

## The REACT study: randomised evaluation of assertive community treatment in north London

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### Abstract

**Objective** To compare outcomes of care from assertive community treatment teams with care by community mental health teams for people with serious mental illnesses.

**Design** Non-blind randomised controlled trial.

**Setting** Two inner London boroughs.

**Participants** 251 men and women under the care of adult secondary mental health services with recent high use of inpatient care and difficulties engaging with community services.

**Interventions** Treatment from assertive community treatment team (127 participants) or continuation of care from community mental health team (124 participants).

**Main outcome measures** Primary outcome was inpatient bed use 18 months after randomisation. Secondary outcomes included symptoms, social function, client satisfaction, and engagement with services.

**Results** No significant differences were found in inpatient bed use (median difference 1, 95% confidence interval -16 to 38) or in clinical or social outcomes for the two treatment groups. Clients who received care from the assertive community team seemed better engaged (adapted homeless engagement acceptance schedule: difference in means 1.1, 1.0 to 1.9), and those who agreed to be interviewed were more satisfied with services (adapted client satisfaction questionnaire: difference in means 7.14, 0.9 to 13.4).

**Conclusions** Community mental health teams are able to support people with serious mental illnesses as effectively as assertive community treatment teams, but assertive community treatment may be better at engaging clients and may lead to greater satisfaction with services.

### Introduction

Despite well equipped community mental health teams, the needs of a substantial subgroup of patients who are severely mentally ill and difficult to engage with services remain difficult to meet.<sup>1</sup> Assertive community treatment,<sup>2</sup> an alternative approach to admission to psychiatric hospital, has gained popular-

ity for service users who have problems engaging with services but for whom psychiatric care is essential.

It has been difficult to appraise the efficacy of assertive community treatment in England and other European countries with similar service systems. This is because the models of intensive community care investigated were based loosely on assertive treatment and did not focus on participants who were difficult to engage.<sup>3-7</sup>

The equivocal evidence has not prevented the Department of Health encouraging the implementation of assertive community care as a tertiary model of care. We compared the clinical outcomes of assertive community treatment with standard community mental health care for clients identified as difficult to engage and high users of inpatient care. We hypothesised that assertive community treatment would lead to fewer inpatient days than standard community mental health care.

### Methods

We carried out the trial in the inner London boroughs of Camden and Islington. High levels of deprivation give this area one of the highest estimated levels of psychiatric morbidity in the United Kingdom.<sup>8</sup> Participants were referred from the 13 local community mental health teams (see [bmj.com](http://bmj.com) for inclusion criteria).

A panel met monthly to consider referred clients that met all but the inpatient bed day criteria and whose mental health placed them at major risk from themselves or others despite input from the community mental health team.

We recruited participants between July 1999 and July 2002. We obtained approval for randomisation of all eligible participants whether or not they consented to assertive community treatment. Only participants willing to give informed consent were interviewed at baseline and follow-up. For those who could not be interviewed, we obtained data on inpatient bed use from the local computerised patient record system and main staff rated secondary outcomes.

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Participants were randomly allocated to assertive community treatment or community mental health care on an equal basis. The 18 month assessment period was dated from randomisation. All interviews were carried out by HK or FN, who were unblinded to treatment allocation.

Participants received care according to nationally recognised models of assertive community treatment<sup>9 10</sup> or community mental health.<sup>11</sup> (See [bmj.com](http://bmj.com) for descriptions of the models of care.) Model fidelity for the assertive community treatment team was assessed independently through the pan-London assertive outreach study.<sup>12</sup> An independent researcher used the same measure to rate the model fidelity of the community mental health teams.

### Outcome measures

Diagnosis was confirmed by examination of case notes and interviews. The primary outcome was the number of days spent as a mental health inpatient during the 18 month period. Secondary outcomes were: satisfaction with services (client satisfaction questionnaire modified to include questions about assertive community treatment); clinical and social functioning (expanded brief psychiatric rating scale, health of the nation outcome scales, and life skills profile); needs assessment (abbreviated form of the Camberwell assessment of needs); quality of life (Manchester short assessment of quality of life); serious incidents; engagement with services (adaptation of the homeless engagement acceptance scale); factors influencing compliance with medication (rating of medication influences scale in schizophrenia); use of the Mental Health Act; and substance misuse (clinician alcohol and drug scale). (See [bmj.com](http://bmj.com) for reference details of instruments.)

