

## Randomised controlled trial of day patient versus inpatient psychiatric treatment

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### Abstract

**Objective**—To assess the proportion of acutely ill psychiatric patients who can be treated in a day hospital and compare the outcome of day patient and inpatient treatment.

**Design**—Prospective randomised controlled trial of day patient versus inpatient treatment after exclusion of patients precluded by severity of illness or other factors from being treated as day patients. All three groups assessed at three and 12 months.

**Setting**—Teaching hospital serving small socially deprived inner city area. Day hospital designed to take acute admissions because of few beds.

**Patients**—175 Patients were considered, of whom 73 could not be allocated. Of the remaining 102 patients, 51 were allocated to each treatment setting but only 89 became established in treatment—namely, 41 day patients and 48 inpatients. 73 Of these 89 patients were reassessed at three months and 70 at one year.

**Interventions**—Standard day patient and inpatient treatment.

**Main outcome measures**—Discharge from hospital and return to previous level of social functioning; reduction of psychiatric symptoms, abnormal behaviour, and burden on relatives.

**Results**—33 Of 48 inpatients were discharged at three months compared with 17 of 41 day patients. But at one year 9 of 48 inpatients and three of 41 day patients were in hospital. 18 Of 35 day patients and 16 of 39 inpatients were at their previous level of social functioning at one year. The only significant difference at three months was a greater improvement in social role performance in the inpatients. At one year there was no significant difference between day patients and inpatients in present state examination summary scores and social role performance, burden, or behaviour.

**Conclusions**—Roughly 40% of all acutely ill patients presenting for admission to a psychiatric unit may be treated satisfactorily in a well staffed day hospital. The outcome of treatment is similar to that of inpatient care but might possibly reduce readmissions. The hospital costs seem to be similar but further research is required to assess the costs in terms of extra demands on relatives, general practitioners, and other community resources.

### Introduction

The potential advantages of day hospital treatment for acute psychiatric illness are several. Compared with inpatient treatment the day hospital maintains the patient's autonomy and links with the community, reduces the risk of institutionalisation, and may provide a cheaper form of treatment. Yet comparison of day patient and inpatient treatment for psychiatric illness

has been difficult because traditionally patients selected for day hospital treatment are different from those selected for inpatient treatment. The only way to make a valid comparison is randomly to allocate patients to each treatment regardless of the severity of illness or social circumstances.<sup>1</sup>

Two American studies achieved such allocation and found that day hospital treatment was at least as efficacious as inpatient treatment and might have advantages for some patients.<sup>2,3</sup> Only one of these studies, however, included an adequate number of acutely ill patients<sup>2</sup>; the other included only one in five of patients seen, the rest being excluded for various reasons.<sup>3</sup>

In the United Kingdom there have been two attempts to compare day patient and inpatient treatment but neither successfully allocated an adequate number of acutely ill patients. One was abandoned because doctors would allow only 10% of all patients to be allocated.<sup>4</sup> Most patients were regarded as "mandatory" inpatients (often because they were psychotic or suicidal) or mandatory day patients because they were not ill enough to warrant admission. The other study circumvented the problem by including only patients with neurotic illness, adjustment reaction, and personality disorders so that only 22% of all patients were included.<sup>5</sup>

This study is the first to be completed in Britain in which all acutely ill patients requiring hospital admission were considered for random allocation to either day hospital or inpatient treatment. It entailed two departures from routine clinical practice. Firstly, all patients requiring admission were subjected to the random allocation procedure. Patients admitted to the inpatient unit outside normal working hours who were randomly allocated to day treatment were rapidly transferred to the day hospital. Secondly, once a patient had been allocated to a treatment setting the responsible consultant was requested to continue managing the patient in that way (that is, as a day patient or inpatient) until discharge as an outpatient.

