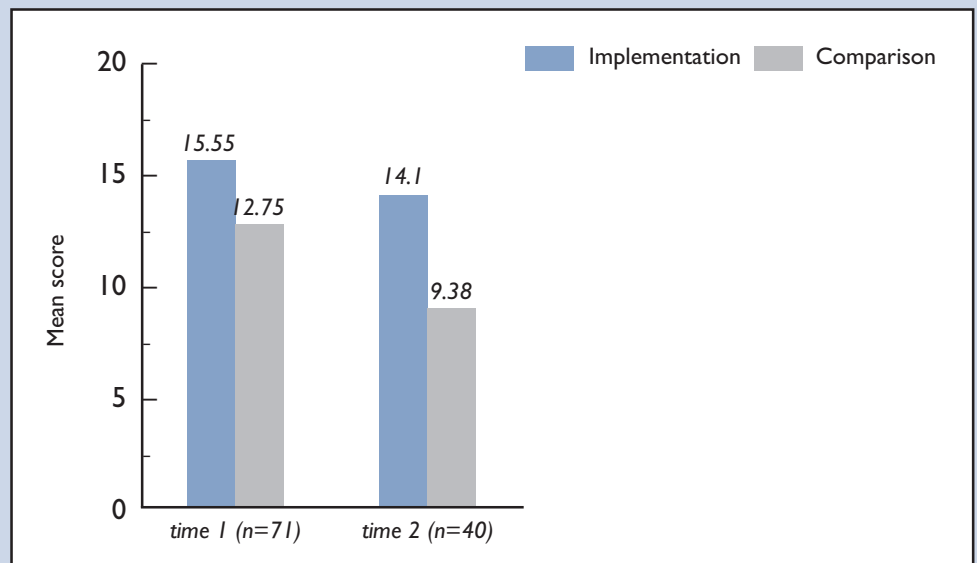


Table 16
Untoward events in each group

		Intervention	Comparison
Self-harm	0 – 6 months before entry	5	10
	0 – 6 weeks after entry	3	4
	6 – 26 weeks after entry	1	2
Violence to others	0 – 6 months before entry	0	7
	0 – 6 weeks after entry	2	1
	6 – 26 weeks after entry	0	0
Homelessness	0 – 6 months before entry	9	0
	0 – 6 weeks after entry	2	0
	6 – 26 weeks after entry	1	0
Trouble with police	0 – 6 months before entry	3	9
	0 – 6 weeks after entry	0	0
	6 – 26 weeks after entry	0	0

community services, there was greater service use for both groups in the period between 6 weeks and 6 months after entry into the study. This was most pronounced in day hospital use, where, for example, the Yardley/Hodge Hill sample increased from 4 attenders before entry into the study to 14 in the 6 week – 6 months study period. The Erdington sample also increased from 1 attender to 5 attenders. However, there were significantly fewer people in touch with day services in Erdington compared with the implementation area in the period between 6 weeks and 6 months after entry into the study.

Summary of service use

In summary, the findings show that both groups of clients were in contact with more ongoing community mental health services and outpatients following entry into the study. The increase in contact with community staff was greater in the implementation group and was significantly greater regarding the number of clients in contact with CMHNs during the first 6 weeks after entry into the study and the period between 6 weeks and 6 months. This reflects a greater integration between acute and community services. On the other hand, the comparison group had a significantly higher level of contact with outpatients, reflecting a more hospital oriented service. The implementation group's less common use of outpatients suggests a more flexible model of working for psychiatrists in the area, in that they will be less likely to be over-burdened with large outpatient clinics.

Client Outcomes

Client outcomes were evaluated using repeat BPRS scores to measure the level of symptoms. The number of untoward events and number of re-admissions as a proxy for relapse were also recorded.

BPRS

All clients interviewed at baseline were to be interviewed 6 weeks later using the BPRS. However, there was a disappointing response rate to follow up interviews (34.5%, n=40). Whilst the response rate is low, the results that we do have show no significant difference between the two groups over time (see table 15). Both groups improved significantly.

Untoward events

There was little difference in the number of untoward events between each group at any time point (see table 16). Incidents were not commonly reported; this may be because of recording practices or because they actually did not occur very often.

The most frequent sort of recorded incident was deliberate self-harm, but even here there were few incidents. For example, from entry into the study until 6 weeks later there were 4 people (7 incidents) in the comparison group and 3 people (3 incidents) in the implementation group who self-harmed.

Harm to others was also rarely recorded; there were 7 incidents in the comparison group before entry into the study but none in the implementation group. From entry into the study to 6 weeks afterwards, one violent incident was recorded in the comparison group and two in the implementation group but there were no further violent incidents recorded after six weeks.

There were no recorded incidents of homelessness in the comparison group across any time points, and only 2 people in the implementation group after entry into the study.

Trouble with the police was also relatively rare: 9 of the comparison group and 3 of the implementation group had been in trouble with the police in the

Table 17
Re-admission rates

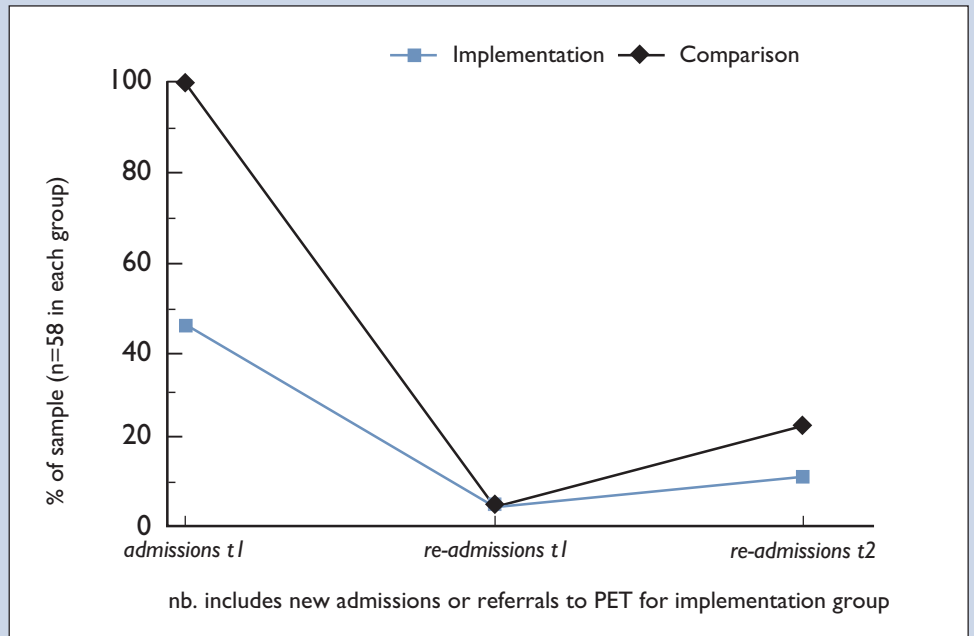
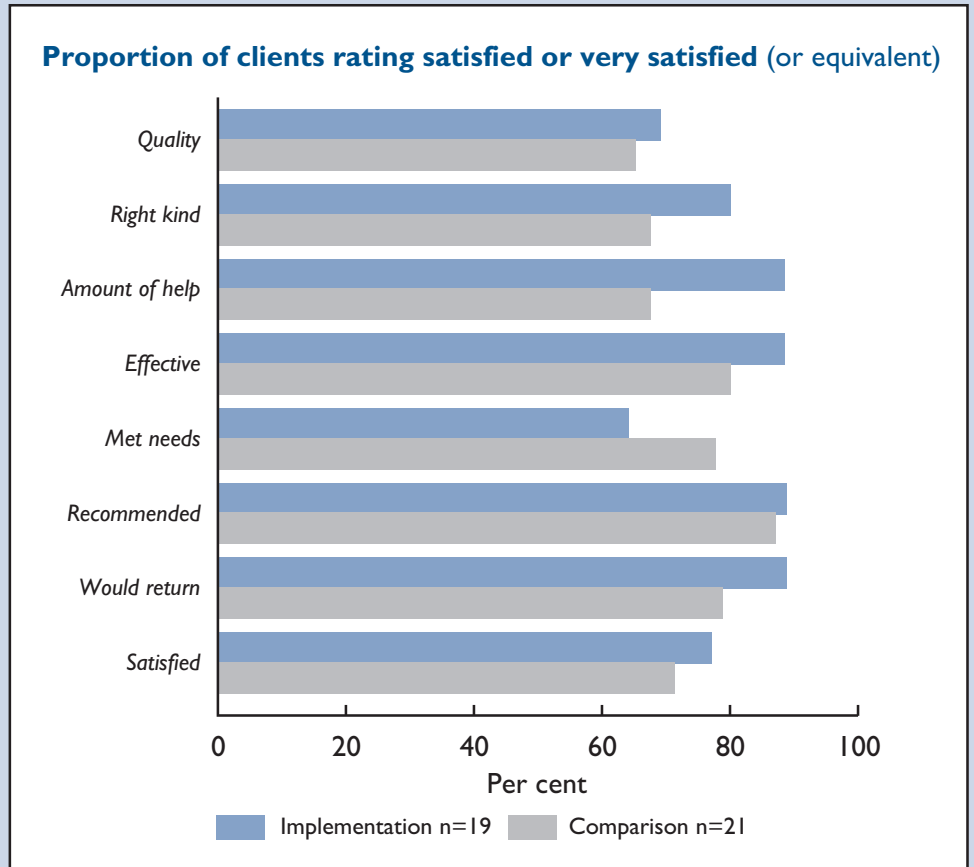


Table 18
Client satisfaction



Re-admissions (or new admissions post-PET) to hospital

6 months prior to admission but there were no recorded police incidents in the period between 6 weeks and 6 months after admission.

There were 2 deaths in the sample – one in each group, both of natural causes.

