

# Randomised controlled trial of effect of intervention by psychogeriatric team on depression in frail elderly people at home

Sube Banerjee, Kim Shamash, Alastair J D Macdonald, Anthony H Mann

## Abstract

**Objective**—To investigate the efficacy of intervention by a psychogeriatric team in the treatment of depression in elderly disabled people receiving home care from their local authority.

**Design**—Randomised controlled trial with blind follow up six months after recruitment.

**Setting**—Community of south east London.

**Subjects**—69 people aged 65 or over who received home care and were depressed according to criteria of the standardised automatic geriatric examination for computer assisted taxonomy (AGECAT). 33 were randomly allocated to an intervention group and 36 to a control group.

**Intervention**—Members of the intervention group received an individual package of care that was formulated by the community psychogeriatric team in their catchment area and implemented by a researcher working as a member of that team. The control group received normal general practitioner care.

**Main outcome measures**—Recovery from depression (AGECAT case at recruitment but non-case at follow up).

**Results**—Data were analysed on an intention to treat basis. 19 (58%) of the intervention group recovered compared with only nine (25%) of the control group, a difference of 33% (95% confidence interval 10% to 55%). This powerful treatment effect persisted after controlling for possible confounders in logistic regression analysis, with members of the intervention group more likely than members of the control group to have recovered at follow up (odds ratio 9.0 (2.0 to 41.5)). This did not seem to be a simple effect of antidepressant prescription: use of antidepressants at follow up did not have a significant effect (multiply adjusted odds ratio 0.3 (0.0 to 1.9)).

**Conclusions**—Depression is treatable in elderly people receiving home care. Therapeutic nihilism based on an assumed poor response to treatment in these socially isolated, disabled elderly people in the community is not supported.

## Introduction

Home care services provided by local authorities are essential for effective community care for disabled elderly people<sup>1</sup>; 9% of those aged 65 or more in England and Wales, around one million people, are maintained in their own households with this help.<sup>2</sup> Compared with the general elderly population, those who receive home care are older, are more socially isolated, are more likely to be women, and have high rates of disability and depression.<sup>3</sup> The prevalence of depression among those receiving home care is estimated to be between 26% and 44%<sup>3-5</sup>—at least twice that among elderly people generally. Of particular note is their fourfold excess of the most severe forms of depression.<sup>6</sup> Despite the increased prevalence and severity of depression among elderly people receiving home care, few receive appropriate management. In a recent study only 16% of those with depression received antidepressants,<sup>6</sup> the same as elderly people in general.<sup>7, 8</sup>

Lack of social support, disability, and chronic illness are poor prognostic factors in depression,<sup>9-11</sup> which suggests that depression would be difficult to treat in

elderly people receiving home care. However, active treatment needs to be considered for three main reasons. Firstly, depression has serious consequences: the quality of life is drastically decreased and mortality increased.<sup>12</sup> Secondly, depression itself may limit activity,<sup>6, 13</sup> so alleviating depression might improve function and free scarce services for others. Thirdly, the NHS and Community Care Act 1990 charges social services with assessing the need for further specialist evaluation and intervention and arranging it if necessary. We therefore tested whether this apparent pessimism about the treatability of depression in this population is warranted in a randomised controlled trial of intervention by a psychogeriatric team.

## Subjects and methods

### SUBJECTS

The study took place in Lewisham, an inner city London borough. Its protocol was approved by the local ethics committees. All those who were aged 65 or more and were receiving home care but were not currently under psychiatric care were eligible for inclusion. Power calculations before starting the study (based on 30% of the control group and 60% in the intervention group recovering from depression, with a 5% significance level and a power of 80%) indicated that 30 people would be needed in each of the two groups (intervention and control).