The study was conducted at the Manchester Royal Infirmary Psychiatric Day Hospital, where previous work had shown that many acutely ill patients could satisfactorily be treated without inpatient care.<sup>6</sup> Because there was a deficiency of inpatient beds in the district the day hospital was designed to take acute admissions direct from the community and was staffed accordingly. The hospital serves a socially deprived inner city area with high psychiatric morbidity. It is geographically small so that all patients live within three miles (5 km) of the day hospital.

The study aimed at answering two questions: What proportion of acutely ill patients can be treated in the day hospital from the outset? and Does day hospital treatment have definite advantages over inpatient treatment in terms of social and clinical recovery?

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## Subjects and methods

Patients were selected from those under the care of three consultants (FC, MO, PT). During 10 months all their patients aged 18-65 who required admission as an inpatient or a day patient were eligible for the study. Both planned and urgent admissions were included, the only exclusions being patients admitted solely for detoxification and those who discharged themselves before the initial assessment. Throughout this report the term "admission" refers to both the inpatient unit and the day hospital.

### RANDOM ALLOCATION PROCEDURE

Random allocation was achieved by means of randomly assorted cards which were placed in sealed envelopes in blocks of six so that equal numbers of day patients and inpatients would result. For each patient the next envelope was opened.

In the case of planned admissions the patient was allocated to day patient or inpatient treatment before the admission. In the case of emergency inpatient admissions the patient was considered for random allocation on the next working day (that is, a maximum of three days after admission). Three groups of patients were studied: (a) those randomly allocated to day treatment; (b) those randomly allocated to inpatient treatment; and (c) all other, non-allocated patients. This last group comprised patients who could not be considered for day treatment. Such patients were those admitted compulsorily under sections of the Mental Health Act, those considered by the consultant to be too ill for day hospital treatment, and those for whom social factors meant that this form of treatment was not practicable. Figure 1 shows how the three groups were derived.

### ASSESSMENTS

Demographic data were collected on admission. Psychiatric symptoms and social functioning were assessed on admission, three months after admission, and one year after admission. Psychiatric symptoms were assessed with the present state examination.<sup>7</sup> Social functioning was assessed with the social performance and behaviour assessment schedule, which yields scores in respect of social role performance (for example, household management, employment, spare time activities) abnormal behaviour (for example,

withdrawal, odd ideas, overactivity), and burden on relatives (for example, lost sleep, time off work, or disrupted household routine).<sup>8</sup> The assessment of social functioning made on admission covered two points in time—that immediately before admission ("when ill") and that before the onset of illness ("when well"). The schedule requires detailed information from a member of the household (or hostel warden) so could be completed only when such an informant was available. The social assessments three and 12 months after admission measured current functioning only.

One week after admission a standardised rating of the patient's behaviour in the hospital was made by interviewing the nursing staff with the social behaviour schedule.<sup>9</sup> Patients with depression only had the severity of their symptoms measured by the research psychiatrist using the Hamilton rating scale.

The effect of treatment was assessed by means of three criteria: (a) continuing contact with psychiatric services; (b) change in psychiatric symptoms; (c) change in social functioning. Because of the drop out rate at follow up two sets of analyses were performed.<sup>10</sup> Firstly, the total allocated groups ("intention to treat") were compared in terms of the outcome criteria; these analyses regarded all drop outs as failures of treatment. Secondly, in order to study the effect of treatment received only patients who completed a course of treatment were included in the subsequent analyses.

### SCORES AND STATISTICS

Present state examination findings are presented as four summary scores: (a) delusions and hallucinations (for example, auditory hallucinations and grandiose and religious delusions); (b) behaviour, speech, and other syndromes (for example, agitation, overactivity, and psychomotor slowness); (c) specific neurotic reactions (for example, special features of depression, situational anxiety, depersonalisation, and hypochondriasis); (d) non-specific neurotic reactions (for example, tension, worrying, social unease, and lack of energy). In each case a high score indicates the presence of symptoms. Absence of symptoms is scored zero. Thus a median score of zero for delusions and hallucinations indicates that most patients in that group were not psychotic.

