

Randomised Controlled Trial of Day and In-patient Psychiatric Treatment. 2: Comparison of Two Hospitals

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Acutely ill patients presenting for admission in two district psychiatric services were randomly allocated to day-hospital or in-patient care. In both services a quarter of all admissions could not be allocated because they were too ill (half of these were compulsory admissions); these patients were predominantly manic and schizophrenic patients with pronounced psychotic symptoms and disturbed behaviour. In one service 80% (41/51) of patients randomly allocated to day-hospital treatment were successfully engaged in treatment compared with 54% (19/35) in the other service. This difference arose because only patients with mildly disturbed behaviour could be treated at the second day hospital. For patients who were successfully allocated, the outcome of treatment was similar in terms of psychiatric symptoms and social functioning. The results of a treatment trial for acutely ill patients in one district service cannot be generalised to other district services without due attention to the factors, such as staffing levels, which determine the degree of disturbed behaviour that can be tolerated in the day hospital.

There has been recent enthusiasm for treating acutely ill patients in a day hospital rather than in an in-patient unit (Department of Health and Social Security, 1975; Vaughan, 1985). However, it has not been matched by a clear demonstration that day treatment is both feasible and efficacious. The early American study of Zwerling & Wilder (1964) showed that two-thirds of all acute admissions could be treated in the day hospital and that such treatment was at least as effective as in-patient treatment. Subsequent attempts to replicate this study failed because representative samples could not be obtained. For example, in the study of Hertz *et al* (1971) only 20% of admissions could be randomly allocated between the two treatment settings, the remainder being excluded. In addition to the problem of unrepresentative samples, there have been other methodological problems that have led to marked criticism of all previous studies (Wilkinson, 1984; Creed *et al*, 1989a).

In the UK there have been two attempts to compare day and in-patient treatment, but neither successfully allocated an adequate number of acutely ill patients. One was abandoned because clinicians would allow only 10% of all admissions to be allocated (Platt *et al*, 1980); the majority of patients were regarded as 'mandatory' in-patients (often because they were psychotic or suicidal) or 'mandatory' day patients because they were not ill enough to merit in-patient admission. The other (Dick

et al, 1985) studied only patients with diagnoses of neurotic illness, adjustment reaction and personality disorder; these amounted to only 22% of all admissions.

On the basis of our previous finding that many acutely ill patients could be satisfactorily treated in the Manchester Royal Infirmary Psychiatric Day Hospital (Creed *et al*, 1989b), it was possible to perform a randomised controlled trial comparing admission to this day hospital with the Infirmary's in-patient unit (Creed *et al*, 1990). An identical trial was run simultaneously at a nearby hospital with a different model of day-hospital treatment. This was at Blackburn, whose psychiatric service, like many others, had tended to use the in-patient unit for acutely ill patients and the day hospital either for the treatment of less ill patients or as a rehabilitation unit (Pryce, 1982; McGrath & Tantam, 1987).

There are other differences between the two hospitals and their catchment populations. Although both day hospitals are similar in size (50 day places), Manchester had eight nurses and three occupational therapists at the time of the study whereas Blackburn had six nurses and no dedicated occupational therapists (patients attended the occupational therapy department as necessary). Both day hospitals use individual treatment plans for their patients and offer a full range of treatments. Central Manchester Health District is a socially deprived inner-city area in which all patients live within 3 miles (2 km)

of the day hospital. Blackburn is a semirural district with some people living more than 20 miles (32 km) away from the day hospital.

The additional trial at Blackburn allowed us to compare results between the two centres and to infer whether the Manchester findings could be generalised to other district psychiatric services. The specific aims of the present study were to answer the following questions regarding each hospital service.

- (a) What proportion of acutely ill patients could be randomly allocated to either day or in-patient treatment?
- (b) What were the characteristics of those patients for whom day-hospital treatment was not considered feasible?
- (c) What was the clinical and social outcome for patients treated in the day hospital compared with that of those in the in-patient unit?

This study involved two departures from routine clinical practice. Firstly, all patients who required psychiatric admission were considered for the random-allocation procedure; patients admitted as out-of-hours emergencies to the in-patient unit and subsequently randomly allocated to day-patient treatment were rapidly transferred to the day hospital. Secondly, once a patient had been allocated to a treatment setting, the responsible consultants were requested, wherever possible, to maintain the patient in that setting until discharge to out-patient status. At Manchester three out of six consultants who admit to general psychiatry beds were involved; at Blackburn two of four were involved.

