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## Clinical effectiveness and cost-effectiveness of collaborative care for depression in UK primary care (CADET): a cluster randomised controlled trial

*David A Richards, Peter Bower, Carolyn Chew-Graham, Linda Gask, Karina Lovell, John Cape, Stephen Pilling, Ricardo Araya, David Kessler, Michael Barkham, J Martin Bland, Simon Gilbody, Colin Green, Glyn Lewis, Chris Manning, Evangelos Kontopantelis, Jacqueline J Hill, Adwoa Hughes-Morley and Abigail Russell*



**National Institute for  
Health Research**



# **Clinical effectiveness and cost-effectiveness of collaborative care for depression in UK primary care (CADET): a cluster randomised controlled trial**

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# Abstract

## Clinical effectiveness and cost-effectiveness of collaborative care for depression in UK primary care (CADET): a cluster randomised controlled trial

David A Richards,<sup>1\*</sup> Peter Bower,<sup>2</sup> Carolyn Chew-Graham,<sup>3</sup> Linda Gask,<sup>2</sup> Karina Lovell,<sup>4</sup> John Cape,<sup>5</sup> Stephen Pilling,<sup>6</sup> Ricardo Araya,<sup>7</sup> David Kessler,<sup>8</sup> Michael Barkham,<sup>9</sup> J Martin Bland,<sup>10</sup> Simon Gilbody,<sup>10</sup> Colin Green,<sup>1</sup> Glyn Lewis,<sup>11</sup> Chris Manning,<sup>12</sup> Evangelos Kontopantelis,<sup>2</sup> Jacqueline J Hill,<sup>13</sup> Adwoa Hughes-Morley<sup>2</sup> and Abigail Russell<sup>1</sup>

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**Background:** Collaborative care is effective for depression management in the USA. There is little UK evidence on its clinical effectiveness and cost-effectiveness.

**Objective:** To determine the clinical effectiveness and cost-effectiveness of collaborative care compared with usual care in the management of patients with moderate to severe depression.

**Design:** Cluster randomised controlled trial.

**Setting:** UK primary care practices ( $n = 51$ ) in three UK primary care districts.

**Participants:** A total of 581 adults aged  $\geq 18$  years in general practice with a current *International Classification of Diseases*, Tenth Edition depressive episode, excluding acutely suicidal people, those with psychosis, bipolar disorder or low mood associated with bereavement, those whose primary presentation was substance abuse and those receiving psychological treatment.

**Interventions:** Collaborative care: 14 weeks of 6–12 telephone contacts by care managers; mental health specialist supervision, including depression education, medication management, behavioural activation, relapse prevention and primary care liaison. Usual care was general practitioner standard practice.

**Main outcome measures:** Blinded researchers collected depression [Patient Health Questionnaire-9 (PHQ-9)], anxiety (General Anxiety Disorder-7) and quality of life (European Quality of Life-5 Dimensions three-level version), Short Form questionnaire-36 items) outcomes at 4, 12 and 36 months, satisfaction (Client Satisfaction Questionnaire-8) outcomes at 4 months and treatment and service use costs at 12 months.

**Results:** In total, 276 and 305 participants were randomised to collaborative care and usual care respectively. Collaborative care participants had a mean depression score that was 1.33 PHQ-9 points lower [ $n = 230$ ; 95% confidence interval (CI) 0.35 to 2.31;  $p = 0.009$ ] than that of participants in usual care at 4 months and 1.36 PHQ-9 points lower ( $n = 275$ ; 95% CI 0.07 to 2.64;  $p = 0.04$ ) at 12 months after adjustment for baseline depression (effect size 0.28, 95% CI 0.01 to 0.52; odds ratio for recovery 1.88, 95% CI 1.28 to 2.75; number needed to treat 6.5). Quality of mental health but not physical health was significantly better for collaborative care at 4 months but not at 12 months. There was no difference for anxiety. Participants receiving collaborative care were significantly more satisfied with treatment. Differences between groups had disappeared at 36 months. Collaborative care had a mean cost of £272.50 per participant with similar health and social care service use between collaborative care and usual care. Collaborative care offered a mean incremental gain of 0.02 (95% CI –0.02 to 0.06) quality-adjusted life-years (QALYs) over 12 months at a mean incremental cost of £270.72 (95% CI –£202.98 to £886.04) and had an estimated mean cost per QALY of £14,248, which is below current UK willingness-to-pay thresholds. Sensitivity analyses including informal care costs indicated that collaborative care is expected to be less costly and more effective. The amount of participant behavioural activation was the only effect mediator.

**Conclusions:** Collaborative care improves depression up to 12 months after initiation of the intervention, is preferred by patients over usual care, offers health gains at a relatively low cost, is cost-effective compared with usual care and is mediated by patient activation. Supervision was by expert clinicians and of short duration and more intensive therapy may have improved outcomes. In addition, one participant requiring inpatient treatment incurred very significant costs and substantially inflated our cost per QALY estimate. Future work should test enhanced intervention content not collaborative care per se.

**Trial registration:** Current Controlled Trials ISRCTN32829227.

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**BOX 1** The four key elements of normalisation process theory

**35**



## List of abbreviations

AfC	Agenda for Change	MRC	Medical Research Council
CADET	Collaborative DEpression Trial	NICE	National Institute for Health and Care Excellence
CEAC	cost-effectiveness acceptability curve	NIHR	National Institute for Health Research
CI	confidence interval	NRES	National Research Ethics Service
CIS-R	Clinical Interview Schedule – Revised	OR	odds ratio
CONSORT	Consolidated Standards of Reporting Trials	PC-MIS	patient case management information system
CSO	clinical studies officer	PCS	physical component summary (of the SF-36)
CSQ-8	Client Satisfaction Questionnaire-8	PenCTU	Peninsula Clinical Trails Unit
EQ-5D-3L	European Quality of Life-5 Dimensions three-level version	PHQ-9	Patient Health Questionnaire-9
GAD-7	General Anxiety Disorder-7	PPI	patient and public involvement
GP	general practitioner	QALY	quality-adjusted life-year
HADS	Hospital Anxiety and Depression Scale	RR	relative risk
IAPT	Improving Access to Psychological Therapies	SD	standard deviation
ICC	intracluster correlation	SEM	structural equation modelling
ICD-10	<i>International Classification of Diseases</i> , Tenth Edition	SF-36	Short Form questionnaire-36 items
ICER	incremental cost-effectiveness ratio	SF-6D	Short Form questionnaire-6 dimensions
IMD	Index of Multiple Deprivation	SMD	standardised mean difference
MCS	mental component summary (of the SF-36)	TMG	Trial Management Group
		TSC	Trial Steering Committee



## Plain English summary

Depression causes misery to many people and is a major health problem in the UK. Although effective treatments are available, many people do not have access to them and we are always looking for treatments that are easier and quicker for patients to receive. New ways of organising treatment have been developed in the USA but we do not know if they are better than usual care in the UK.

In this study we compared a way of organising treatment for depression called collaborative care with the usual care given by general practitioners (GPs). Collaborative care involves a care manager talking to patients regularly on the telephone to give advice about depression and increasing patient activity, helping people make the best use of medical treatments from their GP and co-ordinating care between GPs and specialists.

We found that the people seeing a care manager improved more than those receiving usual care. These results were seen at 4 months and 12 months after collaborative care started. We also found that collaborative care was affordable to the NHS. When we followed up people after 3 years we no longer found a difference between the groups. What seemed to make collaborative care work best was when patients were successful in carrying out more routine, pleasurable and necessary activities in their lives.

We recommend that any further research should concentrate on improving the treatments that care managers can use to help people as we think that the collaborative care system itself is effective and affordable.





# Scientific summary

## Background

Depression results in substantial disability and is recognised as a major health problem; it is currently the second largest cause of global disability. Around 350 million people are impacted by depression across the world and each year up to 5.8% of men and 9.5% of women will suffer from an episode of depression. Depression has a very significant impact on physical health, occupational functioning and the social lives of sufferers. Often anxiety is also present, causing further disability.

A systematic review of 36 organisational intervention studies concluded that simple models such as guidelines and practitioner education were ineffective in improving the management of depression. However, evidence is stronger on the role of organisational interventions in improving the management of a range of chronic conditions. The application of organisational strategies to the management of depression includes 'collaborative care', a complex intervention developed in the USA. Previous reviews of the management of depression have identified collaborative care as the most effective of organisational approaches.

Collaborative care incorporates a multiprofessional approach to patient care; a structured management plan; scheduled patient follow-ups; and enhanced interprofessional communication. In practice, this is achieved by the introduction of a care manager into primary care, responsible for delivering care to depressed patients under supervision from a specialist and for liaising between primary care clinicians and mental health specialists. Systematic reviews demonstrate that collaborative care improves depression outcomes, with some studies showing benefit for up to 5 years.

In 2008, at the commencement of the CollAborative DEpression Trial (CADET), collaborative care had generally been developed and tested in the USA within managed health-care settings. The limited non-US data and the relatively small effect size in trials of patients with depression alone led the UK National Institute for Health and Care Excellence (NICE) to issue a research recommendation that 'The efficacy of organisational interventions, such as chronic disease management programmes or other programmes of enhanced care for depression, should be tested in large-scale multicentre trials in the NHS'. This provided us with the rationale to undertake a fully powered UK evaluation of collaborative care. Prior to this trial in a Phase II test, we found preliminary evidence that collaborative care adapted to the UK was acceptable to patients and clinicians and may be effective outside the USA, but that a cluster randomised controlled trial was required to guard against potential contamination between trial arms.

## Objectives

- To determine the clinical effectiveness and cost-effectiveness of collaborative care compared with usual care in the management of patients with moderate to severe depression.
- To investigate the potential moderators of differential participant response, the possible mechanisms of symptom change and the process of implementation of collaborative care.

## Design

This study was a cluster randomised controlled trial.

## Setting

This study took place in 51 UK primary care practices in three UK primary care districts.

## Participants

A total of 581 adults aged  $\geq 18$  years who met *International Classification of Diseases*, Tenth Edition (ICD-10) criteria for a depressive episode on the revised Clinical Interview Schedule were included in the trial. We excluded acutely suicidal patients and those with psychosis or type I or type II bipolar disorder, patients whose low mood was associated with bereavement or whose primary presenting problem was alcohol or drug abuse and those receiving psychological treatment for their depression from specialist mental health services. We identified potentially eligible participants by searching general practice computerised case records for patients with depression.

## Randomisation

We randomly allocated primary care practices to either collaborative care or treatment as usual as they were recruited into the trial, minimised within sites by Index of Multiple Deprivation (IMD) rank, number of general practitioners (GPs) and practice size.

## Allocation concealment

The allocation sequence was concealed from researchers who recruited practices and was administered centrally by the trial statistician using Minim ([www.sghms.ac.uk/depts/phs/guide/randser.htm](http://www.sghms.ac.uk/depts/phs/guide/randser.htm)). The Peninsula Clinical Trials Unit (PenCTU) remotely managed participant identification and the trial databases.

## Blinding

Research workers blind to practice allocation assessed participants for eligibility and collected outcome measures using participant self-report questionnaires to minimise the effect of potential unblinding. Because of the nature of the intervention, it was not possible to blind participants, care managers or GPs to allocations.

## Interventions

### *Collaborative care*

Developed in our previous studies, collaborative care was delivered by a team of care managers, supervised by mental health specialists. Supervision of care managers for their trial work was provided by psychiatrists and psychological therapists from the trial team. During sessions, care managers:

- assessed participants' views of depression and their attitudes to and concordance with psychosocial and pharmacological treatments
- negotiated shared treatment decisions with participants
- assisted participants to manage antidepressant medication if prescribed
- delivered a brief low-intensity psychosocial intervention in the form of behavioural activation
- provided participants with relapse prevention advice.

### **Usual care**

Participants received care from their GP according to usual clinical practice, which for these participants included treatment with antidepressants and referral for other treatments. We recorded every aspect of usual care but did not specify a treatment programme, in line with the pragmatic nature of this trial.

## **Measures**

### **Baseline information**

We collected demographic data at baseline through a purposely designed form. We recorded data on sex, age, ethnic origin, education level, employment, marital status, presence or absence of antidepressant treatment, previous history of depression, severity of depression, any secondary diagnosis of an anxiety disorder, any long-standing physical illness, health and social care resource use by participants over the previous 6 months and informal care from friends/relatives, and patient costs over the previous 6 months.

### **Primary clinical outcome**

Our primary clinical outcome was individual participant depression severity measured by the [Patient Health Questionnaire-9 (PHQ-9)] at 4 months.

### **Secondary clinical outcomes**

Our secondary outcomes were the PHQ-9 at 12 months, quality of life [Short Form questionnaire-36 items (SF-36)], worry and anxiety [General Anxiety Disorder-7 (GAD-7)] at 4 and 12 months, health state values (health-related quality-of-life) [European Quality of Life-5 Dimensions three-level version (EQ-5D-3L)] at 4 and 12 months and participant satisfaction (Client Satisfaction Questionnaire-8) at 4 months. We also collected PHQ-9, GAD-7 and SF-36 data at 36 months.

### **Economic outcomes**

Our primary economic end point was the cost per quality-adjusted life-year (QALY) at 12 months' follow-up. We derived these QALY estimates using EQ-5D-3L trial data from the baseline and 4- and 12-month assessments, applying the area under the curve approach, a recognised approach for assessing repeated measures. We collected resource use associated with delivery of the collaborative care intervention within the trial, consisting of care manager contact time and supervision of care managers by specialists. We collected other health and social care resource use by participants over the 12-month follow-up and data on informal care from friends/relatives and patient costs using self-report, interviewer-administered questionnaires (at 4 and 12 months, covering the previous 4-month and 8-month time periods, respectively).

### **Process analysis outcomes**

At baseline we recorded six possible moderators: measures of patient attitudes towards antidepressant medication, attitudes towards behavioural activation, depression severity (PHQ-9), history of depression (number of previous episodes), physical health (comorbidity) and socioeconomic status using the postcode for participants' residence to obtain an IMD score at the lower super output area level. We measured participants' adherence to antidepressant medication and level of behavioural activation at 4 and 12 months through self-report of medication adherence and the Behavioural Activation for Depression Scale – Short Form. We conducted face-to-face interviews with care managers and supervisors involved in delivering and supervising collaborative care and undertook telephone interviews with a sample of GPs from intervention practices. We used routinely collected data from session audio tapes collected by care managers for supervision to analyse the process of implementation.

### Sample size

We powered the trial at 90% ( $\alpha = 0.05$ ) to detect an effect size of 0.4, which we regarded as a clinically meaningful difference between interventions. This figure was within the 95% confidence interval (CI) of the effect predicted from data collected during our pilot work (effect size 0.63, 95% CI 0.18 to 1.07). To detect this difference would have required 132 participants per group in a two-armed participant-randomised trial. For our cluster trial, with 12 participants per primary care cluster and an intracluster correlation (ICC) of 0.06 from our pilot trial, the design effect was 1.65 leading to a sample size of 440. To follow up 440 participants, we aimed to randomise 550 participants (anticipating 20% attrition). Because recruitment would not be uniform between practices, we aimed to recruit 48 practices with up to 14 participants in a practice.

## Statistical methods and analyses

### Clinical outcomes

We undertook intention-to-treat analyses for all outcomes, reported in accordance with Consolidated Standards of Reporting Trials (CONSORT) guidelines. All analyses were undertaken in Stata 10.1 (StataCorp LP, College Station, TX, USA), following a predefined analysis plan agreed with the Trial Steering Committee. We analysed outcome data at 4, 12 and 36 months by ordinary least squares or logistic regression, allowing for clustering by use of robust standard errors, adjusting at the cluster level for minimisation variables and site and at the individual level for age and, when appropriate, the baseline measurement of the variable. We analysed the effect of missing data as a sensitivity analysis, estimated by chained regression equations multiple imputation using all available scale clinical scores, age, sex, practice variables, site and treatment group.

### Economic outcomes

We adopted the perspective of the UK NHS and Personal Social Services (third-party payer perspective), with a broader participant and carer perspective considered in sensitivity analyses. We estimated the costs associated with health and social care service use and the additional cost for delivery of the collaborative care intervention and estimated QALYs. The primary economic analyses estimated mean cost and mean QALYs by treatment allocation and used prespecified covariates for age (at the individual level) and deprivation (IMD), site and practice size (at the cluster level). We used a multilevel regression model for the primary analyses, to consider the hierarchical (clustered) nature of the data, presenting the ICC for the main analyses.

### Process data

To explore the role of moderators, we analysed the direct effects of our six baseline covariates on depression severity (PHQ-9) at 4 and 12 months using multilevel multiple linear regression. Potential mediating effects of collaborative care were investigated using structural equation modelling in Stata. We used an iterative approach using constant comparison techniques to analyse interview transcripts. Following the thematic analysis we conducted a further theory-driven analysis of the data guided by the four main constructs of normalisation process theory. We analysed the implementation of the intervention by transcription and analysis of audio files using a thematic analysis similar to that for the interview data.

## Results

Collaborative care participants had a mean depression score that was 1.33 PHQ-9 points lower (95% CI 0.35 to 2.31;  $p = 0.009$ ) than that of participants in usual care at 4 months and 1.36 PHQ-9 points lower (95% CI 0.07 to 2.64;  $p = 0.04$ ) at 12 months after adjustment for baseline depression. Quality of mental health but not physical health was significantly better for collaborative care at 4 months but not 12 months and there was no difference for anxiety. Participants receiving collaborative care were significantly more satisfied with treatment. There were no differences between groups at 36 months' follow-up.

Collaborative care had a mean cost of £272.50 per participant with similar health and social care service use between collaborative care and usual care. Collaborative care offered a mean incremental gain of 0.02 (95% CI -0.02 to 0.06) QALYs over 12 months, at a mean incremental cost of £270.72 (95% CI -£202.98 to £886.04) and resulted in an estimated mean cost per QALY of £14,248. When costs associated with informal care were considered in sensitivity analyses collaborative care is expected to be less costly and more effective (-£1114, 95% CI -£3366 to £1117).

There was little evidence of overall moderation of depression severity at 4 months ( $\chi^2 = 10.01$ ;  $p = 0.35$ ) or 12 months ( $\chi^2 = 5.63$ ;  $p = 0.78$ ). The effect of collaborative care at 4 and 12 months was mediated fully by behavioural activation at 4 months (coefficients: 4.00, 95% CI 1.46 to 6.55 and 3.86, 95% CI 1.30 to 6.42, respectively) with no mediation by medication adherence (coefficients: -0.03, 95% CI -0.14 to 0.08 and -0.01, 95% CI -0.12 to 0.17, respectively). We found a similar but weaker pattern of mediation by 12-month variables on outcomes at 12 months.

Supervisors and care managers demonstrated coherence in their understanding of collaborative care and consequently reported good levels of cognitive participation and collective action regarding delivering and supervising the intervention. GPs showed limited understanding of the collaborative care framework and reported limited collaboration with care managers. All participants identified the potential or experienced benefits of a collaborative approach to depression management and were able to discuss ways in which collaboration can be facilitated.

We derived three themes on the process of treatment delivery: (1) engaging the patient, with care managers making efforts to develop a therapeutic relationship with participants, (2) adopting a counselling model, with care managers moving beyond simply being empathic to engage the participant and towards something more recognisable as counselling and (3) variations in the delivery of behavioural activation describing variations in the adherence of the care managers to the behavioural activation protocol.

## Conclusions

Collaborative care improves depression up to 12 months after initiation of the intervention, is preferred by patients over usual care, offers health gains at a relatively low cost, is cost-effective compared with usual care and is mediated by patient activation. Future work should test enhanced intervention content not collaborative care per se.

We found that collaborative care improved depression at our primary end point of 4 months compared with usual care, an effect that persisted up to 12 months. Collaborative care is cost-effective when service commissioners are willing to pay up to £20,000 per QALY gained and was preferred by patients over usual care. The differences in clinical outcomes between participants treated by collaborative care and participants treated by usual care were no longer apparent at 36 months' follow-up. In our process analyses we have demonstrated that only one variable, the amount of behavioural activation undertaken by participants, predicted better outcomes, despite the fact that there was considerable variation in how behavioural activation was both explained and operationalised by care managers in sessions. We also found that care managers and supervisors regarded collaborative care as coherent but that the collective action required to implement elements of collaborative care was made difficult by GPs' lack of engagement with the collaborative care framework.

There is now evidence to answer NICE's uncertainty in that collaborative care is a clinically effective and cost-effective system leading to better short- and medium-term (but not long-term) effects compared with usual care that could be applied to the UK NHS. Future trials should test enhancements of the basic collaborative care model by developing, examining and delivering better treatments *within* the effective collaborative care organisational framework, or improve the delivery of existing treatments, rather than test collaborative care per se, given that the effects of collaborative care are now firmly established.

## **Trial registration**

This trial is registered as ISRCTN32829227.

## **Funding**

Funding for this study was provided by the Medical Research Council (MRC) (G0701013) and managed by the National Institute for Health Research (NIHR) on behalf of the MRC–NIHR partnership.

# Chapter 1 Introduction

This chapter utilises material from three<sup>1-3</sup> of the four Open Access articles previously published by the research team in accordance with the terms of the Creative Commons Attribution licences (CC BY 2.0, CC BY 3.0 and CC BY 4.0).

## Depression

Depression results in substantial disability and is recognised as a major health problem; it is currently the second largest cause of global disability.<sup>4</sup> Around 350 million people are impacted by depression across the world and each year up to 5.8% of men and 9.5% of women will suffer from an episode of depression.<sup>5</sup> Depression has a very significant impact on physical health, occupational functioning and the social lives of sufferers.<sup>6</sup> Often anxiety is also present, causing further disability.<sup>7</sup>

Depression is the acknowledged reason for two-thirds of all suicides.<sup>8</sup> The nature of depression is that it can frequently be chronic, with regular bouts of relapse and subsequent new episodes. After one depressive episode, around 50% of people will experience additional episodes. The risk of subsequent relapse is 70% after a second bout of depression and as much as 90% following three or more episodes.<sup>9</sup> Among other diagnostic criteria, depressive symptomatology incorporates depressed mood, loss of interest or pleasure in activities, insomnia or sleeping too much and fatigue or loss of energy.<sup>10</sup>

Although effective pharmacological and psychological treatments for depression are available, people are often treated with a less than optimal programme. Internationally, there is often poor patient adherence to pharmacological treatment<sup>11</sup> and further problems caused by organisational barriers between generalists and specialist mental health professionals.<sup>12,13</sup> There is often very limited support for primary care doctors when treating participants with both psychosocial interventions and pharmacological methods. Such support may be critical given that, in systems such as that in the UK and elsewhere, the general practitioner (GP) is the sole responsible medical clinician for 90–95% of patients.<sup>14</sup>

## Collaborative care

In a previous systematic review of 36 studies testing organisational interventions,<sup>15</sup> it was concluded that guidelines, practitioner education and other simple interventions were not effective in studies attempting to improve the management of depression. However, there is better evidence for the role of organisational interventions in improving the management of a range of chronic conditions generally. Organisational strategies have been used in the management of depression, including 'collaborative care'. This is a complex intervention developed in the USA that has been supported by previous reviews. Collaborative care has been identified as the most effective of the range of organisational approaches studied.<sup>15-20</sup>

Collaborative care incorporates a multiprofessional approach to patient care; a structured management plan; scheduled patient follow-ups; and enhanced interprofessional communication.<sup>21</sup> In practice, this is achieved by the introduction of a care manager into primary care, responsible for delivering care to depressed patients under supervision from a professionally qualified mental health specialist and for liaising between primary care clinicians and specialists. Care management has been described as a health worker taking responsibility for proactively following up a patient, assessing patient adherence to psychological and pharmacological treatments, monitoring patient progress, taking action when treatment is unsuccessful and delivering psychological support.<sup>18</sup> Care managers work closely with the primary care provider (who retains overall clinical responsibility) and can receive regular supervision from a mental health specialist.<sup>15,22</sup>

The specific disciplines vary by country context but can include counsellors, paraprofessionals or nurses as care managers, and psychiatrists, psychologists and mental health nurses acting in the specialist role.



Systematic reviews<sup>23,24</sup> demonstrate that collaborative care improves depression outcomes, with some studies showing benefit for up to 5 years. Before developing the CollABorative DEpression Trial (CADET), our 2006 systematic review<sup>24</sup> of 28 collaborative care studies showed collaborative care to be effective [standardised mean difference (SMD)  $-0.24$ , 95% confidence interval (CI)  $-0.17$  to  $-0.32$ ]. The  $I^2$  estimates of inconsistency were 80% for antidepressant use and 54% for depressive outcomes. In metaregression analyses three intervention content variables predicted improvement in depressive symptoms, recruitment by systematic identification ( $p = 0.061$ ), care managers having a specific mental health background ( $p = 0.004$ ) and provision of regular supervision for care managers ( $p = 0.033$ ), which reduced the overall heterogeneity ( $I^2$ ) from 54% to 48% for systematic identification, 43% for case manager background and 49% for supervision.

More recently (after the initiation of the CADET trial) we have undertaken a Cochrane review.<sup>23</sup> Our new analyses show greater improvement in depression outcomes for adults with depression treated with the collaborative care model compared with usual care in the short term (0–6 months) [SMD  $-0.34$ , 95% CI  $-0.41$  to  $-0.27$ ; relative risk (RR) 1.32, 95% CI 1.22 to 1.43], medium term (7–12 months) (SMD  $-0.28$ , 95% CI  $-0.41$  to  $-0.15$ ; RR 1.31, 95% CI 1.17 to 1.48) and long term (13–24 months) (SMD  $-0.35$ , 95% CI  $-0.46$  to  $-0.24$ ; RR 1.29, 95% CI 1.18 to 1.41). However, these significant benefits were not demonstrated into the very long term ( $\geq 25$  months) (RR 1.12, 95% CI 0.98 to 1.27). In metaregression of this significantly larger study data set ( $n = 79$ ) collaborative care that included psychological interventions predicted improvement in depression (beta-coefficient 20.11, 95% CI 20.01 to 20.20;  $p = 0.03$ ). These new data include the results of our CADET trial along with another nine UK studies and a greatly expanded study data set. We include them here for completeness and refer to them further in the discussion.

In 2008, at the commencement of the CADET trial, collaborative care had generally been developed and tested in the USA within managed health-care settings. It is possible that the overall effectiveness of collaborative care programmes might vary when it is implemented and evaluated in non-US settings. In other areas of mental health care results from US-developed organisational interventions have not generalised outside the original health-care context.<sup>25</sup> For collaborative care, there was some supportive evidence from other contexts, including the developing world,<sup>26,27</sup> but prior to the CADET trial there has been uncertainty around the standardised effect size in UK trials (SMD 0.24, 95% CI  $-0.060$  to 0.547) and elsewhere.<sup>24</sup> These limited non-US data and the relatively small effect size in trials of patients with depression alone led the UK National Institute for Health and Care Excellence (NICE)<sup>28</sup> to issue a research recommendation that 'The efficacy of organisational interventions, such as chronic disease management programmes or other programmes of enhanced care for depression, should be tested in large-scale multicentre trials in the NHS' (research recommendation 5.6.8.1, p. 103). This provided us with the rationale to undertake a fully powered UK evaluation of collaborative care.

## Development of the CollABorative DEpression Trial

In published studies there is considerable between-study heterogeneity in terms of the duration and intensity of collaborative care and the training and background of care managers. Therefore, to investigate the clinical effectiveness and cost-effectiveness of collaborative care in the UK, we conducted a series of Medical Research Council (MRC)-funded preparatory studies. We wished to develop an intervention in anticipation of a fully powered randomised controlled trial. We carefully developed our collaborative care intervention to be applicable outside the USA, in health-care systems with a well-developed primary care sector.<sup>29–31</sup>

In our Phase II testing of this intervention,<sup>30</sup> we found preliminary evidence that collaborative care adapted to the UK was acceptable to patients and clinicians and may be effective outside the USA, but that a cluster randomised controlled trial was required to guard against potential contamination between trial arms. We amended the clinical protocol studied in our pilot trial to take account of acceptability data in

our qualitative interviews and designed a cluster randomised controlled trial of sufficient power to detect clinically meaningful and achievable differences between collaborative care and usual care. We now report the results of this pragmatic cluster randomised controlled trial<sup>1</sup> to determine whether or not collaborative care is more clinically effective and cost-effective than usual care in the management of patients with moderate to severe depression. This report is divided into chapters detailing the methods and results of our primary clinical effectiveness and cost-effectiveness questions followed by similar chapters for our process evaluation. We have undertaken an additional long-term follow-up of clinical outcomes and report this in a separate chapter. Finally, we conclude with a discussion chapter summarising our results and considering their implications for the management of depression.



## Chapter 2 Trial methods

This chapter utilises material from three<sup>1-3</sup> of the four Open Access articles previously published by the research team in accordance with the terms of the Creative Commons Attribution licences (CC BY 2.0, CC BY 3.0 and CC BY 4.0).

### Research question

Is collaborative care more clinically effective and cost-effective than usual care in the management of participants with moderate to severe depression in UK primary care?

### Study design

The CADET trial was a multicentre, two-group, cluster randomised controlled trial with allocation of general practice clusters to two trial arms: collaborative care (experimental group) or usual care (GP management). We chose a cluster design given that our Phase II trial<sup>30</sup> described in the previous chapter demonstrated that a participant-randomised trial of collaborative care could be vulnerable to contamination and open to type II error, underestimating the true effect size of the intervention through potential intervention 'leakage'.

### Patient and public involvement

We involved patient and public representatives at all stages of the project. A patient and public involvement (PPI) advisor (CM) was a trial applicant, investigator and full member of the Trial Management Group (TMG). He attended all meetings of the TMG and advised on patient-facing materials including ethics materials and participant therapeutic manuals and on the conduct of the trial including project management, questionnaire development, data collection and project dissemination. There were two PPI representatives on the Trial Steering Committee (TSC), one from a depression consumer advocacy group and another with lived experience of depression. Both provided important checks and balances as part of the independent TSC oversight of the trial.

In addition, the trial was initially co-ordinated from the Mood Disorders Centre at the University of Exeter and latterly from the University of Exeter's Medical School. Both the Mood Disorders Centre and the Medical School operate within a culture of PPI, guided by published theories of participation, empowerment and engagement, through the Mood Disorders Centre's 20-strong Lived Experience Group and the National Institute for Health Research (NIHR) CLAHRC (Collaboration for Leadership in Applied Health Research and Care) for the South West's patient involvement group PenPIG (Peninsula Public Involvement Group).

### Setting and participants

We recruited participants between June 2009 and January 2011 from the electronic case records of primary care general practices in three UK sites: Bristol, London and Greater Manchester.

### Inclusion criteria

Our eligibility criteria were as follows:

- Adults aged  $\geq 18$  years meeting *International Classification of Diseases, Tenth Edition (ICD-10)* criteria for a depressive episode.<sup>32</sup> Diagnosis was determined by research personnel interviewing potential participants using the Clinical Interview Schedule – Revised (CIS-R),<sup>33</sup> a computerised interview schedule that establishes the nature and severity of neurotic symptoms and identifies a categorical diagnosis of mild, moderate or severe depression.
- Newly identified as depressed, including those with or without previous episodes; in treatment for an existing diagnosis of depression but not responding; suffering from peri- or postnatal depression; or suffering with comorbid physical illness or comorbid psychological disorders such as anxiety.
- People were eligible to participate whether or not they were in receipt of antidepressant medication in line with the pragmatic nature of this trial and to reflect usual primary care management of depression in the UK.

### Exclusion criteria

We excluded people for whom there was a sufficiently severe risk of suicide that they required immediate specialist mental health crisis management; those with type I and type II bipolar disorder; those with psychosis; those with depression that was associated with a recent bereavement; those with an alcohol or drug abuse primary presenting problem; and those who, at the time of interview, were receiving specialist mental health treatment for their depression, including psychotherapy.

### Randomisation

We randomly allocated primary care practices to either collaborative care or treatment as usual as they were recruited into the trial. We minimised randomisation within our three sites using the Index of Multiple Deprivation (IMD) rank,<sup>34</sup> the number of GPs and practice size.

### Allocation concealment

We concealed the allocation sequence from the researchers as they recruited practices by ensuring that researchers were unaware of prior allocations or the allocation sequence. Randomisation was undertaken by the trial statistician using Minim ([www.sghms.ac.uk/depts/phs/guide/randser.htm](http://www.sghms.ac.uk/depts/phs/guide/randser.htm)).<sup>35</sup> We managed participant identification and the trial databases through our partnership with the Peninsula Clinical Trials Unit (PenCTU), who undertook these functions remotely from the trial team and trial statistician.

### Blinding

In this type of trial, in which interventions are complex and clearly different from each other, it is not possible to blind participants, care managers or GPs and so our procedures focused on helping to keep research workers blind to participant allocation and protecting the study against assessment interpretation bias through the use of self-report measures. Our research workers were blinded to practice allocation. To help control for the effect of any potential unblinding after research workers assessed and confirmed that people were eligible for the trial, they then collected participant outcomes as self-report measures.

After assessments had been completed, research workers recorded participants' data on a remote, web-based system. This database, administered by PenCTU, allocated each participant an identification number and, if in a collaborative care cluster practice, automatically advised the relevant care manager to contact the participant. The system also automatically communicated with each participant's GP by letter.

## Recruitment

Potential participants were identified by clinical studies officers (CSOs) or practice staff from July 2009 to January 2011. These workers searched the computerised records of participating practices over a 19-month period, looking for records of people with at least one identification code for depression recorded against their name by their GP in the previous 4 weeks. We searched for those codes most widely used by GPs to classify participants as depressed.

The lists of people generated by the searches were screened by GPs to remove the names of anyone whom GPs knew would not meet our inclusion criteria or who would be excluded at interview. Staff then sought permission from potentially eligible people for researchers to contact them. Potentially eligible people were sent an information sheet and reply slip in the post. Practice staff or CSOs followed up this letter by telephone after 1 week.

Those who gave research interview consent were contacted by a researcher trained in the specific interview procedures by study investigators and an interview was organised at the convenience of the participant. Interviews took place either in their home or at their GP practice no earlier than 48 hours after they had received the trial information letter. The first part of the research interview consisted of the researcher outlining the trial in detail and answering questions. Once the potential participants were fully briefed and willing to enter the trial, researchers asked them to fill in and sign the trial consent form, following which the diagnostic component of the baseline interview was undertaken.

If the diagnostic component of the baseline interview – the CIS-R<sup>33</sup> – confirmed that a potentially eligible person met our depression diagnostic inclusion criteria, he or she was included as a participant in the trial, the research interview proceeded and a full baseline data set was taken.

## Intervention and comparator groups

### *Intervention: collaborative care*

Our experimental intervention was collaborative care. As detailed earlier, the specific components of the intervention had been developed, tested and amended in our earlier trial and process evaluation.<sup>30</sup> Care managers in three UK sites provided the intervention under supervision from specialists in mental health care. A copy of the complete clinical protocol is provided in *Appendix 1*. A summary of the collaborative care protocol is given in the following sections.

### Care management

All participants received usual care from their GP. Collaborative care consisted of 6–12 contacts between the care manager and the trial participant, with contacts spanning a period of no more than 14 weeks. The initial appointment was of 30–40 minutes' duration and was conducted in a face-to-face manner. Subsequent appointments were undertaken on the telephone and were of 15–20 minutes' duration. Although most follow-on appointments were by telephone, care managers could arrange to meet the participant face-to-face if either party thought that this was desirable. Routinely, however, the telephone was the preferred contact medium for the majority of follow-on appointments.

Although the frequency of contacts was determined by a participant's needs, in our protocol we suggested that contacts should be undertaken weekly during the first month or so of care management. We recommended that fortnightly appointments could be arranged after this. Once again, we designed our protocol to be sufficiently flexible to permit more frequent sessions if either party regarded this as important, given the progress of the participant or his or her clinical presentation. We recommended short frequent sessions to care managers as opposed to lengthy appointments on a less frequent basis. We asked care managers to be flexible with appointment schedules to permit sessions to be delivered outside usual 0900–1800 working hours, but our expectation was that the majority of sessions would occur during

these hours. We advised care managers to try many times to contact participants if they did not manage to get through on the telephone at first. This is an important component of collaborative care protocols worldwide, because many people with depression avoid contact with other people because of their mood state, with social avoidance being a common symptom.

