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The Daily Living Programme

Preliminary Comparison of Community Versus Hospital-Based Treatment for the Seriously Mentally Ill Facing Emergency Admission

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Patients with a serious mental illness requiring admission were randomised to home care or standard hospital care. Over the initial 18 months, 60 patients entered each group and were studied for a mean of 10 months. Home care reduced hospital use by 80%, with patients being admitted for a mean of 14 days, compared with 72 days for the standard group, but this bed-saving made no difference in direct treatment costs. Home care offers individualised treatment, and many patients require continuing support with the emphasis on areas such as finances and housing.

Mental health policies have shifted gradually towards community care for several decades (Department of Health and Social Security, 1975; Audit Commission, 1986; Griffiths, 1988; Department of Health, 1989), supported by both advocacy groups and professional organisations (Kings Fund, 1988). However, the dangers of community neglect have also been noted (Weller, 1989). Many studies suggest that alternatives to hospital admission benefit patients clinically and socially. Care at home, foster home, hostel, and day hospital have all shown slightly superior outcome to hospital care on measures such as readmission and social functioning (Braun *et al*, 1981; Kiesler, 1982).

Five controlled studies have compared home care with in-patient care (Pasamanick *et al*, 1967; Langsley *et al*, 1968; Stein & Test, 1980; Fenton *et al*, 1982; Hoult *et al*, 1983). The measures on which the experimental and in-patient groups differed varied across these studies. Significant differences, however, consistently favoured the non-in-patient groups, which at the end of the study periods showed greater improvement on clinical symptoms and social functioning, and on patients' and relatives' satisfaction. No programme found in-patient care to be superior on any variable (Braun *et al*, 1981).

No approach claimed to 'cure' mental illness. At the end of the studies, experimental non-in-patient samples still had considerable symptoms and disability in spite of their relatively greater improvement. After home care was withdrawn and substituted by standard care, the experimental groups gradually lost their superiority over the control groups (Langsley *et al*, 1971; Davis *et al*, 1972; Stein & Test, 1980).

The above studies were done in Australia and North America. Their encouraging results still need to be tested in the UK, given possible differences in treatment practices, expectations, legal rights, and lifestyle. Because of its considerable socio-economic deprivation, South Southwark is a challenging site for a replication study, which will have implications for community care in other UK inner-city areas.

A three-year randomised controlled study began at the Maudsley Hospital in October 1987 (Marks *et al*, 1988). It compared home-based versus standard hospital care for seriously mentally ill patients facing immediate admission. Over the subsequent 18 months the two groups were evaluated on clinical outcome, social functioning, family burden, and cost of treatment. This paper analyses hospital use and care practices for the first 18 months of the study. Full results of the study will be presented in future papers.

Method

Patients were accepted into the study if they:

(a) had a serious mental illness (schizophrenia or severe affective disorder) deemed to require immediate hospital admission by an independent psychiatrist – patients who were violent, suicidal, or presented under a section of the Mental Health Act were included and patients who had initially been misdiagnosed were kept in the study
(b) were aged 17–64 years
(c) had no primary addiction (dual diagnosis was accepted)
(d) did not have a primary diagnosis of organic brain damage
(e) were living in or connected to South Southwark (this includes patients with no fixed abode but with close family ties or attending local statutory services).

All but three of the study patients entered when seen at the Maudsley Hospital Emergency Clinic; the exceptions

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were due to be admitted after a domiciliary visit by a consultant. After patients were accepted into the study they were randomised to either home-based care or standard in-patient care.

The groups assigned to the Daily Living Programme (DLP) and to standard in-patient care comprised all qualifying patients presenting for a first admission. We surmised that this group might benefit through prevention of a prolonged or intermittent hospital career (the 'revolving-door' syndrome). In addition, 20% of qualifying patients with a history of hospital admission were included in both groups, to determine the efficacy of community-based care for the long-term mentally ill. The proportion of first admissions and readmissions entering the study was about equal. About 20% of all admissions from South Southwark to the Maudsley Hospital were accepted, half of these being cared for by the DLP.

Severely mentally ill patients in the community require flexible care to maximise their functioning in their natural environment with minimum dependence on services. This calls for a careful balance between the risks of neglect and of overdependence. The form and intensity of care has to be decided individually for each patient, with a long-term perspective.

