British Journal of Psychiatry (1993), **163**, 49–54

A Controlled Trial of Home-Based Acute Psychiatric Services. I: Clinical and Social Outcome

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While research has shown community-based psychiatric care to be as good as, or better than, hospital-based care, generalisation to clinical practice has been difficult. This prospective, randomised controlled study examined a community-based approach feasible within NHS conditions. Ninety-four patients were randomly allocated to experimental and 78 to control treatments and followed for one year. The groups were well matched apart from an excess of psychotic control patients. No differences in clinical or social functioning outcome were found. Both groups improved substantially on clinical measures in the first six weeks, with some slow consolidation thereafter. There were three suicides in the control group and one in the experimental group. Access to care was better in the experimental group (93% attended assessment) than in the control group (75% attended assessment).

As the focus of psychiatric services has shifted from hospitals to the communities they serve, psychiatric bed numbers in the UK have fallen by over two-thirds since their peak in the mid-1950s – a pattern observed in many countries (Bennett, 1991; Raftery, 1991). Community surveys (e.g. Goldberg & Huxley, 1980; Shepherd *et al*, 1981) have shown that the overwhelming majority of patients with psychiatric disorders are treated in primary care or by specialist services, without entering hospital.

Outreach services providing comprehensive specialist psychiatric assessment and care previously available only to in-patients have been evaluated (e.g. Fenton *et al*, 1979; Stein & Test, 1980; Dean & Gadd, 1990). None of these 'alternatives to hospitalisation' studies found the hospital-based service superior (Braun *et al*, 1981), and all demonstrated significant reductions in in-patient care. Stein & Test's finding of improved clinical outcome and consumer satisfaction with a possible cost saving (Weisbrod *et al*, 1980; Stein & Test, 1980) has stimulated a series of replication studies of their "training in community living" approach (Hoult *et al*, 1983; Muijen *et al*, 1992*a*).

Despite their consistency, these findings have not been translated into policy other than in New South Wales. Reservations about their generalisability remain. Firstly, neither 'hospitalisation' nor 'psychiatric patients' can be treated as unitary concepts (Tantam, 1985). In the UK, services within a geographically defined sector must meet virtually all the mental health needs of the population, and some patient groups might not respond to the experimental approach or perhaps might suffer relative therapeutic neglect (Stefansson & Cullberg, 1986). Secondly, staffing levels and motivation are high in research studies. Stein & Test documented a rapid loss of their gains after special funding was withdrawn (as did Langsley *et al*, 1969; and Davis *et al*, 1972). Thirdly, both Stein & Test and Hoult developed their services to meet large deficits in local continuity of care for the seriously mentally ill. Neither control service offered continuity of in-patient and out-patient care or any significant contribution from primary care services.

The present study was designed to examine the feasibility, effectiveness and efficiency of adopting a more assertive community approach in a comprehensive psychiatric service, while reducing the possible biases outlined above.

Randomisation was at the point of referral, to ensure a full range of disorders was included. Local sector teams of similar manpower were recruited in pairs to ensure equal resources and a fair balance of commitment to experimental and control services. Control services had well established multidisciplinary working practices (Paykel *et al*, 1982) and high-quality staff.

Method

The study was carried out at St George's Hospital in London. Six catchment-area teams took part. Three pairs of teams amalgamated their catchment areas into joint sectors, from which referrals were randomised. For the duration of the study one team in each pair continued with its normal practice while the other operated the experimental service. The control teams assessed most patients in routine out-patient clinics, with domiciliary visits for the few urgent referrals.

Two sectors (Wimbledon and Mitcham) are urban/suburban, with Jarman (1983) indices of deprivation of 7.85 and 10.46 respectively; the third (Wandsworth/Battersea) is a deprived inner-city area (Jarman index = 31.0). The total population served was 180 000.

Each team had broadly comparable medical staff plus one full-time community psychiatric nurse, a half-time social worker and psychologist, and minimal occupational therapy. Provision of beds for acute care was similar in all the services (about 0.2 per 1000 population). No team had a community base and only one had prior experience of the experimental approach.

The Dingleton Hospital model (Jones, 1987) was selected for study because of its proven durability and acceptability to local consultants, who agreed to the following alterations in assessment practice:

(a) home-based
(b) jointly involving a psychiatrist and another trained professional
(c) within two weeks of referral.

There were no other limitations on the teams' clinical decisions. Patients coming into the service through alternative channels were included. Extensive training for the experimental teams was not possible. The rationale of the service was discussed and the necessary administrative procedures initiated one month before intake.