Findings with the social performance and behaviour assessment schedule are presented as three summary scores—social role performance, abnormal behaviour observed by the informant, and burden on relatives. In each case a high score indicates impairment and the score "when well" represents some impairment before the current illness episode.

Nurses' ratings of behaviour (for example, depression, panic, violence) on the social behaviour schedule are presented as a single summary score. A high score represents severely disturbed behaviour.

Data were analysed by the Mann-Whitney U test and the  $\chi^2$  test as appropriate.

## Results

One hundred and eighty five patients were eligible for the trial, but 10 were discharged before random allocation could take place. Of the remaining 175 patients, 102 (58%) were allocated to inpatient and day patient treatment groups (51 in each group) and 73 (42%) could not be randomly allocated. Complete present state examination assessments were achieved in 162 patients at admission—48 inpatients, 41 day patients, 73 non-allocated patients (fig 1). Further present state examination assessments were recorded at three months and one year in 133 (82%) and 120 (74%) patients respectively. Of the 42 patients lost to follow up at one year, 23 could not be traced (many had

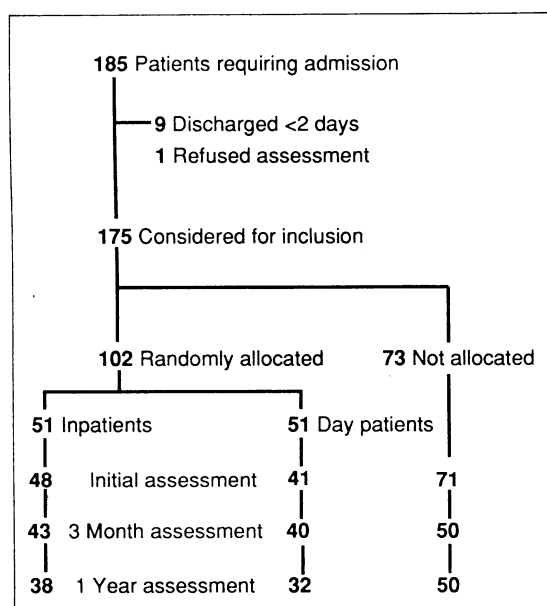


FIG 1—Derivation of the three study groups (patients allocated to inpatient or day hospital treatment and patients who could not be allocated). Numbers represent patients having initial assessment and who attended follow up interviews

left Manchester), 14 refused, four had died, and one had severe dementia.

Complete social performance and behaviour assessment schedule interviews with informants were achieved in respect of 132 patients at admission, 112 patients (85%) at three months, and 103 patients (78%) at one year. The remaining patients did not have an informant who could provide accurate information on their social functioning.

#### ALLOCATED PATIENTS (DAY PATIENTS *v* INPATIENTS)

Of the 102 patients randomly allocated, three inpatients discharged themselves before they could be fully assessed, 10 day patients did not attend sufficiently to be assessed, and a further six day patients had to be transferred to inpatient care because their illnesses did not respond rapidly to day hospital treatment (table I). All of these were regarded as failures of treatment in the first analysis, which considered all patients.

At one year follow up 10 of the 51 patients allocated to inpatient treatment (that is, including the three who discharged themselves before being fully assessed) were inpatients (all but one had been discharged and readmitted), nine could not be traced, and 29 (57%) were living in the community (table I). The corresponding figures for the 51 patients allocated to day treatment (that is, including the 16 who did not attend for day care or were transferred to inpatient care) were:

TABLE I—Numbers of patients at each assessment who were in hospital (as day patients or inpatients) and living in the community

	Inpatient	Day patients	Significance of difference
At admission:			
Allocated	51	51	
Fully assessed	48	41	
Transferred to inpatient care	—	6	
At three months:			
Remaining as inpatients or day patients	15/48	24/41	$\chi^2=5.63$ ; $df=1$ ; $p<0.05$
At one year (excluding six day patients transferred to inpatient unit):			
Remaining as inpatients or day patients	10	3	
Lost to follow up	9	6	
Outpatients/discharged:	48	35	$\chi^2=3.7$ ; $df=3$ ; NS
Social functioning returned	16	18	
Social functioning impaired	13	8	