The DLP team consisted of seven psychiatric nurses, an occupational therapist, a social worker, a psychiatrist, and one whole-time equivalent secretary, with a staff : patient ratio of 1 : 10. Staff liaised closely with other services both in and outside hospital, including the Maudsley Emergency Clinic for crisis cover at night, the occupational therapy department for basic skills assessments, and day centres for day-time activities. Coordination with the Emergency Clinic was facilitated by the fact that the consultant psychiatrist to the team was also in charge of the Emergency Clinic.

Using a problem-solving approach, key-workers presented and discussed their clients with the multidisciplinary team for advice and modifications to care plans. Comprehensive care requires a variety of interventions involving relatives, neighbours, employers, health professionals, and volunteers.

Admitted patients were treated on any of the wards in the Maudsley or Bethlem hospitals. The staff complement of a 25-bed unit consists of about two consultant psychiatrists, a senior registrar, two registrars, 16 nurses, part-time occupational therapists and psychologists, and some input from other professions. Aftercare for control patients would be provided by out-patient appointments, and exceptionally follow-up by a community psychiatric nurse (CPN).

The principles of the DLP are similar to the guidelines of the US National Institute for Mental Health for community support programmes (Turner & TenHoor, 1978):

(a) continuity of care: patients entering the DLP will receive treatment and support until the end of the three-year project
(b) care is coordinated by a key-worker who offers appropriate help to patients and organised local resources
(c) crisis intervention is offered wherever the patient lives, with brief hospital admission if this is unavoidable
(d) rehabilitation, including evaluation of needs and skills training where needed (i.e. at home, with family and friends, and at work)
(e) support for, and education of, relatives, employers, landlords, and statutory and voluntary organisations
(f) 24-hour care, 7 days a week (with telephone cover at night)
(g) advocacy for patients individually and as a group.

Often DLP patients required a (usually) brief in-patient stay, especially when first entering the study, during which the DLP team continued to look after the patients and decided when discharge could occur, a central point in initial management. This double provision, patients looked after by ward staff and the community team, is taken into account in the costing.

The practical experiences and implications of community care are discussed elsewhere (Muijen, 1991).

Results

By 18 months, 120 patients had been randomised, 60 to the DLP and 60 to the hospital control group. At that stage patients had been in the study for a mean of 10 months. The two groups did not differ significantly on demographic data (Table 1). An indication of the patients' severity is that 42% had to be placed under a section of the Mental Health Act 1983.

The proportion of Afro-Caribbean patients (33%) was somewhat higher than in the local population (20%). There was a strikingly higher proportion with a diagnosis of schizophrenia (according to the criteria of the Present State Examination (PSE; Wing *et al*, 1974)) among Afro-Caribbean than among other patients (75% v. 43%, $P<0.05$), especially young Afro-Caribbean men (82%, almost all aged under 30).

The DLP patients used only 20% of the number of hospital days used by controls. Mean duration of admission was 14 days (s.e. 3.5 days) for DLP and 72 days (s.e. 11.1 days) for control patients ($P<0.001$). This brevity of DLP admissions was found for both first and any subsequent admissions.

Table 1
Study patients' demographic data

	DLP care	Hospital care
Total no. of patients	60	60
Mean (s.d.) age: years	35.8 (12.4)	35.1 (11.3)
No. of men	32	37
No. of women	28	23
No. on first admission	35	27
No. readmitted	25	33
No. on section of Mental Health Act	25	25
PSE diagnosis		
schizophrenia	32	32
mania	7	10
psychotic depression	4	2
neurotic depression	17	16

No significance at 5% level.

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Table 2
Number (%) of DLP patients receiving support at any time in 18 months and last month only

	Schizophrenia (n=32)	Mania (n=7)	Psychotic depression (n=4)	Neurotic depression (n=17)	Total (n=60)
Financial					
any time	20 (63%)	6 (86%)	1 (25%)	6 (35%)	33 (55%)
last month	9 (28%)	3 (43%)	0	1 (6%)	13 (22%)
Housing					
any time	19 (60%)	4 (57%)	0	4 (24%)	28 (47%)
last month	10 (30%)	2 (29%)	0	3 (18%)	15 (25%)
Employment					
any time	16 (50%)	6 (86%)	3 (75%)	4 (24%)	29 (48%)
last month	5 (16%)	2 (29%)	0	1 (6%)	8 (13%)
Legal					
any time	10 (30%)	4 (57%)	1 (25%)	2 (12%)	17 (28%)
last month	5 (16%)	0	0	1 (6%)	6 (10%)
Clinical					
any time	32 (100%)	7 (100%)	4 (100%)	17 (100%)	60 (100%)
last month	19 (60%)	4 (57%)	1 (25%)	7 (41%)	31 (52%)

Most diagnostic subgroups of DLP patients showed this reduction of 80% in mean duration of in-patient admission as compared with controls, but for neurotic patients this difference was even larger: DLP neurotic patients were admitted for an average of less than two days, whereas hospital depressive neurotics had a mean in-patient stay of eight weeks. Among DLP patients, far fewer days were spent in hospital by neurotic than psychotic patients ($t=6.7$, $P<0.001$), but duration of in-patient stay did not differ significantly among diagnostic subgroups for hospital patients.