### RECRUITMENT

Elderly people eligible for entry to the study were screened by means of the Selfcare(d) questionnaire, which has 12 items and is a self rating depression questionnaire developed for use in elderly populations.<sup>14</sup> Those scoring 8 or more were visited at home and asked for their consent to an assessment that included demographic data, mental state, physical illness, limitations to activity, and social support.<sup>15</sup> The ratings of mental state included the geriatric mental state examination, a semi-structured psychiatric diagnostic interview,<sup>16, 17</sup> and the Montgomery Asberg depression rating scale, an observer rated depression scale sensitive to change.<sup>18</sup>

### DEFINITION OF DEPRESSION

The geriatric mental state/AGECAT system was selected for case definition because it is the most comprehensive and best validated research assessment of mental state in elderly people. (AGECAT stands for automatic geriatric examination for computer assisted taxonomy.) Psychiatric diagnoses are generated by the AGECAT computer algorithm. These diagnoses have been extensively validated against clinical diagnoses and the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition (DSM-III)<sup>19</sup> with good levels of agreement.<sup>17, 20, 21</sup>

### RANDOMISATION

Subjects were randomised to the intervention or control group on a 1:1 basis by means of a computer generated three digit random number (odd numbers to the intervention group).

### MANAGEMENT OF INTERVENTION GROUP

The intervention was designed to be as naturalistic as possible to maximise generalisability. Members of the intervention group were treated in the same way as any-

Section of Epidemiology and General Practice, Institute of Psychiatry, London SE5 8AF

Sube Banerjee, lecturer in psychiatry  
Anthony H Mann, professor of epidemiological psychiatry

Section of Old Age Psychiatry, United Medical and Dental Schools of Guy's and St Thomas's Hospitals, Guy's Campus, Guy's Hospital, London SE1 9RT

Kim Shamash, senior registrar  
Alastair J D Macdonald, senior lecturer in old age psychiatry

Correspondence to:  
Dr Banerjee.

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one referred to the psychogeriatric team in the catchment area. Each case was presented at a multidisciplinary team meeting which included community psychiatric nurses, occupational therapists, senior and junior medical staff, a social worker, and a psychologist. A management plan was formulated by the team for each subject on an individual basis, as for any referral to the team.<sup>22</sup> This could include any combination of physical interventions—for example, prescription of antidepressants, physical review—psychological interventions—for example, bereavement counselling, family work—and social interventions—for example, referral to a day centre, benefit check.

One of us (SB) acted as each person's keyworker. All members of the team, whether medically qualified or not, may be assigned any case referred. The study population differed in their management only by their all being assigned a doctor. Subjects were visited in their own homes and progress regularly reviewed by the team.

#### MANAGEMENT OF CONTROL GROUP

The control group received general practitioner care. Letters were sent to general practitioners to say that their patient was participating in the study as a control but that this should not affect their management of him or her. The letter also reiterated that patients could be referred as needed and that they would be accepted by the psychogeriatric team as normal if they were referred.

#### FOLLOW UP

Six months after recruitment subjects were reassessed in their own homes by one of us (KS), blind to the group to which the subject had been randomly allocated. The ratings completed at the initial interview were repeated. Any member of the control group who remained depressed at follow up was referred directly to the psychogeriatric team.

#### STATISTICAL ANALYSIS

We carried out intention to treat analyses. We calculated the proportion of people recovering from depression in each group. Recovery from depression was defined as changing from an AGE-CAT case of depression at recruitment to a non-case at follow up. We calculated differences in the change in the AGE-CAT depression ratings and score on the Montgomery Asberg depression rating scale during the study. Depression was deemed to have improved if the AGE-CAT depression rating was lower at follow up than recruitment, to be the same if the rating was unchanged, and to be worse if it increased. We calculated 95% confidence intervals for the differences in proportions or change in score.<sup>23</sup>

To evaluate the effect of intervention and allow for possible confounding, we carried out logistic regression modelling with EGRET.<sup>24</sup> Only subjects completing the study were included, the outcome being recovery from depression. This approach allowed the independent effect of each variable in the model on recovery to be estimated and controlled for the effect of all others in the model. Odds ratios with 95% confidence intervals were calculated. To estimate the effect of antidepressant prescription, the model was then extended to include their consumption at follow up.