The design of the study has been described in detail by Creed *et al* (1990); it was necessary to accept from the outset that some patients would not be available for random allocation (patients admitted under a section of the Mental Health Act, otherwise too ill, or for social reasons). For the patients who were randomly allocated, comparison of outcome of treatment is possible only if the baseline data indicate that the day-patient and in-patient groups were similar in all respects. This was only achieved at Manchester, so those results have been published separately (Creed *et al*, 1990) as an intention-to-treat comparison (*Lancet*, 1987). Since there were clear differences between the patients randomly allocated to day and in-patient groups at Blackburn this paper is *not* intended as a treatment-outcome study but as a description of the patients who were eventually included in the study at the two hospitals. Details of the factors responsible for the differences, notably attitudes of those involved, are explored in a different publication (Anthony *et al*, 1991).

Method

All patients aged 18–65 years who required admission as either in-patients or day patients under the care of one of the five consultants were eligible for inclusion. Both urgent and planned admissions were included, the only exclusions being those patients admitted solely for detoxification from drugs and those who discharged themselves before they could be considered for random allocation. Three groups of patients were studied: (a) those randomly allocated to day treatment, (b) those randomly allocated to in-patient treatment, and (c) all patients not excluded who were admitted during the study period but who could not take part in the random-allocation procedure because they were too ill to be treated as a day patient or because they were admitted under a section of the Mental Health Act.

Before each admission, the consultant in charge decided whether the patient was suitable for random allocation. For patients admitted directly to the in-patient unit as emergencies outside normal working hours, the decision was taken on the next working day.

Allocation was by taking a card from a sealed envelope which indicated day or in-patient treatment.

On admission and at three months and one year after admission, mental state was assessed using the Present State Examination (PSE; Wing *et al*, 1974). This provided syndromal scores for the symptoms present during the month before admission and a tentative ICD diagnosis.

Social functioning was assessed at the same points in time using the Social Behaviour Assessment Scale (SBAS), which yields scores for social role performance (e.g. household management, employment, spare-time activities), any abnormal behaviour (e.g. withdrawal, odd ideas, over-activity) and burden on relatives (e.g. lost sleep, time off work or disrupted household routine) (Platt *et al*, 1981). On admission, these measures were made for two periods of time: immediately before admission ('when ill'); and for the time before the recent illness when the person was considered to be his/her normal self ('when well'). The assessment required detailed information from a close relative or other household member (or hostel warden). It could therefore be made only when such an informant was available.

On admission, demographic data were collected from every patient. Five days after admission, the patient's behaviour in the hospital was assessed using a modified form of the Social Behaviour Scale (SBS; Wykes & Sturt, 1986). This is a standardised measure, with clearly defined points, of the patient's behaviour observed by the responsible nursing staff.

The PSE results were analysed using the CATEGO program. They are presented here as the four summary scores: delusions and hallucinations (DAH), behaviour, speech and other syndromes (BSO), specific neurotic reaction (SNR), and non-specific neurotic symptoms (NSN). The SBAS is expressed as three summary scores: role performance, abnormal behaviour, and burden on relatives. The SBS results are presented both as scores for individual behavioural ratings and as a summary score.