During appointments, care managers would:

- assess participants' views about psychological and medication treatments
- negotiate a treatment programme that was acceptable to participants
- help participants with their management of any prescribed antidepressants
- support participants to use behavioural activation, a brief low-intensity psychosocial treatment for depression
- provide advice on relapse prevention.

### Symptom assessment

Care managers conducted a symptom assessment every time they had a session with a participant, whether face to face or by telephone. They used the Hospital Anxiety and Depression Scale (HADS)<sup>36</sup> to evaluate and record common symptoms of depression and then engaged participants in a discussion regarding these symptoms. We chose the HADS so as not to use the same measure [the Patient Health Questionnaire-9 (PHQ-9)<sup>37</sup>] as our primary research outcome measure. Care managers also conducted a risk assessment to assess the level of risk to self and others for each participant. These assessments were undertaken at the beginning of each appointment.

### Medication management

We instructed care managers to help participants engage appropriately with any medicines that they had been prescribed for their depression. Each participant's GP remained the responsible medical practitioner in terms of medication prescription but the care manager helped participants understand the reason for their prescription, reinforced information from their GP and problem solved any difficulties that participants had in tolerating their medicines.

### Behavioural activation

Behavioural activation is a psychological treatment with good evidence that it is as effective as cognitive-behavioural therapy in depression.<sup>38</sup> Behavioural activation is a brief psychological treatment that helps people interrupt patterns of avoidance that maintain depression. Behavioural activation assists people to increase their levels of activity to help them experience more examples of situations likely to lead to a positive mood. Behavioural activation was suitable for care managers to use given its simplicity and brevity and had been tested previously in our pilot work. We provided participants with support information prepared by the trial team. In summary, participants were supported through a self-guided behavioural activation treatment programme that helped them to increase the frequency and range of activities in their day-to-day lives.

### Communicating with general practitioners

We outlined three levels of care manager contact with GPs:

- Level 1. Care managers communicated a brief statement of the participant's main problem and treatment plan to the GP after the first treatment session, using a structure outlined in our protocol. If participants were progressing satisfactorily and/or willing to engage in the treatment plan, routine records of each contact were recorded.
- Level 2. If participants were not progressing satisfactorily, or they wanted to change their pharmacological treatment regime, the case manager could alert their GP as required. In these instances care managers could inform the GP about changes that may need to be made to the treatment plan. Care managers could also let the GP know if a participant had been advised to make an appointment with his or her GP.

- Level 3. We instructed care managers to contact GPs in person directly or by telephone should there be an urgent need to do so. Circumstances requiring level 3 contact included a participant experiencing intolerable medication side effects, a substantial worsening in a participant's mental health or a participant being at acute risk to self or others.

### Care managers

Care managers were existing NHS mental health workers working in a primary care environment. They had been previously trained as paraprofessional mental health workers. They continued to treat patients in their existing NHS role, undertaking care management of CADET participants alongside their NHS caseload. Care managers were supervised each week by specialist mental health workers including clinical psychologists, psychiatrists, academic GPs with a special interest in mental health or senior nurse psychotherapists. Every CADET participant was discussed at least once a month. Discussions were organised using a bespoke computerised patient case management information system [PC-MIS (see [www.pc-mis.co.uk](http://www.pc-mis.co.uk); accessed 17 November 2015)]. PC-MIS includes automated alerts so that supervisors and care managers are informed of their supervision discussion schedules automatically, including algorithms driven by routine outcome measures that identify participants not responding to treatment.

Specialist mental health worker members of the investigator team trained care managers using a 5-day collaborative care instruction programme. The training consisted of protocol instruction, modelling and treatment session role play. All components of the collaborative care protocol were included in the programme. This included the initial contact, subsequent appointments, telephone working, GP liaison and supervision. The training instructed care managers on both specific case management skills such as participant education, medication support and behavioural activation and non-specific factors necessary to develop therapeutic engagement.

Each care manager received a handbook to accompany the training programme (see *Appendix 1*). The handbook included a collaborative care management session-by-session guide and participant information materials on depression, medication and behavioural activation. The handbook contained all of the worksheets and diaries that care managers were to use in supporting participants with their collaborative care activity programme. It also included information on, and examples of, how care managers should communicate with GPs and provided worksheets to help them prepare case materials for supervision discussions.

### Supervision

Specialist mental health professionals – psychiatrists and psychological therapists (RA, JC, LG, DK, KL and SP) – supervised the care managers. Supervisors helped and supported care managers through discussion with them about participant progress. Care managers discussed participant symptom levels, treatment plans and their own care management activities. In this, they were prompted by alerts on PC-MIS. In addition to routinely triggered discussions they were also able to bring any problems experienced in managing specific cases to supervision. Supervisors assisted care managers with any communications that they needed to have with GPs, for example communicating medication advice for individual participants. Supervisors undertook sessions with care managers over the telephone, either on an individual basis or in groups on a weekly basis. At each supervision session the following cases were reviewed:

- all new participants
- participants who had reached a scheduled supervision review point after being in the trial for 4, 8 or 12 weeks
- participants who were not improving as expected, for example when an adequate trial of antidepressant medication was not having a therapeutic effect or when participants were not benefiting from or engaging in the behavioural activation programme
- overdue participants; that is, when the care manager had not been able to make contact with a participant as previously arranged
- any other participants requiring discussion and/or an overview of current caseloads.



Supervision was principally informed by ratings collected from participants using the HADS, assessments of participant risk to self and others, details of participant concordance with treatment plans and discussions of care management strategies. Supervision focused care managers' attention on their overall decision-making for individual participants while also helping them practice care management principles for their whole caseload.

### **Control condition: usual care**

General practitioners provided control participants with care that reflected their standard practice. For control participants this included antidepressant therapy and/or referral to specialist mental health care. Given that the CADET trial was a pragmatic trial, we did not specify any clinical protocols for usual care. However, we did measure the components of usual care received by participants.

## **Outcomes**

### **Primary clinical outcome**

The primary clinical outcome was depression severity at 4 months' follow-up using the PHQ-9.<sup>37</sup>

### **Secondary clinical outcomes**

Secondary outcomes were the PHQ-9 at 12 months, quality of life [Short Form questionnaire-36 items (SF-36)<sup>39</sup>], worry and anxiety [General Anxiety Disorder-7 (GAD-7)<sup>40</sup>] at 4 and 12 months, health state values (health-related quality of life) [European Quality of Life-5 Dimensions three-level version (EQ-5D-3L)<sup>41,42</sup>] at 4 and 12 months and participant satisfaction [Client Satisfaction Questionnaire-8 (CSQ-8)<sup>43</sup>] at 4 months.

Demographic data on sex, age, ethnic origin, education level, employment, marital status, presence or absence of antidepressant treatment, previous history of depression, severity of depression, any secondary diagnoses of an anxiety disorder and any participant self-reported long-standing physical illness were also collected at baseline.

### **Economic outcomes**

The health economic end point was the cost per quality-adjusted life-year (QALY) at 12 months. We used the recommended area under the curve approach for assessing repeated measures.<sup>44,45</sup> Resource use pertaining to the collaborative care intervention as delivered by care managers and supervisors in the trial was collected directly from our trial and case records. These data included care manager and specialist supervision contact time. Participant-level health and social care resource use data, information on informal care from friends/relatives and other participant costs (e.g. over-the-counter costs, one-off participant costs) were collected at the 4-month and 12-month follow-up points using a self-report format with assistance from interviewers. These same data were collected at baseline using the same self-report data collection approach, asking participants to report their resource use during the 6-month period prior to the baseline assessment. Given the difficulties in collecting data on medication use using the self-report format we did not include medication use in the estimates of health and social care resource use. However, data are reported on the proportion of participants on antidepressant medications at baseline and 12 months' follow-up.

Although all baseline interview data were collected during a face-to-face interview, we were more flexible with our follow-up assessments. We used face-to-face, telephone or postal methods of data collection in accordance with participants' wishes and to maximise data collection. For resource use data we used face-to-face or telephone methods of data collection, all using an interviewer-assisted self-report format.

## Sample size

The CADET trial was powered at 90% ( $\alpha = 0.05$ ) to detect an effect size of 0.4. This effect size is regarded as a clinically meaningful difference between interventions of this type.<sup>46</sup> The proposed effect size was also within the 95% CI of the effect that we had predicted following our analysis of our feasibility and pilot study.<sup>30</sup> This study had shown a potential effect size of 0.63 with a 95% CI from 0.18 to 1.07. However, an effect size of 0.4 is greater than that in the meta-analysis results of trials published at the time that we were commissioned to undertake the CADET trial (effect size 0.25, 95% CI 0.18 to 0.32).<sup>24</sup>

In a two-arm randomised controlled trial in which participants are the unit of randomisation, we would have required 132 participants per group to detect a difference of 0.4 between groups. However, cluster randomisation produces a design effect and inflates the required sample size. In our trial, we planned for 12 participants in each primary care cluster and we used data from our pilot study<sup>30</sup> to estimate the intracluster correlation (ICC) as 0.06. The design effect was calculated as 1.65 and we estimated our required sample size without any attrition to be 440. We estimated that the CADET trial might suffer from around 20% participant attrition at our primary end point. In this scenario, to be able to follow up 440 participants, we planned to randomly allocate 550 participants across the trial arms. To deliver this target we decided to recruit 48 practices with up to 14 participants per practice, given that our recruitment rate would not be exactly even between practices.

## Statistical methods and analyses

### Clinical outcomes

All of our analyses for all of our outcomes used the intention-to-treat principle. We reported all outcomes according to Consolidated Standards of Reporting Trials (CONSORT) guidelines.<sup>47</sup> We analysed all data in Stata 10.1 (StataCorp LP, College Station, TX, USA). We wrote, and agreed with the TSC, an a priori analysis plan. We used ordinary least squares or logistic regression, allowing for clustering by use of robust standard errors, to analyse outcomes at 4 and 12 months. We adjusted at the cluster level for minimisation variables and site and at the individual level for age and, when appropriate, the baseline measurement of the variable. We undertook sensitivity analyses to assess the effect of missing data. We estimated this by chained regression equations multiple imputation<sup>48</sup> using all available scale clinical scores, age, sex, practice variables, site and treatment group.

Standardised effect sizes for our outcome variables were calculated by taking the mean difference between the intervention group and the control group and dividing the difference by the pooled standard deviation (SD). We also calculated the degree of clustering within our participant clusters by GP practice. We have reported these as ICC coefficients.

We wanted to ensure that our results could be easily interpreted from a clinical perspective and compared with existing published studies. Therefore, using the baseline SD for all participants, we calculated rates of 'recovery' and 'response'. These commonly used metrics can help service commissioners, managers, clinicians and patients translate continuous outcome variables into a meaningful clinical figure. The rate of recovery can be regarded as the proportion of participants with a PHQ-9 score of  $\leq 9$  at the end of the trial whereas the response rate can be regarded as a  $\geq 50\%$  reduction in scores from baseline. Finally, to further aid interpretation the numbers needed to treat were deduced from the inverse of the absolute risk reduction adjusted for clustering by practice.

### Economic outcomes

In our economic evaluation we undertook our economic analyses from the UK NHS and Personal Social Services perspective (third-party payer perspective). We also undertook a sensitivity analysis using the broader participant and carer perspective. We estimated the costs associated with health and social care service use and the additional cost of the delivery of the collaborative care intervention and estimated QALYs.

Data on resource use were combined with published unit costs to estimate the mean cost per participant. We used nationally available data sources, in UK pounds sterling at 2011 costs (*Table 1*), adjusted for inflation when necessary, to compute health-care resource values from unit costs. To estimate the intervention cost for collaborative care, we based our calculations on costs for UK NHS Agenda for Change (AfC) Band 5 staff. We chose a unit cost of £65 per hour for patient contact time,<sup>49</sup> a rate equivalent to that for a qualified mental health nurse. All staff cost components are included in this unit cost, for example telephone and travel time, including an allowance of contact time to non-contact time of 1 : 0.89.<sup>49</sup> Supervision costs were calculated by selecting the full costs for specialist mental health professionals at NHS AfC Band 8a<sup>49</sup> from a unit cost of £135 per hour for clinical supervisors. QALYs were estimated over the 12-month follow-up period using the EQ-5D trial data, applying UK tariffs obtained from a UK general population survey to value the EQ-5D health states.<sup>53</sup>

We estimated mean costs and QALYs for our primary economic evaluation by treatment allocation. We used covariates that were prespecified for age (at the individual level) and deprivation (IMD), site and practice size (at the cluster level). A multilevel regression model (Stata, *xtmixed*) was used for the primary analyses. This took into account the hierarchical (clustered) nature of the data, presenting the ICC for the main analyses. We undertook data analyses using generalised linear modelling, with appropriate family and link components to account for the non-normally distributed nature of cost data. Analyses were undertaken in Stata 12.

We conducted a number of sensitivity analyses for areas of uncertainty in the cost-effectiveness analyses:

1. We considered the effect of missing data, estimated by multiple imputation (Stata MI command, with 25 replicated data sets), using all available data on the target variable together with covariates for individual and cluster variables used in the base-case regression analyses.<sup>54</sup>
2. We undertook analyses using a broader analytical perspective, including estimated costs for informal care and participant out-of-pocket expenses.
3. We analysed data for a scenario using trial data from the SF-36 to estimate QALYs using the Short Form questionnaire-6 dimensions (SF-6D),<sup>55</sup> which presents tariffs obtained from a UK general population survey to value health states as an alternative QALY outcome measure.
4. We considered uncertainty in the intervention costs.
5. We analysed a scenario in which one participant, with an extremely high level of self-reported resource use, was excluded, as this potentially offers a more likely and policy-relevant estimate of cost-effectiveness.

We combined estimates of incremental costs and incremental benefits to present incremental cost-effectiveness ratios (ICERs), allowing decision-makers to assess value for money using the cost per QALY estimates [ $ICER = (Cost_{CC} - Cost_{TAU}) / (QALY_{CC} - QALY_{TAU})$ , where CC represents collaborative care and TAU represents treatment as usual]. We used the NICE threshold of £20,000–30,000 per QALY,<sup>56,57</sup> that is the expected payer willingness to pay per unit of additional outcome, to assess the cost-effectiveness of collaborative care, with ICERs below these values regarded as cost-effective. We used the non-parametric bootstrap approach,<sup>58</sup> with 10,000 replications, to estimate 95% CIs around estimated cost differences and QALY differences to address uncertainty. To present the level of uncertainty in the cost-effectiveness estimates we used the cost-effectiveness plane to present combinations of incremental cost and incremental QALY data from bootstrap replicates and used the cost-effectiveness acceptability curve (CEAC) with the 'net benefit statistic' [net monetary benefit = (incremental QALYs × willingness to pay per QALY) – incremental cost]<sup>59,60</sup> to present the probability that the intervention is cost-effective (i.e. incremental net benefit statistic is 0) against a range of potential cost-effectiveness thresholds.

**TABLE 1** Unit costs for different types of health and social care resource items

Resource item	Unit cost (£) <sup>a</sup>	Source	Basis of estimate
GP (surgery/practice)	36.00	Curtis <sup>49</sup>	GP appointment/surgery; based on costing at 11.7 minutes
GP (home)	121.00	Curtis <sup>49</sup>	
Practice nurse (surgery)	15.00	Curtis <sup>49</sup>	Assuming average contact time of 15.5 minutes and using hourly rate for nurse contact time
Practice nurse (home)	30.00	Curtis <sup>49</sup>	Assuming average contact time of 25 minutes and using hourly rate for nurse contact time
Walk-in centre (appointment)	41.00	Curtis <sup>49</sup>	Walk-in service (not admitted)
Counsellor	60.00	Curtis <sup>49</sup>	Per consultation
Mental health worker	76.00	Curtis <sup>49</sup>	Mental health nurse, £76 per 1-hour contact (assumed 1 hour)
Social worker/care manager	212.00	Curtis <sup>49</sup>	Per 1-hour contact (assumed 1 hour)
Home help/care worker	18.00	Curtis <sup>49</sup>	Per weekday hour
Occupational therapist	82.00	Curtis <sup>49</sup>	Community-based occupational therapist per 1 hour of client contact (assumed 1 hour)
Voluntary group (e.g. Mind)	21.73	Curtis <sup>50</sup>	Cost per user session, voluntary/non-profit organisation (£21 per session in 2010)
Acute psychiatric ward (bed-day)	312.00	Curtis <sup>49</sup>	Cost per bed-day
Long-stay ward (bed-day)	222.52	Curtis <sup>50</sup>	Cost per bed-day (£215 in 2010)
General medical ward (bed-day)	321.00	Curtis <sup>49</sup>	Weighted average of all adult mental health inpatient days
Accident and emergency (contact)	106.00	Curtis <sup>49</sup>	Contact, not admitted
Day hospital (day)	126.00	Curtis <sup>49</sup>	Cost per day, weighted average of all adult attendances
Psychiatrist (outpatient contact)	161.38	<sup>b</sup> Department of Health <sup>51</sup>	2008–9 cost per consultation (£155; code MHOPFUA2)
Psychologist (outpatient contact)	135.00	Curtis <sup>49</sup>	Cost per contact hour (assumed 1 hour)
Community psychiatric nurse/care co-ordinator (outpatient contact)	76.00	Curtis <sup>49</sup>	Mental health nurse, £76 per 1-hour contact (assumed 1 hour)
Other outpatient contact	143.00	Curtis <sup>49</sup>	Outpatient consultant services, weighted average
Day care centre (community services/social care)	34.00	Curtis <sup>49</sup>	Cost per user session
Drop-in club (community services/social care)	34.00	Curtis <sup>49</sup>	Assume the same cost as day care centre, cost per user session
Help from friends/relatives	18.00	Curtis <sup>49</sup>	Use cost per hour, based on unit cost for home help/care worker
Lost work (day) (friends/relatives)	99.6	ONS <sup>52</sup>	Based on median gross weekly earnings in 2011 for full-time employees of £498
Travel cost per mile (participant's own car)	0.44		Estimate of reclaim/expense rate (running cost per mile)

ONS, Office for National Statistics.

a At 2011 prices/costs.

b Costs updated/adjusted to 2011 prices using the Hospital and Community Health Services index reported in Curtis.<sup>49</sup>

## Participant consent and ethical approval

We were granted ethical approval by the NHS Health Research Authority, National Research Ethics Service (NRES) Committee South West (NRES/07/H1208/60). We ensured that informed consent was gathered from participants before they undertook any engagement with the study, including data collection and treatment allocation and receipt. In detail, the process was as follows.

First, potential participants had to indicate their potential interest in the trial. They then consented to a researcher-led discussion. Everyone who reached this stage was sent the full participant information sheet by a member of the CADET research team and an appointment was also made. At the initial appointment the trial was explained in detail by the research interviewer, who also answered potential participant questions.

We informed all potential trial participants that being consented into the trial would not replace or adversely affect usual care delivered by their GP. All interviewees were told that they could avail themselves of other services or treatments and that they could withdraw from the trial without incurring any penalty to their health or treatment choices. Having considered these facts and agreed to trial participation, we asked potential trial participants to sign a formal consent form. All of our researchers undertaking this consent process were trained and supervised by the CADET investigator team.

## Chapter 3 Results of the clinical and economic analyses

This chapter utilises material from two<sup>2,3</sup> of the four Open Access articles previously published by the research team in accordance with the terms of the Creative Commons Attribution licences (CC BY 3.0 and CC BY 4.0).

### Participant flow and retention

#### *Allocation of practices*

In total, 53 practices were randomised, two of which dropped out after allocation (*Figure 1*). These practices were removed from the minimisation schedule and their data did not influence later allocations. During recruitment, we found that the cut-off adopted for the IMD had been set far too high, with all practices so far recruited being below the cut-off. We changed this cut-off to one close to the median of practices so far recruited, retaining allocations so far. One practice was found to have been mistakenly recorded in the wrong geographical area; it was moved to the correct group, retaining its allocation. Of the remaining 51 practices, two did not recruit any participants.

*Tables 2 and 3* show the geographical distribution of practices and minimisation variables (IMD, number of GPs and number of registered patients per practice), respectively, by intervention group. There was a wide range for all three practice characteristics.

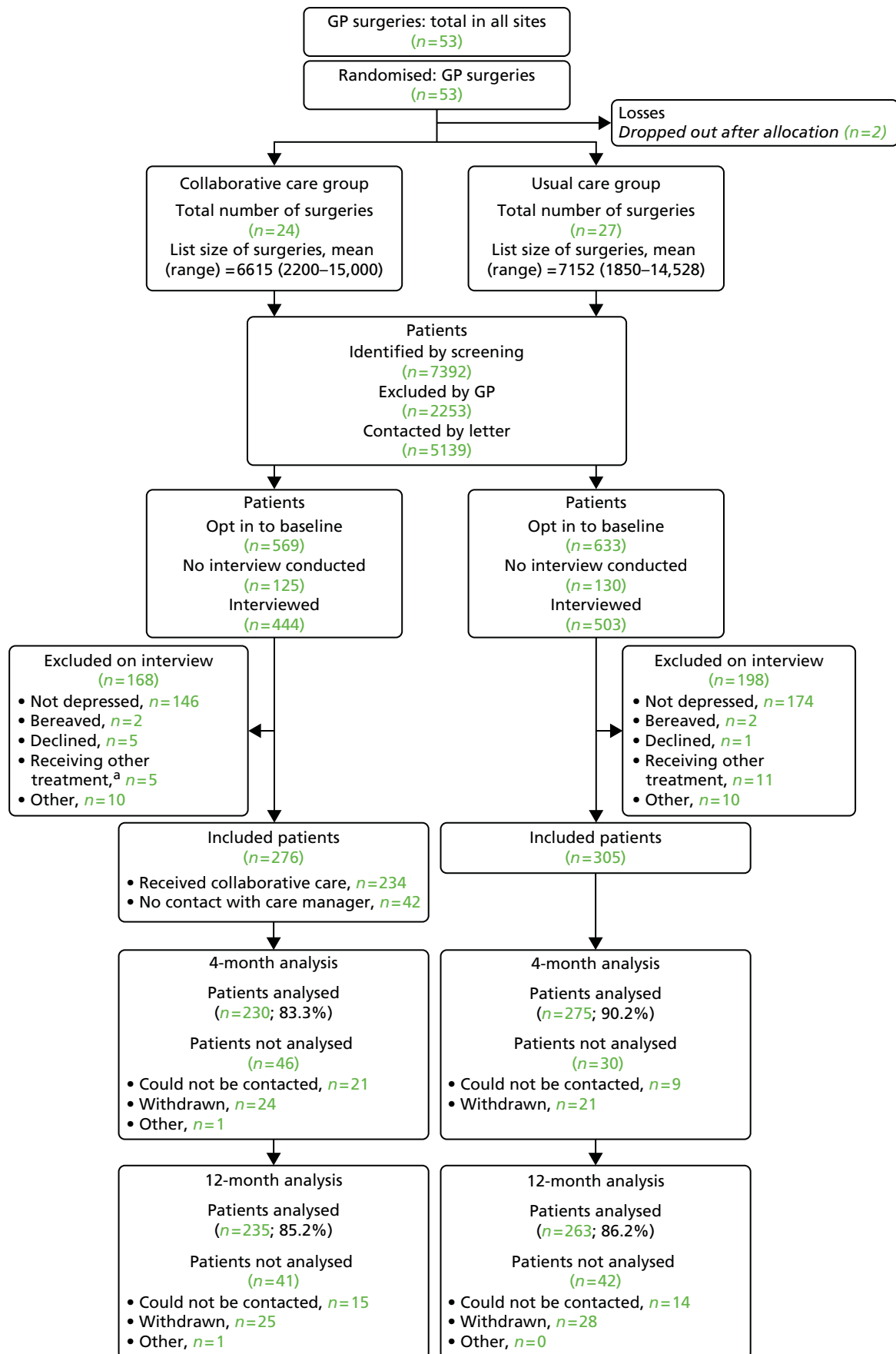
### Participant recruitment

The mean number of participants recruited for the remaining 49 practice clusters was 11.9 (SD 3.9, range 4 to 20). We recruited 581 participants in total and followed up 505 (87%) and 498 (86%) at 4 and 12 months, respectively. The CONSORT diagram in *Figure 1* illustrates the flow of participants through the trial.

### Baseline characteristics of participants

The mean age of participants was 44.8 years (SD 13.3) and 72% were women. Fewer than half (44%) of participants were in full- or part-time paid employment. More than half (56%) of the participants fulfilled ICD-10 criteria for a moderately severe depressive episode, with a further 30% meeting criteria for severe depression and 14% meeting criteria for mild depression and 73% of all participants having had depression in the past (*Table 4*). Almost all (98%) participants had a secondary diagnosis of an anxiety disorder, the most common being generalised anxiety disorder. Almost two-thirds of participants (64%) reported a long-standing physical illness (e.g. diabetes, asthma, heart disease). At baseline, 83% of participants had been prescribed antidepressant drugs by their primary care doctor.

The distribution of PHQ-9 scores at baseline was negatively skewed, with the majority of scores being in the higher part of the range. The mean PHQ-9 score overall was 17.8 (SD 5.1), with the usual care group having a slightly higher average score than the collaborative care group (18.1 vs. 17.4 respectively) (*Figure 2* and see *Table 2*). All subjects were selected for the trial using a different measure of depression (CIS-R) from that used in the analysis to avoid problems of regression towards the mean. Low scores represent random variation because of measurement error.



**FIGURE 1** Trial CONSORT diagram. a, The number of patients in the collaborative care group who were excluded on interview because they were receiving treatment from secondary care or ‘another mental health provider’ (n = 5) includes one participant who was initially allocated in error and who was subsequently excluded.

**TABLE 2** Geographical distribution of practices by intervention group

Site	Collaborative care	Usual care	Total
Greater Manchester	7	9	16
Bristol	8	9	17
London	9	9	18
Total	24	27	51

**TABLE 3** Distribution of the minimisation variables in the two intervention groups

Variable	Group	Number of practices	Mean	SD	Minimum	Maximum
IMD	Collaborative care	24	9210	7416	317	27,365
	Usual care	27	8449	6012	265	19,536
	Total	51	8807	6651	265	27,365
Number of GPs (whole-time equivalents)	Collaborative care	24	3.8	2.0	1.0	10.0
	Usual care	27	4.0	1.9	1.0	7.8
	Total	51	3.9	1.9	1.0	10.0
Number of patients	Collaborative care	24	6615	3282	2200	15,000
	Usual care	27	7152	3781	1850	14,528
	Total	51	6899	3530	1850	15,000

**TABLE 4** Baseline characteristics of participants

Characteristic	Collaborative care ( <i>n</i> = 276)	Usual care ( <i>n</i> = 305)	Total ( <i>n</i> = 581)
GP practices by centre, <i>n</i>			
Bristol	8	9	17
London	9	9	18
Greater Manchester	7	9	16
Minimisation variables, mean (SD)			
IMD	9210 (7416)	8449 (6012)	8807 (6651)
Number of GPs	3.8 (2.0)	4.0 (1.9)	3.9 (1.9)
Number of patients	6615 (3282)	7152 (3781)	6899 (3530)
Sex, <i>n</i> (%)			
Female	202 (73.2)	216 (70.8)	418 (71.9)
Male	74 (26.8)	89 (29.2)	163 (28.1)
Age (years)			
Mean (SD)	45.0 (13.2)	44.5 (13.4)	44.8 (13.3)
Range	18 to 82	17 to 79	17 to 82

continued



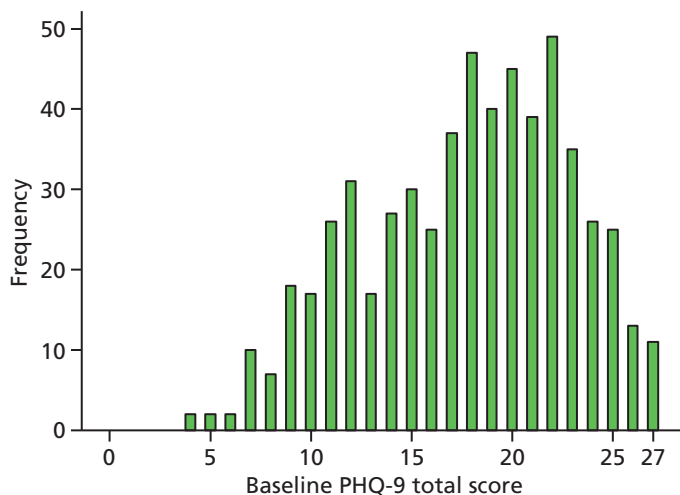
**TABLE 4** Baseline characteristics of participants (*continued*)

Characteristic	Collaborative care (n = 276)	Usual care (n = 305)	Total (n = 581)
Ethnic origin, n (%)			
White British	233 (84.4)	261 (85.6)	494 (85.0)
Other	43 (15.6)	44 (14.4)	87 (15.0)
Education, n (%)			
None	54 (19.6)	74 (24.3)	128 (22.0)
GCSE/O-level	65 (23.6)	81 (26.6)	146 (25.1)
Post GCSE/O-level	84 (30.4)	79 (25.9)	163 (28.1)
Degree or higher	49 (17.8)	53 (17.4)	102 (17.6)
Other or don't know	24 (8.7)	18 (5.9)	42 (7.2)
Employment, n (%) <sup>a</sup>			
Employed/self-employed	130 (47.4)	122 (40.0)	252 (43.5)
Not working	144 (52.6)	183 (60.0)	327 (56.5)
Married/cohabiting, n (%)	127 (46.0)	114 (37.4)	241 (41.5)
Prescribed antidepressants, n (%)	231 (83.7)	249 (81.6)	480 (82.6)
CIS-R score, mean (SD)	28.8 (9.3)	30.3 (8.9)	29.6 (9.1)
ICD-10 diagnosis, n (%) <sup>b</sup>			
Mild	42 (15.2)	41 (13.4)	83 (14.3)
Moderate	156 (56.5)	167 (54.8)	323 (55.7)
Severe	78 (28.3)	96 (31.5)	174 (30.0)
Previous history of depression, n (%)	202 (73.2)	220 (72.1)	422 (72.6)
Secondary diagnosis, n (%)			
Any anxiety disorder	269 (97.5)	301 (98.7)	570 (98.1)
Long-standing physical illness	171 (62.0)	199 (65.2)	370 (63.7)
Baseline outcomes, mean (SD)			
PHQ-9 score	17.4 (5.2)	18.1 (5.0)	17.8 (5.1)
GAD-7 score	12.9 (5.3)	13.6 (4.7)	13.3 (5.0)
SF-36 MCS score	23.2 (10.4)	22.3 (10.3)	22.7 (10.3)
SF-36 PCS score	44.8 (12.4)	44.5 (12.3)	44.6 (12.3)
EQ-5D score	0.50 (0.29)	0.46 (0.31)	0.48 (0.30)
SF-6D score	0.54 (0.08)	0.54 (0.09)	0.54 (0.08)

GCSE, General Certificate of Secondary Education; MCS, mental component summary; PCS, physical component summary.

a Employment data were missing for two participants.

b One participant did not meet ICD-10 criteria for mild, moderate or severe depression on the CIS-R score.



**FIGURE 2** Distribution of PHQ-9 scores at baseline.

## Delivery and receipt of the intervention

A total of 10 care managers provided collaborative care for 276 participants. The mean number of participants managed per care manager was 27.6 (SD 16.42, range 4 to 46).

Patients received a mean of 5.6 (SD 4.01, range 0 to 15) sessions with their care manager. Forty-two (15.2%) participants did not attend any sessions with their care manager, 213 (77.2%) had two or more contacts and 171 (62.0%) had four or more contacts. The mean total time in collaborative care was 3.03 hours (SD 2.18 hours) over a period of 12 weeks (SD 7.75 weeks). For those participants who attended at least one session, the mean duration of the sessions was 34.5 minutes (SD 8.2 minutes). Most participants in both collaborative care and usual care remained on antidepressant medication (74.8% vs. 73.8% at 4 months; 69.7% vs. 69.2% at 12 months).

The mean number of collaborative care sessions per participant in which medication was discussed was 3.2 (SD 3.43, range 0–13). The mean number of sessions incorporating behavioural activation was 5.4 (SD 3.4, range 0–13). The mean number of face-to-face contacts per participant was 1.17 (SD 0.92, range 0–6). The mean number of telephone contacts was 5.3 (SD 3.5, range 0–14).

We collected 220 supervision records reporting a mean supervision time of 35 minutes per week, with six participants discussed on average per session. Participants were discussed in an average of three supervisory sessions over the course of their intervention, at 6 minutes per participant per session. Care managers, therefore, received the intended level of supervision and number of sessions, with the number of participants discussed being dependent on the caseload of individual care managers.

## Primary outcome: Patient Health Questionnaire-9 at 4 months

The primary and secondary outcomes at 4 and 12 months are presented in *Table 5* and data on recovery, response and numbers needed to treat are presented in *Table 6*. With regard to the primary outcome (PHQ-9 at 4 months) we found a significant effect of collaborative care. The estimated mean depression score was 1.33 PHQ-9 points lower (95% CI –2.31 to –0.35;  $p = 0.009$ ) for participants receiving collaborative care than for participants receiving usual care after adjustment for baseline depression. More participants receiving collaborative care than those receiving usual care met criteria for recovery [odds ratio (OR) 1.67, 95% CI 1.22 to 2.29; number needed to treat 8.4] and response (OR 1.77, 95% CI 1.22 to 2.58; number needed to treat 7.8).

**TABLE 5** Intention-to-treat analysis of the primary and secondary outcomes at 4 and 12 months' follow-up

Outcome	Collaborative care			Usual care			Adjusted difference	95% CI	p-value	Effect size
	n	Mean	SD	n	Mean	SD				
Primary outcome										
PHQ-9 score at baseline	276	17.4	5.2	305	18.1	5.0				
PHQ-9 score at 4 months <sup>a</sup>	230	11.1	7.3	275	12.7	6.8	-1.33	-2.31 to -0.35	0.009	0.26
Secondary outcomes										
PHQ-9 score at 12 months	235	10.0	7.1	263	11.7	6.8	-1.36	-2.64 to -0.07	0.04	0.28
GAD-7 score at baseline	276	12.9	5.3	305	13.6	4.7				
GAD-7 score at 4 months	228	9.1	6.8	273	9.8	5.8	-0.39	-1.30 to 0.53	0.4	0.08
GAD-7 score at 12 months	227	7.7	6.2	253	9.1	6.2	-1.09	-2.21 to 0.03	0.06	0.22
SF-36 MCS score at baseline	276	23.2	10.4	305	22.3	10.3				
SF-36 MCS score at 4 months	227	34.6	15.4	268	30.7	13.7	3.4	1.1 to 5.7	0.005	0.33
SF-36 MCS score at 12 months	223	36.4	15.0	249	33.4	14.5	2.5	-0.6 to 5.5	0.1	0.24
SF-36 PCS score at baseline	276	44.8	12.4	305	44.5	12.3				
SF-36 PCS score at 4 months	227	45.8	13.2	268	45.6	13.8	-0.05	-1.67 to 1.56	0.9	-0.004
SF-36 PCS score at 12 months	223	46.1	13.2	249	44.9	13.3	-0.93	-0.93 to 3.01	0.3	0.08
CSQ-8 score at 4 months	232	25.3	5.8	269	22.1	6.2	3.13	1.87 to 4.39	<0.001	0.52

MCS, mental component summary; PCS, physical component summary.

a One participant committed suicide. The PHQ-9 score for this participant cannot be regarded as missing at random. We therefore set the 4-month and 12-month PHQ-9 scores to the maximum of 27 and the effect of this was examined. This participant was classified as 'withdrawn'.