Patients were accepted for the study if they were:

(a) aged between 18 and 74 years
(b) from the appropriate catchment area
(c) not in treatment during the preceding 12 months
(d) able to be interviewed in English.

The age range is that used locally to designate general psychiatric patients, and the 12-month stipulation avoided disrupting established therapeutic relationships. All referrals, by letter or telephone, were intercepted daily by the research secretary and allocated by random number sequence. Direct admissions were allocated by the receiving nurse opening a sealed envelope. Allocation continued with each sector for just over four months, one sector at a time.

Patients were assessed by a graduate researcher within two weeks of clinical assessment and at six weeks, six months and 12 months. The interviews were semistructured (Table 1). Informants were interviewed at each point if available. Detailed records were kept of all service use and are reported in Paper II (this issue).

The following assessment schedules were used:

(a) initial social history (after Paykel, 1982): 36 social and demographic characteristics
(b) the Present State Examination (PSE; Wing *et al*, 1974): 140 items of current mental state, generating CATEGO-based diagnostic groupings and measuring clinical severity through the Index of Definition (ID)
(c) the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962): 18 symptoms on a seven-point scale, for measuring change in psychotic disorders

Table 1
Details of the assessment programme

	Intake	Six weeks	Six months	Twelve months
Patient measures				
Social history	+			
PSE	+			+
BPRS	+	+	+	+
Clinical interview	+	+	+	+
SFS	+	+	+	+
Consumer satisfaction		+	+	+
Informant measures				
Assessment of patient's symptoms	+	+	+	+
Family burden	+	+	+	+
Assessment of patient's social functioning	+	+	+	+
Consumer satisfaction		+	+	+

(d) clinical interview (after Paykel, 1985): 28 symptoms on a seven-point scale for measuring change in depression and mixed neurotic disorders
(e) the Social Functioning Schedule (SFS; Remington & Tyrer, 1979): social functioning in 12 areas, converted to a six-point scale for this study
(f) the consumer satisfaction scale (after Paykel & Griffiths, 1983): 37 items eliciting assessments of quality, appropriateness and accessibility of care
(g) the Family Burden Scale (Paykel, 1982): 31 items measuring objective and subjective burden and subjective stress
(h) informants' assessment of patients' symptoms: 18 key BPRS symptoms, rated on a modified 1–5 scale
(i) informants' assessment of patients' social functioning: patients' schedule plus three summarising variables and a global score
(j) informants' satisfaction scale: patients' scale plus a measure of information imparted.

Inter-rater reliability for consumer satisfaction and family burden scales are detailed elsewhere (Paykel *et al*, 1983).

Statistical methods

An intention-to-treat approach (Pocock, 1983) was applied to all subjects who entered the study (i.e. on whom there were baseline research data). This ensures that all subjects have ratings entered for all assessments. Where subjects missed an assessment for whatever reason (absence, refusal, etc.) their previous assessment scores were carried forward. This was applied for all measures, including social functioning and informant ratings where a number of initial ratings were not achieved.

Categorical variables were compared using χ^2 or Fisher's exact test when appropriate. For continuous measures the Wilcoxon test was used to compare the groups when the measures were skewed and the *t*-test when they were normally distributed.

https://doi.org/10.1192/bjp.163.1.49 Published online by Cambridge University Press

Table 2
Numbers of patients progressing to different stages of the study

	Experimental group	Control group
Randomised	150	182
Excluded	20	27
Allocated to treatment	130	155
Failed to attend	9	39
Clinically assessed	121	116
Refused consent	25	33
Died	0	2
Referred too late for study	2	3
Entered study	94	78

Table 3
Initial patient characteristics

Variable	Experimental group ($n=94$)	Control group ($n=78$)
Mean age: years	39	42
Sex: % male	45	42
Marital status: %		
married	39	36
single	33	41
divorced/separated/widowed	28	23
% childless	45	47
Living alone: %	22	22
Owner occupier: %	54	41
Employed: %	35	28
Social class[1]: I or II: %	15	15
Nationality: % British	79	77
Ethnicity: % white	94	88
Religion: %		
Christian	75	67
practising	23	29
% with a psychiatric history	46	46
Urgent referral: %	12	20
Compulsory admission: %	3	6
PSE CATEGO psychotic: %	29	42*
First episode: %	53	56

*$\chi^2=6.75$, $P=0.032$.
1. Registrar General's classification.