## Results

#### RECRUITMENT AND RANDOMISATION

A total of 441 subjects were eligible for the study, and 317 (72%) completed the Selfcare(d) screening. Twenty four subjects had died or moved and 100 were unwilling or unable to complete it. Overall, 180 subjects scored above 8; 154 of them were interviewed, nine having died or moved and 17 having refused to give informed consent. Sixty nine subjects with AGE-CAT cases

**Table 1—Baseline characteristics of the intervention and control group. Values are numbers (percentages) of subjects unless stated otherwise**

	Intervention group (n = 33)	Control group (n = 36)
<b>Demographic data</b>		
Female	28 (85)	29 (81)
Mean (SD) age (years)	80.4 (6.7)	81.0 (6.9)
Age distribution:		
65-74	6 (18)	8 (22)
75-84	17 (52)	18 (50)
≥85	10 (30)	10 (28)
Marital status:		
Single	2 (6)	7 (19)
Married	6 (18)	5 (14)
Widowed	22 (67)	22 (61)
Divorced	3 (9)	2 (6)
Composition of household:		
Lives alone	27 (82)	27 (75)
With spouse only	5 (15)	4 (11)
With another person	1 (3)	5 (14)
<b>Depression</b>		
Geriatric mental state/AGECAT output:		
Depressive neurosis level 3	15 (46)	18 (50)
Depressive neurosis level 4	6 (18)	7 (19)
Depressive psychosis level 3	4 (12)	7 (19)
Depressive psychosis level 4/5	8 (24)	5 (11)
Mean (SD) MADRS score	27.5 (6.2)	25.1 (6.3)
First episode	18 (55)	28 (78)
Present episode lasting more than		
1 year	26 (79)	26 (72)
<b>Physical and social impairment (mean (SD) score)</b>		
Social resources	3.8 (1.4)	3.5 (1.2)
Physical health	4.2 (0.7)	4.3 (0.7)
Activity limitation	3.8 (0.8)	3.9 (0.8)

AGECAT = automatic geriatric examination for computer assisted taxonomy.

MADRS = Montgomery Asberg depression rating scale.

of depression were identified and entered into the study. Thirty six were randomly allocated to the control group and 33 to the intervention group. Baseline characteristics are presented in table 1. There were no significant differences in the distribution of these variables between the two groups.

#### CLINICAL OUTCOME

At six month follow up four of the intervention group and three of the control group had died, but none had committed suicide or died of any cause attributable to depression or psychiatric treatment. One of the control group declined follow up. Table 2 presents the six month outcome of depression. Significant beneficial effects of randomisation to the intervention group were apparent using each of the three measures of change in depression.

The logistic regression analysis is summarised in table 3. No significant interactions were identified. After the effects of all variables in the model were allowed for, the powerful treatment effect persisted (odds ratio 9.0 (95% confidence interval 2.0 to 41.5). Increasing depression severity and first episode of depression predicted worse outcome at six months. When antidepressant use at follow up was added to the model there was no significant effect (likelihood ratio statistic 1.86, df = 1, P = 0.173). The multiply adjusted odds ratio for the effect of antidepressants was 0.3 (0.0 to 1.9).

#### MANAGEMENT OF DEPRESSION

Three (9%) of the control group and four (14%) of the intervention group were receiving antidepressants at recruitment compared with five (16%) and 20 (69%) respectively at follow up. During the study two (6%) of the control group were referred to the psychiatric team and three of the intervention and one of the control group were admitted to psychiatric units.

**Table 2—Outcome of depression at six month follow up in intervention and control groups**

Variable	Intervention group (n = 33)	Control group (n = 36)	% Difference (95% confidence interval)
Case to non-case*:			
Recovered	19 (58)	9 (25)	33 (10 to 55)
Change in score*:			
Improved	27 (82)	17 (47)	35 (14 to 56)
Same	2 (6)	9 (25)	-19 (-35 to -3)
Worse	0	6 (17)	-17 (-29 to -5)
Follow up incomplete:			
Died	4 (12)	3 (8)	4 (-10 to 18)
Refused	0	1 (3)	-3 (-8 to -3)
Change in mean (SD) MADRS score	-18.3 (6.5)	-11.6 (6.4)	-7 (-10 to -3)†

MADRS = Montgomery Asberg depression rating scale.