TABLE II—Distribution of diagnoses among allocated and non-allocated patients

	Randomly allocated		Non-allocated patients	Total
	Inpatients	Day patients		
Schizophrenia	14	10	27	51
Depression	10	8	16	34
Mania	4	4	13	21
Neurotic disorder	13	11	2	26
Personality disorder	5	3	8	16
Addiction/organic disorder	2	5	7	14
Total	48	41	73	162

Randomly allocated patients *v* non-allocated patients:  $\chi^2=18.7$ ;  $df=5$ ;  $p<0.005$ .

TABLE III—Comparison of scores for psychiatric symptoms and social impairment among allocated and non-allocated patients. Values are medians (95% confidence intervals in parentheses). The higher the score the more severe the psychiatric symptoms or social impairment

	Randomly allocated		Non-allocated patients
	Inpatients	Day patients	
Present state examination score:			
Delusions and hallucinations	0 (0 to 1)	0 (0)	1 (0 to 2)*
Behaviour, speech, and other syndromes	0 (0 to 1)	0 (0 to 1)	1 (0 to 1)*
Specific neurotic reactions	2 (1 to 4)	4 (2 to 5)	1 (0 to 3)*
Non-specific neurotic reactions	8 (5 to 12)	10 (5 to 12)	6 (3 to 9)**
Total score	14 (7 to 19)	16 (12 to 20)	12 (10 to 17)
Social performance and behaviour assessment schedule score:			
Role	14 (11 to 16)	12 (8 to 14)	13 (11 to 16)
Burden	6 (4 to 7)	3 (2 to 6)	4 (3 to 6)
Behaviour	14 (11 to 18)	14 (11 to 17)	13 (12 to 16)
Nurses' rating	6 (4 to 12)	7 (5 to 10)	12 (9 to 14)***

Compared with all randomly allocated patients: \* $p<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$ .

three who were attending as day patients at one year, six who could not be traced, and 26 (51%) who were living in the community at one year.

Further analyses considered only those patients who were fully assessed.

#### At admission

The 48 inpatients and 41 day patients fully assessed were similar in terms of their diagnoses (table II) and present state examination, social performance and behaviour assessment schedule, and nurses' rating scores (table III). Thus the two groups were similar in their severity of psychiatric disorder and social impairment. The inpatients and day patients were also similar in mean age (41 *v* 44 years), sex (26 (54%) *v* 24 (59%) were men), marital state (18 (38%) *v* 17 (41%) were married; 8 (17%) *v* 8 (20%) were separated, widowed, or divorced), employment state (22 (46%) *v* 21 (51%) were unemployed), proportions living with a family member (30 (63%) *v* 20 (49%)), and proportions admitted as an emergency (30 (63%) *v* 20 (49%)). The groups were also similar in terms of the duration of their present illness (less than three months 29 (60%) inpatients *v* 25 (61%) day patients), age at onset of first psychiatric illness (32 *v* 33 years), and mean number of previous admissions (2.0 *v* 1.5).

#### During study

**Contact with psychiatric services**—The duration of the index admission was significantly shorter among inpatients (median 21 days, interquartile range 11-43) than among day patients (median 64 days, interquartile range 33-154;  $z=-4.17$ ;  $p<0.01$ ). Hence at three months significantly more day patients than inpatients remained in treatment, but at one year this position was reversed—that is, 10 inpatients were in hospital compared with only three day patients (table I). During the year of the study 18 inpatients and eight day patients were readmitted (18/39 *v* 8/35;  $\chi^2=3.43$ ;  $df=1$ ; NS). The median total durations of stay (initial admission plus any subsequent admissions) over the whole year were 36 days (interquartile range 17-118) among inpatients and 86 days (48-180) among day patients. This second figure had to be adjusted because day patients attended on five or fewer days a week and the adjusted figure was 31 days (interquartile range 16-47), which was not significantly longer than that among inpatients.