**TABLE 6** Recovery, response and numbers needed to treat

	Collaborative care		Usual care		OR <sup>a</sup>	95% CI <sup>b</sup>	p-value <sup>b</sup>	Number needed to treat <sup>c</sup>
	n	Recovered/responded, n (%)	n	Recovered/responded, n (%)				
Recovery <sup>d</sup>								
4 months	230 <sup>e</sup>	108 (47.0)	275	96 (34.9)	1.67	1.22 to 2.29	0.001	8.4
12 months	235	131 (55.7)	263	106 (40.3)	1.88	1.28 to 2.75	0.001	6.5
Response <sup>f</sup>								
4 months	230 <sup>e</sup>	99 (43.0)	275	83 (30.2)	1.77	1.22 to 2.58	0.003	7.8
12 months	235	115 (48.9)	263	93 (35.4)	1.73	1.22 to 2.44	0.002	7.3

a Adjusted for age, site and minimisation variables.

b Adjusted for clustering by practice.

c Inverse of absolute risk reduction adjusted for clustering by practice.

d Recovery defined as a follow-up score of  $\leq 9$  on the PHQ-9.

e One participant committed suicide. The PHQ-9 data for this participant cannot be regarded as missing at random. This participant's 4- and 12-month PHQ-9 data were set to the maximum of 27 and are included in this analysis.

f Response defined as a  $\geq 50\%$  reduction in PHQ-9 score at follow-up compared with baseline.

## Secondary outcomes

### Depression at 12 months

At 12 months' follow-up, PHQ-9 data were available for 498 participants, 86% of those recruited (see Table 5). There was a significant effect of collaborative care on depression at 12 months. The mean PHQ-9 score was 1.36 points lower (95% CI  $-2.64$  to  $-0.07$ ;  $p = 0.04$ ) in participants receiving collaborative care than in those receiving usual care (standardised effect size 0.28, 95% CI 0.01 to 0.52). More participants in collaborative care than in usual care met criteria for recovery (OR 1.88, 95% CI 1.28 to 2.75; number needed to treat 6.5) and response (OR 1.73, 95% CI 1.22 to 2.44; number needed to treat 7.3) (see Table 6).

### Anxiety

We found no significant effect of collaborative care on anxiety at 4 months, as measured by the GAD-7 (see Table 5). The adjusted difference between the groups in the anxiety score at 4 months was 0.39 (95% CI  $-1.30$  to 0.53;  $p = 0.4$ ). At 12 months there was also no significant effect of collaborative care on anxiety. The adjusted difference between the groups in the anxiety score at 12 months was 1.09 (95% CI  $-2.21$  to 0.03;  $p = 0.06$ ).

### Quality of life

#### Mental health

We found a highly significant effect of collaborative care on the mental component summary (MCS) score of the SF-36 at 4 months, with the mean score higher by 3.4 T-score points (95% CI 1.1 to 5.7 T-score points;  $p = 0.005$ ) in the collaborative care group. This corresponds to an effect size of 0.33 SD (95% CI 0.11 to 0.56 SD). At 12 months this effect was no longer significant (mean difference 2.5 T-score points, 95% CI  $-0.6$  to 5.5 T-score points;  $p = 0.1$ ).

## Physical health

We found no significant effect of collaborative care on the quality of physical health at 4 months, as measured by the SF-36. The difference between the groups in the physical component summary (PCS) score of the SF-36 was 0.05 T-score points (95% CI  $-1.67$  to  $1.56$ ;  $p = 0.9$ ). The same was true at 12 months, with a difference in PCS T-score points between the groups of  $1.04$  (95% CI  $-0.93$  to  $3.01$ ;  $p = 0.3$ ).

Table 7 shows the adjusted effect of collaborative care on each SF-36 subscale at 4 months. Four of the subscales indicated significant benefits of collaborative care: mental health, role limitations (emotional) and vitality of the mental components and general health of the physical components. Although not significant, the other element of the mental dimension, social functioning, showed a small estimated benefit, too.

## Client satisfaction at 4 months

We found a highly significant effect of collaborative care on client satisfaction (see Table 5). The adjusted difference between the groups in satisfaction score at 4 months was  $3.13$  (95% CI  $1.87$  to  $4.39$ ;  $p < 0.001$ ). The estimated effect size for the CSQ-8 was  $0.52$  (95% CI  $0.31$  to  $0.73$ ). This has been calculated slightly differently from the effect sizes for the PHQ-9, GAD-7 and SF-36 because there is no baseline SD. The crude SD within intervention groups for all participants at 4 months was used.

## Missing data

In Table 8 we present the results after multiple imputation for the effect of collaborative care at 4 and 12 months on the main scales used, which also shows the results of the analyses using the available data, which were reported in the preceding sections. The imputed estimates are very similar to the available data estimates and so we can conclude that for all of these analyses the effects of collaborative care are little affected by missing data. The lower GAD-7 anxiety score at 12 months in the collaborative care group, which is not significant in the available data analysis, is just statistically significant in this simulation. However, the difference in the  $p$ -value ( $0.06$  or  $0.05$ ) is very small.

**TABLE 7** Adjusted regression effects of collaborative care on SF-36 subscales at 4 months

Subscale	Coefficient	Robust standard error	t	p-value	95% CI
Physical functioning	0.038	0.078	0.49	0.6	$-0.119$ to $0.194$
Role limitations, physical	0.065	0.096	0.68	0.5	$-0.128$ to $0.258$
Bodily pain	$-0.021$	0.095	$-0.22$	0.8	$-0.211$ to $0.170$
General health perceptions	0.271	0.071	3.81	$< 0.001$	$0.128$ to $0.415$
Social functioning	0.157	0.114	1.37	0.2	$-0.074$ to $0.387$
Mental health	0.289	0.103	2.79	0.007	$0.081$ to $0.497$
Role limitations, emotional	0.264	0.100	2.63	0.01	$0.062$ to $0.465$
Vitality	0.337	0.097	3.48	0.001	$0.142$ to $0.531$

**TABLE 8** Adjusted regression effects of collaborative care after multiple imputation

Scale	Data	Coefficient	Robust standard error	t	p-value	95% CI
PHQ-9 score at 4 months	Imputed	-1.31	0.53	-2.49	0.02	-2.37 to -0.26
	Available data	-1.33	0.49	-2.72	0.009	-2.31 to -0.35
PHQ-9 score at 12 months	Imputed	-1.29	0.62	-2.08	0.04	-2.54 to -0.04
	Available data	-1.36	0.64	-2.13	0.04	-2.64 to -0.07
GAD-7 score at 4 months	Imputed	-0.37	0.45	-0.82	0.4	-1.27 to 0.53
	Available data	-0.39	0.45	-0.85	0.4	-1.30 to 0.53
GAD-7 score at 12 months	Imputed	-1.07	0.52	-2.04	0.05	-2.12 to -0.01
	Available data	-1.09	0.56	-1.95	0.06	-2.21 to 0.03
SF-36 PCS score at 4 months	Imputed	0.03	0.78	0.04	1.0	-1.53 to 1.59
	Available data	-0.05	0.80	-0.07	0.9	-1.67 to 1.56
SF-36 PCS score at 12 months	Imputed	0.98	0.91	1.08	0.3	-0.84 to 2.80
	Available data	1.04	0.98	1.06	0.3	-0.93 to 3.01
SF-36 MCS score at 4 months	Imputed	3.6	1.2	3.13	0.003	1.3 to 6.0
	Available data	3.4	1.2	2.97	0.005	1.1 to 5.7
SF-36 MCS score at 12 months	Imputed	2.6	1.4	1.86	0.07	-0.2 to 5.4
	Available data	2.5	1.5	1.60	0.1	-0.1 to 5.5
CSQ-8 score at 4 months	Imputed	3.20	0.61	5.23	<0.001	1.97 to 4.44
	Available data	3.13	0.63	4.98	<0.001	1.87 to 4.39

Missing data were related to intervention group. *Table 9* shows missing PHQ-9 data at 4 months and 12 months by intervention group. At 4 months, missing data were significantly more likely in the collaborative care group. At 12 months the difference between the groups was much smaller and not significant. As far as we can tell, this difference in missingness at 4 months does not produce a difference in the outcome variables between the two groups and does not explain the observed lower PHQ-9 score in the collaborative care group. This difference persists at 12 months, when the difference in missingness is much smaller.

**TABLE 9** Missing PHQ-9 data by intervention group

Time point of missing PHQ-9 data	Intervention group, n (%)		OR for missing data in collaborative care group	p-value (robust standard error)
	Collaborative care	Usual care		
4 months	46 (16.7)	30 (9.8)	1.83	0.03
12 months	41 (14.9)	42 (13.8)	1.09	0.7

## Results of the economic analyses

Our estimated mean cost per participant for the delivery of the collaborative care intervention was £272.50. This cost estimate includes care manager costs at £232 and clinical supervision costs of £40.50. Our probabilistic analyses used to explore uncertainty around the main cost component, drawing from the distribution of contact time for care managers, showed that in 95% of simulations (cost estimates) the estimated cost of collaborative care was between £101 and £592 per participant (median £249 per participant).

### NHS and social care resource use and costs

We found no statistically significant differences between treatment groups in use of resources prior to the baseline assessment. *Table 10* presents resource use over the 12-month follow-up period and *Table 11* presents the costs associated with the resource use over the 12-month follow-up period. *Table 12* presents cost data by category with comparison by treatment group. We found a broadly similar pattern of resource use across groups, with estimated mean costs of NHS and social care (third-party payer perspective),

**TABLE 10** Mean health and social care resource use (quantities) over the 12-month follow-up period

Resource item	Usual care (n = 305)		Collaborative care (n = 276)	
	n	Mean (SD) [range]	n	Mean (SD) [range]
Primary/community care (contacts)				
GP (surgery/practice)	244	8.21 (6.69) [0–56]	217	7.77 (6.78) [0–45]
GP (home)	247	0.12 (0.80) [0–11]	218	0.05 (0.27) [0–3]
Nurse (surgery/practice)	247	1.77 (3.08) [0–24]	215	1.68 (3.10) [0–32]
Nurse (home)	247	0.06 (0.46) [0–4]	218	0.05 (0.45) [0–6]
Walk-in centre	247	0.32 (0.87) [0–8]	217	0.31 (0.86) [0–5]
Counsellor	246	3.58 (11.26) [0–116]	212	2.67 (7.21) [0–48]
Mental health worker	247	0.58 (3.51) [0–50]	215	0.79 (3.72) [0–36]
Social worker	247	0.34 (1.79) [0–14]	218	0.58 (3.94) [0–33]
Home help/care worker	247	4.35 (47.27) [0–722]	218	1.24 (15.07) [0–220]
Occupational therapist	247	0.22 (0.98) [0–9]	218	0.13 (0.61) [0–5]
Voluntary group	247	0.94 (5.80) [0–64]	218	0.22 (1.39) [0–16]
Secondary care				
Hospital admissions, n	247	34	218	28
Acute psychiatric ward (days)	247	–	218	0.78 (11.51) [0–170] <sup>a</sup>
Psychiatric rehabilitation ward (days)	247	–	218	–
Long-stay ward (days)	247	0.06 (0.94) [0–15]	218	–
Psychiatric ICU ward (days)	247	–	218	–
General medical ward (days)	247	0.48 (2.02) [0–21]	217	0.42 (1.67) [0–12]
Other hospital ward (days)	247	0.28 (1.58) [0–17]	218	0.39 (2.12) [0–24]
Accident and emergency (attendance)	247	0.40 (0.93) [0–7]	218	0.34 (0.76) [0–5]
Day hospital (attendance)	247	0.60 (2.22) [0–24]	218	0.36 (1.19) [0–12]
Outpatient appointment	247	2.62 (5.60) [0–58]	217	2.63 (5.63) [0–65]

**TABLE 10** Mean health and social care resource use (quantities) over the 12-month follow-up period (*continued*)

Resource item	Usual care (n = 305)		Collaborative care (n = 276)	
	n	Mean (SD) [range]	n	Mean (SD) [range]
Social care (contact/session)				
Used day care services (%) <sup>b</sup>	247	3/2	218	4/3
Day care centre	247	0.28 (4.54) [0–70]	218	0.07 (1.08) [0–16]
Drop-in club	247	0.56 (5.26) [0–70]	218	0.12 (1.40) [0–20]
Day care other	247	0.39 (2.85) [0–28]	217	0.65 (5.67) [0–74]
Informal care from friends/relatives				
Had help/care from friends/relatives (%) <sup>b</sup>		45/48		38/35
Hours per week help from friends/relatives <sup>c</sup>	230	6.11 (15.44) [0–112]	209	3.95 (10.11) [0–104]
Report time off work for friends/relatives (%) <sup>b</sup>		7/9		7/10
Days off work lost by friends/relatives	246	4.05 (29.14) [0–360]	217	1.65 (11.28) [0–144]
Participant other costs				
OTC cost (£)	246	28.40 (57.90) [0–429] <sup>d</sup>	215	40.31 (68.61) [0–507] <sup>d</sup>
Travel costs (£)	246	10.98 (30.30) [0–320]	216	14.33 (37.57) [0–202]
Own car travel (miles)	246	26.12 (77.68) [0–600]	214	31.53 (138.95) [0–1862]
Other 'one-off' costs (£)	246	35.77 (144.35) [0–1569]	218	51.58 (213.53) [0–1998]

ICU, intensive care unit; OTC, over the counter.

a Includes one participant with 170 psychiatric ward/admission days.

b These data refer to the proportions at 4 months' follow-up and 12 months' follow-up (months 5–12).

c Weekly number of hours (weighted average of data reported at 4 months' and 12 months' follow-up) (× 52 weeks to give annual estimate of hours).

d Analysis of variance results show only the OTC cost (£) to be significantly different (at  $p < 0.05$ ).

**TABLE 11** Estimated mean costs of health, social care and other resource use over the 12-month follow-up period

Resource item	Usual care (n = 305)		Collaborative care (n = 276)	
	n	Mean (SD) (£)	n	Mean (SD) (£)
Primary/community care				
GP (surgery/practice)	244	295.52 (241)	217	279.76 (243)
GP (home)	247	14.21 (97)	218	5.55 (32)
Nurse (surgery/practice)	247	26.54 (46)	215	25.19 (46)
Nurse (home)	247	1.94 (14)	218	1.38 (13)
Walk-in centre (attendance)	247	13.28 (35)	217	12.66 (35)
Counsellor	246	214.63 (676)	212	160.47 (433)
Mental health worker	247	44 (267)	215	59.74 (283)
Social worker	247	72.10 (379)	218	122.53 (835)
Home help/care worker	247	78.27 (851)	218	22.38 (271)
Occupational therapist	247	18.26 (80)	218	10.53 (50)
Voluntary group	247	20.50 (126)	218	4.88 (30)

continued



**TABLE 11** Estimated mean costs of health, social care and other resource use over the 12-month follow-up period (*continued*)

Resource item	Usual care ( <i>n</i> = 305)		Collaborative care ( <i>n</i> = 276)	
	<i>n</i>	Mean (SD) (£)	<i>n</i>	Mean (SD) (£)
Secondary care				
Acute psychiatric ward	247	0	218	243.30 (3,592)
Psychiatric rehabilitation ward	247	0	218	0
Long-stay ward	247	13.51 (212)	218	0
Psychiatric ICU ward	247	0	218	0
General medical ward	247	154.65 (649)	217	134.61 (535)
Other hospital ward/stay	247	90.97 (507)	218	123.69 (682)
Accident and emergency	247	43.06 (99)	218	36.47 (81)
Day hospital	247	74.99 (280)	218	45.08 (150)
Outpatient appointment, psychiatrist	247	26.79 (148)	217	43.88 (170)
Outpatient appointment, psychologist	247	25.14 (313)	217	25.51 (296)
Outpatient appointment, community psychiatric nurse	247	8.92 (67)	217	12.61 (166)
Outpatient appointment, other	246	306.93 (588)	215	285.34 (498)
Social care				
Day care centre	247	9.64 (151)	218	2.50 (37)
Drop-in club	247	19.13 (179)	218	4.06 (48)
Day care other	247	13.35 (97)	217	22.09 (193)
Informal care from friends/relatives				
Help from friends/relatives	230	5714.73 (14,455)	209	3698.50 (9462)
Days off work lost by friends/relatives	246	403.26 (2902)	217	164.78 (1123)
Participant other costs				
OTC costs (£)	246	28.40 (58)	215	40.31 (69)
Travel costs (£)	246	10.98 (30)	216	14.33 (38)
Own car travel	246	11.75 (35)	214	14.19 (63)
'One-off' costs (£)	246	35.77 (144)	218	51.58 (213)

ICU, intensive care unit; OTC, over the counter.

Kruskal–Wallis (non-parametric) test: no statistically significant differences between groups, other than for OTC costs and costs for days of work lost by friends/relatives, which were statistically significant at  $p \leq 0.05$ .

**TABLE 12** Estimated costs and cost differences (adjusted, unadjusted) over the 12-month follow-up period by group

Resource item	Usual care (n = 305)		Collaborative care (n = 276)		Difference, no adjustment (£)	Difference, adjusted for baseline and participant/cluster covariates, <sup>a</sup> mean (95% CI) <sup>b</sup> (£)
	n	Mean (SD) (£)	n	Mean (SD) (£)		
Primary and community services/care	243	801.49 (1476.98)	208	715.86 (1220.06)	-85.63	-116.48 (-341.06 to 110.91)
Secondary care: hospital stay	247	259.14 (835.40)	217	402.65 (2282.88)	143.51	160.92 (-70.81 to 481.70)
Secondary care: outpatient care	246	368.03 (781.43)	215	368.09 (692.60)	0.06	-30.68 (-148.85 to 111.70)
Secondary care: day hospital	247	74.99 (280.31)	218	45.08 (149.65)	-29.91	-14.52 (-50-13 to 17.94)
Accident and emergency	247	42.06 (98.66)	218	36.47 (80.51)	-5.59	-5.87 (-22.39 to 9.99)
Day services and care	247	42.12 (334.85)	217	28.67 (203.43)	-13.45	1.83 (-38.51 to 41.01)
Total NHS and Personal Social Services (excluding collaborative care)	242	1570.70 (2441.55)	205	1614.32 (3714.49)	43.62	1.78 (-454.82 to 640.81)
Collaborative care	-	-	-	272.50	272.50	-
Total NHS and Personal Social Services	242	1570.70 (2441.55)	205	1886.82 (3714.49)	316.12	270.72 (-202.98 to 886.04) <sup>f</sup>
Patient personal costs (OTC costs/ medications and travel costs plus patient 'one-off' costs)	244	86.64 (175.50)	211	120.79 (260.37)	34.15	24.95 (-12.41 to 65.61)
Informal care costs	230	5714.73 (14,455.18)	209	3698.50 (9642.61)	-2016.23	-1114.13 (-3366.09 to 1117.32)
Total costs (NHS and patient/ related costs)	223	7010.59 (13,492.42)	195	5764.48 (10,796.40)	-1246.11	-312.83 (-2339.92 to 2035.27) <sup>c</sup>

OTC, over the counter.

a Regression analyses using multilevel model ('xtmixed', Stata) with baseline value as covariate and age and cluster-level covariates.

b 95% CIs estimated using non-parametric bootstrap method.

c ICC = 0.0000 (95% CI 0.0000 to 0.0000).

For cost estimates for individual items/categories, analysis of variance showed no statistically significant differences between groups (note: informal care cost difference at  $p=0.088$ ).

excluding the collaborative care intervention, of £1571 and £1614 for usual care and collaborative care participants respectively. After adjustment for baseline costs and individual and cluster covariates the cost difference was not statistically significant, with wide CIs. When including the cost of the collaborative care intervention, the mean total NHS and social care costs were £1571 and £1887 for usual care and collaborative care participants, respectively, but, similarly, after adjustment the cost difference of £271 was not statistically significant. Excluding the intervention cost, the one area of substantial cost difference between groups was for hospital stay, with a mean cost difference of £161 (regression-adjusted estimate). This estimated difference in hospital costs was driven by one participant in the collaborative care group who reported an acute psychiatric hospital stay of 100 days. When we excluded this participant from the analyses, the cost difference for hospital stay was adjusted to £34.27 (95% CI –£119 to £189) and the related differences in NHS and social care costs, without collaborative care costs and with collaborative care costs, were adjusted to –£209 (lower cost for collaborative care) and £63 (additional cost for collaborative care), respectively.

### **Broader participant-level and social costs**

In *Tables 10* and *11* we report resource use and cost estimates associated with informal care from friends and/or relatives and other participant out-of-pocket expenses. Our findings show that informal care costs, when estimated using a shadow price for informal care (an estimate of £18 per hour; see *Table 1*), represented the largest resource and cost burden associated with participants' depression. Participants in the usual care group reported a high use of informal care, which resulted in a higher mean (SD) cost estimate over 12 months of £5715 (£14,455); this compared with £3699 (£9462) in the collaborative care group. However, there is wide variation in the self-report data as shown by the large SDs. When adjusting for baseline costs and other covariates the difference in estimated cost for informal care was –£1114 (95% CI –£3366 to £1117), with lower costs for the collaborative care group and, therefore lower total costs for the collaborative care group (see *Table 12*).

### **Quality-adjusted life-years**

In *Table 13* we report data on health state values for the EQ-5D and SF-6D and the estimated QALY values over the 12-month follow-up period. When adjusted for baseline and for individual and cluster covariates we found a difference of 0.02 QALYs (95% CI –0.02 to 0.06 QALYs) over 12 months for the EQ-5D and 0.017 QALYs (95% CI 0.000 to 0.032 QALYs) for the SF-6D. Both measures show a QALY gain for collaborative care, although the EQ-5D difference is not statistically significant.

### **Cost-effectiveness analyses**

In *Table 14* we present estimates of cost per QALY, based on participants with data on costs and outcomes at follow-up. The base-case cost per QALY for collaborative care was £14,248, adopting a NHS and social care perspective, with uncertainty around this estimate illustrated in *Figure 3* (cost-effectiveness plane) and *Figure 4* (CEACs). The probability that collaborative care is cost-effective compared with treatment as usual is 0.58 at a willingness to pay of £20,000 per QALY and 0.65 at a willingness to pay of £30,000 per QALY.

### **Sensitivity analyses**

The results of the sensitivity analyses are also presented in *Table 14*, in which we estimated incremental costs and QALYs and cost per QALY using alternative assumptions. In the base-case analysis 23% of the cost data are missing at the 12-month follow-up (21% control, 25% collaborative care) and 20% of the QALY (EQ-5D) data are missing at the 12-month follow-up (19% control, 21% collaborative care).

**TABLE 13** Health state values and QALY comparisons (adjusted, unadjusted) over the 12-month follow-up period by group

Resource item	Usual care (n = 305)		Collaborative care (n = 276)		Difference, no adjustment	Difference, adjusted for baseline and participant/ cluster covariates, <sup>a</sup> mean (95% CI)
	n	Mean (SD) [range]	n	Mean (SD) [range]		
EQ-5D: baseline	305	0.464 (0.313) [-0.29 to 1.00]	276	0.504 (0.288) [-0.349 to 1.00]	0.040	
EQ-5D: 4 months	273	0.557 (0.331) [-0.239 to 1.00]	228	0.599 (0.341) [-0.484 to 1.00]	0.042	
EQ-5D: 12 months	254	0.593 (0.338) [-0.349 to 1.00]	227	0.650 (0.317) [-0.484 to 1.00]	0.057	
EQ-5D: QALYs (12 months)	248	0.554 (0.286) [-0.27 to 0.97]	218	0.605 (0.261) [-0.29 to 0.97]	0.051 <sup>b</sup>	0.019 (-0.019 to 0.06) <sup>c</sup>
SF-6D: baseline	303	0.538 (0.86) [0.30 to 0.77]	274	0.540 (0.83) [0.30 to 0.82]	0.002	
SF-6D: 4 months	269	0.597 (0.126) [0.30 to 1.00]	227	0.614 (0.140) [0.32 to 1.00]	0.017	
SF-6D 12 months	250	0.605 (0.131) [0.30 to 1.00]	223	0.634 (0.144) [0.30 to 1.00]	0.029 <sup>b</sup>	
SF-6D: QALYs (12 months)	241	0.591 (0.109) [0.30 to 0.90]	211	0.609 (0.114) [0.35 to 0.91]	0.018	0.0168 (0.000 to 0.032)

a Regression analyses using multilevel model ('xtmixed' [STATA], with baseline values as covariate and age and cluster-level covariates.

b Analysis of variance  $p \leq 0.05$ .

c ICC = 0.0000 (95% CI 0.0000 to 0.0000).

**TABLE 14** Cost-effectiveness analyses

Scenario/analysis	Difference, adjusted for baseline and participant/cluster covariates, <sup>a</sup> mean (95% CI)	ICER, cost (£) per QALY	Probability collaborative care cost-effective at WTP <sup>b</sup> per QALY gained of	
			£20,000 per QALY	£30,000 per QALY
<b>Base case</b>				
Total NHS and Personal Social Services costs (£)	270.72 (-202.98 to 886.04)			
EQ-5D: QALYs (12 months)	0.019 (-0.019 to 0.06)	14,248	0.58	0.65
<b>Sensitivity analyses</b>				
1. Base-case cost-effectiveness analysis with multiple imputation of missing data				
Total NHS and Personal Social Services costs (£)	292.08 (-216.88 to 801.04)			
EQ-5D: QALYs (12 months)	0.017 (-0.020 to 0.054)	17,490	NA	NA
2. Cost-effectiveness analysis using SF-6D QALY data				
SF-6D: QALYs (12 months)	0.0168 (0.000 to 0.032)	16,114	0.57	0.72

continued

TABLE 14 Cost-effectiveness analyses (continued)

Scenario/analysis	Difference, adjusted for baseline and participant/cluster covariates, <sup>a</sup> mean (95% CI)	ICER, cost (£) per QALY	Probability collaborative care cost-effective at WTP <sup>b</sup> per QALY gained of	
			£20,000 per QALY	£30,000 per QALY
3. Cost-effectiveness analysis when excluding one high-cost participant				
Total NHS and Personal Social Services costs (£)	63.34 (-295.98 to 422.67)			
EQ-5D: QALYs (12 months)	0.019 (-0.018 to 0.06)	3334	0.76	0.79
4. Cost-effectiveness analysis using higher cost estimate for collaborative care (mean cost of £338.80)				
Total NHS and Personal Social Services costs (£)	337.02 (-136.67 to 952.34)	17,738	0.54	0.62
5. Cost-effectiveness analysis using a broader perspective, including patient costs and informal care costs				
Total costs (NHS and patient/related costs)	-£312.83 (-2339.93 to 2035.27)	Collaborative care is dominant <sup>c</sup>	NA	NA

NA, not applicable; WTP, willingness to pay.

a Adjusted for baseline measures and prespecified covariates for age (individual level) and the cluster-level covariates for deprivation (IMD), site and practice size (cluster level).

b Based on the assessment of incremental net benefit and WTP thresholds commonly applied in the UK NHS.<sup>56</sup>

c Dominance: lower expected costs with greater expected QALY gain.

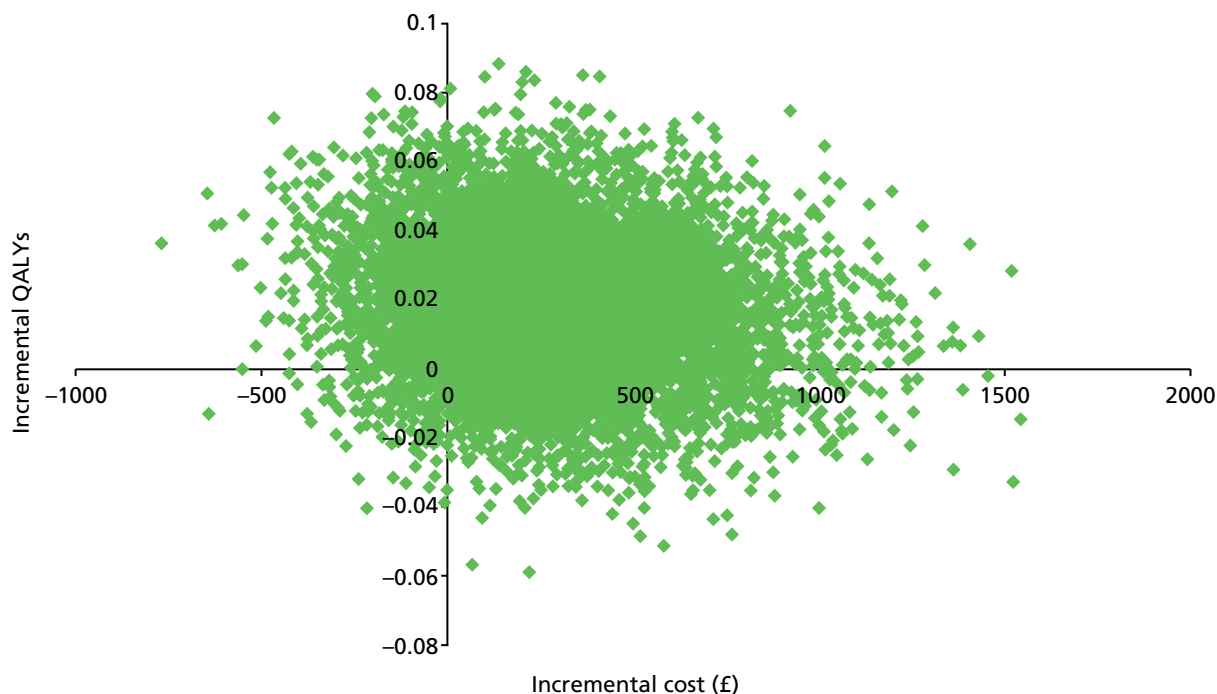
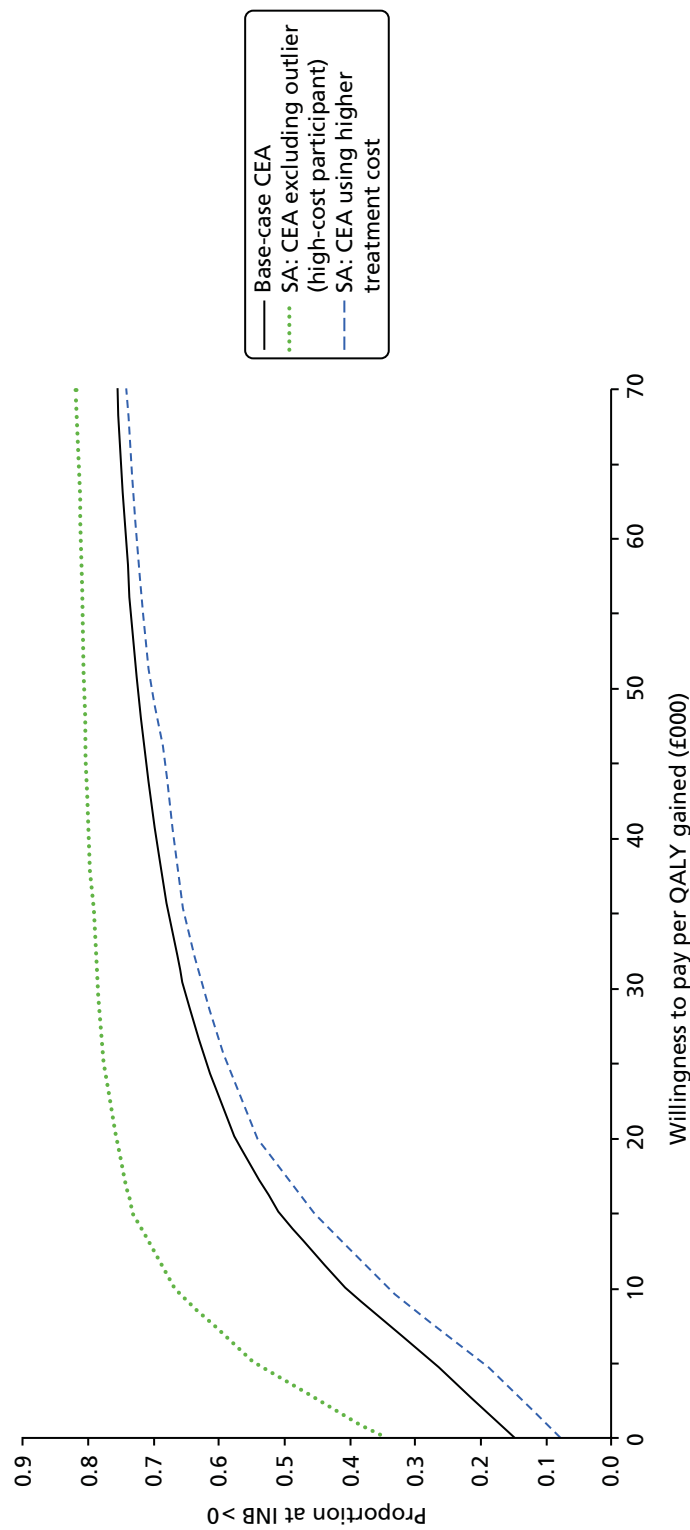


FIGURE 3 Cost-effectiveness plane (payer perspective).



**FIGURE 4** Cost-effectiveness acceptability curves. CEA, cost-effectiveness analysis; INB, incremental net benefit; SA, sensitivity analysis.

Imputation of missing data resulted in an estimated incremental cost of £292 and an incremental EQ-5D QALY gain of 0.017, with a cost per QALY of £17,490. When we adopted a broader analytical perspective, including all participants with data on costs and outcomes at follow-up, we estimated a mean cost saving of £313 with collaborative care, alongside an estimated incremental gain in QALYs of 0.02. This therefore represents a position of dominance for the collaborative care intervention compared with usual care. Using the SF-6D QALY estimate the cost per QALY increased to £16,114, with 0.57 and 0.72 probability of collaborative care being cost-effective at a willingness to pay of £20,000 and £30,000 per QALY, respectively. When we used an alternative cost for the collaborative care intervention, assuming a cost of £338.80 per participant (compared with the base case of £272.50) to allow for additional clinical supervision time for the care manager, and therefore per participant, and for supervision from a psychiatrist (unit cost per hour £267),<sup>49</sup> the cost per QALY estimate increased to £17,738. When we excluded from the analysis the participant with extremely high resource use the cost per QALY was reduced to £3334, with a 0.76 and 0.79 probability of collaborative care being cost-effective at a willingness to pay of £20,000 and £30,000 per QALY, respectively.

## Chapter 4 Results of the process evaluation

Alongside the main clinical and economic evaluation we undertook a process evaluation to investigate the implementation of the intervention, moderators of outcome and possible mechanisms of effect. This chapter utilises material from one<sup>61</sup> of the four Open Access articles previously published by the research team in accordance with the terms of the Creative Commons Attribution (CC BY 2.0)<sup>61</sup> licence. Qualitative data from this work are reproduced verbatim to preserve the integrity of the data analysis.

### Objectives

The objectives of the process evaluation were to investigate:

- the potential moderators of differential participant response<sup>62,63</sup> and the possible mechanisms of symptom change in collaborative care
- the process of implementation of collaborative care.

### Methods

To investigate moderators and mechanisms of effect we recorded a number of baseline covariates together with intermediate process variables that were targets of the intervention, regressing these against depression severity (PHQ-9) at 4 and 12 months using multilevel multiple linear regression.

### Measures

#### *Moderators*

We recorded six possible moderators at baseline: patients' attitudes towards antidepressant medication, patients' attitudes towards behavioural activation, depression severity (PHQ-9), history of depression (number of previous episodes), physical health (comorbidity) and socioeconomic status. To measure attitudes towards treatment we asked 'How acceptable is it to you to use antidepressant medication?' and 'How acceptable is it to you to review and change your routines and increase your daily activities as a way of helping with depression?' Response options were from 1 (definitely acceptable) to 4 (definitely not acceptable). To investigate the moderating effect of patients' socioeconomic status we used their postcode to obtain an IMD<sup>34</sup> score at the lower super output area level.

#### *Mechanisms of change*

We measured participants' adherence to antidepressant medication and level of behavioural activation at 4 and 12 months through self-report of medication adherence and the Behavioural Activation for Depression Scale – Short Form.<sup>64</sup>

#### *Process of implementation*

We conducted face-to-face interviews with six care managers and five supervisors involved in delivering and supervising collaborative care and undertook telephone interviews with a sample of GPs from intervention practices. Telephone interviews were offered to GPs in such a way as to cause minimum disruption to their working day. We sampled GPs purposively based on location, GP surgery, years of experience and practice demographics. We ceased recruitment when category saturation of data was achieved ( $n = 15$ ). We used a flexible topic guide for all interviews with open-ended questions to encourage discussion. All interviews were audio-recorded with consent, anonymised and transcribed verbatim.



Further, we used routinely collected data from session audio tapes collected by care managers for supervision to analyse the process of implementation. We purposively sampled 30 files for transcription and analysis from 656 collected, to cover as wide a range as possible of care managers, patient sex and different treatment sessions, from assessment to the final session.