There were no significant differences between the two groups in the re-admission rate to acute care. (For people seen by PET, a subsequent admission to hospital or to PET was included in the figures). Whilst re-admissions do not fully represent relapse they give some indication of deterioration in mental state to the extent that hospitalisation is required. However, if people were still in hospital or still receiving acute care from the PET team then they would not show up in re-admission rates even if their mental health had deteriorated. The data is shown in table 17.

User satisfaction

The Client Satisfaction Questionnaire (CSQ, Larsen *et al.* 1979) was administered to those service users who were successfully interviewed at follow up 6 weeks after the baseline acute episode (n=40, implementation n=19, comparison n=21). The questionnaire asks for ratings on 8 items. Table 18 shows how the groups compare against these items.

Most users in both groups were reasonably satisfied with services and there were no significant differences between the groups across any of the items. Seventy-seven percent of users in the implementation group and 73% in the comparison group said they were mostly or very satisfied with the service they had received. More than 80% in both groups said they felt services helped them deal more effectively with their problems and that they would recommend the service to a friend in need of similar help.

Users were also asked a series of open questions to elaborate on their experiences. When asked about what they were particularly happy with and had found useful, 16 of the 21 users in the comparison group talked positively about the staff, especially nurses, on the ward. They valued having someone to talk to and the time nurses spent with them. One inpatient said:

“Excellent support from the staff on the ward. They always used to find time to talk, to listen and to advise about things.”

Users in the comparison group also mentioned the effectiveness of the help they had received, such as medication and ECT. Five people valued the food on the ward and a couple mentioned having bathing facilities as important.

In the implementation group there was also a lot of emphasis on the benefits of talking to staff:

“When I was very depressed I was crying and the [PET team] made me feel okay, not stupid for crying.”

People in the implementation group liked the fact that they were visited at home. One person said she felt she got better more quickly at home. The availability of staff at any time of the day or night, if only at the end of a phone, and the frequency of visits were also mentioned by many users as helpful. The experience of a quick response from the PET team at times of need was seen by users as very important.

Another feature of user satisfaction in the implementation group was the practical help provided, such as help with benefits. Such features were

mentioned as particularly helpful by 6 of the 19 users, even though this practical support was sometimes very basic. For example, one woman said:

“One day I had to go to Washwood Heath and couldn’t go on the bus. So they [the PET team] took me there in the car. Nothing was too much trouble.”

The implementation group described few experiences where they had been particularly unhappy or felt services were unhelpful. Regarding the PET team, the frequency, punctuality and duration of visits were the most often mentioned problems. For example, two people felt that visits were too brief, especially towards the end of the period of involvement. One person said that visits suddenly seemed to cease without any explanation. Another felt that the referral system to PET was “long-winded” and would have liked to self-refer.

Few users in the implementation group offered suggestions for improvement when asked; most had little to say. One person said:

“Nothing. I’m very happy with services in this catchment area.”

Where comments were made, users often asked for more of the same. So, for example, one person wanted longer visits and more time to talk, and another suggested there should be more home treatment teams. One person who had appreciated PET’s involvement in keeping him out of hospital was disappointed that when he did have to be admitted, he subsequently had little contact with the team after discharge from hospital.

Dissatisfaction with services amongst the comparison group was often connected with the ward environment (mentioned by 10 of the 21 users). One person said she felt “frightened and imprisoned at first” and several mentioned lack of facilities such as not being able to access the kitchen or no facilities for people with disabilities. Other inpatients were also a problem for some users who felt “bothered” or “got at” by other patients.

This theme – the hospital environment – was carried through to the question about the comparison group users’ suggestions for improvement. People wanted more activities on the ward, more privacy and all-round more pleasant conditions. One woman who had been very positive about the staff support on the ward, said:

“Highcroft is an old hospital. It would be nice to have a new building. For ECT you are herded in like cattle and can hear the treatment being given to others whilst you are in the waiting area, which is unnerving.”

Interestingly, a small number of users in the comparison group also mentioned they would have liked more choice in the services provided to them, notably a choice between hospital and community care. In fact, one user said he had expected care in the community and had been surprised to be admitted to hospital; however, he said he had received no mental health care prior to admission. Another said he had not seen anyone from the mental health services since being discharged, and this lack of co-ordination of community and inpatient care was mentioned by a number of people in this group. Conversely, two people said they were against the hospital closure.

In summary, users in both groups generally tended to be satisfied with the acute service they received and there was no difference in the quantitative findings between the two groups. In response to open questions, both groups of users valued being able to talk to staff about their problems and the fact that staff were available to them. Users of PET particularly liked the practical help they

received, being visited at home and 24-hour availability; the fact that some of this availability was by telephone contact only was not seen as a problem.

There appeared to be group differences in areas of dissatisfaction and suggested improvements. The most prominent area of dissatisfaction for the comparison group was the ward and hospital environment, and the users wanted more of a choice of types of care. For the implementation group, the problem seemed to be that users wanted more of the service: more time, more visits, easier access to the team.

Carers

It was intended to interview carers 6 weeks after the user's entry into the study. However, this proved difficult with carers either not identified, not willing to be interviewed or failing to keep appointments. Of the 116 people in this study, 12 carers were successfully interviewed, 9 from the comparison group and 3 from the implementation group. With such small numbers it is impossible to draw any firm conclusions from the data but a brief summary will be reported here.

Half of the carers were in the 50-69 age group, most (9) were women, and nearly all were white. Most were parents (7) and ten of the twelve lived in the same household as the service user. The carers seemed to support users in practical, rather than emotional, ways. They worried about the mental health of the users but did not fear they may be violent. Carers themselves experienced emotional problems and distress and 8 of the 12 said that they either had no or limited social contact within the month prior to interview. They were mostly satisfied with services and were likely to know who to contact in an emergency. The only people who registered dissatisfaction with services or who didn't know who to contact in an emergency, were in the comparison group.

Costs

Costs for community services were aggregated from the use of all services delivered in the community (ie. everything apart from inpatient care). Inpatient costs were calculated based on occupied bed days. The mean costs at each time point for both groups are shown in table 19.

Again, statistical test results are not presented in this chapter. Please see Appendix Two for calculations and statistical analyses of costs.

Table 19 **Mean costs (client level) and differences between groups**

	Group	Community costs (£) (Mean cost per client)	Inpatient costs (£) (Mean cost per client)	Total costs (£) (Mean cost per client)
During the 6 months prior to entry to the study	Comparison	486.8	434.48	921.28
	Implementation	1063.15	749.49	1812.63
From entry into the study to 6 weeks later	Comparison	49.61	3695.28	3744.88
	Implementation	1420.64	1412.06	2832.71
From 6 weeks to 6 months after entry to the study	Comparison	622.59	3604.03	4226.62
	Implementation	973.69	1729.24	2702.93

Table 20
Community costs
 (standardised per annum)

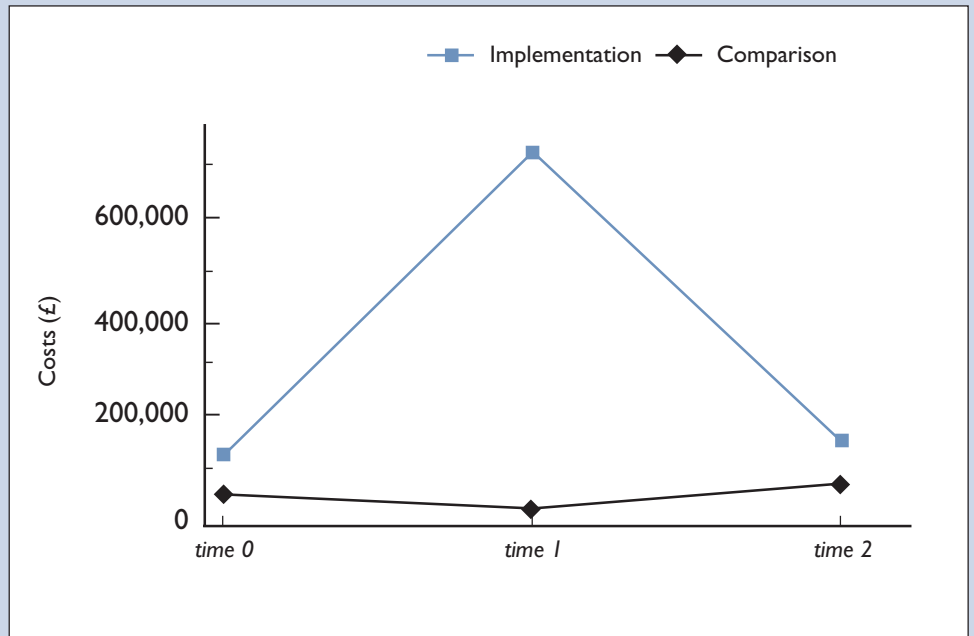


Table 21
Inpatient costs
 (standardised per annum)