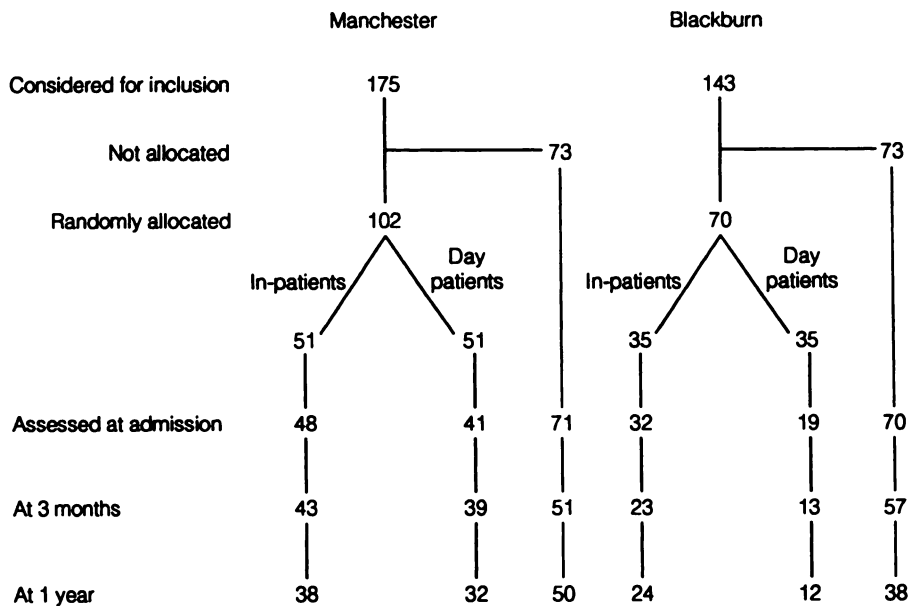


Fig. 1 Number of patients in each group and number assessed at each time point.

Statistical differences between groups were assessed using the Mann-Whitney, χ^2 (with Yates' correction) and Kruskal-Wallis one-way ANOVA tests.

Results

The numbers of patients considered for inclusion in the study were 175 at Manchester and 143 at Blackburn. Of these, 102 (58%) were randomly allocated at Manchester and 70 (49%) at Blackburn ($\chi^2 = 2.39$, NS). However, not all patients remained in their allocated treatment modality for the full initial assessment: three in-patients at Manchester and three at Blackburn discharged themselves before the research interview could be performed, and 10 day patients at Manchester and 16 at Blackburn failed to attend consistently (Fig. 1). Compared with Blackburn, significantly more of the Manchester patients became established in their allocated form of treatment (89/102 v. 51/70, $\chi^2 = 4.77$, $P < 0.05$). This difference ceases to be significant if allowance is made for the six Manchester patients who had to be later transferred from day hospital to the in-patient unit (Creed *et al.*, 1990).

Of all allocated and non-allocated patients, complete mental-state assessments were obtained at admission on 160 of the 175 Manchester patients and 121 of the 143 Blackburn patients. At three months and one year, further PSEs were recorded for 133 (83%) and 120 (75%) of the Manchester patients, and for 93 (77%) and 74 (62%) of

the Blackburn patients. Of the drop-outs from both centres, 49 patients were untraceable (many were known to have moved away), 35 refused further interviews, and three had died or developed severe dementia.

Complete SBAS interviews were obtained from informants of 132 patients at Manchester and 98 at Blackburn. The numbers reinterviewed at three months and one year were 112 (85%) and 103 (78%) at Manchester, and 85 (87%) and 77 (79%) at Blackburn.

Differences between the Manchester and Blackburn samples

As shown in Table 1, the Manchester and Blackburn samples were not identical on demographic measures. The Manchester sample had significantly more men, more non-Caucasians, more patients who lived alone, and fewer patients who were admitted as an emergency. The Blackburn patients had experienced more previous psychiatric admissions and had a longer present episode of illness. There were no significant differences in age, country of birth, or age of onset. In terms of diagnosis the samples were similar (Table 2).

Patients not randomly allocated

As shown in Table 3, the two centres did not differ significantly in the proportions of patients who could not be randomly allocated for various reasons. Moreover, the

Table 1
Comparison of Manchester and Blackburn patients: demographic data

	Manchester (n = 160)	Blackburn (n = 121)
Mean age: years	40.6	41.0
% female	43%	57%*
% single	47%	37%
% non-Caucasian	18%	4%**
% off sick	36%	26%
% living alone	37%	19%*
% currently ill > 1 year	17%	32%**
Mean no. of previous admissions	2.1	2.9*
% referred from accident and emergency	12%	28%**
% emergency admission	68%	79%*
% on section	11%	12%

* $P < 0.05$, ** $P < 0.01$ (χ^2 for % values, Mann-Whitney U test for age and no. of admissions).

clinical and social characteristics of the patients not allocated at each centre were similar. For the purposes of comparing non-allocated and allocated patients the Manchester and Blackburn samples have therefore been combined.

There was a significant difference in diagnostic categories between non-allocated and allocated patients. A total of 50% of the patients not allocated were schizophrenic or manic, compared with 37% of the randomly allocated patients (Table 4). However, the PSE syndrome profiles, SBAS summary scores and SBS scores were not significantly different when all the non-allocated patients were compared with the randomly allocated group.