**Change in psychiatric symptoms**—Because some patients were lost to follow up the changes in scores for psychiatric symptoms and social impairment at three months and one year were calculated only for those patients who were interviewed on all three occasions (at admission, at three months, and at one year). The patients who dropped out did not differ significantly from the rest of the cohort in any of the measurements in the present state examination or social performance and behaviour assessment schedule initially. Table IV and figure 2 show the changes in present state examination scores among patients assessed on all three occasions. There was no significant difference between the two forms of treatment in any measurement. Patients with depression (10 inpatients, eight day patients) had similar scores on the Hamilton rating scale at admission (median scores (interquartile ranges) 20 (13-25) and 21 (17-25) in inpatients and day patients respectively), and in both treatment groups the scores had fallen substantially by three months (to 1 (1-7) and 0 (0-2)) and one year (3 (0-5) and 3 (0-15)).

**Change in social functioning**—Figure 3 and table IV show the results for social functioning. The only significant difference between the two forms of treatment was improvement in role performance among inpatients at three months. On all other measurements

TABLE IV—Reductions in scores for psychiatric symptoms and social impairment at three months and one year compared with values at admission among allocated patients treated as inpatients and day patients. Values are medians (95% confidence intervals)

	Reduction in score at three months			Reduction in score at one year		
	Inpatients (n=43)	Day patients (n=40)	p Value	Inpatients (n=38)	Day patients (n=32)	p Value
Present state examination:						
Delusions and hallucinations	0 (0 to 1)	0 (0)	NS	0 (0 to 1)	0 (0)	NS
Behaviour, speech, and other syndromes	0 (0 to 1)	0 (0)	NS	0 (0 to 1)	0 (0 to 1)	NS
Specific neurotic reactions	1 (0 to 2)	2 (0 to 3)	NS	2 (0 to 3)	1 (0 to 3)	NS
Non-specific neurotic reactions	3 (1 to 6)	4 (0 to 8)	NS	3 (1 to 8)	3 (0 to 7)	NS
Social performance and behaviour assessment schedule:						
Role	8 (4 to 11)	3 (1 to 6)	<0.01	7 (3 to 10)	4 (2 to 6)	NS
Burden	2 (1 to 3)	1 (0 to 3)	NS	3 (1 to 4)	2 (1 to 3)	NS
Behaviour	8 (5 to 11)	5 (3 to 10)	NS	7 (6 to 13)	6 (4 to 10)	NS

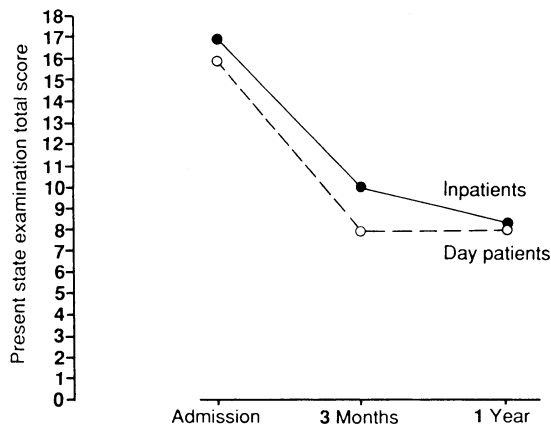


FIG 2—Changes in present state examination total scores from admission to three months and one year in inpatients and day patients