### Statistical analysis

Analysis was on an intention to treat basis. Owing to non-normally distributed data, in the primary analysis we used the Mann-Whitney test to compare the median number of inpatient days over the study period. We used Hodges-Lehmann estimates to calculate confidence intervals for the median difference. Observed inpatient days are reported. We compared secondary outcomes using *t* tests for normally distributed quantitative data, Mann-Whitney's test for non-normally distributed data, and  $\chi^2$  tests for categorical variables. We show only unadjusted results.

## Results

Between July 1999 and July 2002 we recruited 251 participants (see [bmj.com](http://bmj.com)). Eighteen of 20 clients who met the criteria except for bed days were included in the trial. At baseline, 168 (67%) participants consented to be interviewed: 90 of 127 (71%) assigned to the assertive community treatment team and 78 of 124 (63%) assigned to the community mental health team. Care coordinators were unable to complete baseline assessments for three participants (one assigned to assertive community treatment). Ninety one of the 124 (73%) participants in the assertive community treatment group and 75 of the 119 (63%) in the community mental health team group who were available at 18 months agreed to the follow-up interview (response rate 68%).

**Table 1** Inpatient service use over 18 months for clients with serious mental illness assigned to assertive community treatment or to community mental health team care. Values are numbers (percentages) of clients unless stated otherwise

| Variable   | Assertive community treatment team (n=124) | Community mental health team (n=119) |
|--|--|--------------------------------------|
| Total No of inpatient days:                        |  |                                      |
| Mean (SD)  | 162 (161)                                  | 144 (140)                            |
| Median (interquartile range)                       | 120 (27-231)                               | 130 (14-215)                         |
| No of new admissions:                              |  |                                      |
| Mean (SD)  | 1.0 (1.1)                                  | 1.1 (1.4)                            |
| Median (interquartile range)                       | 1 (0-2)                                    | 1 (0-2)                              |
| No of days per admission:                          |  |                                      |
| Mean (SD)  | 65 (91)                                    | 52 (66)                              |
| Median (interquartile range)                       | 27 (0-95)                                  | 27 (0-86)                            |
| No of days to discharge if recruited as inpatient: |  |                                      |
|  | n=60                                       | n=55                                 |
| Mean (SD)  | 158 (177)                                  | 141 (159)                            |
| Median (interquartile range)                       | 70 (29-272)                                | 61 (14-215)                          |
| Inpatient throughout                               |  |                                      |
|  | 7 (6)                                      | 3 (30)                               |
| Any admission                                      |  |                                      |
|  | 73 (59)                                    | 65 (55)                              |
|  | n=73                                       | n=65                                 |
| 1 admission  | 39 (32)                                    | 31 (26)                              |
| 2 admissions                                       | 23 (19)                                    | 17 (14)                              |
| >2 admissions                                      | 11 (9)                                     | 17 (14)                              |
| Involuntary admissions                             | 60 (82)                                    | 54 (83)                              |
| ≥1 PICU admissions                                 | 17 (23)                                    | 16 (25)                              |
| ≥1 MSU admissions                                  | 4 (<1)                                     | 1 (<1)                               |

PICU=psychiatric intensive care unit; MSU=medium secure unit.

The median duration of illness was 10 years (see [bmj.com](http://bmj.com)). The mean number of previous admissions was eight (median duration more than two months). Substance misuse was equally prevalent among the groups (see [bmj.com](http://bmj.com)).

The pan-London assertive outreach study<sup>12</sup> rated the model fidelity of one of the assertive community treatment teams as high (mean score 4.1 on Dartmouth assertive community treatment scale<sup>13</sup>) and the other as like assertive community treatment (mean score 3.4). The 13 community mental health teams had a mean score of 2.7. The mean number of face to face contacts during the second nine months of the study was three times greater for participants in the assertive treatment group than for those in the mental healthcare group (49 (SD 49) v 16 (SD 23), difference in means 33, 95% confidence interval 22.6 to 42.1).