The non-allocated patients were then divided into three subgroups according to reason for non-allocation (Table 5). The patients admitted compulsorily had high scores for both psychotic symptoms (DAH) and behavioural disturbance (BSO and nurses' rating). The patients considered 'too ill' had high scores only for psychotic

symptoms, and those who were not allocated for other reasons (social reasons and refusal) had symptom and behavioural scores similar to the randomly allocated group.

Of the three sets of measures, the SBS demonstrated the clearest differences between allocated and non-allocated patients. Fig. 2 demonstrates the results for the nurses' ratings of those individual items of behaviour that showed greatest difference between allocated and non-allocated patients. It is also apparent from Fig. 2 that at Blackburn, but not at Manchester, the randomly allocated day-hospital patients were less disturbed in their behaviour than the randomly allocated in-patients. This finding is also apparent in the summary scores for all 24 nurses' ratings (a high score indicates more disturbed behaviour). At Manchester and Blackburn the summary scores for non-allocated patients were similar: median and range = 12 (0-41) and 11 (0-41) respectively. Those for randomly allocated in-patients were also similar: 6 (0-25) and 8 (0-27) respectively. But for randomised day patients there was a significant difference: 7 (0-22) for Manchester and 2.5 (0-12) at Blackburn ($P < 0.05$). It can be seen that the randomised day and in-patients had similar median scores and ranges at Manchester but at Blackburn the day patients had a lower median score than the randomised in-patients and upper range of approximately half the value.

The scores of the six patients who were randomly allocated to the day hospital but who were transferred to in-patient care had a median SBS score of 14 (range 2-20) at Manchester, indicating that they were as disturbed as the non-allocated patients. At Blackburn there were no such transfers because these patients had not become established in day-hospital treatment at the outset. But the median score for the patients randomly allocated to day-hospital treatment who did not become established in that form of treatment was 8.5 (range 0-24), which was similar to that of the randomised in-patients. Had they been successfully engaged in day treatment that group would have been similar to the Manchester day-hospital group.

Table 2
Diagnostic categories by centre and group

	Manchester				Blackburn					
	randomly allocated		non-allocated	total	%	randomly allocated		non-allocated	total	%
	in-patients	day patients	(in-patients)			in-patients	day patients	(in-patients)		
Schizophrenia	14	10	26	50	31%	10	2	20	32	26%
Depression	10	8	15	33	21%	6	4	17	27	22%
Mania	4	4	13	21	13%	4	3	12	19	16%
Neurotic disorders	13	11	2	26	16%	2	5	6	13	11%
Personality disorders	5	3	8	16	10%	5	1	9	15	12%
Addiction/organic disorders	2	5	7	14	9%	5	4	6	15	12%
Totals	48	41	71	160		32	19	70	121	

Table 3
Reasons for non-allocation

	Manchester (n = 71)	Blackburn (n = 70)
Under section of MHA	17 (24%)	16 (23%)
Considered too ill	28 (39%)	17 (24%)
Refusal	4 (6%)	7 (10%)
Social reasons	8 (11%)	15 (21%)
Other	14 (20%)	15 (22%)

$\chi^2 = 5.69$, d.f. = 4, NS.

Table 4
Number of patients in each diagnostic category according to randomly allocated and non-allocated groups (Manchester and Blackburn samples combined)

	Randomly allocated	Not-allocated
Schizophrenia	36 (26%)	46 (33%)
Depression	28 (20%)	32 (23%)
Mania	15 (11%)	25 (17%)
Neurotic disorders	31 (22%)	8 (6%)
Personality disorders	14 (10%)	17 (12%)
Addiction/organic disorders	16 (11%)	13 (9%)
Totals	140	141

$\chi^2 = 18.1$, d.f. = 5, $P < 0.005$.