## Analysis

Consistent with the mechanisms of change framework described by Kraemer and colleagues for randomised controlled trials, all of our analyses were exploratory, hypotheses generating activities.<sup>62</sup> Analyses were undertaken in Stata 12.1 following a predefined analysis plan.

To explore the role of moderators we analysed the direct effects of our six baseline covariates on depression severity (PHQ-9) at 4 and 12 months using multilevel multiple linear regression, with a preliminary step to assess 'overall moderation' (regression including all moderator variables), thereby controlling for type I error inflation as a result of performing a large number of statistical tests.<sup>65</sup> We used the `xtmixed` command in Stata, modelling surgery as a random effect, to account for nested structure of the data (patients nested within surgeries). Trial site location was modelled as a fixed effect rather than the top random-effects level to reduce model complexity and avoid non-convergence issues. Each of the six baseline covariates and their interactions with the intervention (through which we investigated moderation) were included in the overall model; all variables were appropriately centred.<sup>66</sup> We planned to proceed with individual moderator analyses only in the presence of 'overall moderation'.

Potential mediating effects of collaborative care were investigated using structural equation modelling (SEM) in Stata. We analysed available data on the effect of medication adherence and behavioural activation at 4 months on PHQ-9 scores at 4 and 12 months and we explored the effect of medication adherence and behavioural activation at 12 months on the 12-month PHQ-9 scores. To explore and control for possible confounding,<sup>63,67</sup> for mediators that were found to have a statistically significant effect on outcome, we analysed the effect of pre-randomisation variables on mediation by including all of the baseline covariates (hypothesised moderators) in the respective structural equation model. To investigate the effect of possible post-randomisation confounding variables on mediation, we analysed the direct effects of the collaborative care participants' care manager and number of treatment sessions on the intervention group's 4- and 12-month PHQ-9 scores using multilevel multiple linear regressions, with GP surgery modelled as a random effect and trial site as a fixed effect. We planned to proceed with mediation analyses (SEM) allowing for post-randomisation confounding variables only if there was evidence of a direct effect of care manager or number of treatment sessions on depression severity.

In all mediation and confounding analyses we analysed the effect of missing process data in sensitivity analysis, in which we used 1000 sample bootstraps. For the post-randomisation confounding investigation we performed an additional sensitivity analysis in which we controlled for all of the baseline covariates in the regression model and bootstrapped 1000 times.

## Qualitative interview analysis

The transcripts from each interview formed the data. We used an iterative approach using constant comparison techniques<sup>68</sup> and topic guides that we reviewed and adapted after each interview following discussions between authors as the study progressed, allowing for emerging themes to be incorporated into the topic guides. CCG, NC, EA and PS conducted an initial thematic analysis and coding,<sup>69</sup> independently at first, and themes were agreed through discussion between researchers of different professional backgrounds (general practice, nursing, psychology). Following the thematic analysis we conducted a further theory-driven analysis of the data guided by the four main constructs of normalisation process theory<sup>24</sup> (coherence, cognitive participation, collective action and reflexive monitoring), detailed in *Box 1*, building on a previous process evaluation in which we had used the normalisation process model<sup>71</sup> to identify the work required to implement collaborative care for depression.<sup>72</sup> Our analyses aimed to identify barriers to and facilitators of the successful implementation of collaborative care into UK primary care.

**BOX 1** The four key elements of normalisation process theory

Coherence: a set of ideas about the meaning, uses and utility of a practice (defined as an ensemble of beliefs, behaviours and acts that manipulate or organise objects and others), which hold the practice together and make it possible to share and enact it.

- This is the sense-making work that people do individually and collectively when they are faced with the problem of operationalising some set of practices.

Cognitive participation: the symbolic and real enrolments and engagements of human actors that position them for the interactional and material work of collective action.

- This is the relational work that people do to build and sustain a community of practice around a new technology or complex intervention.

Collective action: the chains of interactions that are the site of mental and material work to organise and enact practice, which might include reshaping behaviours or actions, employing objects or artefacts or reorganising relationships and contexts.

- This is the operational work that people do to enact a set of practices, whether these represent a new technology or complex health-care intervention.

Reflexive monitoring: the continuous evaluation, both formally and informally, of implementation processes by participants, which may involve judgements about the utility and effectiveness of a new practice with reference to socially patterned and institutionally shared beliefs.

- This is the appraisal work that people do to assess and understand the ways that a new set of practices affect them and others around them.

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Source: from May and Finch<sup>70</sup> and [www.normalizationprocess.org](http://www.normalizationprocess.org) (accessed 18 November 2015).

This analysis was conducted individually by CCG, NC, EA and LG and the final analysis was agreed through discussion, with data being tabulated to illustrate the four constructs of normalisation process theory. Disconfirmatory evidence was sought in the data throughout the analysis.

**Audio-tape analysis**

We analysed the implementation of the intervention by initial transcription of 30 audio files and then analysis of the files by reading the transcriptions, referring in detail to the trial manual. We undertook a thematic analysis<sup>69</sup> similar to that for the interview data, with initial open coding of themes carried out first by SB and then by LG, utilising MAXQDA version 10 qualitative software [VERBI Software GmbH, Berlin, Germany; [www.maxqda.com/](http://www.maxqda.com/) (accessed 10 December 2015)] to manage the data and develop codes and categories within the data set. Memos were used in the development of emerging themes, specifically comparing the interviews with the CADET manual and model of intervention. LG and SB met regularly to discuss, clarify and characterise the themes.

## Results

### Moderation

The level of participants' depressive symptoms, number of previous depressive episodes, attitudes to antidepressant medication, attitudes to behavioural activation, number of limiting physical health problems and socioeconomic status at baseline are summarised in *Table 15*. There was little evidence of overall moderation of depression severity at 4 months ( $\chi^2 = 10.01$ ;  $p = 0.35$ ) or 12 months ( $\chi^2 = 5.63$ ;  $p = 0.78$ ). Multiple imputation data produced similar results (overall moderator effect at 4 months  $F_{9,37799.1} = 0.76$ ;  $p = 0.66$ ; at 12 months  $F_{9,30924.1} = 0.42$ ;  $p = 0.93$ ).

### Mediation

Participants' levels of behavioural activation, medication adherence and PHQ-9 scores at 4 and 12 months are provided in *Table 16*.

**TABLE 15** Mean baseline scores and regression coefficients for potential moderators of collaborative care

Moderator (n) <sup>a</sup>	Mean (SD) score or %, CC vs. UC	4-month coefficient (95% CI) <sup>b</sup>	12-month coefficient (95% CI) <sup>c</sup>
PHQ-9 (505)	17.54 (5.18) vs. 17.96 (5.02)	0.49 (0.37 to 0.60)	0.37 (0.25 to 0.49)
Number of previous depressive episodes (475)			
0	28.4 vs. 29.3	Reference category	Reference category
1	10.7 vs. 9.7	-2.15 (-4.25 to -0.05)	-1.76 (-3.95 to 0.42)
2-4	30.1 vs. 33.6	-1.31 (-2.77 to 0.16)	-0.005 (-1.52 to 1.53)
5+	16.2 vs. 15.4	-0.004 (-1.85 to 1.84)	1.46 (-0.47 to 3.40)
Chronically	14.8 vs. 12.0	1.66 (-0.22 to 3.53)	2.23 (0.27 to 4.19)
Positive attitude towards ADM (504)	76.42 vs. 79.27	-1.66 (-3.08 to -0.24)	-1.48 (-2.97 to 0.001)
Positive attitude towards BA (504)	94.32 vs. 93.09	-0.48 (-2.92 to 1.95)	1.82 (-0.72 to 4.36)
Limiting physical problems (454)	1.40 (1.46) vs. 1.59 (1.64)	1.16 (0.78 to 1.54)	0.77 (0.37 to 1.17)
Socioeconomic status (483)	29.22 (16.13) vs. 33.47 (15.53)	0.04 (-0.002 to 0.07)	0.04 (-0.003 to 0.07)

ADM, antidepressant medication; BA, behavioural activation; CC, collaborative care; UC, usual care.

a n refers to the number of patients who provided data on each moderator variable at baseline.

b 407/505 (81%) participants for whom 4-month PHQ-9 scores were available were included in the analysis.

c 405/498 (81%) participants for whom 12-month PHQ-9 scores were available were included in the analysis.

**TABLE 16** Level of behavioural activation, medication adherence and depression severity at 4 and 12 months

Variable	4-month score		12-month score	
	Collaborative care	Usual care	Collaborative care	Usual care
Behavioural activation, mean (SD)	19.60 (11.11)	16.04 (10.63)	20.80 (11.73)	17.27 (10.35)
Medication adherence (% incomplete)	39.51	35.83	35.97	37.74
Depression severity (PHQ-9), mean (SD)	11.10 (7.28)	12.68 (6.85)	10.03 (7.10)	11.74 (6.79)

### Effect of 4-month mediators on depression at 4 months

We found strong evidence of an effect of behavioural activation (coefficient 4.00, 95% CI 1.46 to 6.55) but not medication adherence (coefficient -0.03, 95% CI -0.14 to 0.08) on the intervention. The effect of behavioural activation led to strong evidence of an indirect effect of collaborative care on depression severity (coefficient -1.53, 95% CI -2.49 to -0.57). This is larger than the effect of collaborative care if the model did not include behavioural activation and medication adherence (coefficient -1.22, 95% CI -2.86 to 0.41). The effect of collaborative care at 4 months was therefore mediated in full by behavioural activation at 4 months.

When we undertook a structural equation model including behavioural activation at 4 months but not medication adherence we also found strong evidence for the effect of behavioural activation on the intervention (coefficient 3.56, 95% CI 1.78 to 5.34) and an indirect effect of collaborative care on depression severity (coefficient -1.33, 95% CI 1.99 to -0.67). There was little evidence of a direct effect of collaborative care (coefficient -0.08, 95% CI -1.10 to 0.94), suggesting that its effect on depression severity at 4 months was mediated in full by behavioural activation at 4 months. However, including the pre-randomisation variables in the model produced little evidence of an indirect effect of collaborative care, although the size of the effect was similar (coefficient -1.33, 95% CI -3.53 to 0.86). The direct effect of the intervention remained small and non-significant (coefficient -0.15, 95% CI -1.03 to 0.73). These results of the structural equation models were verified after a 1000-replication bootstrap.

### Effect of 4-month mediators on depression at 12 months

When we analysed the effect of medication adherence and behavioural activation at 4 months on PHQ-9 scores at 12 months we found strong evidence of an effect of behavioural activation (coefficient 3.86, 95% CI 1.30 to 6.42) but not medication adherence (coefficient -0.01, 95% CI -0.12 to 0.17) on the intervention. There was strong evidence of an indirect effect of collaborative care on depression (coefficient -1.20, 95% CI -2.00 to -0.39), larger than the equivalent effect if the model did not include behavioural activation and medication adherence (coefficient -0.97, 95% CI -2.89 to 0.96). The effect of collaborative care at 12 months was therefore mediated in full by behavioural activation at 4 months.

Moreover, when we undertook SEM including behavioural activation at 4 months but not medication adherence we found strong evidence for the effect of behavioural activation on the intervention (coefficient 3.57, 95% CI 1.78 to 5.37) and an indirect effect of collaborative care on depression severity at 12 months (coefficient -1.03, 95% CI -1.54 to -0.52). Although there was little evidence of a direct effect of collaborative care and the magnitude was relatively small (coefficient -0.42, 95% CI -1.63 to 0.80), we observed partial (not full) mediation; the effect of the intervention on depression severity at 12 months did not completely pass through levels of behavioural activation at 4 months. Including the pre-randomisation variables in the model produced little evidence of an indirect effect of collaborative care (coefficient -0.86, 95% CI -2.53 to 0.80). The direct effect of the intervention was larger but non-significant (coefficient -0.77, 95% CI -1.91 to 0.36). The results of the structural equation models were verified after a 1000-replication bootstrap.

### Effect of 12-month mediators on depression at 12 months

When we undertook a structural equation model including medication adherence and behavioural activation at 12 months we found weak evidence of a moderately sized effect of behavioural activation (coefficient 2.52, 95% CI -0.80 to 5.85) but not medication adherence (coefficient 0.02, 95% CI -0.12 to 0.15) on the intervention. There was weak evidence of an indirect effect of collaborative care on depression severity (coefficient -0.96, 95% CI -2.19 to 0.28), which was similar to the size and strength of the direct effect (coefficient -0.95, 95% CI -2.29 to 0.40). We therefore conclude that the effect of the intervention on depression severity at 12 months partly passed through levels of behavioural activation at 12 months.

Using similar procedures to those at 4 months, including behavioural activation at 12 months but not medication adherence we found that the effect of the intervention on depression severity at 1 year was partly mediated by level of behavioural activation at 12 months. There was strong evidence for the effect of

behavioural activation on the intervention (coefficient 3.53, 95% CI 1.09 to 5.97) and an indirect effect of collaborative care on depression severity (coefficient  $-1.40$ , 95% CI  $-2.34$  to  $-0.45$ ). However, although the direct effect of the intervention is relatively small and non-significant (coefficient  $-0.31$ , 95% CI  $-1.38$  to  $0.76$ ), the effect of the intervention on depression severity is not fully mediated by behavioural activation at 12 months. Including the pre-randomisation variables produced strong evidence of a larger indirect effect of collaborative care (coefficient  $-2.87$ , 95% CI  $-4.94$  to  $-0.80$ ) and little evidence of a direct effect (coefficient  $-0.62$ , 95% CI  $-1.74$  to  $0.50$ ). Results were verified after a 1000-replication bootstrap.

### Effect of post-randomisation confounding variables on mediation

When we undertook multilevel multiple linear regression to explore the effect of participants' care manager and number of treatment sessions on the intervention group's 4-month PHQ-9 scores we found little evidence of an effect of care manager ( $\chi^2 = 2.21$ ;  $p = 0.99$ ) or number of sessions (coefficient  $-0.11$ , 95% CI  $-0.38$  to  $0.15$ ). We also found little evidence of an effect of care manager ( $\chi^2 = 7.57$ ;  $p = 0.58$ ) or number of treatment sessions (coefficient  $-0.07$ , 95% CI  $-0.32$  to  $0.17$ ) on depression severity at 12 months. We observed no difference between the result of the multilevel multiple linear regression including observed data and the sensitivity analyses. The mediating effects of behavioural activation on treatment outcome were not confounded by care manager or number of treatment sessions.

### Results of the qualitative interview analyses

We present our results using the a priori normalisation process theory concepts of coherence, cognitive participation, collective action and reflexive monitoring with respect to the implementation of collaborative care as described in the methods section. We present data to support the analysis, which is labelled by identifier (CM = care manager, S = supervisor, GP = general practitioner) and number.

The demographics of care managers and supervisors have not been included to ensure the anonymity of participants. GP demographics can be seen in *Table 17*. The initial thematic analysis is summarised in *Table 18*, with some illustrative data provided.

### Understanding the collaborative care framework (coherence)

Behavioural activation, which formed the psychological intervention component of collaborative care in this study, was described by care managers as a user-friendly intervention and easy to understand, not just for themselves as practitioners but also for the patients, as they didn't find it 'too overcomplicated' (CM105). The care managers did find that the intervention encouraged them to develop joint plans with patients to a greater extent than in their usual practice:

*By collaborative care what do I mean? Erm, I mean more that sense of working with the patient . . . and I think it's more about reaching a shared understanding and working towards shared goals with enough input from other professionals that are involved in that person's care.*

CM101

Supervisors and care managers understandably demonstrated a good understanding of the collaborative care framework in addition to the intervention itself. For supervisors, this level of understanding was because of their role as co-investigators in the trial. Care managers reported that the CADET training had provided them with sufficient information and opportunities to clarify and improve their understanding of collaborative care, the intervention they were to deliver to patients and the expectation of working with GPs. Care managers described how their understanding of collaborative care and their role had been changed by the training prior to working on the trial:

*I'd assumed [collaborative care] would be self-help-based stuff because we were primary care, and collaborating with other professionals. Since doing the training it's mainly GPs that I've learned, but I kind of had the idea that it would be collaborating with other mental health workers, but not specifically GPs.*

CM103

TABLE 17 Demographics of GPs interviewed

GP	Sex	Years of experience as a GP	Practice population	Practice size	IMD rank	CADET recruitment figures	Actively involved in commissioning
GP001	Female	25	African Caribbean, Asian, Eastern European and Turkish population, long stay, suburban	14,000	4339	16	No
GP002	Male	17	50% Caucasian, 50% Asian population, urban, deprived, socioeconomic mix, many family residents	2800	2938	12	Yes
GP003	Male	39	Urban, mixed social class – less deprived (groups 1 and 2)	8000	26,048	13	No
GP004	Male	31	Urban, mixed social class – less deprived (groups 1 and 2)	8000	26,048	13	No
GP005	Female	25–26	Almost totally white population, not deprived, urban edges/ semi-rural. Core of family-based patients	2350	14,588	11	No, but is mental health lead for primary care trust
GP006	Male	28	5–10% Asian population, one-third transient, two-thirds settled (lots of families), high-deprivation area, over-represented in mental health compared with other practices	3500	1128	9	No
GP007	Female	21	White British population, high-deprivation area, high unemployment, many patients with smoking-related illnesses	6000	317	13	Yes in future
GP008	Male	15	African Caribbean, Asian, Eastern European and Turkish population, long stay, suburban	14,000	4339	16	No
GP009	Male	14	Younger population, high turnover. Eastern European, African Caribbean, South Asian, minority Far East Asian population, higher than 'normal' number of patients with mental health issues	7500	1809	8	Yes but resigning because of political nature
GP010	Male	30	Diverse, multiethnic. Top 10% most deprived areas in the country. A lot of mental health issues	8000	3428	12	Not for last 18 months

continued

TABLE 17 Demographics of GPs interviewed (*continued*)

GP	Sex	Years of experience as a GP	Practice population	Practice size	IMD rank	CADET recruitment figures	Actively involved in commissioning
GP011	Male	18	Two branches, slightly different demographics in each. One has new Eastern European immigrants; other has significant Asian and African Caribbean population. Suburban teaching/training practice	8300	9601/128,182 (two branches)	12	Not any more
GP012	Male	7	Same surgery as above. This GP says this is an inner-city practice. Lots of people with English as a second language. Mobile patient population (high turnover)	8300	9601/128,182 (two branches)	12	Not asked
GP013	Male	17	Mainly white males aged 25–35 years, a few Asian, Chinese and black people	7600	8179	16	No
GP014	Female	10	Mainly white males aged 25–35 years, a few Asian, Chinese and black people	7600	8179	16	No
GP015	Male	22	Majority white British, very few black and minority ethnic groups	7750	317	13	No

TABLE 18 Qualitative data thematic analysis illustrations

Main theme	Subthemes	Illustrative data
Recognising the need for change	GPs' understanding of current services	<i>Theoretically we have access to counselling services. There is a group commissioned by the PCT [primary care trust] called [names team] which I think has changed over the years from being a purely sort of counselling service to one with a range of psychological services</i> GP011
	Limited access to services	<i>[P]sychological services as opposed to psychiatric acute services are dire locally, absolutely dire . . . we have such limited access, there's just such a burden of . . . mild to moderate psychiatric illness and that isn't well catered for at all</i> GP001
	Reflections on the past	<i>The structure, I think, the way we used to work in the old days we used to work collaboratively anyway, which was really good, erm, but we haven't got that structure now, so it's about number crunching really, you know, in terms of referrals coming through to you, and being based at . . . a main health centre where they have to come to you</i> CM102
Operationalising collaborative care	Understanding collaborative care	<i>I was rereading the protocol for this session [interview] and thinking, should I have been doing more with GPs? Talking with them more about medication? So I thought, maybe I've done something kind of wrong and not quite completely as collaborative as I could have been, I think I probably could've done more</i> CM106
	Delivering the intervention	<i>I didn't really understand collaborative care; I'll be quite honest . . . I didn't know what collaborative care was, although I could have had a guess. Collaborative care would have meant care that involved both myself and someone else, if you see what I mean</i> GP004
	Facilitating communication	<i>It's a better experience for the therapist, I've kind of had a really positive experience of CADET, which I think if I'd purely had experience of IAPT [Improving Access to Psychological Therapies] I wouldn't be feeling quite so positive about BA [behavioural activation] or telephone support or telephone supervision or whatever, so 100% I think it's great</i> CM105
		<i>Something that is quite helpful . . . if a client's got an issue, especially something that is about medication, I will say you know, 'why don't you speak to your GP about that?' and I will say 'I will be writing to your GP just to let him know that this is what we've discussed', so the client would go, I would write a letter on the other side as well, and it's quite nice because the client would then come back and go 'Oh yeah, the GP got your letter' and when I speak to the GP they say 'Oh yeah the client did come back to me after what you said' so I think, it really does work</i> CM104
		<i>[T]here's that sort of linking where the GP was linked in, and I think that he was really pleased that erm, he was actually able to have a conversation with me about the medication, because he was actually feeling stuck and I think [names CM] was feeling a bit stuck</i> S102

continued



TABLE 18 Qualitative data thematic analysis illustrations (continued)

Main theme	Subthemes	Illustrative data
		<p><i>[A] lot of the time I've also noticed that through the GP if you do mention that through supervision what I have been told is X, Y and Z, then they could be, you know, they could be more likely to listen as well, to accept your opinion, so yeah, I think that works quite well as well, if you do tell them 'after discussing this in supervision, this is what we thought'</i></p> <p style="text-align: right;">CM104</p>
		<p><i>I've had very little, if any, involvement with the study except notification from you that a particular patient has been included on the study</i></p> <p style="text-align: right;">GP004</p>
	Enhanced supervision	<p><i>I think sometimes I'll write to them asking them something or asking their opinion of something, then the GP will kind of contact me, get back to me, and I think on one or two occasions I have had a GP ringing just to ask if I'd seen a client or when am I next seeing a client, so yeah, I think that's the only thing, it'd not something that happens that often, one or two occasions</i></p> <p style="text-align: right;">CM104</p>
	Communication vs. collaboration	<p><i>It's such a big problem; I'm not blaming anybody because GPs don't have the time . . . You could try to make it happen, it would be nice just to see that, increasing that contact . . . it sounds like a very desirable thing that would be helpful for everybody . . . I think collaborative is too strong a word for collaborative care, it's not truly collaborative in my opinion, but that's my opinion</i></p> <p style="text-align: right;">S105</p>
Catering for complexity	Recognition of complexity	<p><i>I don't think there is such a thing as pure depression, it comes in a package with lots of other things so when I say comorbid things, very often comorbid psychiatric problems, but also physical problems and never to forget, lots of social problems around, so you've got those three things there that are all competing, so there is a person with depression but at the same time there is obsessive-compulsive disorder, or query, you know</i></p> <p style="text-align: right;">S104</p>
	The need to avoid mind-body dualism	<p><i>I think that would be really helpful actually, for us to have more understanding of physical health problems and how they affect people . . . we need to recognise physical health problems and long-term conditions and how they affect people . . . I think knowledge about those is really important, we just need to know more</i></p> <p style="text-align: right;">CM106</p> <p><i>I would have thought logically yes, it's likely to be those sorts of people, the more complex your problem the more likely you are to benefit from it, erm, yeah, I would say comorbidity, absolutely</i></p> <p style="text-align: right;">GP015</p>
	Usefulness of a collaborative care approach for people with complex problems	<p><i>I think that the whole thing about collaborative care isn't about the interventions, it's actually about the system, and so that case management role is great . . . you know, I guess if you're saying, well there's the system which is about active follow-up, is absolutely right and that covers all of these people</i></p> <p style="text-align: right;">S101</p>

Only a minority of GPs demonstrated a good understanding of collaborative care, either because of their self-declared interest in mental health or because of previous experience of working within a collaborative care framework:

*So we've got more likelihood of being aware of what's happening in terms of the management and then that can affect any input that we might have, say in terms of medication if we're treating patients with antidepressants, we can get a feel for whether things were moving in the right direction and get the therapists' input as well as our own assessment. So it can potentially improve our understanding of how the patient is progressing and responding and aid our management.*

GP010

However, the majority of GP respondents did not fully understand the collaborative care framework and could not differentiate between the management of patients with depression in collaborative care and routine care. As a result, some GPs used the qualitative interview as an opportunity for further clarification, perhaps suggesting a lack of such opportunities during their initial discussions about involvement in the trial:

GP014: *Are you able to define collaborative care for me so I know what you're talking about, or not?*

Researcher: *Erm, I mean what we're trying to do it get an understanding of your understanding of it, so if you're not aware.*

GP014: *I mean they're all buzz words, so collaborative care, what it actually means?*

Some GPs described the main benefit of participating in the trial as the potential for increased support in their management of patients with depression in the context of limited access to psychological therapy services to which to refer patients:

*The CADET trial offered to me a resource which I thought would be beneficial. Another opportunity for somebody else to look at these patients, talk to them and share the workload in a way, with me.*

GP011

This GP is not reflecting specifically on the collaborative care framework; rather, she seems to be reflecting on the benefits of participation in any trial in which patients can access an additional 'service'.

Most GPs identified the potential benefits of adopting a more collaborative approach to patient care, particularly for patients with more complex problems:

*[I]t's likely to be those sorts of people, the more complex your problem the more likely you are to benefit from it, erm, yeah, I would say comorbidity, absolutely . . . the more complicated the things are, the more likely it is that the collaborative approach is going to help.*

GP015

It was not clear, even with probing in the interviews, what GPs actually meant by a 'collaborative approach' and GPs were not clear whether or not a collaborative care intervention would fit with their existing ways of working.

### Establishing relationships (cognitive participation)

A number of new relationships needed to be established within the collaborative care intervention. Supervisors and care managers reported well-structured, weekly, scheduled supervisory sessions that were arranged as part of the trial. Supervisors and care managers reported the value of an initial face-to-face meeting to establish the relationship, followed by weekly telephone supervision. Supervision was also supported by the PC-MIS, a web-based patient management system, demonstrating evidence of the work carried out for both establishing and sustaining collaboration between these two parties:

*The supervision has been excellent I must say. It's really nice to have it weekly, and it's great to have PC-MIS because it means we're both looking at the same screen, so it's been really good.*

CM103

Supervision as part of the CADET trial was also considered by care managers as ongoing learning, affirming to their practice and confidence boosting:

*[T]hey might point stuff out to me or they might anticipate problems before they arrived which in my lesser experience maybe wouldn't have foreseen so therefore they gave me some advice about how I might manage certain situations or what I might say to prepare a patient for something, erm, so yeah, it was fantastic, really, really good.*

CM105

Supervisors also considered that supervision in the trial was superior to that received in usual care and highlighted the importance of such supervision to the success of collaborative care, with one describing it as an 'integral part of . . . the whole collaborative care process' (S102).

However, supervisors identified potential problems around identifying the right people to provide supervision outside of the research study, including finding people who are both willing and able to provide the same level of supervision as was delivered in the CADET study.

*I think the biggest issue is the amount of supervisor time, and I think that, I think that we're fairly generous in CADET in that the same supervisor is involved in following people up, and that means that you do get, that means that people do get really good supervision, but it's quite, there's quite a lot of time involved in that . . . It's not that there'd be less time, there'd be less people that, erm, that are used to doing that kind of supervision.*

S102

In contrast, there was limited evidence of new relationships being established between the care managers and GPs in participating practices. Any liaison between care managers and GPs consisted of written information from the care manager to the practice, with direct contact unusual and reported to have occurred only when risk was deemed high, with few reports of care managers having direct access to the practice information technology system:

*[E]very 4 weeks we send a review letter, obviously you send the initial assessment letter to say 'we've assessed this person, their main problem is, their scores are' and then follow-up letters every 4 weeks.*

CM105

**Researcher:** *Have you been able to access to the patient records, has there been a sharing of information?*

**CM103:** *Erm, there's a couple where I've needed to, and I can't remember what practice it was but I went there and she said I had to send them a letter, so I had to come back here to fax them and then they faxed me a letter back, it was a bit, kind of ridiculous.*

One care manager did report having access to the patient records at some GP practices, but encountered different information technology systems in different practices, which was initially problematic, and she reported that developing good relationships with the practice administrative staff was essential to enable utilisation of these:

*[T]he other barrier I had was using the different computer systems in different surgeries, so that was dead complicated, but I got past that, and I found the staff were great because they'd just come and sign you on and things like that, because I couldn't remember the password.*

CM102

As care managers were already working within existing services and were seconded to the trial, a minority of care managers described pre-existing relationships with GPs that they found beneficial to engaging GPs in the collaborative care framework. Care managers also described a number of strategies that they had attempted to use to enhance opportunities for collaboration with GPs, including identifying the GPs' preferred method of communication at the beginning of the trial in anticipation of the need to communicate with them when working within a collaborative care framework:

*Initially with the study, what I did was, I went out and visited the GPs . . . and just said 'what's the best way for communicating?' . . . so it's looking at what's best for that GP, you know if you do get a relationship with them.*

CM102

Data suggest that the work carried out around setting up supervision and establishing care manager–supervisor relationships was important and appreciated by both parties. However, direct contact between care managers and GPs seemed to be the exception rather than the rule, and occurred at a time of crisis for an individual patient. Additional work was needed by care managers, as well as building on prior knowledge of practices, to establish working relationships with GPs that would enable engagement as a routine.

### Working within a collaborative care framework (collective action)

Care managers identified few difficulties in delivering the psychosocial intervention to patients; rather, they focused on the difficulties encountered in liaising or collaborating with GPs. Despite care managers reporting sending regular summary letters to GPs, the majority of GPs reported limited or no communication with care managers. It is unclear, therefore, whether GPs did not receive these letters or whether they did not have time to read them:

*I've had very little, if any, involvement with the study except notification from you that a particular patient has been included on the study.*

GP004

*I don't think I had any contact personally with the case manager. I think I saw a letter or two, but no sort of telephone or e-mail or anything of that sort.*

GP007

Either way, the limited communication reported by some GPs may account for their lack of awareness of the involvement of the care managers in the trial and the work that was being carried out with their patients.

**Researcher:** *You said that there would be someone with more specialist interest might be involved, erm, did you know who else was going to be involved?*

GP014: *Recruiting patients?*

Researcher: Erm, so the person you would be collaborating with?

GP014: No.

Researcher: No. OK. Erm, and so, are you aware now about the case managers that were involved in the study? That was involved in seeing the patient therapeutically?

GP014: No.

The lack of GP involvement is supported by some care managers' reports that, although GPs were helpful once they had managed to contact them, GPs rarely initiated contact, which left care managers feeling that communication was one-sided:

*[S]ince I've been working here, and that's been 2 years now, I think I've only ever had GPs initiate contact with me twice. Yep. It's really, really rare, which is a shame really.*

CM105

Despite the difficulties identified in contacting GPs, care managers reported improved relationships with participating GPs, along with identifying the benefits of this:

*Yeah, I think, I mean there are some GPs who are really difficult to get hold of or, you do write to them and you don't get a response and you have to try to chase them up, but a lot of the time what I have found is that they are quite helpful, you know, certain GPs are very easy to talk to on the phone, or make appointments with, so that's been quite helpful, and erm, yeah, kind of discussing the patient as well, it's, you know, I can suggest something, they can give me their side of what they're doing, again, come to some sort of conclusion.*

CM104

Some care managers suggested that co-location within GP practices could bring more opportunities for collaboration with GPs because of the increased possibility of informal communication and they compared this with their previous ways of working:

*[I]n the old days if we worked at a surgery, based there, it's that relationship building that you have a chance to do, erm, and so at the moment we don't do that as part of normal care, it's harder to do, I think it's impossible to do really, so what we get is, we're based at one health centre and we get people from all different surgeries being referred through to that one health centre so we don't get a chance to build those relationships.*

CM102

Supervisors recognised the difficulty experienced in achieving true collaboration between care managers and GPs:

*I mean you've got to have people together to collaborate, you know, I just wonder to what extent this really is collaboration, because it's only collaboration in name, in a way and the interested parties don't really get down and talk to each other very much . . . It's such a big problem . . . I'm not blaming anybody because GPs don't have the time. . . . You could try to make it happen, it would be nice just to see that, increasing that contact . . . it sounds like a very desirable thing that would be helpful for everybody . . . I think collaborative is too strong a word for collaborative care, it's not truly collaborative in my opinion, but that's my opinion.*

S105

The supervisors recognised that the collaborative care framework did not seem to fit within existing working practices of GPs.

Probably because of the set-up and frequency of supervision, supervisors and care managers reported good professional relationships with each other. Supervisors and care managers reported being impressed with each other's skills, suggesting confidence in each other's abilities. More specifically, supervisors reported satisfaction with the care managers' skills for delivering behavioural activation within a collaborative care framework, even to those patients identified as complex:

*I've been pretty impressed by the ability of the case managers to assess and manage some people who have not always been that straightforward, by any means, and these are people who are supposed to have, you know, these are people who have I suppose moderate degrees of depression, but they've got complicated life problems as well, some of them have been in crisis, and they've managed them. I think it's gone pretty well.*

S102

Likewise, care managers were enthusiastic about what they considered to be enhanced supervision, because of its increased frequency and the supervisors' wealth of experience and knowledge:

*[T]hey might point stuff out to me or they might anticipate problems before they arrived which in my lesser experience maybe wouldn't have foreseen so therefore they gave me some advice about how I might manage certain situations or what I might say to prepare a patient for something, erm, so yeah, it was fantastic, really, really good.*

CM105

There was little evidence in the GP data that the work conducted by the care managers and supervisors had any impact on GPs' routine consultations or their work with patients:

*[A]s far as the CADET study is concerned, we've not . . . it's happened alongside us really, it hasn't had . . . it certainly hasn't been detrimental to anything that we've been doing, but that's not really what I mean. What I mean is that we identified patients but then didn't need to change what we were doing very much.*

GP007

Care managers reported that they had taken or planned to take many elements from collaborative care (such as increased collaboration with GPs and medication management, as well as the behavioural activation psychosocial intervention) back into their routine work, which demonstrates that this approach is acceptable to care managers and has the potential to become normalised within their routine practice:

*What I will probably take back is a lot more information on medication . . . when I was working prior to that [CADET], the focus wasn't so much on the medication, yeah, and I don't think that I had much idea of medication, and I think now, there was a time when I wasn't too keen on medication myself, I wasn't too sure if medication really worked, whereas now I've seen that it is quite helpful so I would probably emphasise the medication with my patients, yeah, and I probably will take the whole BA [behavioural activation] in terms of being active and how that helps with the depression, so yeah, as a whole, the whole thing, but if there's one thing I'm going to focus on more it'll be the medication, yeah.*

CM104

Our data suggest that organisational changes within practices would be required to establish relationships between care managers and GPs and facilitate successful collaboration, such as integrated information technology systems and enhanced opportunities for GP/care manager communication and possibly co-location of professionals. Collaborative care would need to be seen as fitting in with the routine work of the practice for GPs to make changes to accommodate the work involved.