Although 83% of DLP patients were admitted at some point, these admissions were brief: 45% of DLP patients stayed in for less than three days, compared with only 5% of controls. Only 3% of DLP patients were in-patients for over 60 days, compared with 35% of the standard care group. All these differences were highly significant. (A log transformation was performed to correct for positive skew.)

During the 18 months, two patients in the DLP group committed suicide and one is currently on remand charged with homicide. No control patients died in this period.

In the DLP, all staff contacts with patients, relatives and other services on their behalf were recorded, including telephone and travelling time; the mean total number of hours invested per patient was 87 hours – a mean of two hours weekly per patient. Psychotic patients (with schizophrenia or bipolar or unipolar disorders) received on average just over 100 hours of DLP staff input, while neurotic patients received on average 46 hours ($P<0.05$). It was not possible to compare this with amount of staff contact in the hospital group, since this was not recorded.

The DLP offered a comprehensive range of services tailored to individual need, which differed according to diagnosis (Table 2). Psychotic patients required more help with financial, housing, employment, and legal problems than did non-psychotic patients. Moreover, interventions had to be not only short term (days or weeks), but also long term (months or years), particularly for psychotic disorders.

The difference across diagnostic groups in duration of admission and number of DLP hours spent per patient has implications for cost of care. DLP care of patients with schizophrenia was over three times more expensive than DLP care for neurotics.

Bed-savings are calculated by dividing the number of bed-days saved in the DLP as compared with the control group during a period by the number of days in that period.

The DLP treatment cost is calculated as DLP running cost plus cost of a hospital day multiplied by the number of hospital days used. The cost incurred by the standard hospital control group is calculated as the number of hospital days used multiplied by cost per hospital day. A DLP admission day is estimated to cost 10% more than a control-group admission day because the DLP used proportionally about 20% more of the costly intensive-care facilities (50% additionally per day). Compared with controls, DLP patients were more often admitted to intensive care rather than regular wards for shorter periods, since the DLP only admitted the most disturbed, caring for the less severely ill at home.

These figures may allow some estimation of direct treatment savings related to the cost of hospital beds, excluding indirect costs and benefits, such as out-patient clinics, CPN services, local-authority and charity contributions, family costs, and capital expenditure, which will be given in future papers.

Start-up costs per patient of a model programme like the DLP are disproportionately high, biasing early costs against it. Initially about three to four patients entered per month, with only five patients being treated in the first two months by six DLP staff (four staff joined later); the numbers rose steadily thereafter to 60 by 18 months. Nevertheless, total DLP costs for the full 18 months were 1% lower than the costs of the control group, but this was mainly due to the considerable savings during the last six months (Table 3). Table 3 also quantifies the increasing number of bed-days saved after the initial year.

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Table 3
Direct treatment costs and bed-savings

	Costs: £1000s	
0–18 months		
DLP cost	£384	
hospital group cost	£388	
DLP saved	£4	(1%)
DLP saved 3469 (4310 – 841) bed-days/548 days = 6.3 beds		
0–12 months		
DLP cost	£267	
hospital group cost	£231	
DLP saved	£ – 36	(– 16%)
DLP saved 1897 bed-days/365 days = 5.2 beds		
13–18 months		
DLP cost	= £117	
hospital group cost	= £157	
DLP saved	= £40	(25%)
DLP saved 1572 bed-days/183 days = 8.6 beds		

The difference across diagnostic groups in duration of admission and number of DLP hours spent per patient has implications for cost of care. The care of patients with schizophrenia was 10% more expensive in the DLP than in the control group, and of patients with neurosis 50% cheaper.

Discussion

During its first 18 months this three-year randomised controlled study found some differences between the DLP and control groups in number of bed-days used and in direct treatment costs.