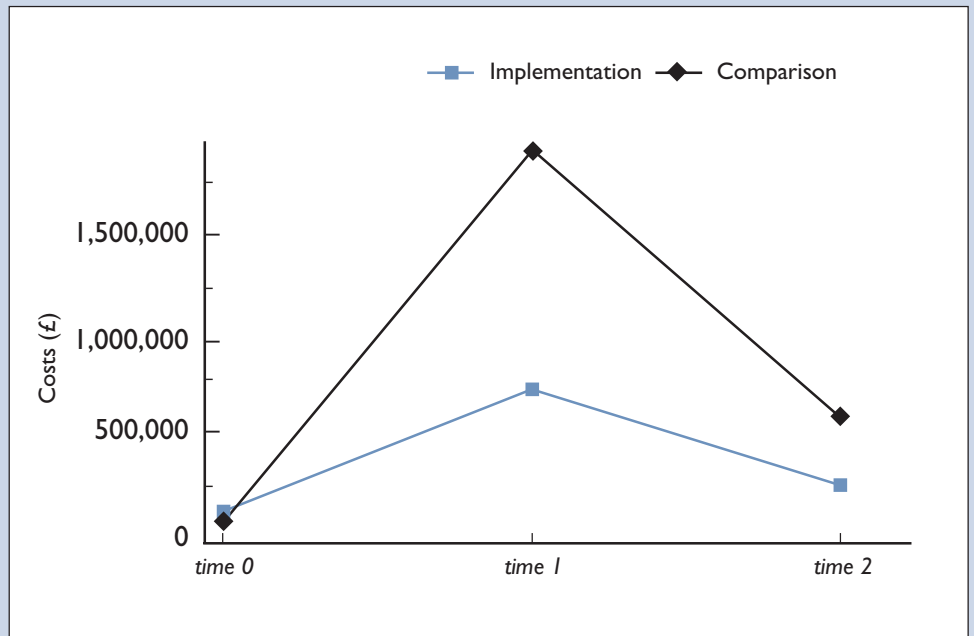
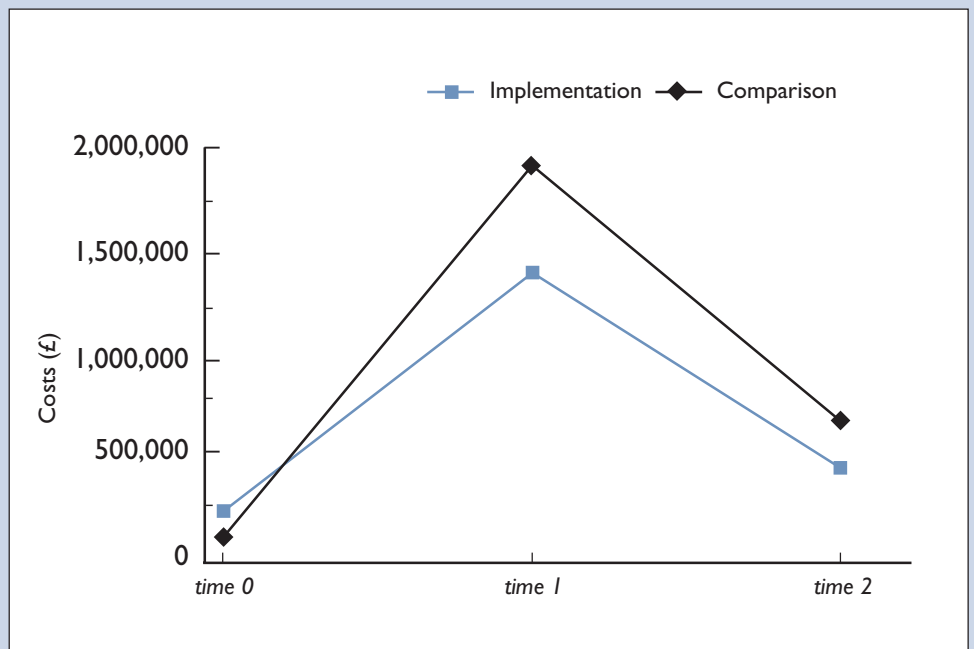


Table 22
Total costs
 (standardised per annum)



Community costs

Whilst there were no significant differences in the costs incurred between the two groups before entry into the study, community costs were significantly higher in the implementation group over the 6 week period following entry into the study. This was to be expected since most people in the comparison group continued to be inpatients during this period, and were not in receipt of community services. However the difference was not significant in the period between 6 weeks and 6 months after entry into the study. Table 20 shows the differences in community costs, based on annualised costs (ie. adjusted to give a *per annum* figure).

Inpatient cost

In contrast to community costs, inpatient costs were significantly lower for the implementation group in both time periods following entry into the study. Again the table showing annualised costs demonstrates this graphically (see table 21).

Overall cost

Because of the disproportionate costs of inpatient care, the results were that overall costs for Yardley/Hodge Hill were significantly lower during the 6 weeks following entry into the study and continuing into the period from 6 weeks up to 6 months after entry (see table 22).

In summary, although the implementation acute response resulted in higher *community costs* during the first six weeks after entry into the study, the *overall costs* in the comparison area were significantly more expensive, both during the acute phase and in the longer term.

The work of the Psychiatric Emergency Team

Introduction to this section

There were 58 people in the Yardley/Hodge Hill group identically matched with the same number from the Erdington group (see overall methods section). Of the 58 people in Yardley/Hodge Hill, 20 were admitted to hospital and 38 received PET on entry into the study. For this part of the study, then, we explored the nature of the service provided by PET for people who, as identically matched with the Erdington sample on the specified criteria, would have been eligible for admission if PET had not existed.

Methods for this section

To obtain detailed information on the nature of PET interventions, PET notes (where available) were examined for each client in the sample. Medical notes were used to supplement information as necessary. A data collection form was designed to record qualitative and quantitative information systematically as specified in table 23.

Table 23
Data collected on PET clients

Qualitative information	Quantitative information
• Reason for referral to PET	• Basic demographic and diagnostic information
• Therapeutic, practical and other interventions provided, including details of care planning	• Referral and discharge information
• Involvement of carer	• No. of PET visits and phone calls and other mental health professional involvement
• Reasons for any hospital admissions through PET	• Medication
• Any other relevant information	• Length of stay with PET
	• Details of any subsequent admission to hospital arranged through PET

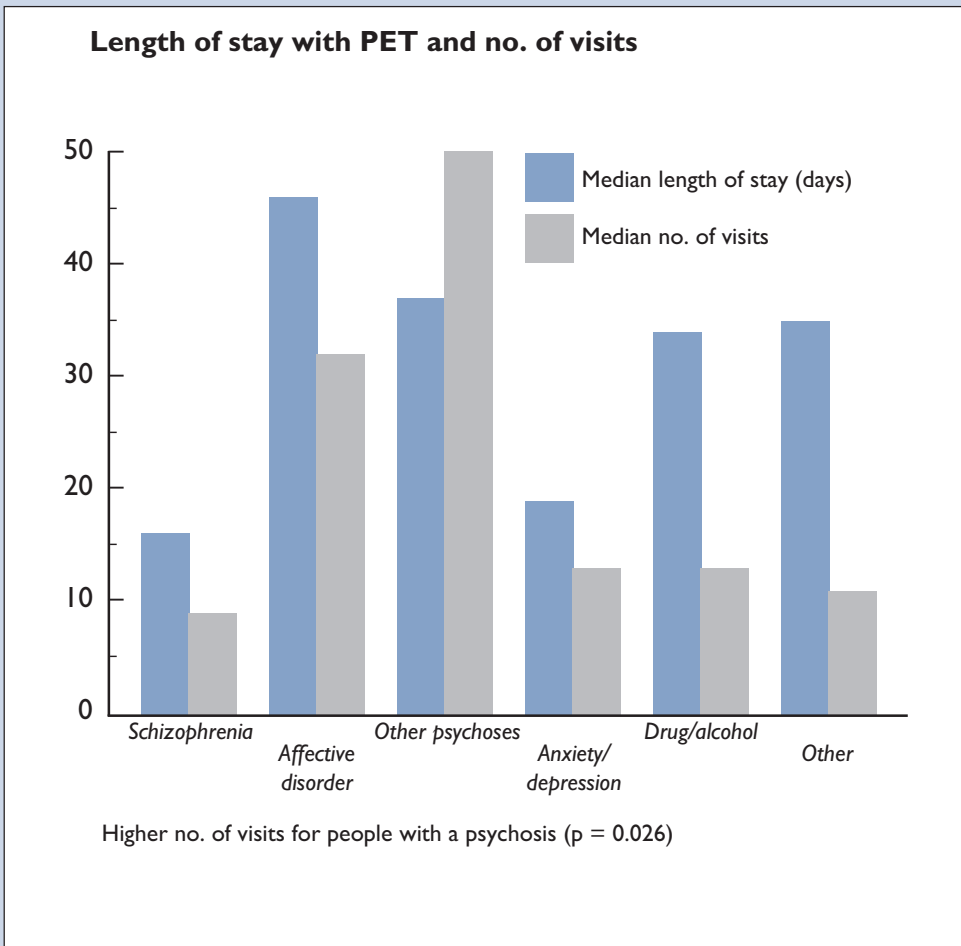
Table 24
PET clients –
demographic information
(n = 35)

63% men
91% white
mean age 39.7 years (sd 12.57)
marital status: 40% single
63% living with others
40% in hospital in previous 18 months

Table 25a
Client contact with PET
(n = 35)

Median length of stay with PET = 20.5 days (range = 1 – 114 days)
Median no. of visits per client = 17 (from admission to discharge) (range = 1 – 86 visits)
Fewer than 10% of visits involved direct contact with a psychiatrist (excluding assessment)
Telephone contact included with 15 clients (43%)

Table 25b
PET contact with clients
by diagnosis



BPRS ratings (see overall methods section) and additional information from the larger data set were also used to supplement the findings. In addition, job satisfaction and burnout were measured as part of a study looking at these factors in all the Sainsbury Mental Health Initiative services (see Harper and Minghella 1997).

Findings

Detailed data on PET interventions was available on 35 of the 38 PET clients. Three clients were admitted almost immediately after PET assessment and preliminary intervention. The findings therefore relate to the 35 clients only. These clients resembled the whole implementation client group in terms of demographic information and diagnoses (see table 24).

Whilst there was a large group of single people, most PET clients were living with others, either partner or family (22 people, 63 %). All were living in their own or the family's homes (rented or owner-occupied), apart from one person who was living in warden-controlled housing (housing association).

Most people (n=28, 65.7%) were diagnosed with a psychotic disorder.

Of the 35 people, 14 (40%) had been in hospital in the previous 18 months. PET had seen 10 of the 35 people before (28.57%), of whom three had not accepted PET on the previous occasion.

Contacts with PET

Clients spent between 1 and 114 days with PET. The median number of days was 20.5 (mean 33.71, sd 27.61). Tables 25 (a) and (b) show the length of stay with PET and the number of visits according to clients' diagnosis.