### Evaluating collaborative care (reflexive monitoring)

The weekly supervision presented regular opportunities for care managers and supervisors to reflect on patients and monitor their progress jointly. Collaborative care and the psychosocial intervention were described as effective and acceptable by care managers and supervisors, although it seems that care managers reflected on the perceived effectiveness of the psychosocial intervention (which formed the majority of their work with individual patients) rather than the collaborative care framework as a whole. The care managers described how they monitored patients through the collection of routine data (HADS), their own perceptions of patients' progress and discussions within supervision:

*[A] couple of people who, especially one, he's had long-standing social anxiety so a bit more of a complicated problem, but also depression, and we just worked away on the depression and we saw an improvement, so just by doing that behavioural activation, so sometimes even though someone's got more complex problems, for some people behavioural activation just saw quite an improvement, you know.*

CM102

*I think it's effective . . . I think that has been the most satisfying part, that I know it can work, I've seen BA [behavioural activation] work.*

CM105

Although care managers and supervisors identified some problems around delivering the trial psychological intervention (behavioural activation) in line with the protocol for those with comorbid mental health and complex social problems, the principles of intervention were still perceived to be acceptable in reducing symptoms of depression:

*I think I would've liked to work on anxiety a bit more, but at the same time . . . we've watched those depression scores come down.*

CM101

Some GPs did report receiving positive feedback from patients about their experiences with the care managers and of the intervention, which led the GPs to believe that there was some value in the intervention. This 'second-hand' knowledge was the only evidence on which GPs could reflect on the intervention, or on the collaborative care framework:

*A significant amount of them have reported personally that they have felt better after participating in the trial, in the study and then whatever the numbers there is some benefit in it.*

GP002

*I think certainly with a number of patients they did seem to gain considerable benefit and their depression was improved and their general social functioning seemed to be improved . . . I didn't get any negative feedback about the process.*

GP006

In contrast to the care managers' reports, GPs reported that they did not actively seek feedback from patients regarding their experience of collaborative care, and feedback was received only when volunteered by the patients:

*Generally from the patients we have had very positive feedback, and often our patients are generally kind of if there is something they don't like they will come and tell us.*

GP009

Similarly, some GPs suggested that the results of the trial rather than their views would determine their opinion on the future possibility of working in a new way:

*[O]ne of my managers doesn't see how, if CADET really works, so, and at the same time I'm not sure because I'm waiting, I look for the actual, you know sometimes I think it hasn't worked, sometimes I think it has worked . . . I suppose that's where the results will show, whether that's worked.*

CM101

*[W]e're talking small numbers and I think we need to see some outcome data rather than just my anecdotal subjective views of possibilities.*

GP010

The supervisors raised concerns about who would take on the responsibility of supervision of the care managers if collaborative care was implemented into routine practice, because of both the expertise and the time required to deliver supervision to the same standard and frequency as was delivered in the trial. Care managers also identified time as the biggest resource necessary to implement collaborative care, which included the time needed to maintain the prompt commencement of the intervention following referral, the time required for the administration involved in communicating with GPs and the time invested in supervision:

*I think the collaborative care part of it, because, writing a letter after assessment and then keeping a GP updated with letters, often what happens at [names team], the GPs are sent a letter on discharge with a summary of what happened, so that's kind of like no collaboration at all, for a lot of people there's absolutely no collaboration, and that's just down to time really and just the number of patients that everybody has.*

CM106

However, GPs felt that the main obstacle to implementing collaborative care would be the financial cost of commissioning collaborative care services, which they perceived would be more expensive than current care:

**Researcher:** *What are your views on whether collaborative care should be commissioned as a service for management of people with depression in primary care?*

**GP005:** *I would say it is an excellent way forward. However, it couldn't really have come at a worse time could it?*

**Researcher:** *Could you explain that?*

**GP005:** *Well in terms of all the financial restrictions and all the changes that are going to be happening at the moment.*

Thus, care managers and supervisors valued the care manager role encompassing expert supervision as well as the specific psychological intervention, including the behavioural activation and medication management components. Care managers placed less emphasis on the liaison between care manager and GP. GPs did not report actively reflecting on and monitoring the collaborative aspect of collaborative care, between care managers and GPs, but care managers described examples of liaison and how it might be facilitated. Care managers were positive about implementing collaborative care into routine practice, although possibly the emphasis was on the psychosocial intervention rather than the broader collaborative care framework; however, lack of time, concerns over supervisory arrangements in routine practice and the perceived cost of implementation were identified by all participants as barriers to this.



### Results of the analysis of therapy recordings

Our analysis of the 30 session tapes sampled led to three emergent themes describing the process of treatment delivery: (1) engaging the patient, (2) adopting a counselling model and (3) variations in the delivery of behavioural activation. We describe these in the following sections.

#### Engaging the patient

The theme 'engaging the patient' describes the efforts and strategies employed by care managers to develop a therapeutic relationship with participants. The theme covers not only these strategies and skills but also communication examples in which care managers failed to connect with participants before trying to engage in the more functional aspects of the CADET clinical protocol.

In terms of achieving engagement, care managers would use scripts, not necessarily those provided in the CADET treatment manual, but rather from a routine framed by the organisation in which they worked. Care managers were not directly employed by the trial team but were working with CADET participants alongside their other responsibilities in the provider organisation for whom they worked. As such, their 'script' could represent standard introductory information that they were required to give as part of their usual clinical practice. In most cases, this made specific reference to the limits of confidentiality:

*OK so I've got a bit of a script to read out first but the rest of it is just completely free-flowing conversation. It's just to make sure I give you the information I need to begin with so I don't miss anything out.*

*Care manager, assessment T4*

It was clear, however, that one of the difficult tasks for the care managers was to merge the script described above with the need to address the immediate needs of the participant and to engage them in the CADET clinical protocol. Non-specific therapeutic skills such as simply providing encouragement and positive feedback seemed to help with achieving and maintaining engagement. A key skill that we observed here was the verbal expression of empathy:

*Participant: Oh, I don't really have much confidence in myself let's put it that way, I just plod on, I just keep going through it.*

*Care manager: You've obviously had a struggle for quite some time but somehow you have managed to keep going.*

*Assessment T3*

Care managers did not always demonstrate engagement with participants and a number of examples of styles of communication that seemed to result in a failure of engagement could be identified in the sessions. There were examples of the care manager almost having a parallel dialogue in which the cues provided by the participant were not picked up on, because of the need to progress with the CADET interview task. One task, collecting factual assessment information, sometimes resulted in prolonged interrogative sequences in which the opportunity to pick up on key emotional cues was lost. Likewise, premature reassurance without understanding, acknowledging and *empathising* with the nature of the problems was not a successful intervention in achieving engagement:

*Participant: I feel useless, like I'm a bad mother.*

*Care manager: And what makes you say that?*

*Participant: I don't know.*

*Care manager: Because it seems like, although it is really hectic, it seems like there is a routine there and there is control and just having a routine is a base for children, because they come home and –*

*Participant: They're always playing up and that so I just think I don't have that much control over them that way, sometimes I just sit there and cry for nothing, I just feel like this is all there is to life, what happened to me basically, because I used to be such a bubbly, outgoing person.*

*Assessment T2*

### Adopting a counselling model

The theme 'adopting a counselling model' describes two particular types of interaction that moved beyond simply being empathic to engage the participant and towards something more recognisable as counselling. The first (delivered in response to life events/emotional cues from the participant) involved offering not simple empathic comments but *explanatory hypotheses* as a response to the participant talking about life difficulties, an approach more associated with psychodynamic therapies. The second counselling focus was when care managers talked about relationships rather than exploring the impact of depression on behaviours, triggers and consequences, and working towards goals. In several of the recordings, open-ended discussions of relationship issues rather than a focus on strategies to manage and address low mood were observed:

*Participant: I all too easily see the negative side in me, what I, what's wrong with me and what I haven't done or what I did or shouldn't have done or –*

*Care manager: Sounds like you're very hard on yourself.*

*Participant: I am yeah.*

*Care manager: Well that's going to have an impact on your confidence isn't it? You know if, again if you're seeing the redeeming features in everybody then perhaps any situation that comes up you might be more likely to take that on as if something bad happens then that's something that you've done rather than –*

*Participant: Yes, yes, like it couldn't be their fault because they're not like that it must be me.*

*Care manager: Yeah, ok, so you recognise that yet you still find that this has impacted on you in certain ways. Well you're not alone with that, certainly and it sounds again like I mean how long were you with your wife for?*

*Assessment T4*

This discussion topic could then become a primary feature of the shared problem statement, making it difficult to move on to functional aspects of the CADET protocol such as symptom monitoring, medication management, behavioural activation and GP liaison.

### Variations in the delivery of behavioural activation

The theme 'variations in the delivery of behavioural activation' describes how care managers explained and delivered behavioural activation, a core element of the CADET clinical protocol. Behavioural activation was clearly described in the manual provided to the care managers and they received 5 days of training in how to deliver it. Nonetheless, we observed differing approaches from care managers in terms of initial explanations, identification of behavioural exercises and goal setting with participants. We also identified care managers focusing on the content of participants' cognitions, a cognitive treatment strategy not part of the CADET clinical protocol.

In terms of explaining behavioural activation, some of the care managers managed a reasonably accurate explanation of it. In some sessions the explanation was brief and reduced simply to the idea of 'getting going and doing things again', with quite cursory reference to it during later sessions. In a similar way to the behaviours that we observed in the theme 'engaging the patient', this sometimes sounded rather like a one-way prescribed 'script', with little opportunity for the participant to ask questions:

*Care manager: The idea is that depression leads to changes in how we behave, our routines change, we withdraw from things that we enjoy and we tend to avoid doing necessary and important things, so the idea is that by setting goals we act our way out of depression rather than waiting until we think that we're ready to think our way out of depression. So behavioural activation is a structured and active method of helping yourself and it focuses on re-establishing daily routines, increasing the pleasurable activities that we do and addressing necessary issues so we'll help you to regain the functions that may have been lost or reduced since you felt low. Does that make sense or –*

*Participant: Yeah, of course, get my brain back and functioning again, I'd appreciate that!*

*Assessment T5*

There were examples of conversations in which care managers focused on the therapeutic effect of increasing physical activity or exercise, whereas the behavioural activation protocol instructed care managers to help participants increase a much broader range of personally relevant activities with the objective of re-establishing routines that had been reduced or disturbed during their depression. Likewise, we did observe variation in the way that care managers helped participants to set personal goals, another key element of the behavioural activation protocol. Some care managers left goals rather vague whereas others helped participants narrow down to specifics:

*Care manager: OK, what are your expectations and your ideas of what you'd like to achieve in the time that we've got together?*

*Participant: Just to be what people call normal, I suppose.*

*Care manager: What does normal mean? What are you not doing now that you'd like to do by the time we're finished working together?*

*Assessment T9*

We saw how care managers could help participants to translate overall goals into specific activities. Planning of activities could be detailed to help participants know what activity they were going to do and how and when they were going to try and carry out the activity. The next two extracts show this variation clearly; in the first extract the first care manager tries to establish clear procedural detail whereas, in the second extract, the details remain somewhat vague and after cursory attention being paid to the detail of how a goal was to be achieved the interview moves on to the care manager's own agenda:

*Care manager: Yeah, so what do you think you want to do over the next week to look at that, do you think there's anything you could change to put that in your diary or?*

*Participant: Yeah, I think the first thing I should do is clean myself up really. I mean I'm not dirty or anything like that, don't get me wrong, but my hygiene has gone out of the window looking at this, it really has.*

*Care manager: So if you just look at the personal hygiene in a morning and work on that bit first that sounds reasonable doesn't it, so what are your aims there, is it a wash or a shower or a wash one day and a shower the next?*

*Follow-up T7 (3)*

*Yeah, I think maybe make that as a goal for this week or the next time we speak, maybe to contact the Citizens Advice Bureau and see what you could do there, that's quite an important thing to do at the moment. Well that's good, excellent. I am going to go on to the HADS scale, the HADS questionnaire, do you have the paper in front of you?*

*Care manager, follow-up T2 (1)*

In terms of care managers' fidelity to the CADET clinical protocol, we did observe some use of clinical strategies that we had not included in the manualised protocol. As noted previously in this section, our care managers had established NHS clinical roles and were used to using a range of approaches as part of their work. One common element of their established working practices – addressing cognitions directly and using cognitive therapy concepts – could be seen to creep into their work with CADET participants even though this was not in the CADET clinical protocol:

*[W]hen we're feeling low we have those automatic negative thoughts and if you're a person who tends to actually personalise things which is a thought bias then sometimes we can beat ourselves up about it. I'm certainly not thinking this is your fault, I'm thinking oh a sinus infection, that's terribly painful.*

*Care manager, follow-up T4 (2)*



# Chapter 5 Results of long-term follow-up at 36 months

## Introduction

Our original funding and protocol<sup>1</sup> included only a maximum 12-month follow-up period. However, we were able to use some grant underspend to facilitate a no-cost extension from the MRC/NIHR to examine the long-term effects of collaborative care.

Our procedures were adapted from those described in the preceding chapters. Given our limited resources, 36-month follow-up interviews could be conducted only over the telephone or by post from a central site in Exeter.

## Sample

Participants were those who were recruited and allocated at baseline to the intervention or control groups of the CADET study.

## Ethical considerations

We applied for and received ethics approval for this trial extension from the NHS Health Research Authority, NRES Committee South West (NRES/07/H1208/60). Because of the unplanned nature of the 36-month follow-up, participants had not been warned that we would be contacting them at this point. Therefore, we sent them a letter explaining the trial extension with an opt-out slip attached that they could return to the research team if they did not wish to be contacted. If a participant could not be contacted by the research team, the GP and/or clinical commissioning group were contacted as appropriate and all reasonable attempts to re-establish contact were made.

## Measures

Our outcomes at the 36-month follow-up point were depression (PHQ-9), quality of life (SF-36) and worry and anxiety (GAD-7).

## Analysis

We assessed the baseline characteristics of participants followed up and compared them with the baseline characteristics of those lost to follow-up, using logistic regression predicting follow-up, adjusting for clustering, age, site, practice size and IMD. When differences between those followed up and those lost to follow-up were shown to be significant, we undertook further logistic regressions of treatment group on significant baseline variables, adjusted for age and minimisation variables.

We analysed outcome data by ordinary least squares or logistic regression, allowing for clustering by use of robust standard errors, adjusting at the cluster level for minimisation variables and site and at the individual level for age and, when appropriate, the baseline measurement of the variable.

We analysed the effect of missing data as a sensitivity analysis, estimated by chained regression equations multiple imputation<sup>48</sup> using all available scale clinical scores, age, sex, practice variables, site and treatment group.

## Results

At 36 months we obtained follow-up data, defined as primary outcome (PHQ-9) data, from 354 of the 581 participants who were observed at baseline (61% of those recruited).

### *Comparison between those followed up and those lost to follow-up*

We compared the following variables between those followed up at 36 months and those lost to follow-up: intervention group, age, sex, baseline PHQ-9 score, baseline GAD-7 score and baseline SF-36 PCS score and MCS score. We defined a participant as being present at 36 months if he or she returned a PHQ-9 questionnaire. We successfully followed up 63.8% of the collaborative care group and 58.4% of the usual care group. *Table 19* shows the comparison between those followed up at 36 months and those not followed up at 36 months. *Table 20* shows the same analysis broken down by treatment group. There is little evidence of a difference at baseline between those followed up and those not followed up apart from a significant tendency for participants with a higher level of education to be followed up at 36 months. *Table 21* shows education level by treatment allocation for those participants with data at 36 months. Our logistic regression of group on education, adjusted for age and minimisation variables, gives  $\chi^2$  (4 degrees of freedom) = 7.8 ( $p = 0.1$ ) indicating that there is no evidence that education differs between treatment groups in those followed up for 36 months.

### *Outcomes*

Summary statistics for available data are presented in *Table 22*. The results for the effect of collaborative care at 36 months using the available data are reported in *Tables 23* and *24*.

### **Depression**

There was no significant effect of collaborative care on depression ( $n = 354$ ). The mean PHQ-9 score was 0.04 scale points lower (95% CI  $-1.59$  to  $1.66$ ;  $p = 1.0$ ) in participants receiving collaborative care than in those receiving usual care (standardised effect size 0.01, 95% CI  $-0.31$  to  $0.33$ ) (see *Table 23*). More participants in collaborative care than those in usual care met criteria for recovery (OR 1.29, 95% CI 0.77 to 2.15; number needed to treat 18.8) and response (OR 1.33, 95% CI 0.80 to 2.21; number needed to treat 15.6) but neither difference was significant ( $p = 0.3$  for both) (see *Table 24*).

### **Anxiety**

With data available for 281 (48.4%) participants we found no significant effect of collaborative care on anxiety as measured by the GAD-7 (mean difference between collaborative care and usual care 0.53, 95% CI  $-0.78$  to  $1.85$ ;  $p = 0.4$ ) (see *Table 23*).

### **Quality of life**

#### ***Mental health***

With data available for 277 (48%) participants we found a non-significant difference (mean difference 0.42, 95% CI  $-3.40$  to  $4.24$ ;  $p = 0.8$ ) in the SF-36 MCS score between collaborative care and usual care.

#### ***Physical health***

We found no significant effect of collaborative care on quality of physical health at 36 months ( $n = 277$ ) as measured by the SF-36 PCS score (mean difference between collaborative care and usual care 0.69, 95% CI  $-1.79$  to  $3.17$ ;  $p = 0.6$ ).

**TABLE 19** Comparison of baseline data between those with PHQ-9 data at 36 months and those without PHQ-9 data at 36 months

Variable at baseline	PHQ-9 data at 36 months	No PHQ-9 data at 36 months	<i>p</i> -value <sup>a</sup>
<i>n</i>	354	227	
Collaborative care group, <i>n</i> (%)	176 (49.7)	100 (44.1)	0.2
Male sex, <i>n</i> (%)	102 (28.8)	61 (26.9)	0.7
Age (years), mean (SD)	44.5 (12.4)	45.1 (14.6)	0.6
Ethnic origin white British, <i>n</i> (%)	305 (86.2)	189 (83.3)	0.2
Education, <i>n</i> (%)			
None	67 (18.9)	61 (26.9)	0.004
GCSE/O-level	87 (24.6)	59 (26.0)	
Post GCSE/O-level	94 (26.6)	69 (30.4)	
Degree or higher	78 (22.0)	24 (10.6)	
Other or don't know	28 (7.9)	14 (6.2)	
Employed or self-employed, <i>n</i> (%)	105 (29.7)	61 (26.9)	0.2
Married or cohabiting, <i>n</i> (%)	149 (42.1)	92 (40.5)	0.7
Prescribed antidepressants, <i>n</i> (%)	292 (82.5)	188 (82.8)	0.9
CIS-R score, mean (SD)	28.8 (9.3)	30.3 (8.9)	0.06
ICD-10 diagnosis, <i>n</i> (%) <sup>b</sup>			
Mild	50 (14.2)	33 (14.5)	0.5
Moderate	203 (57.5)	120 (52.9)	
Severe	100 (28.3)	74 (32.6)	
History of depression, <i>n</i> (%)	258 (72.9)	164 (72.2)	0.9
Anxiety disorder, <i>n</i> (%)	344 (97.2)	226 (99.6)	0.06
Long-standing physical illness, <i>n</i> (%)	230 (65.0)	140 (61.7)	0.3
PHQ-9 score, mean (SD)	17.5 (5.1)	18.2 (5.1)	0.1
GAD-7 score, mean (SD)	13.0 (5.1)	13.7 (5.0)	0.2
SF-36 PCS score, mean (SD)	44.5 (12.1)	44.8 (12.7)	0.6
SF-36 MCS score, mean (SD)	23.4 (10.0)	21.7 (10.7)	0.08

GCSE, General Certificate of Secondary Education.

a Logistic regression predicting follow-up, adjusting for clustering, age, site, practice size and IMD.

b One participant did not meet ICD-10 criteria for mild, moderate or severe depression on the CIS-R score.



**TABLE 20** Comparison of baseline data between those with PHQ-9 data at 36 months and those without PHQ-9 data at 36 months by treatment group

Variable at baseline	Collaborative care		Usual care	
	PHQ-9 data at 36 months	No PHQ-9 data at 36 months	PHQ-9 data at 36 months	No PHQ-9 data at 36 months
<i>n</i>	176	100	178	127
Male sex, <i>n</i> (%)	48 (27.3)	26 (26.0)	54 (30.3)	35 (27.6)
Age (years), mean (SD)	44.7 (12.1)	45.6 (15.0)	44.3 (12.8)	44.8 (14.2)
Ethnic origin white British, <i>n</i> (%)	149 (84.7)	84 (84.0)	156 (87.6)	105 (82.7)
Education, <i>n</i> (%)				
None	28 (15.9)	26 (26.0)	39 (21.9)	35 (27.6)
GCSE/O-level	37 (21.0)	28 (28.0)	50 (28.1)	31 (24.4)
Post GCSE/O-level	57 (32.4)	27 (27.0)	37 (20.8)	42 (33.1)
Degree or higher	38 (21.6)	11 (11.0)	40 (22.5)	13 (10.2)
Other or don't know	16 (9.1)	8 (8.0)	12 (6.7)	6 (4.7)
Employed or self-employed, <i>n</i> (%)	55 (31.3)	27 (27)	50 (28.1)	34 (26.8)
Married or cohabiting, <i>n</i> (%)	87 (49.4)	40 (40.0)	62 (34.8)	52 (40.9)
Prescribed antidepressants, <i>n</i> (%)	144 (81.8)	87 (87.0)	148 (83.1)	101 (79.5)
CIS-R score, mean (SD)	28.4 (9.7)	29.4 (8.6)	29.6 (9.0)	31.3 (8.6)
ICD-10 diagnosis, <i>n</i> (%) <sup>a</sup>				
Mild	27 (15.3)	15 (15.0)	23 (13.0)	18 (14.2)
Moderate	97 (55.1)	59 (59.0)	106 (59.9)	61 (48.0)
Severe	52 (29.6)	26 (26.0)	48 (27.1)	48 (37.8)
History of depression, <i>n</i> (%)	131 (74.4)	71 (71.0)	127 (71.3)	93 (73.2)
Anxiety disorder, <i>n</i> (%)	169 (96.0)	100 (100.0)	175 (98.3)	126 (99.2)
Long-standing physical illness, <i>n</i> (%)	112 (63.6)	59 (59.0)	118 (66.3)	81 (63.8)
PHQ-9 score, mean (SD)	17.2 (5.3)	17.7 (5.1)	17.8 (4.9)	18.5 (5.1)
GAD-7 score, mean (SD)	12.5 (5.4)	13.6 (5.2)	13.5 (4.7)	13.8 (4.9)
SF-36 PCS score, mean (SD)	44.7 (11.6)	44.8 (13.6)	44.2 (12.6)	44.8 (12.0)
SF-36 MCS score, mean (SD)	23.5 (9.2)	22.7 (12.1)	23.3 (10.7)	20.9 (9.5)

GCSE, General Certificate of Secondary Education.

<sup>a</sup> One participant did not meet ICD-10 criteria for mild, moderate or severe depression on the CIS-R score.

**TABLE 21** Educational attainment by treatment group for those followed up

Education	Collaborative care, <i>n</i> (%)	Usual care, <i>n</i> (%)
None	28 (15.9)	39 (21.9)
GCSE/O level	37 (21.0)	50 (28.1)
Post GCSE/O level	57 (32.4)	37 (20.8)
Degree or higher	38 (21.6)	40 (22.5)
Other or don't know	16 (9.1)	12 (6.7)

**TABLE 22** Measures at baseline and 36 months, participants retained at 36 months

Measure	Collaborative care					Usual care				
	<i>n</i>	Mean	SD	Minimum	Maximum	<i>n</i>	Mean	SD	Minimum	Maximum
PHQ-9 score baseline	176	17.2	5.3	5	27	178	17.8	4.9	4	27
PHQ-9 score 36 months	176	10.2	7.2	0	27	178	10.4	7.1	0	27
GAD-7 score baseline	139	12.3	5.5	1	21	141	13.2	4.6	3	21
GAD-7 score 36 months	140	8.2	6.5	0	20	141	8.1	6.3	0	20
SF-36 MCS score baseline	137	23.7	9.4	1.3	44.8	137	23.9	10.6	-3.9	50.4
SF-36 MCS score 36 months	139	37.1	15.2	-1.8	63.6	138	37.0	14.6	5.4	63.4
SF-36 PCS score baseline	137	44.7	12.2	17.7	70.7	137	43.9	12.3	18.2	68.2
SF-36 PCS score 36 months	139	45.4	12.1	15.9	66.2	138	44.3	12.9	13.5	66.0

**TABLE 23** Primary and secondary outcomes at 36 months' follow-up

Measure	Collaborative care			Usual care			Adjusted difference	95% CI	<i>p</i> -value	Effect size
	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD				
PHQ-9 score 36 months	176	10.2	7.2	178	10.4	7.1	-0.04	-1.59 to 1.66	1.0	0.01
GAD-7 score 36 months	140	8.2	6.5	141	8.1	6.3	0.53	-0.78 to 1.85	0.4	0.10
SF-36 MCS score 36 months	139	37.1	15.2	138	37.0	14.6	0.42	-3.40 to 4.24	0.8	0.04
SF-36 PCS score 36 months	139	45.4	12.1	138	44.3	12.9	0.69	-1.79 to 3.17	0.6	0.06

**TABLE 24** Recovery, response and numbers needed to treat at 36 months' follow-up

	Collaborative care		Usual care		OR <sup>a</sup>	95% CI <sup>b</sup>	p-value <sup>b</sup>	Number needed to treat <sup>c</sup>
	n	Recovered/responded, n (%)	n	Recovered/responded, n (%)				
Recovery <sup>d</sup>								
36 months	176	87 (49.4)	178	78 (43.8)	1.29	0.77 to 2.15	0.3	18.8
Response <sup>e</sup>								
36 months	177	81 (46.0)	178	70 (39.3)	1.33	0.80 to 2.21	0.3	15.6

a Adjusted for age, site and minimisation variables.

b Adjusted for clustering by practice.

c Inverse of absolute risk reduction adjusted for clustering by practice.

d Recovery defined as a follow-up score of  $\leq 9$  on the PHQ-9.

e Response defined as a  $\geq 50\%$  reduction in PHQ-9 score at follow-up compared with baseline.

### Missing data

We undertook additional analyses using imputation. The imputed estimates in *Table 25* are very similar to the available data estimates (see *Table 23*) so we can conclude that for all of these analyses the effects of collaborative care are little affected by missing data. Missing data were also not related to intervention group (*Table 26*). At 36 months, we conclude, therefore, that, despite the inevitable large losses to follow-up over 3 years, there is no evidence of bias in the treatment effect estimates from available data.

**TABLE 25** Adjusted regression effects of collaborative care after multiple imputation

Scale	Data	Coefficient	Robust standard error	t	p-value	95% CI
PHQ-9 score, 36 months	Imputed	-0.18	0.73	-0.25	0.8	-1.65 to 1.30
	Available data	0.04	0.81	0.05	1.0	-1.59 to 1.66
GAD-7 score, 36 months	Imputed	0.53	0.67	0.79	0.4	-0.84 to 1.90
	Available data	0.53	0.65	0.82	0.4	-0.78 to 1.85
SF-36 MCS score, 36 months	Imputed	-0.12	1.71	-0.07	0.9	-3.62 to 3.38
	Available data	0.42	1.90	0.22	0.8	-3.40 to 4.24
SF-36 PCS score, 36 months	Imputed	0.94	1.14	0.83	0.4	-1.41 to 3.29
	Available data	0.69	1.23	0.56	0.6	-1.79 to 3.17

**TABLE 26** Missing PHQ-9 data by intervention group

	Intervention group, n (%)		OR for missing data in collaborative care group	p-value (robust standard error)
	Collaborative care	Usual care		
Missing PHQ-9 data at 36 months	99 (35.9)	127 (41.6)	1.26	0.20

## Summary

Our results at 36 months' follow-up showed that, after 3 years, participants in this trial were greatly improved with regard to depression, anxiety and quality of mental health. There were no longer any treatment differences, suggesting that the usual care participants had caught up with the earlier greater improvements in the collaborative care group. There was little change in physical quality of life; however, we would not have expected this as both collaborative care and usual care in this population were directed towards participants' mental health. This provides evidence for the validity of the trial.



## Chapter 6 Discussion

This chapter utilises material from three<sup>2,3,61</sup> of the four open-access articles previously published by the research team in accordance with the terms of the Creative Commons Attribution (CC BY 3.0) licence explicitly permitting the unrestricted distribution, remixing, adaption and reuse of these works.

We found that collaborative care improved depression at our primary end point of 4 months compared with usual care, effects that persisted up to 12 months. Collaborative care is cost-effective when service commissioners are willing to pay up to £20,000 per QALY gained and was preferred by patients over usual care. The differences in clinical outcomes between participants treated by collaborative care and participants treated by usual care were no longer apparent at 36 months' follow-up. In our process analyses we demonstrated that only one variable, the amount of behavioural activation undertaken by participants, predicted better outcomes, despite the fact that there was considerable variation in how behavioural activation was both explained and operationalised by care managers in sessions. We also found that case managers and supervisors regarded collaborative care as coherent but that the collective action required to implement elements of collaborative care was made difficult by GPs' lack of engagement with the collaborative care framework.

### Clinical outcomes

Collaborative care improved depression compared with usual care at both 4 and 12 months' follow-up. Our observed effect size was less than that used to power the study, although the 95% CI around it (0.26, 95% CI 0.07 to 0.46) encompassed our original target (0.4). Our result also lies within the 95% CI of the SMD found in the most recent meta-analysis of collaborative care,<sup>73</sup> which includes our results (overall SMD 0.28, 95% CI 0.23 to 0.33), and is no different from US (SMD 0.28, 95% CI 0.21 to 0.35), non-US excluding the UK (SMD 0.36, 95% CI 0.13 to 0.59), and other UK (SMD 0.32, 95% CI 0.07 to 0.57) trials.<sup>23</sup> Collaborative care is as effective in the UK health-care system, an example of an integrated health system with a well-developed primary care sector, as in the USA. Our study adds to the emerging international literature from countries such as Chile<sup>26</sup> and India<sup>27</sup> indicating that collaborative care is a model that reliably generalises outside the USA.

We also found that participants rated their satisfaction with treatment more highly in the collaborative care group than in the usual care group, the largest difference between groups of any of our measures. These results are in line with data showing that most participants were adherent to collaborative care, with the majority receiving more than two contacts with care managers and the average contact rate being between five and six sessions. Collaborative care is therefore not only effective but patients receiving it are more satisfied with their care than those receiving usual care and are adherent to the intervention.

In the long-term, at 36 months, there was no significant difference between the groups. This confirms the picture described in the recent Cochrane review<sup>23</sup> in which the clinical benefits of collaborative care were not found beyond 2 years after the intervention. Despite the lack of significant difference it is worth noting that in the collaborative care group > 5% more participants had responded or recovered at 36 months.

### Economic outcomes

Although previous reviews<sup>74,75</sup> have identified evidence from cost-utility (cost per QALY) studies to support the economic value of collaborative care for depression in the US health-care system, the CADET trial is the first study to estimate the cost-effectiveness of collaborative care in a UK primary care setting. We have shown that collaborative care is cost-effective compared with usual care in treating people with depression in a UK primary care setting when providers are willing to pay up to £20,000 per QALY gained.

Furthermore, when taking a broader analytical perspective and including costs associated with informal care, the results show that collaborative care is expected to be cost saving, with expected health gains, and therefore dominates the usual care comparator.

Our cost-effectiveness analyses report an expected modest mean QALY gain for collaborative care at a relatively low cost. Although the mean QALY gain is modest, it is comparable, and favourable, to that recently reported in the evaluation of a UK Improving Access to Psychological Therapies (IAPT) service,<sup>76</sup> which estimated a mean EQ-5D QALY gain of 0.014 (SF-6D gain of 0.008). Our estimated costs for health and social care in the CADET trial are similar to those reported in the IAPT service evaluation for IAPT service or comparator mental health-care services.<sup>76</sup> Furthermore, despite differences in the populations, the QALY gain from the collaborative care intervention is in a similar range to that reported in an evaluation of therapist-delivered cognitive-behavioural therapy for depression,<sup>77</sup> in which the mean incremental QALY benefit was reported as 0.027 (95% CI -0.012 to 0.066).

Our base-case difference in health and social care (NHS and Personal Social Services) costs over 12 months (£272.50) and the subsequent cost per QALY estimate of £14,248 are heavily influenced by one participant who reported extremely high levels of service use for specialist care, including a 100-day stay in an acute psychiatric hospital. This participant, in the collaborative care group, had an estimated service use cost of £48,522 compared with a mean cost of £1637 for all other trial participants with cost data over 12 months ( $n = 446$ ) averaged across both groups; 94% of participants had cost estimates of < £5000, all but four participants had cost estimates of < £10,000 and three participants had costs estimated between £10,000 and £24,000. When we excluded this one participant from the analyses, the difference in NHS and personal social services costs between collaborative care and usual care when including the cost of collaborative care was £63, with an estimated cost per QALY of £3334.

Our probabilistic analyses indicate that collaborative care has a 58% and 65% probability of being cost-effective at commonly assumed UK NICE willingness-to-pay thresholds of £20,000 and 30,000 per QALY respectively. When we considered the uncertainty around the cost-effectiveness estimate that excludes one participant with high service use and costs (£3334 per QALY), the probability of collaborative care being cost-effective at these cost per QALY thresholds was > 75%. The most conservative expectation (based on the intention-to-treat principle) would be that the introduction of collaborative care will involve an additional cost of £272.50 per participant for the UK NHS and this potential cost, alongside estimated EQ-5D QALY gains, will result in an expected cost per QALY of £14,342, which is similar to the base-case analysis presented here and represents a cost-effective use of NHS resources. We would suggest that the likely cost-effectiveness of collaborative care in practice might be closer to the estimate in the sensitivity analysis with the very high-cost participant excluded.

## Process analyses

The principal finding from our moderation and mediation analyses was that the effects of collaborative care on depression at 4 months' follow-up can be entirely attributed to the amount of behavioural activation undertaken by participants and the effects at 12 months are strongly mediated by behavioural activation. Despite the fact that collaborative care is a complex intervention that also includes medication management, we found evidence only for the mediating effect of behavioural activation. We found no evidence that depression severity, number of previous depressive episodes, attitudes towards treatment components, physical health problems or socioeconomic status influenced treatment outcome, and nor did we find that the care manager, number of contacts between care manager and participant and adherence to medication influenced outcome, albeit our study was not powered to detect these effects per se.

The second component of our process analysis, interviews with care managers, supervisors and GPs, showed that collaboration around the management of patients with depression in primary care was valued by professionals. However, GPs' understanding of collaborative care, compounded by long-standing organisational barriers, hindered their engagement in the intervention. It is unclear whether or not more GP engagement would have led to better outcomes. Enhanced supervision as reported in this study may be collaboration enough to result in improved patient care.

Our final process evaluation element, in which we analysed care manager/participant contact audio-tape recordings, revealed variation in the way that care managers engaged participants, how they behaved clinically and how they undertook behavioural activation. Verbal expression of empathy, encouragement and positive feedback seemed to be key in achieving both initial engagement and its maintenance. Some care managers strayed from merely demonstrating empathy into a style of treatment more closely identifiable as counselling. There was variation in how the elements of behavioural activation were demonstrated by care managers, with considerable difference in how behavioural activation was both explained and operationalised. Despite the protocol focus on behaviour alone, some care managers also chose to address cognitions.

## Strengths and limitations of the study

The CADET study is one of the largest studies of collaborative care with an integrated economic evaluation. Less than 50% of published collaborative care trials have followed up participants for  $\geq 12$  months and our levels of attrition at 4 and 12 months are comparable with those in 70% of collaborative care trials and better than those in other trials of brief interventions in this area.<sup>78</sup> There was no evidence that missing follow-up data biased the findings, even at 36 months when, not surprisingly, attrition was higher than at other follow-up time points.

Although our cluster design protected against contamination of the usual care arm by changes in behaviour being tested in the collaborative care arm, cluster trials are prone to selection bias. We minimised this bias by recruiting participants through electronic case note searches rather than clinician referral. Given the nature of the intervention and comparator we could not blind GPs, patients or care managers to treatment allocation but we used self-report outcome measures to minimise the impact of detection bias. The supervisors who we interviewed were also CADET co-investigators and therefore their views are likely to be framed by their academic investment in the study. As CADET trial researchers conducted the qualitative interviews some researcher bias may be evident, as this is likely to have affected the participants' responses, particularly those of the supervisors and care managers.<sup>79</sup> We attempted to use interviewers from another study site to reduce this bias. Although purposive sampling of GPs was attempted, GPs were difficult to recruit to this qualitative study, with a majority of those who refused citing lack of time or limited involvement in the trial as reasons for this. However, category saturation was achieved within the data, although the difficulties experienced in recruiting GPs may mean that the data may not represent the views and experiences of GPs in all participating practices.

Our within-trial analysis demonstrates cost-effectiveness at the willingness-to-pay threshold of £20,000 per QALY, without the need to extrapolate potential benefits over the longer term. Our analyses used data collected within the trial to estimate resource use and costs associated with delivery of the intervention, but relied on self-report data from interviewer-administered questionnaires to estimate health and social care service use and broader resource impacts. Routinely collected service use data may have provided a more rigorous estimate of service use, particularly for primary care contacts.<sup>80</sup> However, there would be difficulties and costs related to the collection of service use data from 42 general practices and to necessary routine data collection for aspects of care not recorded in GP records and therefore we chose to use participant self-report data. We also relied on self-reported records of care manager contacts and so have no means to assess record accuracy.