\*Geriatric mental state/AGECAT system.

†Refers to points difference rather than percentage difference.

**Table 3—Adjusted odds ratio (95% confidence intervals)\* in logistic regression analysis of association of assignment to intervention group with recovery from depression at six month follow up**

Variable	Allowing for confounding	P value	Including antidepressant use at follow up	P value
Intervention group	9.0 (2.0 to 41.5)	0.005	20.1 (2.5 to 158.9)	0.004
First episode of depression	0.2 (0.0 to 0.7)	0.015	0.1 (0.0 to 0.6)	0.011
AGECAT at entry:				
dn3	1.0		1.0	
dn4	0.2 (0.0 to 1.7)	0.156	0.2 (0.0 to 1.7)	0.157
dp3	0.9 (0.2 to 4.8)	0.875	0.7 (0.1 to 4.1)	0.712
dp4/5	0.1 (0.0 to 0.6)	0.016	0.0 (0.0 to 0.5)	0.013
Antidepressant use at follow up			0.3 (0.0 to 1.9)	0.194

\*Adjusted for all variables shown and also for social resources, physical health, and activity limitation.

**Table 4—Management of depression in the 29 subjects in the intervention group completing study over six months. Values are numbers (percentages) of subjects**

Intervention	Proposed by team	Completed by subject*
Antidepressant treatment:		
Started	23 (79)	18 (78)
Dose increased	2 (7)	2 (100)
Physical review	22 (76)	20 (91)
Social measures	20 (69)	15 (75)
Counselling or psychotherapy	17 (59)	15 (88)
Family work	10 (34)	8 (80)
Outreach referral	7 (24)	3 (43)
Activities of daily living assessment	6 (21)	6 (100)

\*Percentage of proposed interventions completed.

Table 4 presents a summary of the management plans formulated for the intervention group and the proportion of these interventions completed. When more than one intervention was proposed in a category, the intervention was regarded as completed if any were successfully introduced. Counselling or psychotherapy includes all specific psychological interventions but not the supportive exchanges which all subjects received. Reviews of physical state were carried out by primary or secondary care services as appropriate. In all but one case the prescription of antidepressants was carried out by the patient's general practitioner after advice from the team.

### Discussion

Psychiatric treatment was substantially more effective than general practitioner care alone in treating depression in this disabled elderly population. Therapeutic pessimism concerning the treatability of depression in disabled elderly people receiving home care is not justified.

### POSSIBLE LIMITATIONS

There is the possibility of non-response bias; if the non-responders differed from the responders in terms of depression or prognostic factors, then the generalisability of the study findings might be compromised. The non-responders to the first stage screening included people who were unable to complete the questionnaire because of severe physical disorder and dementia. Ten of the 17 who withdrew at the second stage were excluded because they were cognitively impaired to the extent that they could not give informed consent. However, this is unlikely to have introduced bias because AGECAAT operates a hierarchy whereby people with dementia and depression are assigned an organic rather than a depressive diagnosis. Such cases would therefore not have met the entry criteria for the intervention study. Nevertheless, the study findings may not be generalisable to subjects with both depression and dementia.

The study was completed in subjects receiving home care rather than the wider disabled elderly community of which the home care population is a part. Subjects receiving home care make up a large and important group in terms of numbers and use of services, but the results of this study may not be directly generalisable to those with equivalent disability who are maintained in the community without home care.

### INTERVENTION

The study has methodological strengths: the definitions of depression were stringent and based on clinical criteria; follow up was blind to group membership; the size of the treatment effect indicates a clinically significant benefit; and the persistence of the positive finding after logistic regression to control for confounding adds to its validity. The treatment effect observed in this study was greater than that reported for intervention by community nurses in the general elderly population<sup>11</sup> and for elderly patients attending their general practitioner.<sup>25</sup> This may be because of tighter case definition and greater success in implementing management plans. Although the intervention group all had a doctor as their keyworker, we think that this is the most naturalistic controlled trial of the treatment of depression in elderly people to date and the first, so far as we know, to focus on a disabled population.