Results

A total of 332 patients were randomly allocated (Table 2). Of the 47 patients excluded: 20 had been in recent treatment; 10 were not resident in the catchment area; two were discovered to be aged over 74; five failed to be randomised; five entered alternative psychiatric care (e.g. private or specialised) simultaneously with the index referral; three had insufficient English for interview; and two control patients died before assessment. The overall exclusion rate was similar in the experimental (13%) and control (15%) groups. Slightly fewer experimental than control patients refused research assessments (21% v. 28%) or failed to complete all four follow-up interviews (28% v. 38%), but neither difference is significant. The overall rate of successful follow-up interviews was high (81%).

Initial patient characteristics were similar (Table 3). The only significant difference was the lower proportion of CATEGO-defined psychotic patients in the experimental group (25/87, 29%) than in the control group (30/71, 42%). Eight patients missed the PSE rating and six had no rateable PSE symptoms. Both groups displayed a similar broad diagnostic spectrum dominated by neurotic disorders (mainly depression and anxiety states).

The proportion of patients who failed to attend their initial clinical assessments was significantly lower in the experimental (9/130, 7%) than in the control group (39/155, 25%) ($\chi^2=35.46$, $P<0.0001$). This represents a substantial increase in service accessibility and is closely associated with the time between referral and appointment for an assessment: patients who failed to attend had been sent appointments for a median of 36.5 days after referral as opposed to 18.5 days for those who attended non-urgent appointments ($P<0.01$).

The overall delay to assessment was only marginally reduced, from a median of 7.5 days in controls to 7.0 days in the experimental group ($P=0.61$). 'Urgent' assessments (arbitrarily defined as within one week of referral, but often referred by telephone with a suggestion of urgency) waited 2.5 days in the experimental group ($n=44$) but were seen the next day in the control group ($n=36$) ($P=0.06$). Non-urgent referrals (usually by letter and treated as routine) waited 15.5 days and 22 days respectively ($P=0.01$). Most psychotic patients were assessed within the week in both treatments.

There were no significant differences between the two treatments in clinical outcome measures at any assessment (Table 4). Changes in scores between assessments also showed no significant difference in the rate of clinical improvement between the two groups. There is a significant improvement in both groups from intake to six-week follow-up measured by clinical interview and BPRS.

Social functioning was surprisingly good. There were no significant differences between the groups at any assessment point.

The PSE scores were available only for intake and 12 months, and show a significant improvement in symptoms for both treatment groups, with no difference between them. The PSE recorded slightly higher scores at intake in control patients, in part because of the increased number of psychotic patients, with higher mean scores on the Behavioural, Speech & Other (BSO) syndrome (control 1.39; experimental 0.82) and Delusions and Hallucinations (DAH) (control 1.03; experimental 0.50) subscales. Both groups show similar reductions in Index of Definition, from 77% of experimental and 79% of control patients being 'cases' (ID5+) at intake to only 25% at 12 months. This reduction is highly significant ($P<0.001$, by χ^2).

Informant interviews

A total of 122 patients had an eligible informant. There were no significant differences in the proportions of patients living with relatives or close friends (experimental 70%;

https://doi.org/10.1192/bjp.163.1.49 Published online by Cambridge University Press

Table 4
Main outcome measures: median total scores

Variable	Time	*n*	Experimental group	*n*	Control group
Patient assessments					
Clinical interview	intake	94	19	78	19
	6 weeks	94	13*	78	10.5**
	6 months	94	9	78	9
	1 year	94	7	78	7.5
BPRS	intake	94	23	78	23
	6 weeks	94	20**	78	20**
	6 months	94	19	78	19.5
	1 year	94	19	78	18
SFS	intake	94	11	78	7.5
	6 weeks	94	3.5***	78	5
	6 months	94	4	78	4.5
	1 year	94	3	78	5
PSE	intake	90	15.5	74	16.5
	1 year	91	4***	77	3***
Informant assessments					
Symptoms	intake	27	28	23	22
	6 weeks	28	22**	25	21
	6 months	28	20.5	27	20
	1 year	29	21	27	20
Social functioning	intake	27	7	23	6
	6 weeks	28	4	25	2*
	6 months	28	4	27	2
	1 year	29	3	27	3
Family burden	intake	27	30	23	30
	6 weeks	28	26	25	35
	6 months	28	26	27	29
	1 year	29	25	27	27

No differences significant between samples.
Within-group change in scores from preceding assessment: *$P<0.05$, **$P<0.01$, ***$P<0.001$ by Wilcoxon test.

control 72%) nor in the proportion of these eligible informants who cooperated with the research (experimental 40%; control 41%). Of the 50 informants, 38 were spouses/cohabitees, 8 parents, and 4 'others'.