Difficulties in collecting detailed data on medication use by self-report methods can lead to errors in self-reporting. These errors include the potential for variation in medication names, variation in reported dose and complexity in relation to the use of medications for a wide range of comorbid conditions. These issues led us to exclude medication costs from the economic analysis plan<sup>1</sup> and this may be a limitation in the results presented here, as medication adherence has been shown to be one of the potential benefits of collaborative care.<sup>23</sup> However, most participants in both the collaborative care group and the usual care group remained on antidepressant medication (74.8% vs. 73.8% at 4 months; 69.7% vs. 69.2% at 12 months). Finally, the collection of resource use data using self-report methods over 4-month and 8-month durations may have introduced recall bias and this has not been explored as part of the current analyses.

Although care managers were already employed by organisations providing primary care mental health services in the UK NHS, supervisors were senior members of the investigator group and so it is unclear how much their, albeit minimal, supervision can be generalised beyond the trial. Our intervention was brief and it is possible that a more intensive intervention might have improved outcomes further, particularly for the more complex cases. We could have chosen a different psychological intervention such as cognitive-behavioural therapy<sup>81</sup> but a review<sup>38</sup> and a randomised controlled trial<sup>82</sup> showed that behavioural activation is as effective as cognitive-behavioural therapy, potentially more so for severe cases,<sup>83</sup> and can be delivered effectively by junior, less intensively trained health-care personnel.<sup>82</sup>

The perspective on the analyses does not extend to the broad welfare and economic impacts of depression, including impact on productivity costs, as such costs are not included in the reference case analyses suggested by NICE<sup>56</sup> for UK analyses. However, data collection did cover aspects of care and support and patient costs, which has extended the primary perspective (of NHS and Personal Social Services costs) to a broader patient- and societal-orientated perspective. We accept that the use of a relatively small number of categories for these broader considerations may be a limitation in the analyses. However, as in other studies (e.g. Romeo *et al.*<sup>84</sup>), we found that resources and estimated costs associated with informal care were a dominant aspect when taking a wider perspective and this gives us clear guidance on the magnitude of these wider perspective costs.

## Implications of the clinical and economic findings for the NHS

During the time that we undertook the CADET study the number of international trials of collaborative care more than doubled, albeit with many of them still conducted in the USA. Although the generalisability of a US collaborative care model to the UK had been suggested by previous small-scale studies, the CADET trial has provided definitive confirmation of generalisability and that collaborative care is preferred over usual care by depressed patients and is cost-effective in the UK. We have therefore answered a specific research need highlighted in the NICE guidelines for depression,<sup>28</sup> providing critical evidence for service delivery improvement. The NICE guidelines can now be reviewed to reassess the place of collaborative care in the stepped care pathway in light of our findings that collaborative care is clinically effective and cost-effective for a range of depressed patients, not necessarily those who fail at other treatments.

Although our results sit within the expected effect range of collaborative care reported in the latest meta-analysis of international collaborative care trials,<sup>23</sup> the clinical implications of our results are more difficult to interpret given that the average difference in treatment response was less than that we had anticipated (actual effect size 0.26 vs. 0.4 anticipated). Between-group differences can obscure response rates in individual patients. We have therefore presented the data on meaningful clinical difference using numbers needed to treat and two criteria commonly applied in the depression literature and regarded as clinically meaningful: that of *recovery* (falling below a recognised point on the PHQ-9 symptom scale) and *response* (a  $\geq 50\%$  reduction in symptoms of depression). Using these metrics it is particularly noteworthy that at 12 months 56% of patients receiving collaborative care were 'recovered', 15% more

than in usual care. Health services would therefore need to treat 6.5 patients using collaborative care to produce one additional patient with a sustained recovery compared with usual care.

Studies that have achieved higher effects have been undertaken in countries with less developed primary care services<sup>26,27</sup> or have used more highly qualified workers such as nurses or social workers.<sup>85</sup> These workers are in acute short supply in the UK and hence this would not have been a translatable model for our health system.

Our results represent a slightly higher recovery rate than that reported by the UK IAPT programme. Recovery rates of around 45% have been achieved in the IAPT programme following an investment of £700M over 6 years.<sup>86</sup> We suggest that integration of our CADET protocol into IAPT services might enhance outcomes for depressed patients receiving treatment and provide guidance to international mental health services that this model can be applicable outside the USA.

The finding that collaborative care is the dominant intervention compared with usual care when we included informal care costs in our analyses is an important issue. Family members and others involved in informal care contribute to the care of depression in a substantial manner. As Richard Layard<sup>87</sup> and others have often asserted, the implications of these care costs on productivity are a significant burden on the economic activity of a nation. The introduction of collaborative care has the potential to relieve some of the significant burden that falls on informal carers and reduce this economic load.

Given that collaborative care is more effective over a sustained period of time than usual care and represents value for money to the NHS at commonly used thresholds for cost per QALY, we suggest that commissioners of health care in the UK might review the organisation of their routine depression management services and consider using a collaborative care model. Evidence here indicates that services could benefit from being commissioned to support the management of patients with depression in UK primary care using a collaborative care model, as it would be both clinically effective and cost-effective to do so.

## Implications of the results for treatment development and future research

Although collaborative care is an organisational intervention that improves outcomes, much remains to be done to improve the effectiveness of treatments for depression. Even intensive psychological treatments for depression have been shown to achieve only modest gains (effect size of 0.42 in 51 studies<sup>88</sup>). Our careful selection of intervention ingredients, directed by our identification of components present in the better-performing trials from our previous metaregression,<sup>89</sup> did not succeed in achieving the larger effects we had hoped for. In the trial, 44% of participants receiving collaborative care had PHQ-9 scores that remained above the PHQ-9 depression threshold at 12 months' follow-up.

The strong finding that behavioural activation was the only mediator of effect is important. Behavioural activation is hypothesised to operate by providing people with more opportunities for positively reinforcing experiences and reducing the amount of negatively reinforced avoidance behaviours, thereby improving affect. This hypothesis would appear to be supported by our results. We would encourage future researchers to measure the mediational contribution of behavioural activation to patient outcomes in other trials, to determine the universality or otherwise of our findings. If replicated, this would have considerable implications for the inclusion of activating strategies in other effective depression management strategies. Further, in the context of the findings from our audio-tape analysis that there was variation in the delivery of behavioural activation in care managers' contacts with participants, we may have achieved better outcomes, more in keeping with our predictions, had care managers been able to deliver a more rigorous and consistent behavioural activation programme. We may have achieved better outcomes, more in keeping with our predictions, had care managers been able to deliver a more rigorous and consistent behavioural activation programme. Our supervision model did not require supervisors to listen to audio

tapes and give care managers specific clinical feedback on these tapes. It might be that we could optimise the delivery of behavioural activation to ensure that it is more consistent by amending our supervision model to require supervisors to sample audio tapes and feed back their analyses. It seems clear that clinical and supervisory practice should focus much more on enhancing the quality and consistency of behavioural activation within the collaborative care model. However, our supervisory system was delivered by professionals with considerable expertise in case management and behavioural activation. The ability of routine services to replicate this standard of supervision would need to be tested and then monitored in any implementation programme.

The limited liaison reported between GPs and care managers could suggest that more work is needed to facilitate collaboration around individual patients. Some structural aspects were identified that may facilitate liaison, including shared place of working, shared information technology systems, facilitating opportunities for informal meetings and building in formal collaboration into the collaborative care framework. However, although considered by many to be desirable, it is unclear if such an increase in collaboration between care managers and GPs would improve clinical outcomes. Despite being a core component of the collaborative care model, the extent to which additional collaboration between care managers, supervisors and GPs beyond established communication lines is actually necessary for effective patient management of depression is as yet undetermined. For example, a recent trial of collaborative care for people with long-term physical health conditions and depression<sup>90</sup> introduced joint sessions with primary care staff (practice nurses) and mental health-care managers to reflect the comorbid problems that patients had, but the effects were no different from those in the CADET study.

Although the vast majority (98%) of our participants had a secondary diagnosis of anxiety we found no differential effect of collaborative care compared with usual care on anxiety at any follow-up point. Patients in both groups had less anxiety at 12 months in particular but the difference between the two groups at this point fell just short of being significant. It seems that a fruitful area of potential treatment development would be the addition of specific anxiety-directed treatment components to the basic collaborative care package. In addition, the high prevalence of long-term physical health conditions in our study population is worthy of note and suggests that specific attention given to this aspect of collaborative care might reap rewards. Indeed, several studies in the USA<sup>91,92</sup> and more recently the UK<sup>90</sup> have done this. Unfortunately, the addition of this focus in the UK did not deliver significantly enhanced outcomes compared with the CADET study.<sup>90</sup>

Future trials should therefore test enhancements of the basic collaborative care model by developing, testing and delivering better treatments *within* the effective collaborative care organisational framework or improve the delivery of existing treatments through more rigorous supervision, rather than test collaborative care per se, given that the effects of collaborative care are now firmly established.

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**Jacqueline J Hill, Adwoa Hughes-Morley and Abigail Russell** were responsible for study management and data collection.

**David A Richards, J Martin Bland, Colin Green, Evangelos Kontopantelis and Jacqueline J Hill** undertook data analysis.

All authors had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis. All authors contributed to the writing and editing of the report.

## Publications

Richards DA, Hughes-Morley A, Hayes RA, Araya R, Barkham M, Bland JM, *et al.* Collaborative Depression Trial (CADET): multi-centre randomised controlled trial of collaborative care for depression – study protocol. *BMC Health Serv Res* 2009;**9**:188.

Richards DA, Hill JJ, Gask L, Lovell K, Chew-Graham C, Bower P, *et al.* CADET: clinical effectiveness of collaborative care for depression in UK primary care. A cluster randomised controlled trial. *BMJ* 2013;**347**:f4913.

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## Data sharing statement

The authors confirm that all data underlying the findings are fully available without restriction. The authors have made the clinical and economic data set available through the University of Exeter's Institutional Repository – Open Research Exeter (see <https://ore.exeter.ac.uk>). Access to these data is permitted but controlled through requests made via the repository to the chief investigator (Professor Richards: [d.a.richards@exeter.ac.uk](mailto:d.a.richards@exeter.ac.uk)). Although use is permitted, this will be on the basis that the source of the data is acknowledged (including the funder) and it includes reference to the data set 'handle'.

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# Appendix 1 The CollAborative DEpression Trial care manager's guide

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## Case Management for Depression in Primary Care:

## A Practitioners Guide

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## **Introduction**

This protocol contains guidelines for delivering the case management element to patients with depression treated as part of the Enhanced Care for Depression clinical trial.

**Section A** describes the research trial and details the overall principles of case management.

**Section B** outlines a session by session overview.

**Section C** describes the case management interventions (including education about depression, medication management and behavioural activation) and provides patient information leaflets.

**Section D** provides resource materials for use by case managers.

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## Section A

# Principles and Practice of Case Management

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### **Explaining the Trial**

This trial is funded by a project grant from the Medical Research Council. It is a randomised controlled trial where patients are allocated to either the 'experimental condition', in this instance case management, or 'usual care' which in this study is care which would be offered in normal circumstances to patients with depression by the GP.

Eligible patients are patients from 18 years onwards with a diagnosis of at least moderate depression who are not suicidal and who would normally be treated by GPs in primary care. Patients with very severe depression who would be referred to local psychiatric services are excluded from the trial. In essence, the trial is trying to find out what impact case management can have on the usual care of patients with depression in primary care.

Although case management has a strong evidence base internationally, its application has not been studied in the UK. The trial is a 'trial platform'. This means that we want to understand the fine details of case management. For example, we do not know who would be the best person to act as a case manager in a UK primary care setting. In order to answer this and other questions, we are conducting the trial in four PCT sites across the North of England and deliberately varying the background of people who are acting as case managers. We are very interested in the outcomes of patients with depression who are assisted by a case manager but we are equally interested in the experiences of case managers themselves and in how the process of case management unfolds.

Hopefully, by the time the trial is complete in March 2006, we will have tested this protocol and will understand more about the process and outcomes of case management for depression in primary care. We will use this information to make recommendations for both clinical practice and further research if this is indicated. Your help in this process is very much appreciated and we thank you for becoming involved.

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**Questions and Answers**

**What is Case Management?**

Case management involves one health worker in primary care making proactive contact with patients. It includes regular, scheduled contacts (usually by telephone but may include some face to face contact). Case managers take responsibility for:

- 1 assessing patients' views of depression, their attitudes to and concordance with psychosocial and pharmacological treatments
- 2 negotiating shared treatment decisions with patients
- 3 assisting patients with managing antidepressant medication
- 4 delivering brief guided self-help psychosocial interventions
- 5 feeding back of information about treatment and progress to the GP and mental health specialist to assist in treatment decision making

**How is Case Management Different from Other Forms of Community Mental Health Care?**

In a few areas, case management will be very similar to current practice. However, case management contacts are generally shorter than traditional community mental health care and start as soon as a patient is diagnosed with depression by a GP. The telephone is the most likely mode of contact in case management. Contacts with patients are structured around medication concordance and self-help psychosocial interventions. Psychosocial interventions are less intensive, less dependant on professional delivery and focussed more around self-help interventions. Contact frequency is explicitly organised around the phenomenology of depression and the response and side effect profiles of antidepressant medication and psychosocial interventions.



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**Who is Case Management Indicated for?**

Case management is suitable for all patients with moderate depression who a) have been prescribed antidepressant medication or b) have chosen not to take medication.

**How are Case Managers Supported?**

Case managers are part of a system of 'collaborative care'. They do not work alone, but receive support from a specialist mental health professional and share information with the GP. Case managers operate to provide an extension of the GP's work and are in regular contact with the GP. Case managers are also supported by a specialist mental health professional who provides weekly supervision of cases together with advice and support.

**How long will Case Management Last?**

For the purposes of the trial, the duration of Case Management will be for 12 weeks and include a maximum of 10 contacts per patient.

**What is the desired frequency of Contact Sessions?**

The minimum frequency should be weeks 1, 2, 4, 8, 12. Additional session frequency should be negotiated with individual patients. Negotiation of contact frequency should take into account patient preference, response to treatment, PHQ9 scores, the requirements of the psychosocial support programme and the amount of GP-patient contact. However, in general, weekly sessions are good practice during the first month of contacts, reducing to fortnightly in the second and third months. Where treatment is progressing satisfactorily, contacts may be less frequent than for patients who are struggling to overcome their depression.

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**How often should Case Managers try to Contact Patients?**

Most case management contacts will be by telephone. Case managers should try to contact patients until they are successful in reaching the patient. The most successful strategy is to arrange a time when patients will be expecting a telephone call from the case manager. However, if patients cannot be reached, case managers should persist in trying to get through to the patient. In some cases, this may require very many attempted calls or calls to be made in the evenings or at weekends where this is possible. Clinical experience tells us that patients are overwhelmingly positive when case managers are persistent. We know of no cases where this has been regarded negatively by patients.

**What happens at the End of the Trial?**

After the period of case management comes to an end, case managers should discuss options with the patient's GP and their local mental health services. For some patients whose condition has substantially improved, no more assistance will be required aside from regular GP review. In other cases it may be appropriate for the GP to organise a referral to specialist mental health services, where these are available locally. In some cases, following discussion with service managers locally, case managers may wish to maintain further ongoing support to patients. Trial supervisors will be available to advise case managers on next steps; however, all decisions should be taken in consultation with GPs and local service managers.

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**Summary: Who Does What in the Trial.**

### **The GP**

The GP is responsible for identifying patients with depression and referring them into the trial. They retain all medical responsibility for the treatment of trial patients.

### **The Case Manager**

The case manager is responsible for supporting patients in their treatment choices for depression. They help the patient manage pharmacological treatments where these have been initiated and are also responsible for delivering a programme of self-help psychosocial support to patients. Case managers are responsible for communicating with the GP and supervisors on the progress of patients in the trial.

### **The Supervisors**

Supervisors are responsible for providing support to case managers on the process of case management and on specific pharmacological and psychosocial interventions. They will initiate regular, scheduled reviews of patients and help case managers problem solve any difficulties. They will assist case managers in their communications with GPs.

### **The Researchers**

Researchers are responsible for assessing GP referrals for suitability for the trial. They will interview suitable patients at the beginning and end of the trial to collect clinical outcome measures. The research trial unit is responsible for the random allocation of patients to each arm of the trial and for informing case managers of patient contact details once randomisation has taken place.

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GP identifies patient and initiates treatment	Patient consents to trial	Case manager receives notification of patient participation in trial	Case manager makes 1 <sup>st</sup> appointment with patient (face to face or telephone)	Case manager makes weekly follow up appointments (face to face or telephone). Medication management and behavioural activation.	Case manager makes fortnightly follow up appointments (face to face or telephone). Medication management and behavioural activation.
Week 1	Week 1 or 2	Weeks 2-5	Weeks 5-12	Weeks 2-5	Weeks 5-12
Month 1			Months 2 and 3		

**Case Management: timetable of possible contact frequency. As a minimum, contacts should be made at 1, 2, 4, 8, 12 weeks.**

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## **Arranging Contacts with Patients**

### **The First Contact**

It is extremely important that patients are contacted by a case manager as soon as they consent to be involved in the trial, within 24-48 hours of allocation to a case manager. Case management should start as soon as possible after a patient is diagnosed. This is particularly important for patients who have chosen to take antidepressants so that they can be helped through the early stages where side-effects of treatment are common. The case manager should interview all patients within a few days of diagnosis, preferably within the first week following their diagnosis by a GP.

Ideally, the first contact should be face to face unless this is difficult to arrange from the patient's perspective, in which case telephone contact is acceptable. Initial contact appointments should be arranged by telephone, not a letter.

### **Subsequent Contacts**

Most case management contacts should be conducted on the telephone. Time and day for each contact should be negotiated with the patient. Face to face contacts can be arranged if the patient and case manager think that this is desirable but the first option should always be using the telephone.

### **Contact Frequency**

Contacts should be titrated against the patient's needs. However, weekly contacts are recommended for the first five weeks of case management, followed by fortnightly contacts thereafter. More frequent sessions can be arranged if the patient and case manager think that this is desirable. In most cases the maximum number of sessions will be ten. Short but frequent sessions are more important than lengthy individual sessions.

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### **Contact Duration**

The initial session should take no more than 30-40 minutes. Subsequent sessions should be timed at 15-20 minutes. Sessions can be shorter. Case managers should strive to keep sessions brief and focussed.

### **Contact Timing**

Unless case managers normally work in the evenings as part of their contract of employment, contacts should be scheduled for between 9.00am and 6.00pm. However, we know that many patients prefer to be contacted out of hours and case managers should try to accommodate patient preferences if at all possible.

### **Patient-Initiated Contacts**

Although the timetable for all scheduled contacts should be negotiated with the patient, some patients may want to be able to contact the case manager between sessions. If a patient specifically requests this, case managers should inform patients of times when they may be available for such patient-initiated contacts.

### **The Contact Log**

All contacts with patients should be recorded on the contact log contained in section D. It is essential that the research team are able to measure the frequency, duration and mode of contact between case managers and patients. This will also be useful in supervision and should be kept up to date at all times. It is a separate record from standard clinical records which case managers would have to fill in under the policies and procedures of their organisations. Please keep a log for each patient in the special study folder, adding extra pages per patient as these are required.

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**Assessing and Managing Risk**

Patients who are actively suicidal are not eligible for inclusion in the trial. However, some patients may experience a deterioration in their mental state during the trial. Each contact, therefore, should always include a risk assessment. No case manager should be managing patients at significant risk of suicide, self-harm or harm to others. Where patients express such ideas and where clear plans are evident, case managers should inform the GP immediately and make use of the local psychiatric service's arrangements for handling patients who present a risk to themselves or others.

**Communicating with GPs.**

Regular communication with GPs is an essential aspect of case management. There are three levels of communication:

Level 1: A statement of the patient's main problem and treatment plan should be entered into record systems held at the practice level after the first patient contact using the guidelines in Section D. Thereafter, a brief record of each contact should be entered into the general practice notes where the patient is progressing satisfactorily and/or willing to engage in the treatment plan.

Level 2: Where the case manager wishes to alert the GP to changes that may need to be made to the treatment plan, for example in response to lack of progress or changes in patient preference, a specific note should be sent to the patient's GP. Where the case manager has suggested to the patient that s/he should arrange an appointment with the GP in the next few days, the case manager should always inform the GP before the patient makes an appointment.

Level 3: Case managers should communicate in person by telephone to the GP when an urgent message needs to be passed on, for example where a patient is experiencing intolerable antidepressant side effects or where there is a significant worsening in a patient's mental health.

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### Using Supervision

Supervision to case managers for their trial work will be provided weekly by psychiatrists and psychological therapists working in the trial team. Case managers are expected to report their activity, results of patient monitoring outcome measures, plans for managing their caseload and any problems they are experiencing with specific cases. Supervisors will guide and advise case managers in their management of pharmacological and psychosocial interventions. They will also help the case manager communicate good practice guidelines (particularly on medication) for individual patients to GPs.

At each supervision session there will be a priority ordering of cases to be discussed:

1. All new patients
2. Patients who have reached a scheduled supervision review point after being in the trial for 4, 8 and 12 weeks
3. Patients who are not improving as expected, for example where an adequate trial of antidepressant medication is not having a therapeutic effect or where patients are not benefiting from or engaging in the psychosocial self-help support programme
4. 'Overdue' patients, i.e. where the case manager has not been able to make contact with patients as previously arranged
5. All other patients

Supervisors will expect to base their supervision on reports of regular PHQ9 scores, risk assessments, concordance information and treatment plans. Most supervision content will concern the process of decision making in overall case management, although some specific clinical supervision will be provided.

Section D contains several copies of a sheet to help you prepare for supervision and provides a structure for each type of supervision discussion, together with the information which will be required by supervisors in their discussions with case managers. Photocopy more as you need them.



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### **Interventions**

There are two types of intervention in case management for depression: pharmacological and psychosocial. These reflect the treatment options commonly used in primary care for patients with depression. The case manager's role is to help patients make the best use of the treatment(s) they have decided to opt for. In this trial all patients will be offered psychosocial support by the case manager and some patients will have been prescribed medication by their GP.

Antidepressants are very effective medications for depression. Many patients in primary care will be offered and will accept antidepressant medication. However, for a range of reasons, some patients will take a less than optimum dose and therefore get less benefit from their medication. It is the case manager's role to enable patients make better use of their medicines. Although the GP is in charge of prescribing medication, the case manager should assist the patient by reinforcing the information given to patients by their GP and by helping patients and GP problem solve any difficulties with medication tolerance. Where patients decide not to take - or to stop taking - medication, the case manager should support patients' use of alternative psychosocial strategies.

Psychosocial support is less commonly available in primary care. In this trial of case management, it is provided by the case manager in the form of behavioural activation for all patients. Behavioural activation is an evidence-based treatment that has been shown to have equivalent effects to more complex cognitive treatments of depression. It is simple to explain and use and is, therefore, an ideal psychosocial self-help intervention for use by case managers. Supported by patient information literature, case managers guide patients through a behavioural activation programme which increases the range and frequency of activities undertaken by patients in their daily lives.

Instructions and patient education materials for both medication management and behavioural activation are provided in section C.

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## **Section B**

# **Case Management: A Session by Session Guide**

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**Case Management Session by Session Guide**

**General Session Structure**

All case management sessions should adopt the following structure:

- 1. Assessment**
- 2. Education**
- 3. Shared Decision Making**
- 4. Action Following Contacts: Reporting and Supervision**

**1. Assessment**

The depth of assessment depends at which stage patients are currently being cared for in the case management process. For example, the first contact requires a more in-depth assessment in order to plan a psychosocial support programme. Later contacts will have a more focussed assessment around progress towards patient goals. However, in all contacts there will be assessment of:

- Patient symptom levels
- Risk
- Depression, using the PHQ 9
- Motivation for engagement in treatment
- Treatment concordance (pharmacological and/or psychosocial)
- Response to interventions

**2. Education**

Again, the level of educational input will vary from session to session. It is likely that in the early contacts, educational input will be highest. However, education may be required at all stages to help patients take decisions about their treatment. For example, where a patient is considering an early termination of an antidepressant regime, education will be required on the mode of action of antidepressants and relapse rates to help the patient make an informed decision. Behavioural activation information is also likely to be given in more detail during the early contact sessions.

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### **3. Shared Decision Making**

Case managers should develop a collaborative relationship with patients. Patients are in charge of their own decisions. The case manager should always ensure these are made in an informed way. Case managers collaborate in these decisions by helping patients weigh up their options. Decisions will be about both medication issues and about behavioural activation activities.

When patients have been prescribed medication by their GPs, case managers should ascertain how closely the patient wishes to follow the GP's prescription. Where a patient does not wish to adhere to the GP's prescription, the case manager should respect the patient's view even if they disagree, and help the patient to weigh up the pros and cons of their decision. Case managers must ensure patients' decisions are informed by accurate educational input on antidepressant action and respect and support decisions. Later, if appropriate, discussions about treatment decisions can be initiated by case managers, for example where symptoms and/or PHQ9 scores do not improve.

Decisions will also have to be made about behavioural activation targets and exercises. Negotiated targets and exercises to assist patients to regain their functioning should be realistic and achievable. Selection of activities should be based on patients' own identification of key deficits in their functional activities.

Other decisions will be about the frequency of case manager/patient contacts, time of next contact etc. During all contacts, case managers need to finish the contact with a clear understanding of what the patient has decided to do between this and subsequent contacts and get feedback from patients on their shared understanding of the next steps.

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**4. Action Following Contacts**

All contacts must be followed by feedback to the GP at levels 1-3 below:

**Level 1:** A statement of the patient's main problem and treatment plan should be entered into record systems held at the practice level after the first patient contact using the guidelines in Section D. Thereafter, a brief record of each contact should be entered into the general practice notes where the patient is progressing satisfactorily and/or willing to engage in the treatment plan.

**Level 2:** Where the case manager wishes to alert the GP to changes that may need to be made to the treatment plan, for example in response to lack of progress or changes in patient preference, a specific note should be sent to the patient's GP. Where the case manager has suggested to the patient that s/he should arrange an appointment with the GP in the next few days, the case manager should always inform the GP before the patient makes an appointment.

**Level 3:** Case managers should communicate in person by telephone to the GP when an urgent message needs to be passed on, for example where a patient is experiencing intolerable antidepressant side effects or where there is a significant worsening in a patient's mental health. No case manager should be managing patients at significant risk of suicide, self-harm or harm to others. Where patients express such ideas and where clear plans are evident, case managers should inform the GP in person immediately and make use of the local psychiatric service's arrangements for handling patients who present a risk to themselves or others.

Case managers should always complete the patient contact log and session record as well as complying with the record keeping requirements of the services that employ them.

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**Supervision:**

At each supervision session there will be a priority ordering of cases to be discussed:

1. All new patients
2. Patients who have reached a scheduled supervision review point after being in the trial for 4, 8 and 12 weeks
3. Patients who are not improving as expected, for example where an adequate trial of antidepressant medication is not having a therapeutic effect or where patients are not benefiting from or engaging in the psychosocial self-help support programme
4. 'Overdue' patients, i.e. where the case manager has not been able to make contact with patients as previously arranged
5. All other patients

Supervisors will expect to base their supervision on reports of regular PHQ9 scores, risk assessments, concordance information and treatment plans. Most supervision content will concern the process of decision making in overall case management, although some specific clinical supervision will be provided.

Case managers should also be aware of how closely patients' medication regimes follow prescribing guidance. Where prescriptions do not follow accepted prescribing guidance, the case manager should discuss this with their supervisor. Action following this might include either the case manager or the supervisor communicating to the GP with suggestions.

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# Contact Session 1

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<p><b>Case Manager's Checklist for Session Number 1</b> <i>(photocopy additional copies as required)</i></p>	<p><b>Tick when complete</b></p>
<b>Introduction</b>	
<b>1. Assessment</b> person-centred, 'here and now' problem assessment	
<b>1.1 Assessment of Risk</b> thoughts, plans, actions and prevention	
<b>1.2 Formal symptom assessment</b> PHQ-9	<u>Write score here</u>
<b>1.3 Medication review</b> attitude to medication and medication behaviour	
<b>1.4 Medication side-effect assessment</b> unusual effects assessment	
<b>2.0 Education</b>	
depression information	
medication information	
material on behavioural activation	
<b>3.0 Shared Decision Making</b>	
agree action goals for medication and behavioural activation	
hand out medication and behavioural activation materials	
negotiate the next contact session	
<b>Record Keeping and Feedback to GP</b>	
complete patient contact log, session record and any other records	
enter a short record of contact, problem statement and action plan into the GP's record systems	
make a special (level 2) or an urgent (level 3) communication if indicated	



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**Contact Session 1**

**Introduction**

The case manager should introduce themselves by full name and job title, confirm the patient's full name, outline the case management role and the objectives of the interview, the confidentiality protocol for note taking and inform the patient that the contact should take no more than 30 minutes.

**Assessment**

**1.1 Problem Assessment**

The case manager should conduct a person-centred, 'here and now' problem assessment focussing on those aspects of the patient's problems that are interfering with their day to day activities and which are identified by the patient as priorities for change.

**1.2 Assessment of Risk**

The case manager should ensure they conduct a risk assessment to identify any risk thoughts, plans or actions and anything that is currently preventing the patient enact such plans if present.

**1.3 Formal symptom assessment**

The case manager should use the PHQ-9 to confirm symptoms and establish a baseline for symptom change over the next few weeks.

**1.4 Medication review**

If the patient is on antidepressants the case manager should assess the patient's attitude to their medication, ascertain if the patient has commenced the medication and find out to what extent the patient is taking the prescribed dose.

**1.5 Medication side-effect assessment**

The case manager should ask the patient about any unusual effects which might be attributed to their antidepressant medication.

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**Contact Session 1 Introduction: Example Script**

*"Hello, my name is [case manager's name]. I am one of the [role title] working with Dr [GP Name]. Can I just confirm your full name? It's [patient's full name].*

*If you remember, you volunteered to be part of a research project investigating how to improve the way we organise treatment for depression. As part of that research study, my job is to contact you today and then regularly over the next three months to help you with your mood. I'll try to do this by supporting the treatment you are getting from Dr [GP Name]. I will also help you by giving you information about depression and your treatment and I will suggest other activities to help lift your mood.*

*The purpose of today is for me to get a better understanding of your main difficulties. Dr [GP Name] has given me a short report but no details. I'd like to ask you some questions about your main problems. At the end of the interview we'll make a plan for the next few weeks to help you with your difficulties. We have about 40 minutes for the interview.*

*After the interview, what I would normally do is let Dr [GP Name] know that we have been in contact with each other and give [him/her] a short report. From time to time I may discuss your treatment with Dr [GP Name]. Also, as part of the research, I have a supervisor whom I will report to so that I can make sure I am following the guidelines for this project. Is this OK?"*

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**Contact Session 1 Assessment Details: Example Questions**

**1.1 Person-centred, 'here and now' problem assessment**

- What are your main difficulties at the moment, those that prompted you to visit your GP recently?
- How do these difficulties affect you physically?
- How do they affect what you do with your time?
- What thoughts do you have when you feel like this?
- Are there any particular situations that trigger your feelings?
- What impact is this having on your life?
- Could you detail things that you have stopped doing because of the way you feel?

**1.2 Assessment of Risk**

- Do you have any thoughts of killing yourself?
- Do you have any plans to kill yourself?
- Have you made any preparations to kill yourself or have you tried to do it in the past?
- Is there anything stopping you killing yourself?
- Are you feeling as if you could hurt or harm anyone around you?
- Are you finding it hard to look after yourself or anyone in your care such as children or older relatives?

**Other question areas**

- What makes the problem better or worse?
- When did the problem start and how has it fluctuated over time?
- Have you had any previous treatment for this problem now or in the past?
- What is your current treatment?
- What is your alcohol or drug consumption?
- What would you like to change about the problem (magic wand)?

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**Contact Session 1 Formal Symptom Assessment: The PHQ9**

**1.3 Procedure for administering the PHQ9**

The PHQ9 (see section D) is a brief instrument which enables practitioners and patients to constantly monitor key symptoms of depression. It should be introduced in the following way. If possible, the patient should have a copy of the PHQ9 in front of them to help them answer the questions.

Tell the patient you will be running through this questionnaire each time you talk to each other to give you both a measure of the patient's progress over time during the next few weeks that you will be in touch with them.

*"I would like to ask you some standard questions from a questionnaire. I will ask you about a series of common symptoms of depression. Could you tell me if you have been feeling these symptoms during the last two weeks: Not at all; Several days; More than half the days; or Nearly every day."*

- Run through the questions in order.
- Quickly add up the score using the system in section D.
- Give the patient feedback on what the score means in terms of their depression severity. Always give this feedback to the patient. Be honest with the scoring and ask the patient, *"How does this fit for you?"* in terms of the way they are currently feeling.
- Given that in the first interview, their score is likely to be high, remind the patient that this is a baseline to measure their progress against.
- Make sure a spare copy of the PHQ9 is handed out/sent by post to the patient

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**Agree an overall problem statement with the patient that describes the patient's mood state, their symptoms and the impact of this mood state on their daily activities. For example:**

*Your main problem is a lack of interest in undertaking previously enjoyed activities, lethargy, sleep problems, reduced activity and thoughts that you are a failure with the consequence that you are finding it difficult to work, socialise and keep on top of your housework.*

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**Contact Session 1 Medication Review: Example Questions**

**1.4 Medication Review**

- What medication did the GP prescribe?
- Have you started taking it?
- When and how often are you actually taking the tablets?
- Do you know much about how these tablets work?
- How do you feel about taking the medication?
- Do you plan to continue to take them over the next few weeks?
- Are you planning to take them regularly as advised by your GP?
- Have you noticed any benefits yet?
- How effective do you think these tablets are?

**1.5 Medication side-effect assessment**

- Have you noticed any unusual physical or mental feelings since you have been taking the tablets?
- Could you describe these in detail?
- What do you feel about these effects?
- Do you know anything about side-effects these tablets might cause?

**A list of antidepressant side effects is given in Section C. Most side effects are temporary, mildly unpleasant but not dangerous. Consult Section D for a list of common side-effects as well as a list of those for which it will be necessary to consult the GP. Very occasionally, patients may experience side-effects which require them to stop taking the medication. These are listed in Section C. Facts for patients are given in the educational section on the next pages.**

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## **Education**

The case manager should provide education to patients verbally using the information given on the next three pages. Wherever possible, this verbal information should be supplemented by written material given to, or posted out to, the patient.

### **2.1 Depression**

Many patients request information about depression. There are many good information sources about depression. Section C provides several including an example published by the Mental Health Foundation. The case manager should provide the patient with these leaflets or other resources on depression.

### **2.2 Medication**

If the patient is taking medication, the case manager should provide the patient with educational information on medication and reinforce information about antidepressants given to the patient by the GP. Facts about antidepressants are given in the next pages. Examples of medication information sheets which can be given to patients are provided in section C.

### **2.3 Behavioural Activation**

The case manager should also introduce material on behavioural activation and provide the patient with a rationale for its use. Facts about behavioural activation are given on the next page. Examples of behavioural activation information sheets which can be given to patients are provided in section C.

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**Contact Session 1 Education: Depression Information**

**Basic facts about depression**

- Depression is not a sign of personal weakness
- 15-20% of people will experience clinical depression at some time during their life.
- The best research suggests that depression is caused by a combination of inherited or genetic factors and life events - just like high blood pressure or heart disease.
- There is no one way people experience depression

**Common symptoms of depression**

Physical feelings such as: disturbed sleep including taking longer to get off to sleep and then waking up early; poor appetite and weight loss, or the reverse with comfort eating and weight gain; exhaustion; poor concentration

Behaviours such as: staying at home and avoiding other people; loss of interest in life and inability to enjoy normal things; restlessness and agitation

Thoughts such as: inadequacy; hopelessness and loss of self-confidence; thoughts or even plans of suicide



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**Contact Session 1 Education: Medication Information**

**Basic facts about the effects of antidepressants**

- Antidepressant medication is, on average, effective - regardless of what seems to have caused depression for any particular person
- Antidepressants help to relieve symptoms of depression such as depressed mood, loss of energy, appetite changes, sleep disturbance, loss of interest in things, trouble concentrating, and feelings of guilt or worthlessness.
- Antidepressants will not change your personality or make you a different person.
- Antidepressants will not change the important life problems you face, but they may help you deal with those problems more confidently and effectively.
- Antidepressants may help you to feel less overwhelmed by life problems, but they don't create an artificial "high".