People with affective disorders and other psychoses had the highest number of PET visits and spent the longest amount of time on the PET caseload. The higher number of visits for people with psychoses was statistically significant (2-tailed t-test $p=0.026$).

This hides the fact, though, that people with anxiety/depression had more PET visits than people with schizophrenia; there was a median of 13 visits compared with 9 for people with schizophrenia. This is not explained by admission to hospital curtailing PET involvement since one person from each of these categories was admitted.

case study

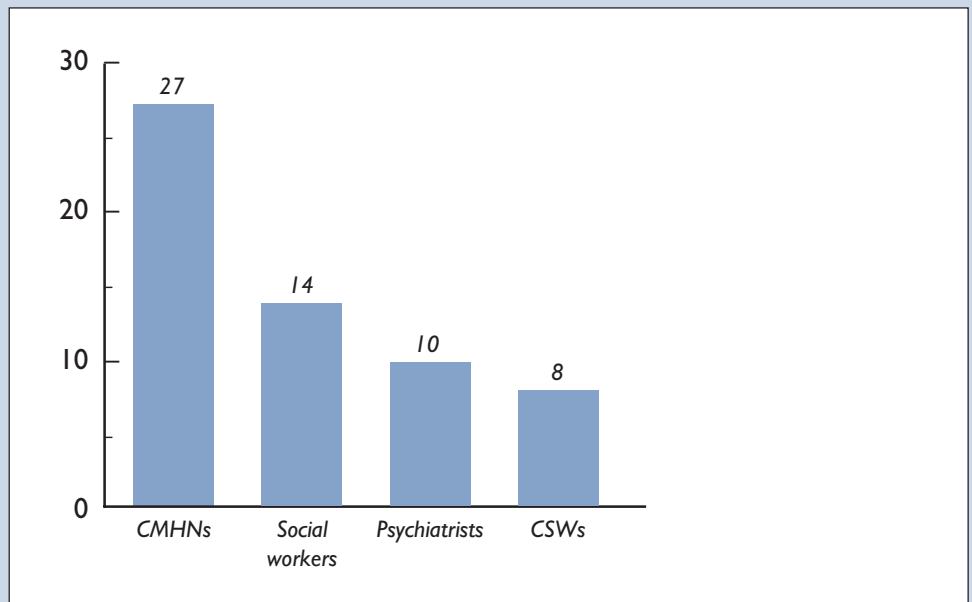
ADMISSION FROM PET

“Graham”, a young white man of 20, was referred to PET by a junior doctor at the local psychiatric hospital. Gary had been sent there by his mother in the early hours of the morning; their relationship had broken down. He was complaining of obsessive thoughts and poor sleep with some suicidal ideas. He had a two year psychiatric history,

with a diagnosis of personality disorder, and had discharged himself from the hospital less than 3 weeks earlier. His main problem, though, was that his mother did not want him to continue living with her. PET worked with him for 4 days (5 visits including 1 from a psychiatrist) with the aim of trying to find him accommodation and monitoring

his mental state. They also gave him medication (Zolpiden and prn Thioridazine). When PET contacted the accommodation officer, he would not accept Graham because of the suicidal ideas, and as a result, Graham was re-admitted to hospital. Graham was in hospital for 19 days before a hostel place was found for him out of the locality.

Table 26
PET team members carrying out assessments (after referral)



case study

A LONG PERIOD OF PET INVOLVEMENT

The person with the longest length of stay (114 days) was “Michael”, a 36 year old white man with an acute paranoid psychosis. Michael turned up at A&E with paranoid ideas (he believed there was a plot to murder or seriously harm him), and a query over whether he had a drug-induced psychosis. He had no previous history of contact with mental health services although he had been referred to PET 4 days earlier but refused their service. He

was assessed in A&E by a CMHN and social worker from the PET team. PET saw him 58 times, 26 of these involved giving medication. He was seen by a psychiatrist 7 times during this period. Twelve phone calls with Michael were recorded. PET provided help with Daily Living Allowance (DLA), medication and monitored his mental state. They also gave advice about drug use, used persuasion to try and help Michael adhere to treatment plans, and supported

Michael’s family.

PET found Michael a keyworker (CMHN) from the CMHT who visited with PET 3 times, before PET discharged him into the keyworker’s care. The keyworker saw him 3 days later. However, Michael’s paranoid beliefs were never shaken. He threatened to get a gun and after PET’s involvement ended he wrote to seek support (unsuccessfully) to apply for a gun licence.

Table 27
Reasons for PET referral – categorised data

Onset or relapse of psychotic symptoms	14
Risk of / actual harm to self or others	14
Depressive symptoms	8
Other mental health symptoms (eg panic)	6
Not taking medication	4
Early discharge from hospital	3
Family seeking admission	2
Alcohol detox/drug induced psychosis	2

There was very little difference in the number of PET visits for those who lived alone or with someone else and whilst there was a tendency for women to receive more visits, the gender difference was not significant.

Phone calls with clients were recorded in 15 cases, so fewer than half of clients appeared to use the telephone facility. Sometimes calls were initiated by the PET team, for example to change the time of a visit or to check that a client was expecting them. The average (median) number of phone calls per client was 3.

The median number of psychiatrist visits was 2.5 (mean 3.2, sd 1.98) with a range from 1-7 visits per client. Thus fewer than 10% of visits included a psychiatrist.

Admissions from PET

As already stated, of the 58 people in the sample, 20 were admitted directly to the inpatient unit. From the 35 people in this subset, a further 10 people (28.6%) were admitted from PET without any further involvement from the team. Two more people were admitted via PET and then the team became involved again on discharge. In all, only 3 people (8.6%) were referrals from the inpatient unit for facilitating early discharge and one of these had been admitted via PET.

Those not admitted had a median of 4 weeks' PET involvement. People who were admitted had the shortest time of PET involvement – a median of 16 days. Half of the people admitted from PET (n=5) had an affective disorder. The rest were evenly distributed across the other diagnostic categories (not drug and alcohol).

Who carried out assessments?

CMHNs and social workers were most likely to carry out initial assessments with CMHNs carrying out 27 (77.14%) and social workers carrying out 14 assessments (40%). All clients were seen initially by a psychiatrist or – in 10 of the 35 assessments (28.57%) – jointly with PET. Community support workers were involved in 8 assessments (22.86%). All but 4 assessments were done by at least 2 people (see table 26).

Where there was sufficient information recorded in the notes, the time between receiving the referral and carrying out the assessment was measured (20 people). Everyone was seen within 24 hours of referral whilst 10 out of the 20 people (50% where information available) were seen within 4 hours, the commonly used standard for emergency assessments.

Why did people get referred to PET?

There were several reasons given; the qualitative data was grouped into a number of categories (see table 27).

The two largest categories were “onset or relapse of psychotic symptoms” and “risk of or actual harm to self or others”. This latter category included people displaying aggressive behaviours including setting light to furniture or threatening to harm themselves or others. Only one person in the sample actually harmed himself. This man had been accused of sexually abusing a young woman in his family; he took an overdose and attempted to throw himself in front of a car. It seems that a perceived threat or risk of harm to self or others was greater than actual harm.

Table 28a
**PET ‘typical’
care plan**

- Monitor mental state

- Administer and monitor effects and side effects of medication

- Provide intensive support - twice daily visits initially

- Offer 24-hour telephone support

- Liaise with (or arrange) a keyworker

Table 28b
**Actual main areas of
PET’s work**

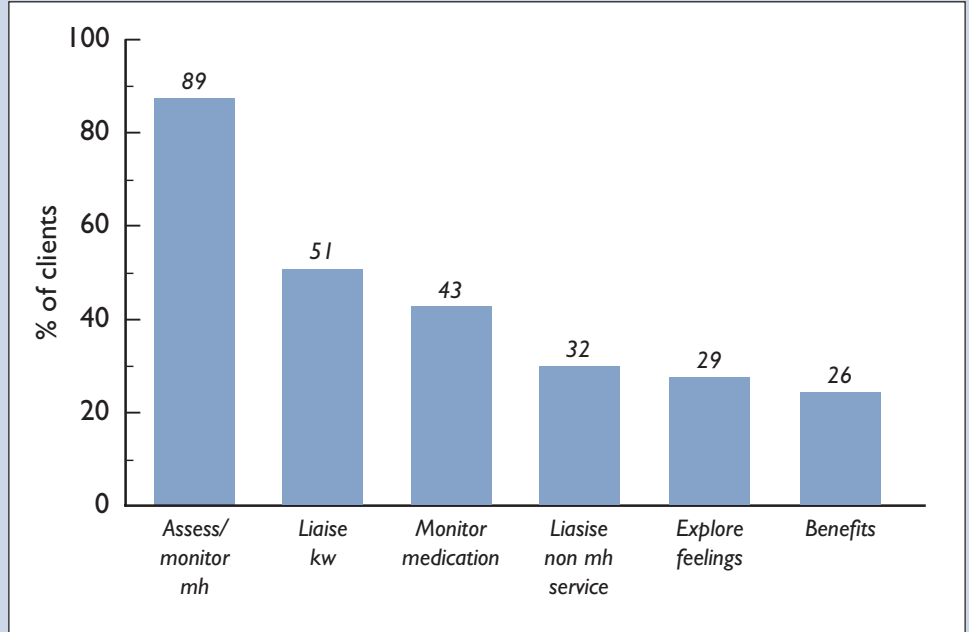


Table 29
**PET – psychological
therapies**

Intervention	No. of clients
Ventilation or exploration of feelings	10
Support or reassurance	9
Relaxation techniques	7
Anxiety management	5
Coping strategies	3
Cognitive approaches	1

What did PET do?