The percentage of patients admitted for any length of time was 83% for DLP and 100% for controls, although the total number of bed-days used by the DLP was only 20% of that used by controls. In other studies using similar care principles the percentage of patients admitted varied from 18% (Stein & Test, 1980) to 40% (Hoult *et al*, 1983). Several factors may explain why such a relatively high proportion of DLP patients required admission. Firstly, South Southwark is a deprived area with a high psychiatric morbidity (Wing, 1982), yet it has few support services in the community such as hostels, drop-in centres, or day hospitals for the severely mentally ill. This made it difficult to prevent admissions during crises. Secondly, the high proportion of single people in South Southwark caused more admissions due to lack of social support, especially at night. Thirdly, about 20% of DLP patients were admitted before DLP staff could assess them; for some of these patients admission might have been prevented. Thus, inferences from community-care programmes such as the DLP have to be cautious, owing to differences in social and clinical factors that may affect care and outcome (Bachrach, 1980).

The duration of the DLP patients' admissions was similar to that in other studies (Stein & Test 1980; Hoult *et al*, 1983; Fenton *et al*, 1979), which reported hospital stays of about 14 days per year for their community-care patients. Only one controlled study did not reduce duration of hospital stay for community-care patients (Pasamanick *et al*, 1967). Unlike the other studies and the present one, the Pasamanick team passed on the clinical responsibility for admitted patients to the in-patient team. Good community care requires that responsibility for admission, treatment, and discharge remains with the community team if a dynamic, proactive, and efficient service is to be achieved.

These advantages of continuity of care might be offset if hospital staff become 'second rank' and community staff carry too heavy a burden. DLP patients formed only a small proportion of the patients on wards at the Maudsley Hospital, so the impact on ward staff was small. This factor would become more important if a large proportion of the ward patients consisted of DLP-type patients, potentially leading to dissatisfaction among ward staff. Their role in community care needs clarification.

The number of bed-days used was greater among psychotic than non-psychotic patients in the DLP, but comparable across diagnostic categories in the control group. Duration of admission may have been more tailored to individual needs in the DLP than in the control group.

The frequency of support provided to DLP patients in areas such as housing, finance, and employment confirms the comprehensive input patients require, again more frequently and constantly for psychotic than for neurotic patients. Whether this has resulted in better clinical and social functioning for DLP than control patients only our full analysis will be able to tell.

That two DLP patients committed suicide is a worrying finding not reported in the other controlled studies. At the time of their suicide both patients had been functioning reasonably well. They had been in regular contact until a few days before the suicide. Both had entered the DLP about six months earlier. The man charged with homicide had been seen regularly and had not exhibited any violent or psychotic behaviour during his eight weeks under care.

The DLP appeared to reduce the number of admission days by the equivalent of about half a ward. This means that the DLP savings on direct treatment were marginal over the first 18 months, but increased to 25% for the last six months, although

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only when start-up costs are excluded. The DLP became more efficient as more patients were cared for.

In other studies, community care was cheaper than hospital care, saving from 5% (Weisbrod *et al*, 1980) to 25% (Hoult *et al*, 1983) and even 61% (Fenton *et al*, 1982). These variations partly reflect differences in methods of calculation. All these studies included the main cost components, however, such as total hospital expenditure, and since the relative costs of these components were similar, the large differences in savings across studies may be a reflection of variations in models of care, such as staff : patient ratios and number of hours invested per patient. This may explain the comparatively small savings from the DLP during this period, with 10 staff caring for a maximum of 60 patients. Future work will include a full cost : benefit analysis of the two methods of care.

The development of effective community care requires knowledge of predicted costs and benefits for the various types of patients. Psychotic patients, especially those suffering from schizophrenia, are more expensive to support in the community than are patients with a depressive neurosis.

The higher cost of community care for patients with schizophrenia has been found before (Fenton *et al*, 1982). They require more intensive care and continuing social and clinical support if their improvements are to be maintained (Davis *et al*, 1972; Stein & Test, 1980). In contrast, the number of contacts with severe neurotic patients can often be reduced rapidly. An important unknown is how much such severe depressive neurosis, requiring hospital care, improves without either intensive community care or lengthy hospital admission.

In conclusion, preliminary findings from a study still in progress are that the seriously mentally ill people facing admission to hospital can largely be treated in the community by key-workers within a multidisciplinary team using a problem-solving, case-management approach. Individualised care in a range of social and clinical areas reduces use of in-patient services considerably; the most vulnerable and disabled patients receive most support.