Table 5
Comparison of patients not allocated because of admission under Mental Health Act, voluntary patients considered too ill for random allocation and those not allocated for other reasons, with scores for patients who were randomly allocated given for comparison

	Patients not allocated			Patients randomly allocated (n = 140)
	admitted under MHA (n = 33)	con- sidered too ill (n = 45)	other reason (n = 63)	
PSE				
DAH	3.4*	3.0	1.6	1.8*
BSO	2.7*	1.5	1.1	1.1*
SNR	1.6*	5.5	2.7	4.1*
NSN	4.8*	10.0	7.5	9.8*
SBAS				
Role	15.1	14.1	12.7	13.4
Burden	5.6	6.0	5.0	5.2
Behaviour	16.4	16.0	15.0	15.3
SBS				
Nurses' rating	14.9*	13.7*	9.9	8.8*

* $P < 0.001$ (Kruskal-Wallis) across all four groups.
* Indicates significant difference ($P < 0.01$) from randomly allocated group.
DAH = delusions and hallucinations, BSO = behaviour, speech and other syndromes, SNR = specific neurotic reactions, NSN = non-specific syndromes.

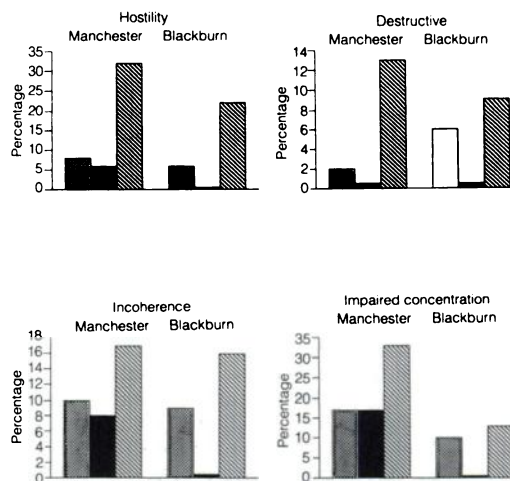


Fig. 2 Nurses' rating of behaviour on the SBS subscale: Percentage in each group of patients given a rating of two or more. Items shown are those which showed greatest difference between non-allocated and all randomly allocated patients. Data are shown for randomly allocated in-patients (solid black), randomly allocated day patients (hatched), and non-allocated patients (stippled), for Manchester and Blackburn separately.

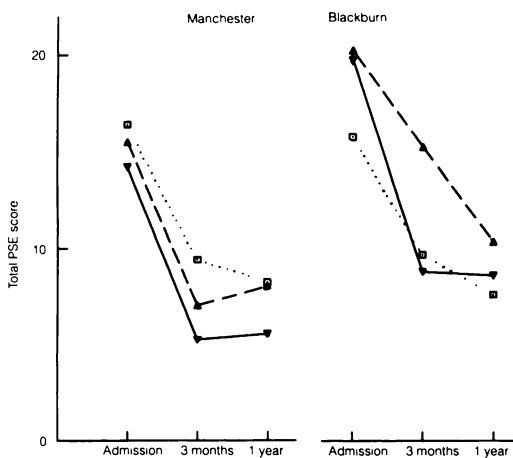


Fig. 3 Reduction of total PSE score between admission, three months and one year (□...□ day patients, Δ...Δ non-allocated patients, ▽...▽ in-patients).

Effect of treatment

The results of the Manchester treatment study have been published elsewhere (Creed *et al*, 1990). The results of the Blackburn study cannot simply be added to these because the random-allocation procedure did not produce equivalent groups of patients at each centre.

The overall reduction of psychiatric symptoms at three months and one year was similar in all groups, suggesting that the effect of day-hospital treatment was equivalent to that of in-patient care (Fig. 3). Detailed examination of the results was made using an 'improvement score' calculated by subtracting the scores at three months from the scores at admission. There were no significant differences between day and in-patient treatment groups for DAH, BSO, SNR, and NSN scores of the PSE or behaviour and burden subscores on the SBAS. The only significant difference was in role performance at three months in the Manchester sample – in-patients had improved to a greater extent ($P < 0.05$).

There were no significant differences between day and in-patients at one year. Since one-fifth of patients were lost to follow-up at three months (one-quarter at a year), the patients not followed up were compared with the whole cohort. They had not been significantly different on any PSE, SBAS or SBS measures at initial assessment. The results for the 116 patients who were interviewed on all three occasions showed no significant difference between day and in-patients at one year. The details of readmission rates will be published separately.