The PET team normally made an initial assessment and then drew up a care plan for each client. (In 9 cases – around a quarter – there was no apparent care plan in the notes). Care plans were fairly standard; whilst there were differences reflecting individual clients' needs, there seemed to be a standard care plan 'package' provided by PET (see tables 28a and 28b).

PET's interventions with clients as recorded in their notes reflected this 'typical' care plan and could be categorised under the following headings:

- ▶ Psychological therapies
- ▶ Practical help, including education and advice
- ▶ Monitoring (mental health, medication adherence, physical health etc)
- ▶ Liaison with other practitioners and services.

In addition, the number of contacts that involved giving medication was recorded. It should be noted that when discussing the activities of different disciplines, this does not normally include psychiatrists whose main role appeared to be to provide medical advice and prescription.

Psychological therapies

Under this category, any kind of supportive counselling or formal therapies were noted. Most of the interventions here were recorded as "exploring feelings" or giving reassurance (see table 29). Many clients were "offered support". More specific interventions included relaxation techniques, including use of tapes, anxiety management and coping strategies. Some cognitive work was carried out by the PET psychologist with one client in the sample. Apart from this example, 'talking' interventions were carried out by all professional groups in the team, although clearly some team members had particular skills and interests. For example, one social worker often introduced relaxation work with clients

case study

EFFECTIVE HOME-BASED CARE

A 57-year-old white woman, "Jean", was referred to PET by her consultant. Jean had a long psychiatric history going back more than 20 years. She had been admitted to hospital for a month 3 months' earlier and had also been seen by PET a few weeks before. She was unmarried and lived alone.

On referral Jean was experiencing severe depressive symptoms, including auditory hallucinations, agitation and poor sleep. She had stopped

taking medication. PET worked with her for 6 and a half weeks, seeing her 57 times. Nearly every day they took her medication (37 visits) and staff used prn medication (valium) when they felt necessary. Apart from this, their main role was the provision of practical support and constant review of her care. Practical support included liaising with the Neighbourhood Office, transport to and from the Day Hospital (which Jean had stopped attending) and helping

Jean with housework. PET also supported Jean's neighbour who was her main carer and liaised with other professionals (eg. Jean's keyworker).

Initially Jean's mental health seemed to improve, but as Christmas approached, her symptoms worsened and began to include paranoid ideas. During this time, PET increased the intensity of their visits and despite the seriousness of Jean's mental state, admission was not necessary.

Table 30
PET – practical help

Intervention	No. of clients
Benefits help and advice	9
Advice (drug, alcohol, physical care)	9
Escorting/transport	8
Social/day activities (eg shopping, arranging day care)	8
Household activities	6
Accommodation help and advice	3

Table 31
PET – monitoring

Intervention	No. of clients
Assessment and monitoring of mental state	31
Monitoring effects and side effects of medication	15
Monitoring medication adherence	9
Monitoring physical symptoms	7
Assessment and monitoring of risk	3
Monitoring alcohol or drug use	3

Table 32
PET – liaison

Intervention	No. of clients
Liaison with keyworker (incl. arranging a keyworker)	18
Liaison with non-mental health services and agencies	11
Liaison with medical staff	8
Liaison with other mental health services (e.g. Day Hospital)	6

Practical help

Practical help was a major component of PET's work with clients. It included help with benefits, transport and daily living activities. It also involved given practical advice regarding alcohol or drug use and physical care, eg. giving advice about safe drinking levels. Again, all team members appeared to offer this sort of help (see table 30).

Monitoring

Monitoring – particularly of the client's mental health, medication effects, side effects and adherence – was the most obvious intervention provided by the PET team, mentioned in nearly all the notes (see table 31). The team also monitored physical symptoms (including taking blood for people prescribed lithium) and risk to self or others (although this was rarely specifically mentioned and appeared to be considered intrinsic to general monitoring.)

Liaison

Liaison was another frequently mentioned aspect of PET's work (see table 32). This commonly meant liaison with the client's keyworker, or actually arranging a keyworker if the client was new to community mental health services. Indeed, joint visits (ie PET with another service) took place with more than half of the clients (n=19). Other liaison work involved non-mental health services, notably those concerned with children such as health visitors or social services. Psychiatrists' input, too, was often a matter of liaison for the team. Team members would keep the psychiatrist informed of the client's mental state, discuss changes in medication or the need for a psychiatrist to visit.

Medication was administered to 25 out of the 35 clients. The number of 'medication visits' per client ranged from 1 to 41, with a median average per client of 13 medication visits. Again, all members of the PET team were involved in administering medication, including social workers and support workers. The use of non-nursing staff for medication administration was negotiated through a special arrangement organised by PET.

Staff satisfaction and burnout

One of the charges levelled against emergency teams is the high rate of burnout amongst staff. The PET team was surveyed as part of the evaluation of all the Sainsbury Mental Health Initiative teams, using a variety of measures including the Minnesota Job Satisfaction Scale (Keolbel *et al.* 1991) and the Maslach Burnout Inventory (Maslach & Jackson 1986). The survey took place six months into the study when the team had been operational for 9 months. Statistical findings are reported in Appendix Three.

All of the Initiative teams reported high levels of job satisfaction and low levels of burnout (Harper & Minghella 1997). Looking separately at the PET team (response rate 69.6%), the team's scores were significantly higher than the other teams on a number of items. In particular, the PET team scored significantly higher on general Job Satisfaction and this was true both for extrinsic factors (eg. pay and conditions of work) and intrinsic factors (eg. satisfaction through work with clients). Furthermore, compared with a study of 250 CMHNs and 323 ward-based staff (Brown *et al.* 1994), the PET team had higher job satisfaction than both groups of staff.

Role conflict and ambiguity scales were also used to measure staff perceptions of the aims, objectives, roles and responsibilities within the team (Rizzo, House & Lirtzman (1970), Brown *et al.* (1986)). The PET team scored significantly higher than the other Initiative teams on Team Identification – the extent to which a person feels a positive sense of belonging to a team and on Team Role

Clarity – the extent to which the team is seen as having clear aims and priorities, including clarity about who it is trying to help.

These findings indicate high levels of job satisfaction, a sense of belonging to the team and a shared understanding of the team's role. It could be that over time, burnout will become a problem. However, since the team's inception until the time of writing (June 1995 – December 1997) turnover has been low, with only 2 members of staff having left. Both left for more senior posts in home treatment teams in other localities in North Birmingham.

Training recommendations

The issue of training in emergency home treatment is often a neglected one, although this is an area of mental health intervention which is both complex and demanding. Home treatment takes place in a very different environment from traditional inpatient care, demanding high levels of responsibility and performance from practitioners. Service structures apart, positive outcome for users will in the final analysis be dependent on the quality and level of competence of the human resources available.

There is an extensive portfolio of skills required for effective crisis intervention in a psychiatric emergency. This portfolio can be broken up into a number of broad domains of knowledge, attitudes and skill across several areas of care provision including assessment, engagement, treatment and intervention and crisis resolution. Good clinical supervision is a further requirement, and can be more effective if it includes a teaching component.

Conceptual framework

In the area of knowledge, practitioners in this field require a conceptual framework which guides their understanding and practice within complex and rapidly changing situations. The stress-vulnerability model is a useful explanatory framework which integrates the bio-psycho-social aspects of crises.

Practitioners also need a value base built on principles which recognise that where feasible, people with an acute mental illness have a right to treatment in the least restrictive environment and that opportunities for learning and relapse prevention are maximised if users and carers are involved in finding solutions to the problems confronting them.

One of the primary skills of this work is the capacity to develop rapidly a working relationship and therapeutic alliance with patients. This is essential for managing acute mental illness in the community and underpins all other interventions. Case or Care Management approaches using a bio-psycho-social approach recognise that effective clinical outcomes are often based on successful engagement between the service user and clinician, and that this relationship is central to achieving positive clinical outcomes.

Assessment skills

Practitioners in a psychiatric emergency team must also be competent in performing a thorough and comprehensive assessment, across a range of settings. This raises several issues in the collection of information and of co-ordinating multi-disciplinary team working. Assessment will take place in a variety of different environments including the client's home. It will also take place in the context of a multi-disciplinary team and the roles and functions of

the various professionals involved will need to be clarified and agreed.

While there are obvious issues around specialist practitioner roles in crisis intervention and psychiatric emergency such as the diagnostic and prescribing role of psychiatrists, mental health practitioners in the team must be competent in assessing the following areas:

- ▶ needs assessment including determining access to basic material supports such as food, shelter and finances
- ▶ mental state examination
- ▶ risk assessment
- ▶ functional or behavioural analysis
- ▶ family and social network assessment.

Practitioners will also need to develop skills in conducting joint assessments, often with colleagues from other professional backgrounds. This points towards the need for training programmes in assessment skills to be multi-disciplinary, and inclusive. A team culture should be developed so that all staff feel comfortable in presenting their assessments to peers of all disciplines. Such a process is enhanced if a teaching and supervision component is included.

Planning and treatment skills

Other skills include developing a co-ordinated multi-disciplinary treatment plan and providing a key working role during the acute phase. This may include providing 'in-reach' into hospital, where appropriate, and providing continuity and integrated care across the hospital-community interface.

Further skills include the capacity to provide goal setting and problem solving interventions, working with families to alleviate stress and tension particularly where treatment may be taking place in the family home. Practitioners must also be competent in being able to provide information on issues relating to the illness and its treatment.

Staff must be familiar with psychiatric medications, their effects and side effects and be able to facilitate medication adherence and monitor the possible side effects of medication. Such knowledge need not be the sole domain of qualified health practitioners but shared amongst all disciplines and staff involved in home-based treatment.

Practical knowledge and skills are also essential. Practitioners will need to provide assistance with very basic and practical issues around self care, diet and money management that are essential for survival in the community.

Increasingly patients are presenting in acute crisis due to substance abuse and thus practitioners will need to be competent in the area of dual diagnosis. They must also be competent in risk management, providing continual monitoring and assessment.