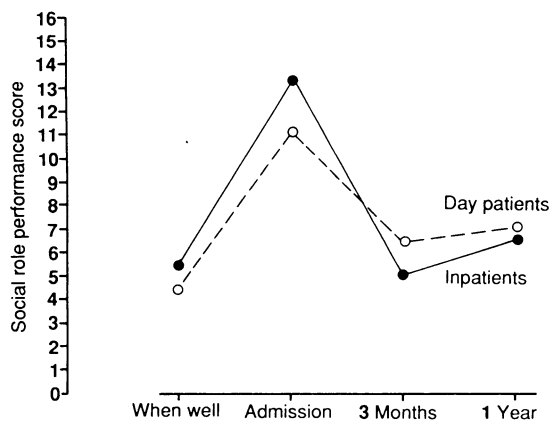


FIG 3—Changes in summary social role performance score between "when well" and at admission, three months, and one year in day patients and inpatients

in the social performance and behaviour assessment schedule the changes in scores were not significantly different between day patients and inpatients. Table I gives the numbers of patients who were both living in the community and had returned to their previous level of social functioning according to the social performance and behaviour assessment schedule. There was no significant difference between day patient and inpatient treatment; 16 of the 39 inpatients assessed at one year and 18 of the 35 day patients fulfilled both those criteria ( $\chi^2=0.44$ ; NS).

#### NON-ALLOCATED PATIENTS

Of the 73 patients not allocated, 17 were admitted under sections of the Mental Health Act (so precluding day hospital treatment), 29 were judged by the consultant to be too ill for day hospital treatment, and the remainder were not allocated because of social problems (homelessness, family or hostel staff could not cope, frequent involvement of police or other emergency services). These non-allocated patients differed

significantly from the allocated groups in their diagnoses. They included more manic patients and fewer with neurotic disorders (table II). Non-allocated patients were also more severely ill according to the psychotic symptom scores of the present state examination and the nurses' rating of behaviour (table III).

This study was too small for detailed analysis by diagnosis. Nevertheless, as patients categorised as having neurotic disorders might represent a group with milder illnesses the analyses were repeated with the exclusion of the neurotic group. This reduced the overall proportion of patients randomly allocated to 48% (78 of 162). The results in terms of outcome remained similar. There were no significant differences between outcome of day patient and inpatient treatment except for the more rapid improvement of role performance in the inpatient group at three months.

#### Discussion

This study differed from many other studies by virtue of the high proportion of acutely ill patients who could be randomly allocated to either day patient or inpatient treatment. A total of 102 of 185 patients (55%) were initially randomly allocated, which reflects the ability of the day hospital at Manchester Royal Infirmary to accept seriously ill patients.<sup>6</sup> Nevertheless, of the patients allocated to day care, 10 did not engage with this treatment and a further six had to be transferred to inpatient care. Thus in this series two thirds of patients allocated to day care could satisfactorily be treated in the day hospital, a proportion almost identical with that reported by Zwerling and Wilder.<sup>2</sup> A parallel study at a day hospital in another (non-teaching) district has shown that this result could not be generalised to other day hospitals without an increase in staffing levels and a change in treatment philosophy from long term care to management of acute illness.<sup>11,12</sup> These findings will be presented elsewhere.

There were two main drawbacks in our study. The follow up period was too short reliably to assess whether day treatment leads to a reduced chance of readmission (longer follow up study is under way) and the numbers of patients were small. The number of patients was limited by the availability of research resources and was further reduced at follow up because of drop outs. Nevertheless, the follow up rate was better than in many other studies<sup>1</sup> and was the best that could be hoped for in a study which included all admissions, not just those from a stable family,<sup>13</sup> and which was performed in an inner city area with a highly mobile population. The small number of patients prevented detailed analysis by diagnosis, but exclusion of patients in the neurotic diagnostic group, who had milder illness, made no difference to the overall findings.

This study achieved a satisfactory random allocation of patients, unlike many other studies.<sup>14</sup> At admission

the two treatment groups were similar on measures of psychiatric symptoms, previous psychiatric history, and demographic characteristics. The significant differences at follow up must be treated with caution because of the limited numbers of patients and the large number of statistical tests performed. Nevertheless, it is interesting that social role performance scores improved more rapidly in inpatients than day patients, and day patients were more likely than inpatients to be out of hospital one year after admission. This suggests that inpatients may recover more quickly than day patients but be at greater risk of relapse. A further random allocation study is in progress with larger numbers of patients to see if these differences in outcome will be repeated.