Discussion

The aim of this project was to run a random-allocation study, comparing the effectiveness of day-hospital and in-patient treatment, at two centres. The design allowed for the following inevitable constraints. Firstly, patients admitted under a section of the Mental Health Act or others who were seriously disturbed could not be considered for day treatment and therefore would not be available for random allocation. Secondly, the day hospitals at Manchester and Blackburn might not be able to admit similar cohorts of patients because of different staffing levels and prior uses of day-hospital facilities (Creed *et al.*, 1989b). Because the groups of patients successfully allocated to day treatment differed at the two centres these must be regarded as two parallel studies rather than a single one. For reasons given above, the Blackburn study cannot be regarded as an intention-to-treat comparison.

In the event, both centres were able to randomly allocate a larger proportion of patients (58% and 49%) than some previous studies (10–22%) (Hertz *et al.*, 1971; Fenton *et al.*, 1979; Platt *et al.*, 1980; Dick *et al.*, 1985). However, only 19 patients of the 35 patients randomly allocated to the day hospital at Blackburn were successfully engaged in that form of treatment. If we assume that a corresponding 19 patients of the randomised in-patient group could also have been treated in the day hospital, 38 patients (31%) of the 121 patients assessed in this project might be treated in that day hospital. The corresponding figure for Manchester was 51%.

The feasibility of day care for acutely ill patients (Creed *et al.*, 1990) has therefore been partially demonstrated at a second day hospital. Unlike Dick *et al.* (1985) and Platt *et al.* (1980), we found it possible to treat a number of psychotic, disorganised and suicidal patients in the day hospital; the extent of this depended on the particular day hospital.

The characteristics of those patients who cannot be treated in a day hospital have been defined for the first time in the UK. They are not, however, a homogeneous group and two groups can be discerned: (a) patients who are too ill (including those admitted under the Mental Health Act) and (b) patients for whom random allocation is not possible because of social reasons, for example lack of suitable accommodation, or refusal by patients or others involved in the patients' care (either family or social workers).

There were almost twice as many patients in category (b) at Blackburn compared with Manchester, even though more Manchester patients lived alone. This suggests that attitudes of patients, relatives and staff may have been important in determining suitability for random allocation. At Manchester the day hospital is a smart new building on the site of a district general hospital and most of the in-patient beds are seven miles (11 km) away in a psychiatric hospital. At Blackburn the two units are on the same site and the prevailing attitude, particularly among patients and their relatives, is that the in-patient unit is where 'proper' psychiatric treatment takes place.

At each hospital a research registrar was employed to screen all admissions and discuss them with the relevant consultant. This prevented the junior staff (whom Platt *et al.* (1981) found to be more reluctant than senior staff to allocate patients randomly) influencing the proportion so allocated.

Staff numbers may be more important than attitudes. The greater behavioural disturbance that could be managed in the Manchester day hospital probably reflects greater staff numbers, as more time can be given to disturbed patients. This would reduce the chances of disturbed behaviour leading to demands for transfer to in-patient care. These points will be considered in more detail in another publication.

The outcome of day and in-patient treatment was similar at the two centres. The main qualification to this statement is the small number of patients successfully completing a course of day-hospital treatment at Blackburn. The number of subjects reassessed at three months and one year was disappointing, but our follow-up rate is comparable with that in our previous study (Creed *et al.*, 1989b).

and rather better than some similar studies (Creed *et al*, 1989a). The figures reflect the reality of accepting into the study *all* admissions, not only those living with a stable family (Hertz *et al*, 1975). Whether there were lasting differences between day and in-patient treatment in readmission rates over a longer follow-up period will be the subject of another paper.

This study has demonstrated that day-hospital treatment is an alternative to in-patient treatment for acutely ill patients but adequate numbers of staff and confidence among the staff, patients and their relatives are necessary if the proportion is to reach 50%. Any increase in this proportion would require 24-hour community nursing to help relatives and other carers to deal with a patient's disturbed behaviour out of hours (Stein & Test, 1980; Hout, 1986).

The number of staff required for satisfactory day-hospital treatment of acutely ill patients means that day care may not be cheaper than in-patient care (Weisbrod *et al*, 1980). It may be a preferable form of treatment if accepted by patients and their relatives and if it reduces subsequent readmission rates (Creed *et al*, 1990). On the other hand, there may be increased burden on relatives during the early stages of treatment which was not examined in detail during the present study. There may also be additional costs to general practitioners and other carers in the community, which at present remain 'hidden'. All these aspects of day-hospital treatment are being examined in our current study.

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