Informants for the experimental group rated symptoms slightly worse at intake, but the subsequent assessments were similar in the two groups. There were no significant differences in informants' assessment of social functioning between the two treatment groups at any point nor in the changes in their ratings over time.

Ratings of family burden were generally low, and similar in both groups. Means for each of the rated variables measured at each time period lay between 1 ('no limitation') and 2 ('slight interferences, mild problems, slight or irregular strain'). The highest mean score for an individual item at intake was the provision of extra companionship for the patient (experimental 1.76; control 2.09). Of the 50 informants questioned at intake, 39 considered that no special care was required. Eleven experienced noticeable burden – six spouses, two parents, two flat-sharers, and one child. Six burdened informants were in the experimental group and five in the control group.

Death

Three patients in the experimental group and seven in the control group died. Two died before clinical assessment and two before the first research assessment and are thus technically not study patients. All four were control patients: one committed suicide and one died from natural causes while awaiting a psychiatric appointment, and two died from natural causes after clinical assessments but before research assessment.

Of the six who had entered the study, two suicides occurred in the control group and one in the experimental group. Conclusions cannot be drawn from such small numbers, but they should be noted in view of concerns of a possible raised suicide risk in community-based services (Morgan, 1992).

Treatment satisfaction

Consumer satisfaction was remarkably similar, with no clear preferences for either service. Most ratings were 'neutral' or 'mildly positive'.

https://doi.org/10.1192/bjp.163.1.49 Published online by Cambridge University Press

Both groups felt that they were given fairly adequate information on diagnosis and treatment but less so on prognosis. Twenty patients in each group reported receiving no information on their illness. Those given information found it largely comprehensible.

Informant satisfaction was slightly higher, both groups being 'fairly' to 'very happy' with most aspects of treatment. There is a suggestion that informants from the experimental group were given more information by the teams but there is no evidence of their having understood it better.

Discussion

The decision not to restrict this study to patients who were destined for admission but to allocate all patients at the point of referral allowed comparison of outcomes in a comprehensive mental health service. While this decision ensured a more naturalistic study, it introduced complications.

There was a high rate of exclusion after random allocation. Of the 332 referrals randomised, 160 (48%) failed to become study subjects. Forty-seven (14%) were found to be ineligible when their details were checked. Many of these excluded 47 patients had been referred by telephone. The 20 patients excluded for having been in treatment during the preceding 12 months included more severely ill patients. Consequently the study sample, while reflecting the full range of disorders, does not accurately reflect the normal case mix for these services and has an under-representation of long-term, severely disabled patients.

A quarter of the patients (28% of the control and 21% of the experimental group) refused to cooperate with the research project, and 32% missed at least one follow-up. Fenton *et al* (1979), Stein & Test (1980), and Hoult *et al* (1983) did not publish the number of their subjects who refused to cooperate with research assessments, although Hoult (1983) reported very few refusals. Only one patient out of 189 refused participation in the Maudsley study (Muijen *et al*, 1992*b*). Two differences may contribute to our much higher rate. Firstly, this study was introduced to the patient by the clinicians (not the researchers, whose commitment to recruiting patients is presumably greater). Secondly, this was the first contact with psychiatric services for over half the patients in this study, and many had minor, time-limited disorders. Compliance was more forthcoming from the more severely ill patients. Despite offering out-of-hours and home-based assessments, more mildly ill patients refused. They clearly wanted to put the whole episode behind them as soon as possible, and research contact was seen as an unwelcome reminder. More disabled patients may have felt themselves more dependent on the services and hence less able to refuse. They also appeared to welcome the interviews as interruptions in otherwise relatively isolated lives.

Because of the short intake period and randomisation procedure, we could not examine the effect of removing the out-patient waiting-list. Overall, delays to treatment were similar in the two groups, but we assume would diverge in established services. The only difference was in the long tail of delay to non-urgent assessment. In the experimental group only 4% received appointments more than three weeks from referral (usually because of reallocation or holidays, etc.). Twenty control appointments ranged from three to a maximum of six weeks. The numbers failing to attend reflect this, rising steeply and significantly with excessive delays. Clearly, the waiting-list rations care. That a quarter of those failing to attend came into care within the study year and one patient committed suicide while awaiting a routine out-patient appointment highlights the deficiencies of waiting-lists as a filter.

Clinical and social improvement, measured by both patient and informant, is substantial, but without significant differences between treatment groups. There is a suggestion of more rapid reduction in symptoms reported by informants in the experimental group, but overall the differences were trivial. A picture emerges of a substantial reduction in morbidity during the first six weeks of treatment, with continued, slow reductions in symptoms over the year.