No statistically significant differences were found between the trial arms in inpatient bed days over the 18 months of follow-up (median difference 1, -16 to 38) or in any other indicator of inpatient service use (see [bmj.com](http://bmj.com) and table 1).

All ratings of satisfaction were higher for clients assigned to assertive treatment, and total satisfaction scores were statistically significantly greater (effect size 0.35 SD). No significant differences were found in clinical or social functioning between groups (table 2). Ratings on the adapted homeless engagement acceptance scale indicated greater quality of engagement with services in the assertive treatment group (effect size 0.29 SD); fewer clients in this group were lost to follow-up than those in the mental healthcare group. Serious incidents were equally distributed between the

**Table 2** Secondary outcomes at 18 months for clients with serious mental illness assigned to assertive community treatment or to community mental health team care. Values are numbers (percentages) of clients unless stated otherwise

| Variable  | Assertive community treatment team<br>n=91 | Community mental health team<br>n=75 | Mean difference (95% CI) | P value |
|---|--|--------------------------------------|--------------------------|---------|
| Mean (SD) symptoms (EBPRS)                                | 32.9 (9.0)                                 | 33.5 (8.6)                           | -0.6 (-3.3 to 2.1)       | 0.66    |
| Mean (SD) unmet needs (CANSAS)                            | 3.3 (2.7)                                  | 3.4 (2.9)                            | -0.1 (-1.0 to 0.7)       | 0.76    |
| Mean (SD) satisfaction (CSQ)                              | 77.2 (20.0)                                | 70.0 (20.6)                          | 7.14 (0.9 to 13.4)       | 0.03    |
| Mean (SD) quality of life (MANSA)                         | 4.5 (1.0)                                  | 4.4 (0.9)                            | 0.1 (-0.2 to 0.4)        | 0.56    |
| Mean (SD) social function (LSP)                           | 119 (16.4)                                 | 115 (19.7)                           | 4.3 (-0.3 to 8.9)        | 0.07    |
| Mean (SD) total score (HoNOS)                             | 8.6 (4.8)                                  | 9.0 (5.9)                            | -0.4 (-1.8 to 1.0)       | 0.56    |
| Mean (SD) influences on medication (RoMI): compliance     | 6.7 (2.6)                                  | 6.1 (2.5)                            | 0.6 (-0.6 to 1.2)        | 0.07    |
| Mean (SD) influences on medication (RoMI): non-compliance | 10.8 (4.3)                                 | 11.4 (3.8)                           | -0.7 (-1.7 to 0.4)       | 0.20    |
| Mean (SD) engagement (HEAS)*                              | 9.1 (3.3)                                  | 8.0 (3.8)                            | 1.1 (0.1 to 1.9)         | 0.03    |
| Lost to follow-up   | 2 (2)                                      | 10 (8)                               | 5.96†                    | 0.01    |
| Serious incidents in past 18 months:                      |  |                                      |                          |         |
| Homeless  | 12 (10)                                    | 16 (14)                              | 1.03†                    | 0.31    |
| Violence‡   | 21 (17)                                    | 14 (12)                              | 1.08†                    | 0.30    |
| Deliberate self harm§                                     | 10 (8)                                     | 13 (11)                              | 0.72†                    | 0.40    |
| Arrested  | 23 (19)                                    | 25 (22)                              | 0.38†                    | 0.54    |
| Forensic¶   | 9 (7)                                      | 6 (5)                                | 0.22†                    | 0.64    |
| Prison  | 3 (2)                                      | 4 (3)                                | 0.24†                    | 0.63    |
| Substance misuse:   |  |                                      |                          |         |
| Alcohol   | 25 (20)                                    | 21 (18)                              | 0.14†                    | 0.71    |
| Illicit drugs   | 29 (23)                                    | 25 (22)                              | 0.64†                    | 0.42    |

EBPRS=expanded brief psychiatric rating scale; CANSAS=Camberwell assessment of needs short assessment schedule; CSQ=client satisfaction questionnaire; MANSA=Manchester short assessment of quality of life; LSP=life skills profile; HoNOS=health of the nation outcome scales.

\*Includes participants who disengaged completely and were out of contact with services therefore assertive community treatment n=124, community mental health care n=119.