Relapse prevention skills

Resolution and follow-up of crisis episodes is an area critical to the longer term success of brief crisis oriented interventions and is often the stage that the treatment plan unravels. This is the phase where on-going relapse prevention plans, strategies and goals are formulated and implemented. Specifically this may involve linking the client with continuing care services, if this function is provided for by a different team, and ensuring that the client does not fall between a gap in services. Other skills associated with this phase include being

able to assist the client in learning from the crisis episode and extracting lessons about their particular vulnerabilities, associated risk factors and early warning signs of relapse. In planning for discharge, practitioners should be able to assist the client to put together a contingency plan involving what to do and how to seek help in the event of any future crisis which may emerge.

Training programmes

In terms of constructing a training programme for practitioners in new teams, it is recommended that the team have an opportunity to receive training *in advance* of taking on an active case load. A typical course would take place over a period of a month prior to commencing active casework and consist of twenty days of training and supervision. This would include training in the topics outlined above, but would also include placement time with another already established team, to observe and learn from practitioners already engaged in home-based treatment. Training should also incorporate a component of team building and clarifying individual/team roles and responsibilities.

In addition, training should facilitate opportunities for the practitioners to become familiar with the range of community resources in their particular 'patch'. Knowing what resources are available is an essential requirement for putting clients in touch with relevant services for ongoing support.

Finally, effective practice will be maintained if it is embedded within a culture of clinical supervision and support.

Service development recommendations

The North Birmingham approach is an important example of an attempt to develop a total district service model. Its three layer team configuration is an important and fascinating experiment.

Key lessons

The key lessons from the North Birmingham model for service developers are:

- ▶ **The PET team itself is an example of the importance of developing a home treatment and crisis component of local services.**

Crisis intervention is a core component of a comprehensive mental health service. However, many services provide crisis intervention by experienced staff on a nine to five basis only, leaving casualty departments as the most common form of provision for out-of-hours psychiatric emergency assessment. The example of the PET team provides useful information for service developers seeking to redress this situation.

- ▶ **It is important to identify locally how home-based emergency care can best be provided on a locality or larger sector basis.**

Services need to be based on an assessment of local needs and on an understanding of what already exists. This involves a process of:

- identifying the full range and providers of crisis services currently available in the area
- collecting information on the functions, hours, and client groups of these services
- consulting with local stakeholders, including users and carers, about what needs to be provided
- assessing local individual and population needs.

- ▶ **The teams need to be dedicated, trained and have very clear operational policies.**

The operational policies and procedures need to include (Phelan *et al.* 1997):

- agreed referral sources (the PET team does not take direct referrals from outside specialist mental health services)

- an efficient system for prioritising referrals
- procedures for dealing with refused referrals
- agreed out-of-hours service provision (eg. on call service)
- agreed response times
- a standard initial assessment process with a standard form
- a system for informing the referrer promptly of the outcome of the assessment
- procedures for working with others, including identifying existing or arranging new keyworkers
- procedures for planning care and effective interventions, such as relapse prevention
- plans of action to be taken in further crisis
- safety procedures for staff (eg. clear instructions for follow up if a staff member fails to return from a visit)
- agreed procedures for carrying and administering medication.

► **The service needs to be properly targeted to people in a severe psychiatric emergency.**

When deciding the nature and level of service response to a crisis, the PET team considers the following:

- past history
- current presentation
- level of informal support at home
- safety of home environment
- levels of engagement with treatment and support services
- capacity of the team to provide intensive home support
- past experiences of working with the client.

► **Services need to be well publicised.**

Information should be provided on:

- what service is provided
- what constitutes a psychiatric emergency
- the procedure for urgent referrals
- a single telephone number to contact
- provisions the service can and cannot make
- who can refer.

- ▶ **The service must be supported by rigorous evaluation of its efficiency and effectiveness.**

Finally, it is clear from the evaluation described in this report that, for an emergency home treatment team to be provided in localities, pump priming monies are essential to allow double running costs until bed savings can be made. Beds should not be reduced until and unless safe, adequate community facilities are made available.

Critical success factors

The following are critical success factors in developing emergency psychiatric services:

- ▶ **Services must be available out-of-hours. This can be efficiently and effectively provided on an on-call basis overnight and by telephone.**
- ▶ **It is absolutely crucial to prioritise those in high need. This means service users who suffer from a severe mental illness and:**
 - who would usually be admitted to an acute bed
 - who are in current danger to themselves or others
 - who have a history of poor engagement with services
 - are homeless or have other special needs.
- ▶ **Such a service should be multi-disciplinary and include psychiatrists.**
- ▶ **The service must be complementary to and integrated with other services, especially CMHTs, inpatient units, primary care and assertive outreach services.**
- ▶ **Teams must receive training in effective interventions, including those aimed at relapse prevention.**
- ▶ **Clear information about the service, how it operates and how it can be contacted must be readily available to potential referring agents.**

Discussion

The development of a home-based acute service for people with severe mental health problems has been shown to work at least as well as more traditional systems and to be more economical.

One of the key factors regarding this development is that PET is provided in the context of a comprehensive functional service which is oriented around community provision. Compared with the more hospital-oriented locality, clients in Yardley/Hodge Hill had more access to CMHNs and day care following an acute mental health breakdown. Whilst PET provides a home-based option for acute care, it is not an exclusive alternative to acute inpatient care; rather, inpatient care is provided alongside PET, and it is clear from the results of the evaluation that PET makes extensive use of the inpatient facility. Nevertheless, the development of PET has resulted in a decrease in the use of inpatient beds, through a decrease in their availability. This was possible because there were adequate (although not excessive) beds in the first place from which to make a reduction and because transitional funding was made available to develop safe alternatives.

The impact on acute inpatient care can be seen clearly through an analysis of bed use. Acute inpatient care for people living in Yardley/Hodge Hill was examined over the 3 year period covering the Sainsbury Mental Health Initiative – 1994-1997. Figures were calculated for each financial year (see table 33).

Table 33
Acute inpatient activity
in Yardley/Hodge Hill
94/97

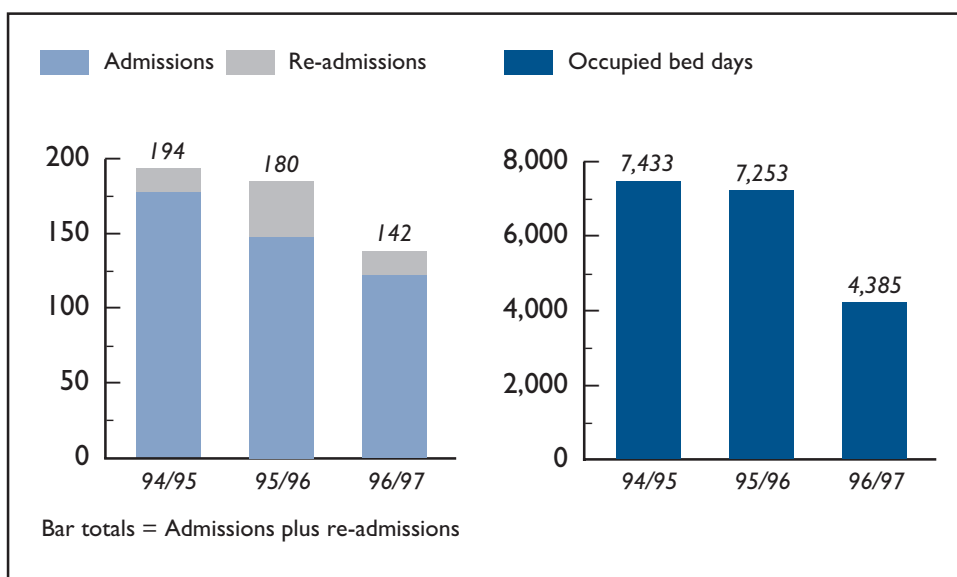


Table 34
Breakdown of mental health costs for Yardley/Hodge Hill 1997/98
 (NB non-locality costs based on population proportion and equal use across Birmingham of Trust-wide and HA funded facilities)

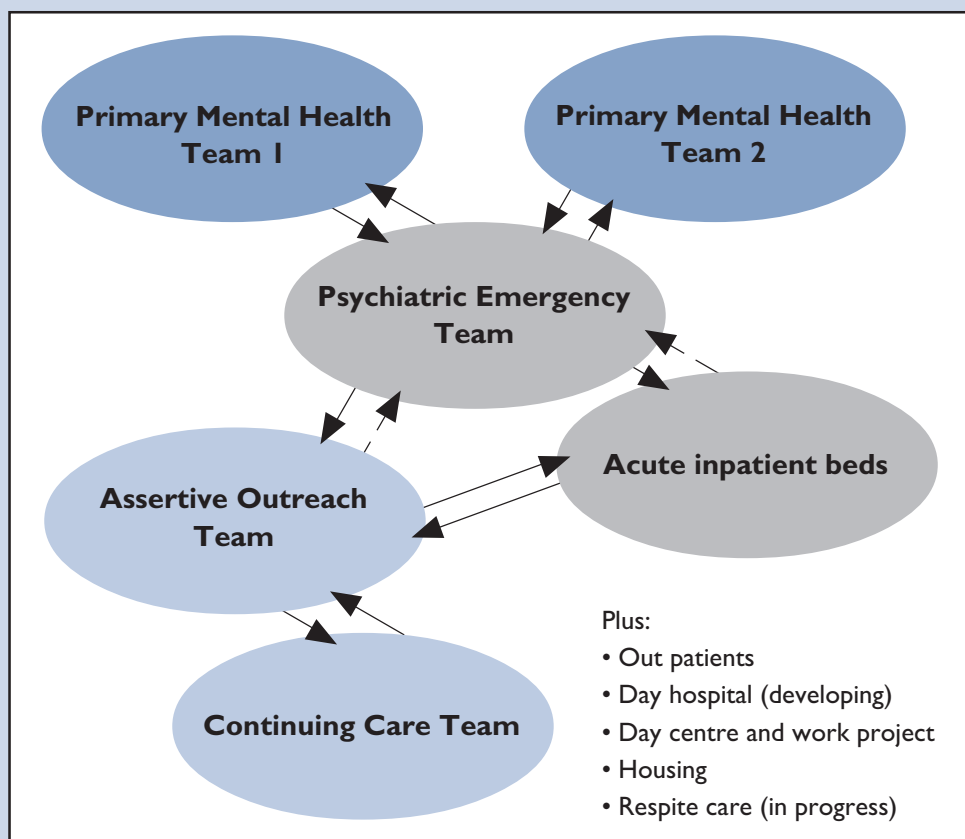
		£	£
Local costs	Inpatient	423,000	
	Day care	86,000	
	Home treatment team	364,000	
	Primary mental health care	262,000	
	Assertive outreach and continuing care	325,000	
Local Oncosts	Capital, hotel, admin etc	671,000	
	(population based proportion of Trust-wide costs)		
Total local + oncosts		2,131,000	
Costs of other B'ham-wide services	Primarily medical and drug services		1,532,788
Costs of other HA funded services	Primarily secure, forensic and specialist services		1,657,950
Grand total		5,321,738	
Leads to:	Cost per head of population Yardley/Hodge Hill Locality	£59.23	
	Cost per head of adult population Health Authority wide	£65.06	