Our failure to demonstrate any clinical superiority for the experimental approach is difficult to interpret in the context of previous reported studies. The point of entry, patient mix and symptom severity are clearly very different. Just over a third of our patients were psychotic at intake, as opposed to around 70% in the three 'training for community living' studies. Mean total PSE scores at intake are 40% lower in the present study than in the studies by Hoult *et al* (1983) and Muijen *et al* (1992*a*,*b*). This total score reflects less severe illness in our patients. Our lower scores (comparable to those reported for acute day-hospital care in Manchester (Creed *et al*, 1990)) cannot be accounted for solely by the psychotic/non-psychotic mix. The mean intake score for our psychotic patients (19.38) was only marginally higher than that of the non-psychotic patients (17.01).

Patients treated in the training in community living studies are a highly selected group of the most severely ill. Comparing the results from our psychotic subjects only with them could be misleading. Reduction of mean PSE scores to a third, by Hoult's experimental team, is matched easily by both

experimental team (16.63 to 4.76) and surpassed by the control team (17.31 to 3.45) in this study if means are calculated only for those patients for whom follow-up results are available. These results could be interpreted as evidence that both experimental and control services achieve the high levels of support and supervision of patients which had previously only been achieved by the experimental services reported and not their controls.

We were disappointed not to find more patient or carer satisfaction with the experimental treatment as did Fenton, Stein & Test, and Hoult. The slight increase in consumer satisfaction over time despite a tailing off in clinical contact noted in this study is similar to results reported in the treatment of neurotic out-patients (Paykel *et al*, 1982). Like Muijen *et al* (1992*a*,*b*), we found no differences between the two groups on patient or informant satisfaction. The advantage to experimental care in Hoult's study must be interpreted in the light of the extensive explanation and persuasion used to engage the patients in that study.

Our experimental approach was, however, quite acceptable to patients. Those who had previously received standard care were sometimes taken aback by the prompt, home-based assessment. Some were initially alarmed that it might indicate a more serious problem than their general practitioner had implied, but were soon reassured. Several commented that they preferred the new approach, although this was not manifest in the scores. None of the study patients considered the assessment an 'invasion', although some clinicians commented on this. A few stated that being visited at home made them feel 'special' or 'cared for'. Similarly, several general practitioners commented favourably on the initiative, and had only a few reservations.

The absence of any increased family burden for patients in the experimental group is reassuring. Reported burden was low, and it is highly likely that the patients who generate substantial burden (e.g. chronic psychotics living with parents) were underrepresented because of our study procedures. Also, the marked heterogeneity of the patients and their social supports and needs makes drawing meaningful conclusions difficult. We became aware of the enormous complexity of this issue in acute psychiatric practice. Burden could, indeed, be increased by the removal of even a severely disabled member to hospital, for example a husband taking time off to collect children from school if his depressed wife is admitted. The importance to a family of supporting their sick member through a time-limited disorder became evident to us but could not be easily measured.

There is accumulating evidence that those severely ill patients who do poorly with orthodox out-patient care are benefited by assertive community outreach (Stein & Test, 1980; Hoult *et al*, 1983; Muijen *et al*, 1992*a*,*b*). The Stockholm experience of introducing an assertive, community-based comprehensive service highlighted the possibility that other patient groups might respond differently (Stefansson & Cullberg, 1986). This study aimed to assess whether adopting such an approach for a comprehensive service entailed significant disadvantages for the less severely ill patients and so limit its value in the UK. Our clinical and social outcome results refute this. The outcome measures in both experimental and control groups indicate equal and significant improvements across a wide diagnostic spectrum.

The practicalities of randomisation limited the duration of intake and hence sample size. The proportion of patients severely mentally ill was further restricted by clinicians' insistence that patients in recent contact could not be randomly assigned. Our results do, however, allay anxieties that less ill patients would fare worse with such an approach. Nor was there any evidence that a more assertive approach 'sucked in' less ill patients. The symptoms and social dysfunction scores in the two groups were similar at intake. Questioning the clinical teams after the study confirmed that they had not encountered any new 'type' of patient because of the outreach approach.

While we can conclude with some confidence that this more assertive outreach does not appear to have any drawbacks for less severely ill patients, we remain concerned that the results could be interpreted as failing to confirm earlier evidence that such approaches are superior for severely ill patients. Given the small numbers of such patients in a patient population with predominantly moderate, remitting disorders, such a conclusion would be unjustified. We would interpret our results in the context of previous, more focused studies as further support for the overall benefits of an outreach approach in general psychiatry.

Acknowledgements and references are given at the end of Paper II.

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