**Facts about side-effects of antidepressants**

- Side effects are common, but these are usually mild and improve with time.
- All known side effects go away after stopping medication (i.e. none are permanent).
- Antidepressants are not addictive unlike other drugs which can produce dependence (e.g. alcohol, tranquilizers or sleeping pills).
- Side effects are worst early on and usually improve whilst the benefits build slowly over a few weeks.

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Contact Session 1 Education: Behavioural Activation

**How to Explain Behavioural Activation**

When we are depressed:

- we feel physically unwell,
- we have depressed thoughts
- we change the way we behave.

We behave differently by:

- often stopping doing the important life **routines** that make us comfortable in our surroundings.
- withdrawing from doing **pleasurable** things that make us feel well, for example, talking to other people, going for a walk.
- avoiding important and **necessary** things like paying bills.

By withdrawing in this way, our feelings and thoughts also get worse because all our physical, thinking and doing symptoms of depression are linked.

By setting goals of things we want to do we can '**act our way out**' of depression rather than wait until we are ready to '**think our way out**'.

Behavioural activation is a structured, active self-help intervention. It is focused on:

- re-establishing our daily **routines**
- increasing **pleasurable** activities
- addressing **necessary** issues

The purpose of this is to help us to regain functions which have been lost or reduced during depression.

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**How to Start Behavioural Activation**

1. The *first* step in behavioural activation is to make a diary of what you are doing now.
2. The *second* step is to make lists of things that you would like to do, based on what you have stopped doing since you became depressed.
  - Some of these things will be just **routine** jobs which need to be done, such as housework or cooking.
  - Others things will be **pleasurable** activities such as going out and meeting people.
  - Some things will be important **necessary** activities that you are avoiding, such as paying bills or dealing with conflict.
3. The *third* step is to order these separate lists into one big list, with the most difficult activities at the top of the list and some easier activities at the bottom, making sure you mix up **routine**, **pleasurable** and **necessary** activities.
4. The *fourth* step in behavioural activation is to use a diary sheet to plan out how to start doing these things, starting near the bottom of your list and working upwards.

**NB:** When choosing activities it is very important to:

- start small and help patients to choose things that they are likely to be successful at achieving
- spell out exactly what the activity is, where it will be done, when it will be done, how it will be done, who it will be done with (if it includes other people) and what steps are needed to complete the activity.

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### **3.0 Shared Decision Making**

The case manager should agree action goals with the patient around:

#### **3.1 the use of Medication**

When patients have been prescribed medication by their GPs, case managers should ascertain how closely the patient wishes to follow the GP's prescription. Where a patient does not wish to adhere to the GP's prescription, the case manager should respect the patient's view even if they disagree, and help the patient to weigh up the pros and cons of their decision. Case managers must ensure patients' decisions are informed by accurate educational input on antidepressant action and respect and support decisions. Later, if appropriate, discussions about treatment decisions can be initiated by case managers, for example where symptoms and/or PHQ9 scores do not improve.

Case managers should also be aware of how closely the medication regime follows prescribing guidance. Where the prescription does not follow accepted prescribing guidance, the case manager should discuss this with their supervisor at the next supervision session and decide on a communication action plan to assist the GP in their prescribing.

#### **3.2 Behavioural Activation**

Decisions will have to be made about behavioural activation targets and exercises. In most instances at contact session 1, this will be reading the patient information leaflet in section C or keeping the diary. Activity diaries should be based on patients' own identification of key deficits in their functional activities. Some patients may wish to start using BA worksheets I and II to initiate activation activities.

#### **3.3 Arranging the Next Contact**

The case manager should negotiate the next contact session with the patient. This will normally be within a week of the initial session and be conducted by telephone.

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**Contact Session 1 Shared Decision Making**

**3.1 Depression Action**

- Information on depression given verbally and handed out/sent by post

**3.2 Medication Action**

- Does the patient wish to take the medication?
- Details negotiated regarding timing and dosage according to decision above
- Information on antidepressant effects and side-effects given verbally and handed out/sent by post

**3.2 Behavioural Activation Action**

- Is there agreement to start a programme of behavioural activation?
- Information on behavioural activation given verbally and handed out/sent by post
- First stage diaries and/or worksheets handed out/sent by post for activity monitoring

**3.3 Next Contact Session**

- Agreement on next contact time, mode (telephone preferred) and place.

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### **Action Following the Contact**

#### **Record Keeping**

The case manager should complete the contact log, session record and any other records required of the case manager's employing organisation.

#### **Feedback to GP**

Level 1, 2 or 3 feedback should be initiated. All patients require at least level 1 feedback (routine report in practice records). For patients with changed treatment preferences level 2 is required (special communication to GP). Level 3 feedback (personal contact with GP) should be used for patients who have severe side effects or present a risk.

#### **Supervision**

Case managers should report the outcome of contact session 1 to their supervisor in the next weekly supervision session using the format:

- Gender, age, previous episodes, onset
- Main problem statement
- Risk assessment
- PHQ9 score
- Treatment plan including medication and behavioural activation
- Case Management Action

Where case managers are concerned that the medication prescription by the GP does not follow prescribing guidelines, s/he should discuss this with the supervisor. Action following this might include either the case manager or the supervisor communicating to the GP with suggestions.

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**Contact Session 1 Action Following the Contact**

**Record Keeping**

- complete patient contact log, session record and any other records required by the employing organisation

**Feedback to GP**

- enter a short (Level 1) record of contact, problem statement and action plan into the GP's record systems
- make a special (Level 2) or an urgent (level 3) communication if indicated

**Supervision**

- report the outcome of contact session 1 in the next weekly supervision session
- if medication prescription by the GP does not follow prescribing guidelines, discuss with supervisor

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## Contact Session 2



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<p><b>Case Manager's Checklist for Session Number 2</b> <i>(photocopy additional copies as required)</i></p>	<p>Tick when complete</p>
<b>Introduction</b>	
<b>1. Assessment</b> review and re-confirmation of problem statements	
<b>1.1 Assessment of Risk</b> thoughts, plan, actions and prevention	
<b>1.2 Formal symptom assessment</b> PHQ-9	<u>Write score here</u>
<b>1.3 Medication review</b> assessment of concordance	
<b>1.4 Medication side-effect assessment</b> unusual effects assessment	
<b>1.5 Review of Behavioural Activation Support Programme</b> diaries of negotiated behavioural activation activities	
<b>2.0 Education</b>	
Depression, medication and BA information	
<b>3.0 Shared Decision Making</b>	
agree action goals for medication management	
specific behavioural activation plans	
negotiate the next contact session	
<b>Record Keeping and Feedback to GP</b>	
complete patient contact log, session record and any other records	
enter a short record of contact, problem statement and action plan into the GP's record systems	
make a special (level 2) or an urgent (level 3) communication if indicated	

## Contact Session 2

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## **Introduction**

The case manager should confirm that they are speaking to the patient, remind the patient of who they are and describe the objectives and time scale for the contact.

### **1. Assessment**

The case manager should remind the patient about the main problem statement agreed at the last contact and ascertain whether there has been any change in mood and problem impact since the last contact. This is not a new assessment but a review of previous information given.

#### **1.1 Assessment of Risk**

The case manager should ensure they conduct a risk assessment to identify any risk thoughts, plans or actions and anything that is currently preventing the patient enact such plans if present.

#### **1.2 Formal symptom assessment**

The case manager should use the PHQ-9 to re-measure symptoms and confirm the assessment information.

#### **1.3 Medication review**

If the patient is on antidepressants the case manager should assess if the patient is taking the prescribed dose and has experienced any benefits yet.

#### **1.4 Medication side-effect assessment**

The case manager should ask the patient about any unusual effects which might be attributed to their antidepressant medication.

#### **1.5 Review of Behavioural Activation Support Programme**

The case manager should discuss the previous behavioural activation activities negotiated during the last session. This may be reviewing a diary sheet or asking the patient if they have read educational material on behavioural activation.

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**Contact Session 2 Assessment Details: Example Procedure**

**Assessment**

Each case management contact should build on the previous one, in essence a continuation of a conversation between the case manager and the patient. Continuation sessions should be short unless the patient's state has deteriorated markedly. Therefore, after the introduction:

- Feedback previous summary statement of main problems.
- Ascertain from patient that this is still an accurate reflection of their difficulties - if not clarify and adjust the summary with the patient.

**Assessment of Risk**

It is always essential that case managers assess risk at each contact. This can be approached in the following way:

*"Last time we talked I mentioned that sometimes when people are depressed they can feel so despondent that they feel like taking their own lives. Can you tell me whether you have had any suicidal thoughts since we last talked.*

If an affirmative answer is given then the standard risk assessment questions must be run through, i.e.

- Do you have any plans to kill yourself?
- Have you made any preparations to kill yourself or have you tried to do it in the past?
- Is there anything stopping you killing yourself?

Additionally, harm to others, self- and other-neglect should be excluded.

- Are you feeling as if you could hurt or harm anyone around you?
- Are you finding it hard to look after yourself or anyone in your care such as children or older relatives?

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**Contact Session 2 Formal Symptom Assessment: The PHQ9**

**Procedure for administering the PHQ9**

The PHQ9 (see section D) - the brief instrument which enables practitioners and patients to constantly monitor key symptoms of depression - should be rated again in the following way. The patient should have a copy of the PHQ9 in front of them to help them answer the questions.

Remind the patient that you will be running through this questionnaire each time you talk to each other to give you both a measure of the patient's progress over time.

*"I would like to ask you the same standard questions from the questionnaire we went through last time. I will ask you about a series of common symptoms of depression. Could you tell me if you have been feeling these symptoms during the last two weeks: Not at all; Several days; More than half the days; or Nearly every day."*

- Run through the questions in order.
- Quickly add up the score using the system in section D.
- Give the patient feedback on what the score means in terms of their depression severity. Always give this feedback to the patient. Be honest with the scoring and ask the patient, *"How does this fit for you?"* in terms of the way they are currently feeling. Compare their current score to the baseline score rated in the last contact session.
- If there is any improvement connect this to actions they have taken since the last session

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**Contact Session 2 Medication Review: Example Questions**

**Medication Review**

The case manager needs to relate the next section to information gathered at the previous contact. Since side-effects of antidepressants typically appear during the first week to ten days of taking medication, this is likely to be a major feature in this section of the contact. Questions might include:

- Have you been taking your medication?
- When and how often have you actually taken the tablets?
- Have you noticed any benefits?
- How do you feel about continuing to take the medication?

**Medication side-effect assessment**

- Have you noticed any unusual physical or mental feelings since you have been taking the tablets?
- Could you describe these in detail?

**Information review**

- Did you read the information on antidepressants I gave/sent you?
- What do you think about the information?
- Do you have any questions for me about it?

**A list of antidepressant side effects is given in Section C. Most side effects are temporary, mildly unpleasant but not dangerous. Consult Section C for a list of common side-effects as well as a list of those for which it will be necessary to consult the GP. Very occasionally, patients may experience side-effects which require them to stop taking the medication. These are listed in Section C.**

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**Contact Session 2 Review of Behavioural Activation**

**Information**

- Ask the patient if they have read the information you sent/gave them at the last contact session.
- Ask the patient what they think about the material.
- Ask the patient if they have made any attempts to list *routine*, *pleasurable* and *necessary* things that they would like to do that they have stopped doing since they became depressed.
- Check if the patient has tried to put any of these things into a hierarchy or an ordered list.
- Ask the patient if they have tried any of the activities.

**Diary**

- Ask the patient if they have filled in the diary sheet for the last week
- If the sheet has been even partially filled in, go through it with them.
- Make sure you praise and reinforce any attempt to make lists or order them.
- If the patient has tried any activities make sure you encourage them and reinforce any progress.
- Help the patient to connect any improvement with behavioural activation actions they have taken.

**Next Steps**

- Ask the patient if they are prepared to try some behavioural activation exercises

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**2.0 Education**

The case manager should act on the information given in sections 1.1-1.5 of the assessment.

**2.1 Medication**

Further information on medication may be unnecessary if the patient is happy to take it as prescribed. However, if there are issues regarding medication, the case manager should reiterate the information about antidepressants given in the previous session and in the educational material sent to the patient. The case manager should ensure that the patient is fully informed about the action, effects and side effects of antidepressants. The case manager should also address pros and cons of medication concordance decisions plus discuss barriers to concordance where this has been identified as a problem in the assessment phase of the contact.

**2.2 Behavioural Activation**

The case manager should reiterate the rationale for behavioural activation and explore how prepared the patient is to embark on a personalised behavioural activation programme.

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**Contact Session 2 Education: Medication Information**

If patients are ambivalent about antidepressant medication, it may be necessary to again provide the information given in the previous contact:

**Basic facts about the effects of antidepressants**

- Antidepressant medication is, on average, effective - regardless of what seems to have caused depression for any particular person
- Antidepressants help to relieve symptoms of depression such as depressed mood, loss of energy, appetite changes, sleep disturbance, loss of interest in things, trouble concentrating, and feelings of guilt or worthlessness.
- Antidepressants will not change your personality or make you a different person.
- Antidepressants will not change the important life problems you face, but they may help you deal with those problems more confidently and effectively.
- Antidepressants may help you to feel less overwhelmed by life problems, but they don't create an artificial "high".

**Facts about side-effects of antidepressants**

- Side effects are common, but these are usually mild and improve with time.
- All known side effects go away after stopping medication (i.e. none are permanent).
- Antidepressants are not addictive unlike other drugs which can produce dependence (e.g. alcohol, tranquilizers or sleeping pills).
- Side effects are worst early on and usually improve whilst the benefits build slowly over a few weeks.



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**Contact Session 2 Education: Behavioural Activation**

If it is necessary, briefly go through the rationale for Behavioural Activation, i.e.

When we are depressed:

- we feel physically unwell,
- we have depressed thoughts
- we change the way we behave.

We behave differently by:

- often stopping doing the important life routines that make us comfortable in our surroundings.
- withdrawing from doing pleasurable things that make us feel well, for example, talking to other people, going for a walk.
- avoiding important and necessary things like paying bills.

By withdrawing in this way, our feelings and thoughts also get worse because all our physical, thinking and doing symptoms of depression are linked.

By setting goals of things we want to do we can '*act our way out*' of depression rather than wait until we are ready to '*think our way out*'.

Explain the importance of the diary and BA worksheets I and II so that patients can plan their week and also keep a record to look back and see how they have done.

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### **3.0 Shared Decision Making**

The case manager should help the patient make decisions about a medication and behavioural activation treatment plan. Behavioural activation plans should be patient-centred, detailed and specific. *Behavioural Activation Worksheets I and II* and the *Behavioural Activation Diary* should be used and incorporated into behavioural activation treatment planning.

The case manager should negotiate the next contact session with the patient. This will normally be within a week and be conducted by telephone.

### **Record Keeping and Feedback to GP**

The case manager should complete the contact log, session record and any other records required of the case manager's employing organisation. The case manager should enter a level 1 record of contact into the GP's record systems and make any other contact at levels 2 or 3 as necessary.

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**Contact Session 2 Shared Decision Making**

**Medication Action**

- Does the patient wish to continue to take the medication?
- Details negotiated regarding timing and dosage according to decision above
- Any further information required on depression, antidepressant effects and side-effects given verbally and handed out/sent by post

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**Behavioural Activation Action Plan**

**Behavioural Activation Step 2:**

- if they have not yet thought of activities, help the patient to put their identified **routine**, **pleasurable** and **necessary** activities into a series of lists in BA Worksheet I.
- If necessary, collaboratively fill in one or two activities in the three lists in worksheet I to encourage the patient.

**Behavioural Activation Step 3:**

- ask the patient to order these separate lists into one big list using BA Worksheet II, with the most difficult activities at the top of the list and some easier activities at the bottom, making sure patients mix up **routine**, **pleasurable** and **necessary** activities

**Behavioural Activation Step 4:**

- together, choose a few examples of these activities from the bottom of the list
- help the patient schedule these activities into a new diary
- try to schedule at least something once a day, more if the patient wishes it but do not insist on so many activities the patient will not be able to achieve them.

**NB:** When choosing activities it is very important to:

- start small and help patients to choose things that they are likely to be successful at achieving
- spell out exactly what the activity is, where it will be done, when it will be done, how it will be done, who it will be done with (if it includes other people) and what steps are needed to complete the activity.

**Next Contact Session**

- Agreement on next contact time, mode (telephone preferred) and place.

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**Record Keeping and Feedback to GP**

The case manager should complete the contact log, session record and any other records required of the case manager's employing organisation. The case manager should enter a level 1 record of contact into the GP's record systems and make any other contact at levels 2 or 3 as necessary.

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## Contact Sessions 3-10

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**Case Manager's Checklist for Session Numbers  
 3-10 (photocopy additional copies as required)**

Tick when  
complete

<b>Introduction</b>	
<b>1. Assessment</b> review and re-confirmation of problem statements	
<b>1.1 Assessment of Risk</b> thoughts, plans, actions and prevention	
<b>1.2 Formal symptom assessment</b> PHQ-9	<u>Write score here</u>
<b>1.3 Medication review</b> assessment of concordance	
<b>1.4 Medication side-effect assessment</b> unusual effects assessment	
<b>1.5 Review of Behavioural Activation Support Programme</b> diaries of negotiated behavioural activation activities	
<b>2.0 Education</b> Depression, medication and BA information	
<b>3.0 Shared Decision Making</b> agree action goals for medication management	
specific behavioural activation plans	
negotiate the next contact session	
<b>Record Keeping and Feedback to GP</b> complete patient contact log, session record and any other records	
enter a short record of contact, problem statement and action plan into the GP's record systems	
make a special (level 2) or an urgent (level 3) communication if indicated	

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**Contact Sessions 3-10**

**Introduction**

The case manager should confirm that they are speaking to the patient, remind the patient of who they are and describe the objectives and time scale for the contact.

**1. Assessment**

The case manager should remind the patient about the main problem statement agreed at the last contact and ascertain whether there has been any change in mood and problem impact since the last contact. This is not a new assessment but a review of previous information given.

**1.1 Assessment of Risk**

The case manager should ensure they conduct a risk assessment to identify any risk thoughts, plans or actions and anything that is currently preventing the patient enact such plans if present.

**1.2 Formal symptom assessment**

The case manager should use the PHQ-9 to re-measure symptoms and confirm the assessment information.

**1.3 Medication review**

If the patient is on antidepressants the case manager should assess if the patient is taking the prescribed dose and has experienced any benefits yet.

**1.4 Medication side-effect assessment**

The case manager should ask the patient about any unusual effects which might be attributed to their antidepressant medication.

**1.5 Review of Behavioural Activation Support Programme**

The case manager should discuss the previous behavioural activation activities negotiated during the last session. This is likely to involve reviewing a diary sheet to assess concordance with negotiated activities.



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**Contact Sessions 3-10 Assessment Details: Example Procedure**

**Assessment**

Each case management contact should build on the previous one, in essence a continuation of a conversation between the case manager and the patient. Continuation sessions should be short unless the patient's state has deteriorated markedly. Therefore, after the introduction:

- Feedback previous summary statement of main problems.
- Ascertain from patient that this is still an accurate reflection of their difficulties - if not clarify and adjust the summary with the patient.

**Assessment of Risk**

It is always essential that case managers assess risk at each contact. This can be approached in the following way:

*"When we have talked previously I have mentioned that sometimes when people are depressed they can feel so despondent that they feel like taking their own lives. Can you tell me whether you have had any suicidal thoughts since we last talked.*

If an affirmative answer is given then the standard risk assessment questions must be run through, i.e.

- Do you have any plans to kill yourself?
- Have you made any preparations to kill yourself or have you tried to do it in the past?
- Is there anything stopping you killing yourself?

Additionally, harm to others, self- and other-neglect should be excluded.

- Are you feeling as if you could hurt or harm anyone around you?
- Are you finding it hard to look after yourself or anyone in your care such as children or older relatives?

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**Contact Sessions 3-10 Formal Symptom Assessment: PHQ9**

**Procedure for administering the PHQ9**

The PHQ9 (see section D) - the brief instrument which enables practitioners and patients to constantly monitor key symptoms of depression - should be rated again in the following way. The patient should have a copy of the PHQ9 in front of them to help them answer the questions.

Remind the patient that you will be running through this questionnaire each time you talk to each other to give you both a measure of the patient's progress over time.

*"I would like to ask you the same standard questions from the questionnaire we go through each time. I will ask you about a series of common symptoms of depression. Could you tell me if you have been feeling these symptoms during the last two weeks: Not at all; Several days; More than half the days; or Nearly every day."*

- Run through the questions in order.
- Quickly add up the score using the system in section D.
- Give the patient feedback on what the score means in terms of their depression severity. Always give this feedback to the patient. Be honest with the scoring and ask the patient, *"How does this fit for you?"* in terms of the way they are currently feeling. Compare their current score to the baseline and subsequent scores rated in previous contact sessions.
- If there is any improvement connect this to actions they have taken since the last session

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**Contact Sessions 3-10: Medication Review: Example Questions**

**Medication Review**

The case manager needs to relate the next section to information gathered at the previous contact. Questions might include:

- Have you been taking your medication?
- When and how often have you actually taken the tablets?
- Have you noticed any benefits?
- How do you feel about continuing to take the medication?

**Medication side-effect assessment**

- Have you noticed any unusual physical or mental feelings since we last talked?
- Could you describe these in detail?

**Information review**

- Do you need any further information or explanation on antidepressants?

**A list of antidepressant side effects is given in Section C. Most side effects are temporary, mildly unpleasant but not dangerous. Consult Section C for a list of common side-effects as well as a list of those for which it will be necessary to consult the GP. Very occasionally, patients may experience side-effects which require them to stop taking the medication. These are listed in Section C.**

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**Contact Sessions 3-10: Review of Behavioural Activation**

**Diary**

- Ask the patient if they have filled in diary sheets for the period since the last contact.
- In early sessions, BA worksheets I and II may have been the focus of activity between contacts, in which case ask about these - has the patient made any attempt to list *routine, pleasurable* and *necessary* activities and have they tried to put any of these things into a hierarchy or an ordered list.
- If the diaries and/or worksheets have been even partially filled in, go through them with patients.
- Make sure you praise and reinforce any attempt to make lists, order them, complete diaries or try any activities.
- Help the patient to connect any improvement with behavioural activation actions they have taken.
- Try to elicit any barriers to behavioural activation, together with how the patient feels about the pros and cons of activating.

**Next Steps**

- Ask the patient if they are prepared to do some behavioural activation exercises

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**2.0 Education**

The case manager should act on the information given in sections 1.1-1.5 of the assessment.

**2.1 Medication**

If there are issues regarding medication, the case manager should reiterate the information about antidepressants given in previous sessions and in the educational material sent to the patient. The case manager should ensure that the patient is fully informed about the action, effects and side effects of antidepressants.

**2.2 Behavioural Activation**

If necessary, the case manager should review the patient's understanding of behavioural activation programme, assess its success and refocus the patient's attention to educational material previously given out.

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**Contact Sessions 3-10: Education: Medication Information**

During later sessions it is unlikely that patients will require much more information on antidepressants. However, it may be necessary to provide information about how long patients should stay taking antidepressants:

**Basic facts about the effects of antidepressants**

- Antidepressant medication is, on average, effective - regardless of what seems to have caused depression for any particular person
- Antidepressants help to relieve symptoms of depression such as depressed mood, loss of energy, appetite changes, sleep disturbance, loss of interest in things, trouble concentrating, and feelings of guilt or worthlessness.
- Antidepressants will not change your personality or make you a different person.
- Antidepressants will not change the important life problems you face, but they may help you deal with those problems more confidently and effectively.
- Antidepressants may help you to feel less overwhelmed by life problems, but they don't create an artificial "high".
- Current recommendations suggest that in order to avoid a relapse it is beneficial for people to remain taking antidepressants for at least six months.

**Facts about side-effects of antidepressants**

- Side effects are common, but these are usually mild and improve with time.
- All known side effects go away after stopping medication (i.e. none are permanent).
- Antidepressants are not addictive unlike other drugs which can produce dependence (e.g. alcohol, tranquilizers or sleeping pills).
- Side effects are worst early on and usually improve whilst the benefits build slowly over a few weeks.

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**Contact Sessions 3-10: Education: Behavioural Activation**

Although in later sessions it is unlikely, if it is necessary, briefly go through the rationale for Behavioural Activation, i.e.

When we are depressed:

- we feel physically unwell,
- we have depressed thoughts
- we change the way we behave.

We behave differently by:

- often stopping doing the important life routines that make us comfortable in our surroundings.
- withdrawing from doing pleasurable things that make us feel well, for example, talking to other people, going for a walk.
- avoiding important and necessary things like paying bills.

By withdrawing in this way, our feelings and thoughts also get worse because all our physical, thinking and doing symptoms of depression are linked.

By setting goals of things we want to do we can '*act our way out*' of depression rather than wait until we are ready to '*think our way out*'.

Explain the importance of the diary and BA worksheets I and II so that patients can plan their week and also keep a record to look back and see how they have done.

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### **3.0 Shared Decision Making**

The case manager should help the patient make further decisions about the medication and behavioural activation treatment plan. Behavioural activation plans should continue to be patient-centred, detailed and specific. They should also be progressive and forward looking as the patient becomes better able to determine their own activity programme. Diaries should be used and incorporated into behavioural activation treatment planning.

The case manager should negotiate the next contact session with the patient. This will normally be within a week in the first month or so, becoming more spaced out in the second and third months. Most contacts will be conducted by telephone.



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**Contact Sessions 3-10: Shared Decision Making**

**Medication Action**

- Does the patient wish to continue to take the medication?
- Details negotiated regarding timing and dosage according to decision above
- Any further information required on depression, antidepressant effects, ideal duration of treatment and side-effects given verbally and handed out/sent by post

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**Behavioural Activation Action Plan**

**Behavioural Activation Step 4:**

- together, choose a few more examples of activities from the bottom of the list in BA Worksheet II
- help the patient schedule these activities into a new diary
- try to schedule at least something once a day, more if the patient wishes it but do not insist on so many activities the patient will not be able to achieve them.

**NB:** when choosing activities it is very important to:

- start small and help patients to choose things that they are likely to be successful at achieving
- move on to bigger things when the patient feels able to
- spell out exactly what the activity is, where it will be done, when it will be done, how it will be done, who it will be done with (if it includes other people) and what steps are needed to complete the activity.

In addition it may be necessary to revisit steps 2 and 3, i.e.

**Behavioural Activation Step 2:**

- help the patient to put their identified **routine, pleasurable** and **necessary** activities into BA Worksheet I.
- if necessary, collaboratively fill in one or two activities in the three lists in worksheet I to encourage the patient.

**Behavioural Activation Step 3:**

- ask the patient to order these separate lists into one big list using BA Worksheet II, with the most difficult activities at the top of the list and some easier activities at the bottom, making sure patients mix up **routine, pleasurable** and **necessary** activities

**Next Contact Session**

- Agreement on next contact time, mode (telephone preferred) and place.

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**Record Keeping and Feedback to GP**

The case manager should complete the contact log, session record and any other records required of the case manager's employing organisation. The case manager should enter a level 1 record of contact into the GP's record systems and make any other contact at levels 2 or 3 as necessary.

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## Section C

# Case Management Interventions and Patient Information Leaflets

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**Educating Patients about Depression**

The role of the case manager is to ensure that patients are well informed about their problems and about depression. This should be done both verbally and using back up written material. There are many good resources about depression to give to patients. Several key messages should be imparted:

- Depression is not a sign of personal weakness
- 15-20% of people will experience clinical depression at some time during their life.
- The best research suggests that depression is caused by a combination of inherited or genetic factors and life events - just like high blood pressure or heart disease.
- There is no one way people experience depression
- Common symptoms include:

**Physical feelings** such as: disturbed sleep including taking longer to get off to sleep and then waking up early; poor appetite and weight loss, or the reverse with comfort eating and weight gain; exhaustion; poor concentration

**Behaviours** such as: staying at home and avoiding other people; loss of interest in life and inability to enjoy normal things; restlessness and agitation

**Thoughts** such as: inadequacy; hopelessness and loss of self-confidence; thoughts or even plans of suicide

At the end of this section are a number of patient information resources including authoritative information sources from independent bodies now follow. The booklet from the Mental Health Foundation (MHF) is a particularly good resource. The MHF have given us permission to photocopy this booklet for the purposes of this trial.

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**Medication Management**

The goal of medication management is to assist patients to make the best decision on antidepressant use by:

- **assessing** attitudes to medication, medication use, clinical outcomes, medication effects and side effects
- imparting **education** regarding appropriate use of antidepressants
- negotiating **shared decisions** on patients' medication usage

Case managers will provide information and will support patients' decision-making. Case managers will not be making independent prescribing decisions (e.g. stopping medication, change in dosage). Mostly, the case manager will support the patient in their decision to follow (or not) the medication recommendation made by the GP, providing information so that this decision is made in an informed manner. The only instance where a case manager should make a different direct recommendation to a patient on medication is if they identify possibly dangerous side effects. In these instances, case managers must:

- advise the patient to temporarily discontinue medication
- inform the GP of the possibility of dangerous side effects being present
- strongly advise the patient to make an urgent appointment with their GP

Where a patient decides not to follow the prescription made by the GP, case managers should ensure that the patient's decision is fully informed by information on the effects and side effects of antidepressants. The pros and cons of their decision and alternative strategies should also be explored. Further discussions between the patient and the GP should be encouraged and non-pharmacological psychosocial support offered in the form of behavioural activation by the case manager.

Where a case manager is aware that a GP's prescription does not follow prescribing guidelines, this should be discussed with the case manager's supervisor and a joint plan devised to assist the GP and the patient make effective use of antidepressant medications.

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**Antidepressant Medication**

Antidepressants are prescribed by the GP to many patients with depression. They are highly effective. Modern antidepressants from the Selective Serotonin Reuptake Inhibitor (SSRI) and Selective Noradrenalin reuptake Inhibitor (SNRI) classes are now more widely used than earlier antidepressants such as the tricyclics. However, older tricyclic antidepressants are still prescribed where clinically indicated.

The role of the case manager is to enable the patient to maximise the benefits of taking antidepressants. Many patients take antidepressants at a less than optimum dose through misguided beliefs about addiction or mode of action. For example, it is necessary to take antidepressants for a number of weeks at a therapeutic dose before beneficial effects are observed by patients. Unfortunately, unpleasant side effects often appear before these beneficial effects. This combination of delayed action and immediate side effects causes many patients to reconsider or stop taking their antidepressants. Other patients may take antidepressants sporadically when they are feeling particularly low, in the belief that they have an immediate effect. Finally, current recommendations are that patients should continue to take antidepressants for six months following remission of symptoms. Many patients stop taking their medication before this period has elapsed, increasing their chances of relapse.

It is important to state that case managers are there to help patients make informed decisions about taking antidepressant medication. Where that decision is not to take medication, patients' decisions are to be respected and supported. Later, if appropriate, case managers can initiate further discussions about medication decisions made by patients, if for example symptoms and/or PHQ9 scores do not improve.

Medication management is, therefore, essential to help patients get the most benefit from their prescriptions. A combination of education, medication effect and side effect monitoring in collaboration with patients can improve concordance and mental health outcomes.

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**Common antidepressant side-effects and actions**

Side effect	What happens	What to do about it
<b>COMMON</b>		
Nausea and vomiting	Feeling sick and being sick.	Take your medicine after food. If you are sick for more than a day, contact your doctor. This tends to wear off after a few days or a week or so.
Insomnia	Not being able to get to sleep at night.	Discuss with your doctor. He or she may change the time of your dose, or reduce the dose a little to start with.
Sexual dysfunction	Finding it hard to have an orgasm. No desire for sex.	Discuss with your doctor. See also a separate question in this section.
<b>LESS COMMON</b>		
Drowsiness	Feeling sleepy or sluggish. It can last for a few hours after taking your dose.	Don't drive or use machinery. Ask your doctor if you can take your SSRI at a different time of day.
Headache	Your head is pounding and painful.	Try aspirin or paracetamol. Your pharmacist will be able to advise if these are safe to take with any other drugs you may be taking.
Loss of appetite	Not feeling hungry. You may lose weight.	If this is a problem, contact your doctor or chemist for advice.
Diarrhoea	Going to the toilet more than usual and passing loose, watery stools.	Drink plenty of water. Get advice from your pharmacist. If it lasts for more than a day, contact your doctor.



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**Common antidepressant side-effects and actions - continued**

<b>UNCOMMON</b>		
Restlessness or anxiety	Being more on edge. You may sweat a lot more.	Try and relax by taking deep breaths. Wear loose fitting clothes. This often happens early on in treatment and should gradually ease off over several weeks. A lower starting dose may help sometimes.
<b>RARE</b>		
Rashes and pruritis	Rashes anywhere on the skin. These may be itchy.	Stop taking and contact your doctor now.
Dry mouth	Not much saliva or spit.	Suck sugar-free boiled sweets. If it is bad, your doctor may be able to give you a mouth spray.
Skin rashes	Blotches seen anywhere.	Stop taking and contact your doctor now. This is a particular problem with fluoxetine (Prozac)
Tremors and dystonias	Feeling shaky. You may get a twitch or feel stiff.	It is not dangerous. If it troubles you, contact your doctor.

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**Side Effects Which Give Cause For Concern**

**Below is a list of side effects which should be regarded as of considerable concern. They are rare. For most of these symptoms, patients should be advised to stop their medication and discuss with the GP as soon as possible.**

**Skin rash** - Can be caused by any medication. This is usually not caused by a true allergy, but is usually reason for switching medication.

**Akathisia** - Subjective symptoms of tension, panic, irritability and impatience together with movements usually taking the form of shuffling of feet while sitting and pacing or rocking while standing. Fidgety leg movements may occur while lying down.

**Priapism (prolonged or painful erections)** - Can occur with Trazodone.

**Jaundice (yellow skin or eyes)** - Can indicate liver inflammation (hepatitis) caused by medication.

**Manic/Hypomanic symptoms (speeded up, "racy", elevated mood, excessive energy, grandiosity)** - Antidepressant medications can precipitate mania (especially in those with family history of bipolar disorder).

**Palpitations/Irregular heartbeat** - While antidepressants can cause irregular heartbeat, this symptoms will usually be due to anxiety. Should discuss with GP as soon as possible.

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**Problem Solving Medication Management Difficulties**

Patients may stop taking medication completely or take less than the prescribed dose for a range of reasons. Here are some possibilities:

- *'ineffective/not-helpful'*
- *'no longer necessary'*
- *'side effects'*
- *'concerned about safety'*
- *'concerned about addiction'*
- *'believes not appropriate - just a crutch'*
- *'family oppose it, others will find out'*
- *'forgot to renew prescription'*

It is important to:

**Assess** the true reasons for medication non-concordance

Provide **education** about the way antidepressants work and their side effects

Come to a **shared decision** about what to do next.

Several examples of education materials for patients are provided later in this section. These should be used to help patients come to an informed decision.

The next page highlights key messages about antidepressants and side effects which case managers may find useful in coming to a shared decision with patients.

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**Antidepressant Medication: Key Messages**

**Basic facts about the effects of antidepressants**

- Antidepressant medication is, on average, effective - regardless of what seems to have caused depression for any particular person
- Antidepressants help to relieve symptoms of depression such as depressed mood, loss of energy, appetite changes, sleep disturbance, loss of interest in things, trouble concentrating, and feelings of guilt or worthlessness.
- Antidepressants will not change your personality or make you a different person.
- Antidepressants will not change the important life problems you face, but they may help you deal with those problems more confidently and effectively.
- Antidepressants may help you to feel less overwhelmed by life problems, but they don't create an artificial "high".
- Current recommendations suggest that in order to avoid a relapse it is beneficial for people to remain taking antidepressants for at least six months.