Future reports need to correlate change in quality of life with amount of staff time offered and with duration of hospital admission for subgroups of patients, comparing community care with hospital care. These subgroups should not be limited to diagnostic categories, but should also include presenting problems such as homelessness, financial difficulties, and disabilities.

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References

AUDIT COMMISSION (1986) *Making a Reality of Community Care*. London: HMSO.

BACHRACH, L. L. (1980) Overview: Model programmes for chronic mental patients. *American Journal of Psychiatry*, **137**, 1023–1031.

——— (1982) Young adult chronic patients: an analytical review of the literature. *Hospital and Community Psychiatry*, **33**, 189–197.

BRAUN, P., KOCHANSKY, G., SHAPIRO, R., *et al* (1981) Overview: deinstitutionalisation of psychiatric patients, a critical review of outcome studies. *American Journal of Psychiatry*, **136**, 736–749.

DAVIS, A. E., DINITZ, S., PASAMANICK, B. (1972) The prevention of hospitalisation in schizophrenia: five years after an experimental program. *American Journal of Orthopsychiatry*, **42**, 375–388.

DEPARTMENT OF HEALTH (1989) *Caring for People*. London: HMSO.

DEPARTMENT OF HEALTH AND SOCIAL SECURITY (1975) *Better Services for the Mentally Ill*. London: HMSO.

FENTON, F. R., TESSIER, L. & STRUENING, E. L. (1979) A comparative trial of home and hospital psychiatric care. One-year follow-up. *Archives of General Psychiatry*, **36**, 1073–1079.

———, ———, CONTANDRIOPOULOS, A. P., *et al* (1982) A comparative trial of home and hospital psychiatric treatment: financial costs. *Canadian Journal of Psychiatry*, **27**, 177–187.

———, ———, STRUENING, E. L., *et al* (1982) *Home and Hospital Psychiatric Treatment*. London: Croom Helm.

GRIFFITHS, R. (1988) *Community Care: Agenda for Action*. London: HMSO.

HOULT, J., REYNOLDS, I., CHARBONNEAU-POWIS, M., *et al* (1983) Psychiatric hospital versus community treatment: the results of a randomised trial. *Australian and New Zealand Journal of Psychiatry*, **17**, 160–167.

KIESLER, C. A. (1982) Mental hospitals and alternative care. *American Psychologist*, **37**, 349–360.

KINGS FUND (1988) *Promoting Innovation in Community Care*. London: Kings Fund Institute.

LANGSLEY, D., KAPLAN, D., PITTMAN, F., *et al* (1968) *The Treatment of Families in Crisis*. New York: Grune and Stratton.

———, MACHOTKA, P. & FLOMENHAFT, K. (1971) Avoiding mental hospital admission, a follow-up study. *American Journal of Psychiatry*, **127**, 1391–1394.

MARKS, I., CONNOLLY, J. & MUIJEN, M. (1988) The Maudsley Daily Living Programme: a controlled cost-effectiveness study of community-based versus standard in-patient care of serious mental illness. *Bulletin of the Royal College of Psychiatrists*, **12**, 22–24.

MUIJEN, M. (1991) *The Outcome of the First Year of the Daily Living Programme: A Controlled Study Comparing Home-Based Care with Standard Hospital Care*. PhD thesis, Institute of Psychiatry, University of London.

PASAMANICK, B., SCARPITTI, F. R. & DINITZ, S. (1967) *Schizophrenics in the Community*. New York: Appleton-Century-Crofts.

STEIN, L. J. & TEST, M. A. (1980) Alternative to mental hospital treatment: 1, conceptual model, treatment program and clinical evaluation. *Archives of General Psychiatry*, **37**, 392–397.

TURNER, J. C. & TENHOOR, W. J. (1978) The NIMH Community Support Program; pilot approach to a needed social reform. *Schizophrenia Bulletin*, **4**, 319–348.

https://doi.org/10.1192/bjp.160.3.379 Published online by Cambridge University Press

WEISBROD, B. A., TEST, M. A. & STEIN, L. J. (1980) Alternative to mental hospital treatment: 2, economic benefit–cost analysis. *Archives of General Psychiatry*, **37**, 400–405.

WELLER, M. (1989) Mental illness, who cares? *Nature*, **339**, 249–252.

WING, J. (ed.) (1982) Long-term community care: experience in a London borough. *Psychological Medicine* (suppl.).

——, COOPER, J. E. & SARTORIUS, N. (1974) *The Measurement and Classification of Psychiatric Symptoms*. London: Cambridge University Press.

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