† $\chi^2$  tests.

‡Victim required hospital treatment.

§Includes participants who committed suicide: one assigned to assertive community treatment (total n=125) and three assigned to community mental health care (total n=118).

¶Contact with forensic psychiatric services.

groups. Three clients assigned to community mental health team care and one client assigned to assertive community treatment committed suicide during the study period.

## Discussion

Our study found no evidence of greater clinical efficacy or improvement in social outcomes for recipients of assertive community treatment compared with usual care from community mental health teams.

Our trial tackled the limitations of previous studies<sup>3-6</sup> by using a randomised controlled design and testing the standard model for assertive community treatment.<sup>9, 10</sup> Our assertive community treatment teams had medium to high model fidelity and were representative of such teams in London.<sup>12</sup> Our referral criteria were strictly adhered to and only a small number of participants not meeting referral criteria for recent inpatient care were recruited through our panel. Primary outcome data were available for all participants. Our findings therefore seem robust for inner city populations in the UK.

One important limitation of the study was its non-blindness, although this might have been expected to lead the assertive community treatment teams to resist more admissions than the community mental health teams. Likewise, interviewer bias might have been expected to increase differences between the groups. That this was not the case supports the validity of our

findings. A second limitation was the response rate for follow-up interviews at which secondary outcome data were collected. However, use of participant and staff rated measures reduced interviewer and non-response bias as data from staff rated measures on clinical and social function, substance misuse, compliance with drugs, and adverse events were available for all participants.

The number of days spent in hospital was similar for both groups, refuting our primary hypothesis. We analysed multiple secondary outcomes of which two achieved nominal significance. Any adjustment for multiple analyses would reduce the degree of statistical significance. Bearing this in mind, our results suggest that patients receiving assertive treatment were better engaged in terms of both quantity and quality of contact with staff, and fewer clients were lost to follow-up. In addition, greater satisfaction with services was reported by clients assigned to assertive community treatment who agreed to be interviewed. These findings suggest that the assertive community treatment approach may be more acceptable to this client group than the standard community mental health team model. This was not, however, associated with any improvement in social or clinical function.

In the context of the UK government's national policy of encouraging assertive community treatment,<sup>14, 15</sup> our results require further examination. Inpatient mental health services in inner cities are already operating with high admission thresholds.<sup>16</sup>

**What is already known on this topic**

Assertive community treatment is one of the most widely researched mental health service interventions

International studies have shown that it reduces length and frequency of hospital admissions

UK studies of other models of intensive community mental health care have found no advantage over usual care, yet assertive community treatment has been implemented nationally

**What this study adds**

Assertive community treatment had no benefit over usual community mental health team care for inpatient admissions and clinical or social outcomes

Satisfaction and engagement with services may be greater for recipients of assertive community treatment

Interventions that aim to prevent or reduce admissions are therefore unlikely to succeed. It may also be that the approach of community mental health teams, particularly in inner cities, already incorporates features of assertive treatment such as relatively low case loads and dedicated inpatient beds.<sup>17</sup>

Another possibility is that as the assertive community treatment teams in our study were new they lacked experience. Finally, an 18 month follow-up may not have been long enough to measure positive change.

Assertive community treatment is gaining popularity in Europe, but we found that it cannot be assumed to be preferable to well developed community mental health teams.

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*Middle East perspectives*

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On 21 October the *BMJ* will publish a cluster of articles drawing attention to some of the key health problems, policy challenges, and research priorities in the Middle East region. The issue will be linked to the 10th meeting of the Global Forum for Health Research, which is being held in Cairo (29 October to 2 November) with the broad theme of combating disease and promoting health.

The richly diverse countries of the eastern Mediterranean and Middle East region contain both some of the wealthiest and some of the most deprived populations of any region. Sociocultural contrasts are marked, and health challenges, priorities, and expectations are equally varied. There are, nevertheless, issues of common concern. These include the growing burden of non-communicable disease, a high incidence of genetic and inherited disorders, rising rates of injury, rising rates of communicable disease including HIV/AIDS, poor access to reproductive health services, the relatively weak position of women and civil society, and the searing impact on health of political unrest and armed conflict.

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