Our findings show that day care is feasible for some patients and that it has no major disadvantage over inpatient care. Nevertheless, whether it is a more desirable treatment for acutely ill patients is less clear. Compared with inpatient treatment we did not find any definite advantage of day care in terms of mental state or social outcome scores, though a longer follow up might confirm the clinical impression that inpatients have quicker social recovery than day patients but are at a higher risk of rapid relapse.

As the end results of treatment are similar the determinant of treatment preference might be cost. This study could provide limited data on direct costs of hospital care, but any development of this form of treatment for seriously ill patients, as envisaged in *Better Services for the Mentally Ill*,<sup>15</sup> has implications for general practitioners and relatives who care for the patients at night and at weekends. The costs to these carers may be considerable in view of the prevalence of suicidal ideas and psychotic symptoms among the day patients. Their need for close supervision during the early stages of treatment has been catered for in studies of community care by using 24 hour community psychiatric nursing or crisis intervention services,<sup>16,17</sup> but these services tend to make community care as expensive as inpatient treatment.<sup>18</sup>

The day hospital at the Manchester Royal Infirmary differs from other day hospitals in having a greater staff to patient ratio and a policy of not allowing patients to become chronic attenders,<sup>11</sup> so permitting staff to be available for acutely ill patients. A full range of treatments is available, though patients are transferred to the inpatient unit for electroconvulsive therapy. Each patient has an individual treatment programme with both medical and social goals. The differences

from another day hospital have been examined (Creed *et al*, unpublished data).

The development of day care in the United Kingdom has been determined to date more by fashion than by systematic research.<sup>19</sup> This study has begun to redress the balance. Day care is a feasible alternative to inpatient care for some acutely ill patients provided that the day hospital is well staffed and the initial admission is fairly prolonged. This makes it unlikely to be a cheap alternative, but the possible reduction in subsequent readmissions might make it a preferable form of treatment.

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## ONE HUNDRED YEARS AGO

Now that the Notification Act is fairly in operation in the metropolis and a great many of the country districts of England, we may expect to hear of some few instances in which it is alleged that cases of trifling illness have been improperly notified for the sake of the fees payable to practitioners for certificates under the Act. Ten years ago, when a Local Notification Act first came into operation in a town which is now frequently referred to as affording a conspicuous example of the successful working of such a measure, some complaints of this kind arose. They were, of course, made the subject of inquiry by the proper authority namely, the medical officer of health, whose duty it is to report to the Local Board of Health on the medical points which from time to time arise for consideration in the operation of this and other Acts relating to the Public Health. These alleged irregularities are subjects for local inquiry, and, as they are of immediate interest to ratepayers, they are likely to receive all the attention they require. But there are other more important questions connected with the operation of the Act which are of wide public interest, and which before long must engage the attention of the Local Government Board. A great many urban and rural sanitary authorities have adopted the Act, and

it is asked, What use are these authorities making, or likely to make, of the information with regard to the existence of infectious diseases which they have thus acquired? It is to be feared that many of these districts would be found quite destitute of any adequate provision by which good use would be made of the abundant information which they now possess, and for which they are legally bound to pay. It is only too true that the sanitary staff of many villages, and even more important districts, exists only in name; while there is, generally speaking, amongst rural sanitary authorities a want of appreciation of the value of medical services, in the shape of skilled advice, without which the Act cannot be successfully administered. Notification is only a means to an end, the object of the measure being to enable local authorities to prevent or control infectious diseases by applying the various powers of the Public Health Act where their application is most needed. We hope that the numerous boards of health which have recently adopted the Act of last session will immediately take such further action as may be necessary to ensure its being made of practical utility in the districts under their control. (*British Medical Journal* 1890;i:374)