The natural course of depression in this group seems bleak: only a quarter of the control group recovered in six months. The finding that the most severe disorders were least likely to recover is consistent with the results of other studies.<sup>9, 26</sup> However, the fairly poor prognosis for the first episode of depression, which persisted even after controlling for its duration (data not shown), was unexpected. This population may have a particular excess of irreversible physical or social causal factors precipitating or perpetuating depressive disorder, so limiting recovery from the first episode of depression. The effect observed seem not to have been solely a function of antidepressant prescription and compliance. However, the study was designed as an evaluation of team intervention as a whole rather than as a drug trial, and therefore any consideration of the impact of individual elements of the intervention is limited.

### IMPLICATIONS

The study has practical implications. The intervention approximated to a naturalistic process, being formulated and implemented through a psychogeriatric team in the same way as for anyone referred to that team. Although the keyworker for the intervention group was always a doctor, he implemented a plan formulated by the team and made no more visits than other team members. Our results were therefore achieved in what might be considered optimum conditions. This design was adopted to investigate whether anything could be done for depression in this group.

## Key messages

- The prevalence and severity of depression are greater in disabled elderly people receiving home care from their local authority than in elderly people in the general population, but few receive appropriate management
- This randomised controlled trial evaluated whether intervention by a psychiatric team would improve depression in elderly people receiving home care
- Overall, 58% of those receiving the intervention had recovered from their depression six months later compared with only 25% of those receiving unsupplemented general practitioner care
- These results should be achievable by other community old age psychiatry services
- The current comparative inaction on the part of health and social services needs to be changed

Further work is needed to confirm that similar benefits can be achieved by other psychogeriatric services working entirely normally. In addition, the degree to which these people with depression can be successfully managed by their primary health care team needs to be investigated.

No formal economic evaluation was carried out, but the only additional resource required by the team to achieve the effect was an extra half time doctor. Further work is needed to investigate which are the most important components of the intervention. An important development of this work may be the formulation and evaluation of management protocols and training packages for members of primary and secondary health care teams and social services to aid the recognition, assessment, and treatment of depression in this housebound group.

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## ANY QUESTIONS

*In view of the forecast that there will be a considerable increase in jellyfish stings this year what is the best treatment?*

Of the true jellyfish in British waters, only *Pelagia noctiluca* (night light jellyfish), *Chrysaora* (compass jellyfish), and *Cyanea* species usually cause stings (SM Turk, personal communication). The hydrozoan *Physalia physalis* (Portuguese man o'war) is an infrequent but potentially dangerous visitor to British waters. True jellyfish have round bells whereas *Ph physalis* is recognised by its boat shaped blue or pinkish float and its stings (characterised by interrupted weals). Serious envenomation seems rare in Britain; some patients attend casualty departments, but few are admitted to hospital. For these reasons the British literature is scanty and most advice is anecdotal or extrapolated from American and Australian literature.

Jellyfish toxins are complex species specific mixtures of peptides. Pain is the first most prominent symptom and may cause a swimmer to get into difficulties. Weals occur early and may occasionally progress to vesicles or ulcers. More serious systemic effects may be toxic or

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anaphylactic, but differentiation is difficult. The severe local neuropathies and vascular effects reported elsewhere do not seem to have been recorded in Britain. Immediate management is to remove the patient from the water, the rescuer taking care to avoid being stung. Unless immediate resuscitation is needed it is important to prevent further stings from adherent undischarged nematocysts. Vinegar inactivates nematocysts from many species: although there is debate about its effect on *Ph physalis*, it should be used as a douse if available.<sup>1</sup> Remaining tentacles may be picked off; rubbing should be avoided. Cold packs give effective local pain relief.<sup>2</sup> Oral analgesia is appropriate, and antihistamines are logical but have not been evaluated. Anaphylaxis is treated in the usual way with adrenaline and oxygen.—  
D F LEVINE is a consultant physician in Penzance

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