Table 35
PET v inpatient illustrative service costs

	Inpatient 21 beds	PET
Staff costs	644,301	369,696
Supplied/overheads	245,448	84,317
Capital	79,003	27,360
Total	968,752	481,373

Bridging costs = £1 per head on top of mental health spend

Table 36
Model of service delivery



There has been a decline in acute inpatient admissions since 1994/95 (the year before the PET team became operational). There has also been a reduction in length of stay which, combined with fewer admissions, has resulted in a radical reduction in occupied bed days. During this time, the number of acute beds was reduced by half. Use of extra-contractual referrals, including to forensic care, is negligible. A review of the adult mental health expenditure for 1997/8 indicates that the cost per head of the Yardley/Hodge Hill model of services is less than the average cost for the rest of the population covered by Birmingham Health Authority (see table 34).

Looking at the overall cost of PET per annum compared with the 21 acute beds it replaced (down from an initial 44 before the start of this study and 23 by the end of the study) shows that bridging funds from the Sainsbury Mental Health Initiative amounted to £1 per head on top of mental health spend to fund the development of this service (see table 35). Thus, while in this study costs were shown to have been lower for individuals using the implementation service – which is not unexpected – the table indicates that they were also lower at the service level. Again it was the closure of beds that reduced the costs at service level, although it is vital to stress that this closure took place in a staged, planned way *coupled with* the development of increasing community services. (At the time of writing, the number of acute beds available had reduced further to 20, with access to intensive care beds, as necessary.)

It is important to stress that there are no long-term actual savings. For the whole system to work, funds are recycled into developing the full range of services required.

With pump-priming funds and through engaging in a safe, incremental and planned reduction in inpatient beds, North Birmingham were able to fund the development of an Assertive Outreach team and continuing care services. The Assertive Outreach team in particular has a crucial role in working with the most severely ill clients. The team will work with a maximum of 80 clients, with a maximum of 10 clients to 1 staff member. Clients accepted by the team all have a severe mental illness and meet one or more of the following additional criteria:

- ▶ those who are admitted regularly under the Mental Health Act
- ▶ people with a history of violence or persistent offending
- ▶ people who have failed to respond to treatment or whom the service has failed to engage
- ▶ people with combined serious substance misuse and severe mental illness.

There are also two primary care mental health teams in the early stages of development. Although operational, they are still in the process of defining and refining their roles and functions. The model of service delivery across the locality is shown in table 36.

Without services to refer people on to, crisis teams can become clogged up. The evaluation has demonstrated the integration of PET with other community mental health care services. PET arranged or contacted keyworkers and invariably undertook joint visits with the keyworkers before transferring care to community teams. They also received referrals from keyworkers. However, the link with non-PET social workers was not demonstrably strong. As this was also true of the Erdington sample this may be indicative of a general lack of local health and social services integration locally or a lack of social services resources.

The extent of PET's involvement in early discharge was limited, according to the evidence in this study. It may be that the volume of work coming from the community prevents this stated aim of the team from being a priority; however, supported early discharge can be an effective way of reducing inpatient stays for people who would often rather be at home than in hospital (Muijen *et al.* 1995). Another possible cause of the lack of early discharge work could be a lack of integration between the community services and the inpatient unit.

Indications for the sustainability of this model of care are positive. The team's job satisfaction is high and levels of burnout are low, and staff turnover is low. One of the initial concerns was the fact that the service was developed by a charismatic, highly experienced and enthusiastic consultant who screened all referrals and took responsibility for gatekeeping the acute unit. It was unclear whether the service could be sustained once consultant responsibility was shared between all the consultants operating in the locality, and indeed when the original consultant went on holiday for a month admissions to the acute unit increased temporarily. However, shared consultant responsibility operated from three months after the study started and the results here are provided in that context. The original consultant has now left the area. The service not only continues but has been replicated across the whole of North Birmingham.

Another contextual issue relating to the sustainability of the service was the way the model was introduced. It was initiated at the level of senior management who supported it entirely and saw it as a way of starting the reconfiguration of services locally. As already mentioned, the consultant was very experienced in home treatment as was the team leader. The team's staff were newly recruited to the service and were likely to be enthusiastic and willing to work flexibly as they knew before applying what the job entailed. There was a period of a month after the team members were all recruited that was used for training and orientation. Training included risk assessment and management and the evidence base for the new model. All of these factors contributed to a way of introducing change that was careful and planned.

The evidence suggests that working with people with severe mental illness at risk of hospitalisation can be done effectively with a separate home treatment team. There is, though, a danger of fragmentation of services. Changing the model so that consultant responsibility remains with the referring consultant is likely to help address this problem: the medical team and keyworker remain the same throughout PET's involvement with clients. The new Assertive Outreach Team is providing extended hour care and initially it was expected that this team would use PET in the same way as other local services. However, the team is now finding that it is able to manage crises in its client group, and rarely needs to use PET, especially as both teams work similar hours. If the Assertive Outreach Team believes an admission is required then this will be discussed with PET before admission, but PET is otherwise not involved. The Assertive Outreach Team is now the only team locally that has single consultant responsibility.

The model of services adopted by North Birmingham has involved a circular process of change: senior managers and practitioners instigated the bid for funds for the development of PET; through the PET team working effectively, it was possible for beds to be closed; through the closure of beds, funding was made available to develop the Assertive Outreach Team. The service model itself may provide a useful framework for other planners wanting to restructure local mental health services to cover the spectrum of care from acute to long term work, with resources targeted to those with the most severe illness.

Conclusions

The key conclusions are as follows:

- ▶ **A service such as PET does provide a service for some people who would otherwise be at risk of hospital admission.**
- ▶ **An acute community-oriented service costs less than an acute hospital-based service and bridging funds need only amount to an extra £1 per head on top of mental health spend over three years, but money must be recycled to sustain the system and a range of other support services must be in place.**
- ▶ **An acute community service can work but there must be acute beds available – the service needs to be community-oriented, not exclusively community-based. Acute beds were needed both initially and in some cases after PET’s involvement.**
- ▶ **Evidence for relative clinical effectiveness is limited but suggests no difference between hospital and community-oriented services.**
- ▶ **Evidence from other studies, and – though limited – from this study, suggests that service users and their carers prefer treatment at home and value having the options associated with community-oriented acute care.**
- ▶ **PET provides a bio-psycho-social and practical model of care in people’s own homes.**
- ▶ **The provision of PET results in a service that is more integrated across hospital and local settings.**
- ▶ **The development of a home-based emergency psychiatric service requires a period of multi-disciplinary training and induction, with particular emphasis on engagement, assessment (including risk assessment) and relapse prevention skills. A knowledge of other local resources and the ability to refer people on to those resources is also essential.**

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APPENDIX

Statistical analysis of demographic, service use and outcome data referred to in Chapter Four

For categorical data Pearson's chi squared test was used to compare intervention and control groups. Two-tailed t tests were used to compare means. Significance was set at $p < 0.05$.

Demographic differences

People in the comparison group were less likely to be living with a carer, with 53% living alone in Erdington compared with only 30% in Yardley/Hodge Hill ($\chi^2 = 5.02$, $p = 0.025$).

The implementation group scored significantly higher on the HoNOS than the comparison group (Two-tailed $t = -2.42$, $p = 0.017$, response rate 99.1%).

Use of acute hospital beds

Data for occupied bed days was logarithmically transformed to correct for skewed distribution. Analysis was carried out on matched pairs.

		Intervention group	Comparison group	Test, p
Number of Admissions	0 – 6 months before entry	10	8	ns
	0 – 6 weeks after entry	28	61	$\chi^2 = 47.25$, $p < 0.001$
	6 – 26 weeks after entry	7	13	ns
Occupied bed days	0 – 6 months before entry	345	200	ns
	0 – 6 weeks after entry	650	1,701	$t = -8.41$, $p < 0.001$
	6 – 26 weeks after entry	796	1,659	$t = -3.1$, $p < 0.001$

Number of people in contact with each service by time period

		Intervention n=58	Comparison n=58	Chi squared test, p
Community psychiatric nurses	0 – 6 months before entry	18	11	ns
	0 – 6 weeks after entry	22	8	$\chi^2 = 8.44$, $p = 0.004$
	6 – 26 weeks after entry	25	13	$\chi^2 = 6.71$, $p = 0.01$
Social workers	0 – 6 months before entry	5	2	ns
	0 – 6 weeks after entry	3	1	ns
	6 – 26 weeks after entry	7	3	ns
Psychiatrists	0 – 6 months before entry	7	29	$\chi^2 = 19.49$, $p < 0.001$
	0 – 6 weeks after entry	11	3	$\chi^2 = 5.2$, $p = 0.02$
	6 – 26 weeks after entry	12	33	$\chi^2 = 16.01$, $p < 0.001$
Day services	0 – 6 months before entry	4	1	ns
	0 – 6 weeks after entry	9	3	ns
	6 – 26 weeks after entry	14	5	$\chi^2 = 5.1$, $p = 0.02$
Supported housing	0 – 6 months before entry	1	4	ns
	0 – 6 weeks after entry	1	1	ns
	6 – 26 weeks after entry	1	5	ns

BPRS

Analysis of covariance was used to compare the two groups' BPRS mean change scores.

At entry into the study, the intervention group's mean BPRS score was 15.55 (sd 8.24; n=31) and the comparison group's 12.75 (sd 7.98; n=40).

After 6 weeks the intervention group's BPRS scores had changed by a mean of -2.58 (sd 10.05; n=19). The corresponding mean change score for the comparison group was -4.57 (sd 7.74; n=21). There was no significant difference in mean change score between the groups (F=0.42, p=0.52).

Untoward incidents

		Intervention	Comparison	Chi squared test, p
Self-harm	0 – 6 months before entry	5	10	ns
	0 – 6 weeks after entry	3	4	ns
	6 – 26 weeks after entry	1	2	ns
Violence to others	0 – 6 months before entry	0	7	$\chi^2=7.47$, p=0.006
	0 – 6 weeks after entry	2	1	ns
	6 – 26 weeks after entry	0	0	ns
Homelessness	0 – 6 months before entry	9	0	$\chi^2=9.76$, p=0.002
	0 – 6 weeks after entry	2	0	ns
	6 – 26 weeks after entry			ns
Trouble with police	0 – 6 months before entry	3	9	ns
	0 – 6 weeks after entry	0	0	ns
	6 – 26 weeks after entry	0	0	ns
Re-admission to acute care*				
	0 – 6 weeks after entry	4	3	ns
	6 – 26 weeks after entry	7	12	ns

* = re-admission to acute inpatient care in comparison area and subsequent admission to acute inpatient or home treatment in intervention area

Costs analysis

The analysis of costs' data for this study took the form of comparison of costs over the three time periods under investigation using matched analysis. The 3 periods were:

- 1 The twenty six weeks before clients entered the study
- 2 From entry into the study until six weeks later
- 3 From six weeks after entry into the study until twenty-six weeks after entry into the study.

For each comparison, costs were calculated according to the community, inpatient and overall actual services used. A weekly cost was then calculated and transformed using log transformations in order to approximate a normal distribution as follows:

- $\ln(5 + \text{weekly cost of services used during } 0 - 26 \text{ weeks before entry to study})$
- $\ln(5 + \text{weekly cost of services used during } 0 - 6 \text{ weeks after entry to study})$
- $\ln(5 + \text{weekly cost of services used during } 0 - 26 \text{ weeks after entry to study})$.

Two sets of analysis were performed:

- 1 Firstly, differences in logged weekly costs incurred by the two groups (control and experimental) during each time period were assessed using the paired t-test.
- 2 Secondly, differences were calculated between the two groups looking at changes in logged weekly costs following entry into the study compared with before entry into study as follows:
 - For the 6 week test:

$$\left(\ln(5 + \text{weekly cost of services used during } 0 - 6 \text{ weeks after entry to study}) \right) - \left(\ln(5 + \text{weekly cost of services used during } 0 - 26 \text{ weeks before entry to study}) \right)$$

- For the 26 week test:

$$\left(\ln(5 + \text{cost of weekly services used during } 0 - 26 \text{ weeks after entry to study}) \right) - \left(\ln(5 + \text{cost of weekly services used during } 0 - 26 \text{ weeks before entry to study}) \right)$$

Statistical significance in differences between the two groups was assessed by the paired t-test.

Test one: differences in transformed costs between the two groups during each time period

The results were as follows:

The 26 weeks before entry into the study:

Inpatient costs during the period from 0-26 weeks before entry into the study.

$$t=0.67 \text{ (57 df)}$$

$$p=0.51$$

No difference between the two groups

Community costs during the period from 0-26 weeks before entry into the study.

$$t=0.65 \text{ (57 df)}$$

$$p=0.52$$

No difference between the two groups

Total costs during the period from 0-26 weeks before entry into the study.

$$t=0.61 \text{ (57 df)}$$

$$p=0.54$$

No difference between the two groups

The period from 0 – 6 weeks after entry into the study

Inpatient costs during the period from 0 – 6 weeks after entry into the study.

$t = -8.41$ (57 df)

$p = 0.00$

Experimental costs significantly less than control group costs

Community costs during the period from 0 – 6 weeks after entry into the study.

$t = 10.61$ (57 df)

$p = 0.00$

Experimental costs significantly higher than control group costs

Total costs during the period from 0 – 6 weeks after entry into the study.

$t = -2.86$ (57 df)

$p = 0.01$

Experimental costs significantly less than control group costs

The period from 6 – 26 weeks after entry into the study

Inpatient costs during the period from 6 – 26 weeks after entry into the study.

$t = -3.17$ (57 df)

$p = 0.00$

Experimental costs significantly less than control group costs

Community costs during the period from 6 – 26 weeks after entry into the study.

$t = 1.7$ (57 df)

$p = 0.09$

No difference between the two groups

Total costs during the period from 6 – 26 weeks after entry into the study.

$t = -2.19$ (57 df)

$p = 0.03$

Experimental costs significantly less than control group costs

Costs incurred by the two groups – means and standard deviations

	Group	Community costs (£) (mean cost per client)	Inpatient costs (£) (mean cost per client)	Total costs (£) (mean cost per client)
During the 6 months prior to entry to the study	Implementation	1063.15 (sd 2577.7)	749.49 (sd 3137.32)	1812.63 (sd 4271.97)
	Comparison	486.8 (sd 903.94)	434.48 (sd 1510.93)	921.28 (sd 1670.37)
From entry into the study to 6 weeks later	Implementation	1420.64 (sd 1590.82)	1412.06 (sd 1958.55)	2832.71 (sd 1947.31)
	Comparison	49.61 (sd 104.78)	3695.28 (sd 1745.49)	3744.88 (sd 1764.12)
From 6 weeks to 6 months after entry to the study	Implementation	973.69 (sd 1259.48)	1729.24 (sd 4389.44)	2702.93 (sd 4622.79)
	Comparison	622.59 (sd 1364.09)	3604.03 (sd 5401.03)	4226.62 (sd 5332.58)

Test two: differences between the two groups looking at changes in costs from post entry into study compared with before entry into study

0-6 weeks after the study

Inpatient costs during 0 – 6 weeks after entry to study, compared with 0 – 26 weeks before:

$$t = -7.46 \text{ (57df)}$$

$$p = 0.00$$

Experimental group significantly lower inpatient costs than control group

Community costs during 0 – 6 weeks after entry to study, compared with 0 – 26 weeks before:

$$t = 8.99 \text{ (57df)}$$

$$p = 0.00$$

Experimental group significantly higher community costs than control group

Total costs during 0 – 6 weeks after entry to study, compared with 0 – 26 weeks before:

$$t = -2.47 \text{ (57df)}$$

$$p = 0.02$$

Experimental group significantly lower total costs than control group

6 – 26 weeks after entry to study

Inpatient costs during 6 – 26 weeks after entry to study, compared with 0 – 26 weeks before:

$$t = -6.88 \text{ (57df)}$$

$$p = 0.00$$

Experimental group significantly lower inpatient costs than control group

Community costs during 6 – 26 weeks after entry to study, compared with 0 – 26 weeks before:

$$t = 6.34 \text{ (57df)}$$

$$p = 0.00$$

Experimental group significantly higher community costs than control group

Total costs during 6 – 26 weeks after entry to study, compared with 0 – 26 weeks before:

$$t = -2.31 \text{ (57df)}$$

$$p = 0.02$$

Experimental group significantly lower total costs than control group

APPENDIX 3

Staff satisfaction and burnout statistics

Job satisfaction (Minnesota Job Satisfaction schedule)

Higher scores = greater satisfaction

	PET mean (sd)		Other Initiative teams mean (sd)		2-tailed t-test
Intrinsic factors	21.57	(1.13)	26.96	(7.21)	t = -4.65 p<0.001
Extrinsic factors	15.29	(2.98)	19.04	(4.53)	t = -2.12 p=0.039
Overall job satisfaction	79.43	(3.74)	67.11	(11.61)	t = 5.51 p<0.001

PET compared with Brown et al's sample: t=3.34, p=0.01 (Overall job satisfaction)

Burnout scores (Maslach Burnout Inventory)

	PET mean (sd)		Other Initiative teams mean (sd)		2-tailed t-test
Emotional exhaustion (high score = high burnout)	14.50	(6.97)	19.55	(6.98)	ns
Depersonalisation (high score = high burnout)	2.88	(2.48)	4.38	(4.16)	ns
Personal accomplishment (high score = low burnout)	38.63	(7.46)	36.17	(6.48)	ns

Role and team clarity/identification

High scores = greater clarity/identification

	PET mean (sd)		Other Initiative teams mean (sd)		2-tailed t-test
Team role clarity	28.50	(3.51)	24.43	(6.78)	t = 2.57 p =0.02
Team identification	38.43	(2.70)	34.91	(5.19)	ns
Personal role clarity	29.25	(3.66)	26.24	(5.59)	ns
Professional identification	34.37	(5.95)	33.08	(6.22)	ns



The Sainsbury Centre
for Mental Health

Working for Excellence in Mental Health Services

134-138 Borough High Street • London SE1 1LB
Telephone: 0171 403 8790 • Fax: 0171 403 9482

www.SainsburyCentre.org.uk

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