**Facts about side-effects of antidepressants**

- Side effects are common, but these are usually mild and improve with time.
- All known side effects go away after stopping medication (i.e. none are permanent).
- Antidepressants are not addictive unlike other drugs which can produce dependence (e.g. alcohol, tranquilizers or sleeping pills).
- Side effects are worst early on and usually improve whilst the benefits build slowly over a few weeks.

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### **Behavioural Activation 1**

When we are depressed we feel physically unwell, we have negative thoughts and we change the way we behave. These feelings, thoughts and behaviours are all linked. We end up in a vicious circle where the worse we feel physically, the more we think depressed thoughts and the more we withdraw from doing the normal things we used to do. The more we withdraw, the more we feel physically unwell and the more depressed our thoughts become.

- Some of these things we avoid are just *routine* activities such as cleaning the house, doing the ironing, washing up. Other routines are disrupted such as the time we go to bed or get up, when we eat and how we cook for ourselves. These are the important life routines that make us comfortable in our surroundings
- Other activities that get disrupted are things we do for *pleasure* such as seeing our friends, enjoying a day out with our families or playing games with our children. There are the things that often make us feel well.
- A third area where we avoid activities is in important *necessary* things such as paying bills or confronting difficult situations at work.

Behavioural activation is a structured, active self-help intervention. It is focused on activities to help patients:

- re-establish their daily routines
- increase pleasurable positively reinforcing external activities
- address necessary issues such as unpaid bills

Behavioural activation is about helping patients to '*act their way out*' of depression rather than wait until they are ready to '*think their way out*'.

The case manager's role is to support and coach patients in using a range of materials including diaries and information sheets. Case managers are not therapists and the patient retains control of all activities they undertake through a guided support programme from the case manager.

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## Behavioural Activation 2

### How to Start Behavioural Activation

1. The *first* step in behavioural activation is to make a diary of what people are doing now.
2. The *second* step is to think about things that people would like to do, based on what they have stopped doing since they became depressed.
  - Some of these things will be just **routine** jobs which need to be done, such as housework or cooking.
  - Others things will be **pleasurable** activities such as going out and meeting people.
  - Some things will be important **necessary** activities that people are avoiding, such as paying bills or dealing with conflict.
3. The *third* step is to make a list of these different things, with the most difficult activities at the top of the list and some easier activities at the bottom, making sure people mix up **routine**, **pleasurable** and **necessary** activities.
4. The *fourth* step in behavioural activation is to use a diary sheet to plan out how to start doing these things, starting near the bottom of people's list and working upwards.

**NB:** When choosing activities it is very important to:

- start small and help people to choose things that they are likely to be successful at achieving
- spell out exactly what the activity is, where it will be done, when it will be done, how it will be done, who it will be done with (if it includes other people) and what steps are needed to complete the activity.

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# Enhanced Care for Depression

## Patient Information Leaflets



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# Depression, Your Mental Health Worker and You

## Patient Information Leaflet

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**Help from your mental health worker**

As part of the research trial, your mental health worker, who has had special training in helping people to manage depression, will support you during the next three months. S/he will do this in several different ways:

- Contact you by telephone at regular intervals and at a time arranged between you and her/him.
- Explain about depression and give you information, including leaflets and booklets to read and information on where to get other information.
- Help you make the best use of any medication that your GP has prescribed by giving you information on the medicine, including information on any possible side effects.
- Plan an individual programme of support and self-help activities with you to help you overcome many of your symptoms of depression.
- Work closely with your GP and anyone else involved in your care and treatment.

Please do not be afraid to ask your mental health worker any questions about the system of care we are testing in this research trial. They will try to answer your queries as best they can and if necessary will forward your questions to one of the researchers.

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## **Depression**

### **What is Depression?**

In our lives we use the word 'depression' to describe feelings of low mood which all of us feel from time to time. However, the word is also used to describe a medical illness. When we talk about depression in this medical way it describes a feeling of persistent sadness, involving feelings of helplessness and hopelessness. Depression also affects our bodies and our thoughts and includes feelings of physical illness and of not being able to think clearly.

Depression is a very common problem. Very many adults will at some time experience symptoms of depression. Feeling sad or fed up is a normal reaction to experiences that are upsetting, stressful or difficult. Those feelings will usually pass with time. However, if you are suffering depression, you are not 'just' sad or upset. You have an illness which means that intense feelings of persistent sadness, helplessness and hopelessness are accompanied by physical effects such as sleeplessness, a loss of energy, or physical aches and pains.

### **How Does Depression Affect People?**

When people are depressed they may find it difficult to do even simple things. People stop doing their normal activities such as household routines, getting up at certain times of the day, cooking and eating meals. People also cut themselves off from other people. They may also become inactive, just doing nothing for long periods of time.

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**Common Symptoms of Depression**

There is no specific way a person who is depressed feels. However, many people have a range of physical and mental symptoms which affect the way they feel, do and think. Some symptoms are listed below.

**Physical feelings** such as: disturbed sleep including taking longer to get off to sleep and then waking up early; poor appetite and weight loss, or the reverse with comfort eating and weight gain; exhaustion; poor concentration

**Behaviours** such as: staying at home and avoiding other people; loss of interest in life and inability to enjoy normal things; restlessness and agitation

**Thoughts** such as: inadequacy; hopelessness and loss of self-confidence; thoughts or even plans of suicide

**Depression: the Good News**

The good news about depression is that the vast majority of people recover from their depression. Treatments are available which are effective. These include drug treatments and self-help. Your mental health worker will help you get the best out of whatever treatment you have decided to take. S/he will be able to answer your questions about medication and self-help and will support you during your illness. Your mental health worker will also talk to your GP to keep your GP informed as to how you are progressing.

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# Antidepressants

## Patient Information Leaflets and Booklets

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# Behavioural Activation

## Patient Information Leaflet

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### **Behavioural Activation 1**

When we are depressed we feel physically unwell, we have negative thoughts and we change the way we behave. These feelings, thoughts and behaviours are all linked. We end up in a vicious circle where the worse we feel physically, the more we think depressed thoughts and the more we withdraw from doing the normal things we used to do. The more we withdraw, the more we feel physically unwell and the more depressed our thoughts become.

On the next page is an example of the vicious circle of depression: 'George'

- Some of these things we avoid are just *routine* activities such as cleaning the house, doing the ironing, washing up. Other routines are disrupted such as the time we go to bed or get up, when we eat and how we cook for ourselves. These are the important life routines that make us comfortable in our surroundings
- Other activities that get disrupted are things we do for *pleasure* such as seeing our friends, enjoying a day out with our families or playing games with our children. There are the things that often make us feel well.
- A third area where we avoid activities is in important *necessary* things such as paying bills or confronting difficult situations at work.

Behavioural activation is a structured, active self-help intervention. It is focused on activities to help us:

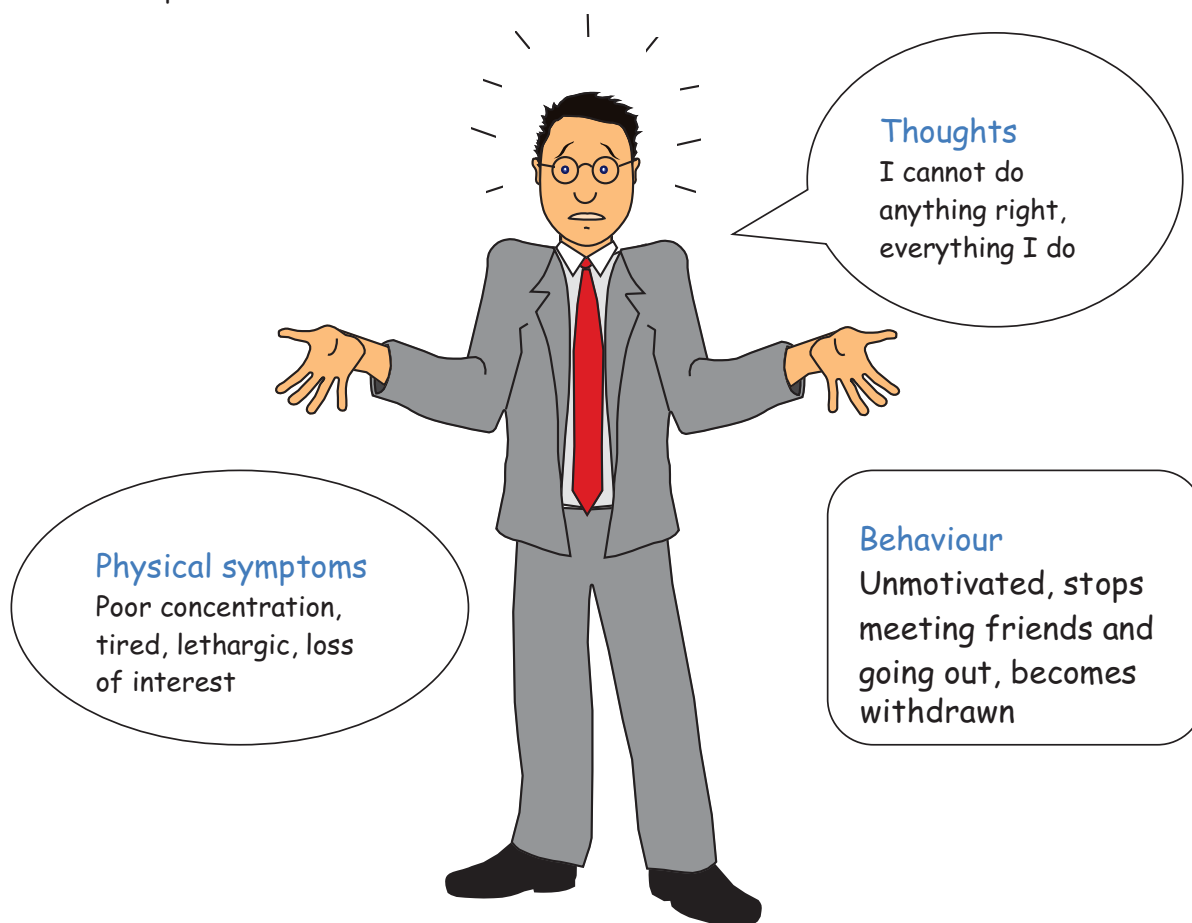
- re-establish our daily routines
- increase pleasurable activities
- address necessary issues such as unpaid bills

Many people think that it is necessary to feel completely physically well before starting to do things again. However, research evidence suggests that gradually starting to do more of the things we have been avoiding again can be a very effective way of self-help for depression.

Behavioural activation is about helping us to '*act our way out*' of depression rather than wait until we are ready to '*think our way out*'.

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George had been feeling anxious and depressed since he had been made redundant. He had lost his confidence and had a low self-esteem. He had thoughts that he was no good and could do nothing right. He felt tired and lethargic all the time, lost interest in hobbies and interests, and had poor concentration. He became unmotivated and stopped going out or meeting friends or doing the things he had previously enjoyed. He became more and more withdrawn. The more he had these thoughts, physical symptoms and behaviour the more depressed and anxious he became. This 'vicious circle' of thoughts, physical symptoms and changes in behaviour maintain George's depression.





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## Behavioural Activation 2

The goal of behavioural activation is to enable you to recommence some of the behaviours which are typically reduced in depression. The purpose of this is to help you to regain some of your lost or reduced activities.

### Behavioural Activation - The Four Steps

1. The *first* step in behavioural activation is to make a diary of what you are doing now.
2. The *second* step is to make three lists of the things that you would like to do, based on what you have stopped doing since you became depressed.
  - One list will be just **routine** jobs which need to be done, such as housework or cooking.
  - The second list will be **pleasurable** activities such as going out and meeting people.
  - The final list will be important **necessary** activities that you are avoiding, such as paying bills or dealing with conflict.
3. The *third* step is to combine these different things into a final big list, with the most difficult activities at the top of the list and some easier activities at the bottom, making sure you mix up **routine**, **pleasurable** and **necessary** activities.
4. The *fourth* step in behavioural activation is to use a diary sheet to plan out how to start doing these things, starting near the bottom of your list and working upwards.

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**Behavioural Activation 3**

**Step 1**

Take a blank **diary** sheet.

Each day, fill in what you are doing. Be specific and try to fill in each square. Even if you think you are doing nothing, this is very helpful information

Discuss this list with your depression specialist mental health worker. His or her role is to support and coach you in using the diaries and information sheets. You are in control of all activities you plan to undertake, though you will get guidance and support from the depression specialist mental health worker.

**Step 2**

Think about things that you would like to do, based on what you have written down in your first diary. Identify things that you have stopped doing since you became depressed.

- Some of these things will be just **routine** jobs which need to be done, such as housework or cooking.
- Others things will be **pleasurable** activities such as going out and meeting people.
- Some things will be important **necessary** activities that you are avoiding, such as paying bills or dealing with conflict.

Use the **Worksheet I** to list all these activities. Put them down in any order you like, as you think of them

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**Behavioural Activation 4**

**Step 3**

Using **Worksheet II**, organise all these different things into a list, with the most difficult activities at the top of the list and some easier activities at the bottom.

Make sure you mix up **routine**, **pleasurable** and **necessary** activities so that there is a mixture of different types of activities at the bottom, middle and top of the list.

**Step 4**

Use another clean **diary** sheet to plan out how to start doing these things. Take some examples of **routine**, **pleasurable** and **necessary** activities from near the bottom of your list and plan to do them. Write down at certain times exactly what you will do.

Spell out exactly what the activity is, where it will be done, when it will be done, how it will be done, who it will be done with (if it includes other people) and what steps are needed to complete the activity.

Try to schedule at least something once a day, more if you wish it but do not plan on so many activities that you will not be able to achieve them. Remember to start small and work up to big.

Try it for a week or two!

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**Behavioural Activation 5**

**What's Next?**

Once you have tried to do some of the activities you have listed, discuss your progress with your mental health worker. He or she will encourage you and give you advice. As you accomplish some activities on your list move on up the list to other more difficult activities. Some activities will give you pleasure but it is more likely you will begin to feel a sense of accomplishment for more successfully completed activities (no one feels pleasure at paying a bill!)

**Dealing with Setbacks**

Remember that depression affects how you feel, what you do and what you think. It is unlikely you will be 100% successful. Some days will be better than others. If you do not do what you had planned one day, leave it for another day and try again. Complete success is not necessary. The best thing you can do is to keep trying. Compare what you are doing with how you were a few weeks earlier (try comparing your new diary with old ones). If you are really struggling, choose some activities from nearer the bottom of your list, or something different.

Finally, discuss your progress with your mental health worker. He or she will advise you and support you.

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# Behavioural Activation

## Patient Worksheets and Diaries

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## Section D

# Resource Materials in Case Management

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**PHQ-9 monitoring tool**

Patient Name \_\_\_\_\_ Date \_\_\_\_\_

1. Over the last 1-2 weeks, how often have you been bothered by any of the following problems? Read each item carefully, and circle your response.

a. Little interest or pleasure in doing things

Not at all      Several days      More than half the days      Nearly every day

b. Feeling down, depressed, or hopeless

Not at all      Several days      More than half the days      Nearly every day

c. Trouble falling asleep, staying asleep, or sleeping too much

Not at all      Several days      More than half the days      Nearly every day

d. Feeling tired or having little energy

Not at all      Several days      More than half the days      Nearly every day

e. Poor appetite or overeating

Not at all      Several days      More than half the days      Nearly every day

f. Feeling bad about yourself, feeling that you are a failure, or feeling that you have let yourself or your family down

Not at all      Several days      More than half the days      Nearly every day

g. Trouble concentrating on things such as reading the newspaper or watching television

Not at all      Several days      More than half the days      Nearly every day

h. Moving or speaking so slowly that other people could have noticed. Or being so fidgety or restless that you have been moving around a lot more than usual

Not at all      Several days      More than half the days      Nearly every day

i. Thinking that you would be better off dead or that you want to hurt yourself in some way

Not at all      Several days      More than half the days      Nearly every day

2. If you ticked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not Difficult at All      Somewhat Difficult      Very Difficult      Extremely Difficult

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### Scoring the PHQ-9

The PHQ-9 is a useful monitoring tool to ensure case managers have an objective measure of a patient's mood as well as information gleaned from their assessment contacts. It can be quickly totalled to give confirm mental health state and give patients weekly feedback on the outcomes of their treatment.

Of the 9 items in question 1 count one point for each item ticked 'several days', two points for each ticked 'half the days' and three points for those ticked 'nearly every day'. Sum the total for a severity score.

<b>SCORE</b>	<b>SEVERITY</b>
<10	Mild depression
10-14	Moderate depression
15-19	Moderate to severe depression
>20	Severe depression

#### Definition of improvement

Improved                      A reduction of 2 or more points on the baseline score

Not improved                Drop of 1 point or no change or increase

#### Definition of remission

If patients have a score of less than 5 they are considered to be in remission.



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**Patient Contact Log**

Patient Name \_\_\_\_\_ GP Name \_\_\_\_\_ Page \_\_\_\_\_ of \_\_\_\_\_

Date	Contact Number (1-10)	Contact Duration (mins.)	Face to face or phone?	Medication Management Y/N	Behavioural Activation Y/N	PHQ9 Score	Comments

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**Session Record; Summary of Contact**

**Patient**

**Date**

**Session no**

**Assessment (depression, risk, medication, side effects, behavioural activation)**

**PHQ9 Score**

**Education**

**Shared Decision Making**

**Action Following Contact (Level of GP feedback - 1,2,3)**

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**Suggested Brief Reporting Format for GP Records  
Following Session 1**

Date and Time of Contact with Patient \_\_\_\_\_

**Main Problem Statement** (single sentence summarising the patient's triggers, autonomic, behavioural and cognitive symptoms, impact on life). Risk category.

*E.g. Jean Smith, part of case management research trial. Main problem is a lack of interest in undertaking previously enjoyed activities, lethargy, sleep problems, reduced activity and thoughts that she is a failure with the consequence that she is finding it difficult to work, socialise and keep on top of her housework. Not at risk of suicide.*

**Case Management Plan** (outline of contacts planned with patient)

*E.g. Mrs Smith agreed to be contacted weekly to review her progress with fluoxetine and to commence a programme of behavioural activation. Information on depression, antidepressants and behavioural activation given to Jean.*

Name of Case Manager \_\_\_\_\_

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**Suggested Brief Monthly Reporting Format for GP Records**

**Number of Contacts with Patient in Last Month** \_\_\_\_\_

**Progress report (brief outline of progress)**

*E.g. Mrs Smith experienced initial mild nausea which abated after 10 days. Her mood is slightly improved and she continues to take her fluoxetine as prescribed. She has started on a behavioural activation programme and is beginning to re-establish her daily routine. She is not at risk.*

**Future Plans**

*E.g. Mrs Smith will continue to be contacted weekly for the next two weeks to review her progress, her concordance with her fluoxetine and to support her behavioural activation programme.*

**Name of Case Manager** \_\_\_\_\_

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**Preparing for Supervision. Date.....**

In preparation for your supervision session, make a note of patients in the following five categories. Include the detail mentioned to assist you and the supervisor deal with your caseload effectively and efficiently. Use your session records and patient contact log to organise yourself prior to supervision and to refer to during supervision.

1. New Patients: (gender, age, previous episodes, onset, main problem statement, risk, PHQ9 score, treatment, case management action so far).

**Number of patients for discussion.....**

2. Patients at 4, 8 or 12 weeks (review point, gender, age, episode, treatment summary, initial PHQ 9 score, risk, case management action, progress including PHQ 9 scores).

**Number of patients for discussion.....**

3. Patients who are not improving as expected, (time in study, gender, age, episode, treatment summary, initial PHQ 9 score, risk, case management action, progress including PHQ 9 scores).

**Number of patients for discussion.....**

4. Overdue patients (time in study, gender, age, episode, treatment summary, initial PHQ 9 score, risk, case management action including number of attempts made to contact patient).

**Number of patients for discussion.....**

5. All other patients (current caseload numbers, number of patients in caseload additional to those already discussed in this supervision session, any other problems).

**Number of patients for discussion.....**

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**Organising Information For Supervision**

**1. New Patients**

- Gender, age, previous episodes, onset
- Main problem statement, risk
- PHQ9 score
- Treatment plan including medication and behavioural activation
- Case Management Action

**2. Patients at 4, 8 or 12 weeks**

- Review point, gender, age, episode
- Treatment summary
- Initial PHQ 9 score, risk
- Action so far by case manager
- Progress including PHQ 9 scores

**3. Patients who are not improving as expected**

- Time in study, gender, age, episode
- Treatment summary
- Initial PHQ 9 score, risk
- Action so far by case manager
- Progress including PHQ 9 scores

**4. Overdue patients**

- Time in study, gender, age, episode
- Treatment summary
- Initial PHQ 9 score, risk
- Action including number of attempts made to contact patient

**5. All other patients**

- Current caseload numbers
- Number of patients in caseload additional to those already discussed in this supervision session

**Plus..... any other problems not covered above.**



## Appendix 2 Consolidated Standards of Reporting Trials checklist

**TABLE 27** Consolidated Standards of Reporting Trials 2010 checklist of information to include when reporting a randomised trial<sup>a</sup>

Section/topic	Item number	Checklist item	Reported on page number
<b>Title and abstract</b>			
	1a	Identification as a randomised trial in the title	vii
	1b	Structured summary of trial design, methods, results and conclusions (for specific guidance see CONSORT for abstracts)	vi–vii
<b>Introduction</b>			
Background and objectives	2a	Scientific background and explanation of rationale	1–3
	2b	Specific objectives or hypotheses	5
<b>Methods</b>			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	5
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	NA
Participants	4a	Eligibility criteria for participants	5–6
	4b	Settings and locations where the data were collected	7
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	7–10
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	10
	6b	Any changes to trial outcomes after the trial commenced, with reasons	NA
Sample size	7a	How the sample size was determined	11
	7b	When applicable, explanation of any interim analyses and stopping guidelines	NA
Randomisation			
Sequence generation	8a	Method used to generate the random allocation sequence	6
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	6
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	6
Implementation	10	Who generated the random allocation sequence, who enrolled participants and who assigned participants to interventions	6
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	6
	11b	If relevant, description of the similarity of interventions	NA

continued



**TABLE 27** Consolidated Standards of Reporting Trials 2010 checklist of information to include when reporting a randomised trial<sup>a</sup> (*continued*)

Section/topic	Item number	Checklist item	Reported on page number
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	11–13
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	11–13
<b>Results</b>			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment and were analysed for the primary outcome	15–16
	13b	For each group, losses and exclusions after randomisation, together with reasons	16
Recruitment	14a	Dates defining the periods of recruitment and follow-up	7
	14b	Why the trial ended or was stopped	NA
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	17–18
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	16
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group and the estimated effect size and its precision (such as 95% confidence interval)	20–23
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	NA
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory analyses	20–23
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	NA
<b>Discussion</b>			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision and, if relevant, multiplicity of analyses	65–66
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	66–68
Interpretation	22	Interpretation consistent with results, balancing benefits and harms and considering other relevant evidence	66–68
<b>Other information</b>			
Registration	23	Registration number and name of trial registry	viii
Protocol	24	Where the full trial protocol can be accessed, if available	71
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	viii

NA, not applicable.

a We strongly recommend reading this statement in conjunction with the CONSORT 2010 Explanation and Elaboration Document for important clarifications on all of the items. If relevant, we also recommend reading the CONSORT Statement extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions and pragmatic trials. Additional extensions are forthcoming; for those and for up-to-date references relevant to this checklist, see [www.consort-statement.org](http://www.consort-statement.org).

## Appendix 3 Consolidated Standards of Reporting Trials abstract checklist

Item	Description	Reported on line number
Title	Identification of the study as randomised	vii
Authors <sup>a</sup>	Contact details for the corresponding author	vii
Trial design	Description of the trial design (e.g. parallel, cluster, non-inferiority)	vii
Methods		
Participants	Eligibility criteria for participants and the settings where the data were collected	vii
Interventions	Interventions intended for each group	viii
Objective	Specific objective or hypothesis	vii
Outcome	Clearly defined primary outcome for this report	viii
Randomisation	How participants were allocated to interventions	vii
Blinding (masking)	Whether or not participants, care givers and those assessing the outcomes were blinded to group assignment	viii
Results		
Numbers randomised	Number of participants randomised to each group	viii
Recruitment	Trial status	NA
Numbers analysed	Number of participants analysed in each group	viii
Outcome	For the primary outcome, a result for each group and the estimated effect size and its precision	viii
Harms	Important adverse events or side effects	NA
Conclusions	General interpretation of the results	viii
Trial registration	Registration number and name of trial register	viii
Funding	Source of funding	viii

NA, not applicable.

a This item is specific to conference abstracts.



## Appendix 4 The CollAborative DEpression Trial ethics documents

GP Headed paper

Dear **Patient**

### Treatment of depression in primary care

At this surgery we have decided to take part in a research study being co-ordinated at **SITE DETAILS** which may be of interest to you. A new treatment is being tested called Collaborative Care for depression and is explained in the leaflet that comes with this letter. Please take the time to read this and consider if participating in this research would be right for you.

As stated in the information sheet, if you are interested in participating in the study please complete the "permission for researcher to contact" form and send it free post to the address given. If you have any questions, or are interested in finding out more about the study please ring the research team on the number listed.

In the next week or so you may receive a call from the surgery to check that you have received this letter and to ask if you are interested. To help the surgery please let the practice know if your telephone number has changed.

If you are certain that you do **not** want to take part in the research you may return the slip at the bottom of this letter to the surgery and you will not be contacted again.

Thank you for taking the time to read this letter.

Yours sincerely,

**Surgery GP's name**

-----

I DO NOT want to take part in this study and DO NOT want a follow-up call

Name:

Signature:

Please return to **GP SURGERY ADMINISTRATOR NAME**, at **SURGERY NAME**  
(CADET: Collaborative Depression Trial)



## Collaborative Depression Trial (CADET)

### Treatment of Depression in General Practice

We are looking at a new treatment called collaborative care which has been shown to be very helpful in the treatment of depression. We are writing to you because your GP surgery has agreed to help us with this and you have visited your GP reporting symptoms experienced by many people with depression. This letter asks you to consider taking part in the research study.

#### **What is the treatment that is being tested?**

The new treatment is called **Collaborative Care for Depression**. People receiving Collaborative Care are allocated a **case manager** who is a health worker specially trained to help people with depression, they will help to organise your care and give you advice on overcoming depression. You will still carry on seeing your GP to help you deal with your depression but you will also regularly speak to this case manager. The case manager will have more time to discuss the management of your care and will offer advice about medication and explain some things you can do to start to make you feel better. The case manager will see you face to face initially, at a time and place to suit you, and the meeting will usually take about 40 minutes. After this first meeting, you will usually speak to the case manager over the telephone, but there is the opportunity for more face to face meetings if you wish. They will arrange to call you at regular times to support you in your treatment. These calls take about 15 minutes, and will be booked at times that you find easiest. Usually, they will call you once a week for the first month and then once a fortnight for the next three months, but how often they call is totally up to you. You will have contact with the case manager for four months.

#### **What will happen to me if I take part?**

This study is a randomised controlled trial. Sometimes, because we do not know which way of treating patients is best, we need to make comparisons. We are asking people from a number of different GP surgeries in the area if they would like to take part. Every patient who takes part in the study will continue to have their treatment managed by their GP, but people from **half** of the GP surgeries will **also receive Collaborative Care**. What we do is compare the progress and experiences of patients who received collaborative care with those who didn't. The decision about whether a surgery will offer collaborative care is made totally by chance, and you will not know which group your GP surgery is in until you decide to take part in the study. So it is important to note that half of the people who agree to take part will be receiving exactly the same treatment as they would be if they chose not to take part in the study, that is, they will not be receiving Collaborative Care.

We would also want to meet you to ask you some questions about how you are feeling and we will ask you to fill out some short questionnaires. We try to see everyone three times, once when they agree to take part and then four and twelve months later. These meetings will take between 45 and 90 minutes.

#### **Will my taking part in this study be kept confidential?**

All information collected about you during the course of the research will be kept strictly confidential.

#### **How do I find out more?**

This is a very short summary about the study, if you would like to find out more then you can return the 'permission for researcher to contact' form or call **site researcher on xxxxx**. Someone working on the study will then send you more information about this study and arrange a time to meet you to answer any questions that you may have.

Thank you for reading this and for considering taking part in this study.

---

CADET Participant Summary Sheet v1.2 – 27-01-09



**Collaborative Depression Trial (CADET)**  
**Treatment of Depression in General Practice**

**Permission for researcher to contact**

**Patient's GP Surgery name:**

I confirm that I have read and understand the summary sheet for the above study and am happy for a researcher to contact me to discuss whether or not I would like to take part.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.

Name \_\_\_\_\_

Address \_\_\_\_\_

Signature \_\_\_\_\_

Telephone contact details                      Day \_\_\_\_\_  
    Evening \_\_\_\_\_  
    Mobile \_\_\_\_\_

Email address \_\_\_\_\_

Return in enclosed pre-paid envelope to:

**Relevant site details here – including phone number**

CADET Participant Summary Sheet v1.2 – 27-01-09

## Participant Information Leaflet



### Collaborative Depression Trial (CADET)

#### Treatment of Depression in General Practice

You are being invited to take part in a research study. Before you decide whether you want to take part or not it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

#### What is the purpose of the study?

Depression causes misery to many people and is a major health problem in the UK. Although effective treatments are available, many people do not have access to them and we are always looking for treatments that are easier and quicker for patients to receive. New ways of organising treatment have been developed in the United States but we do not know if they are better than usual care in the UK. Therefore, this study will investigate a way of organising the way we deliver treatment for depression. This is called 'collaborative care for depression' and it is being compared with the usual care given by GPs.

#### Why have I been chosen?

Your GP surgery is taking part in this trial and you have recently visited your GP reporting symptoms experienced by many people with depression. This letter asks you to consider taking part in this research study.

#### Do I have to take part?

It is entirely up to you to decide whether or not to take part. If you do decide to take part you will be asked to sign a consent form. You will still be free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect the standard of care you receive in any way.

CADET Participant Info Sheet v1.2 – 27-01-09

### What is the treatment that is being tested?

The new treatment is called Collaborative Care for Depression. People receiving Collaborative Care are assigned a case manager who is a health worker specially trained to help people with depression. Case managers help to organise the person's care and will give them advice on overcoming depression. For example, the case manager may advise about medication or explain some very simple ways that a person can help themselves to start to feel better. Case managers see people face to face initially, at a time and place to suit them, and the meeting will usually take about 40 minutes. After this first meeting, they will telephone the person at regular times to support them in their treatment, these calls take about 15 minutes, and will be booked at times to suit the patient. Usually, the case manager will call once a week for the first month and then once a fortnight for the next three months, but how often they call is totally up to the patient. Patients have contact with the case manager for four months.

### What will happen to me if I take part?

This study is a randomised controlled trial. Sometimes, because we do not know which way of treating patients is best, we need to make comparisons. We are asking people from a number of different GP surgeries in the area if they would like to take part. Every patient who takes part in the study will continue to have their treatment managed by their GP, but people from **half** of the GP surgeries will **also receive Collaborative Care**. What we do is compare the progress and experiences of patients who received collaborative care with those who didn't. The decision about whether a surgery will offer collaborative care is made totally by chance, and you will not know which group your GP surgery is in until you decide to take part in the study. So it is important to note that half of the people who agree to take part will be receiving exactly the same treatment as they would be if they chose not to take part in the study, that is, they will not be receiving Collaborative Care.

### What information do you need from me?

If you agree to take part in the research the first thing we will want to do is to find out about you. We will need to ask about your current and past mental health as well as your life more generally. We have already arranged to meet with you at [site details](#), if you are happy to take part in this study we will ask you some questions about how you have been feeling recently and there will be a few questionnaires that we would like you to fill out. You will also have an opportunity to ask any questions you may have about the study. This meeting will take about 90 minutes.

We would then arrange to see you in four and twelve months time. These meetings will be a little shorter as they only involve you filling out some questionnaires. We expect these meetings to take about 45 minutes. We also need to collect some information from your medical records. The research study will last for two-and-a-half years, but your involvement will only be for twelve months.

We are also interested in finding out what it was like to be part of this study and will be giving a small number of you the opportunity to describe your experiences of the treatment and the ways in which you think it could be improved. To do this, we will ask some of you to agree to a longer interview of about 60 minutes. If you agree, we would like to tape record this interview. The tapes will be given a code and securely stored for a maximum of 20 years

CADET Participant Info Sheet v1.2 – 27-01-09



before being destroyed. We will also make typed copies of the taped conversations. We will ensure all information in these copies is anonymous by removing all named references to you or your family and friends from the copies.

We want to make sure that all patients are offered the best service possible, so in a bid to maintain quality we would like to tape record some of the contact sessions with the case managers. This is so that we can check the quality of the advice given to you by the case manager. The tapes will be given a code and securely stored for a maximum of 20 years before being destroyed. We will also make typed copies of the taped conversations. We will ensure all information in these copies is anonymous by removing all named references to you or your family and friends from the copies. However, if you would rather they weren't taped, you can refuse. This will not affect your care at all and you can still take part in the study.

**Will I have to do anything differently?**

There are no restrictions in your lifestyle from taking part in this research. You should continue to follow the advice of your GP.

**Are there any side effects, disadvantages and risks of taking part?**

We are not aware of any side effects, disadvantages or risks to you of taking part in this research.

**What are the possible benefits of taking part?**

We hope that both the new treatment and usual care from your GP will help you. The information we get from this study may help us to treat future patients with depression better.

**What happens when the research study stops?**

Throughout the study and afterwards, your GP will continue to treat you as s/he feels is best for you and with your agreement.

**What if something goes wrong?**

We do not expect any harm coming to you from being in this study. However, if you wish to complain, or have any concerns about any aspect of the way you have been approached or treated during the course of this study, the normal National Health Service complaints mechanisms are available to you.

**Will my taking part in this study be kept confidential?**

All information collected about you during the course of the research will be kept strictly confidential. Any information about you that is collected from the questionnaires or interviews will have your name and address removed so that you cannot be recognised from it. As your GP is involved in your treatment, s/he will be informed of your progress as part of the research study, with your permission. Should your condition worsen to a point where it is felt by either a researcher or the case manager that you may be a danger to yourself or others, your GP will be informed of this, with or without your permission. However, this is the only time we would ever break confidentiality.

CADET Participant Info Sheet v1.2 – 27-01-09

**What will happen to the results of the research study?**

We will publish the results of this research study widely. As well as producing a research report and writing articles for health professionals to read, you will be given a summary of the findings on request at the end of the trial in 2012. To request the study summary and articles please contact Prof. David Richards, whose details are at the end of this information leaflet. We will also ensure patient organisations such as Depression Alliance are informed of the results of the trial. You will not be personally identified in any publications from this trial.

**Who is organising and funding the research?**

The Medical Research Council has funded this research study. Your GP is not being paid any extra money for being involved in the study.

**Who has reviewed the study?**

This research study has been reviewed and approved by the South West Research Ethics Committee.

**Next Steps**

An appointment has been arranged for you to come and see [site details](#) and during this meeting you will have the chance to ask any questions you have. If you are still happy to take part in the study we will ask you to sign a form to say so and then get you to fill out some questionnaires about yourself.

If you need further information to help you decide, please contact Professor Dave Richards at the address below.

Thank you for reading this and for considering taking part in this study.

**Contact for Further Information**

If you need further information about this study please contact:

David Richards  
Professor of Mental Health Services Research  
School of Psychology  
University of Exeter

Office: XXXX

Email: XXXX

CADET Participant Info Sheet v1.2 – 27-01-09



**Collaborative Depression Trial (CADET)  
Treatment of Depression in General Practice**

**CONSENT FORM**

Patient Identification  
Number for this trial:

**Site Details**

	<b>Please initial box</b>
1. I confirm that I have read and understand the information sheet dated ..... (version .....) for the above study and have had the opportunity to ask questions.	
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.	
3. I agree to take part in the above study.	
4. I agree to my GP being informed of my participation in this study.	
5. I understand that research staff will contact my GP or specialist if they feel that my condition has deteriorated and further action is needed	

In addition to the above, I would also be prepared to consent to the following;

6. I understand that sections of any of my medical notes may be looked at by research staff. I give permission for these individuals to have access to my records.	
7. If my surgery is one where collaborative care is offered, I am willing to have some of my sessions with the health worker tape recorded.	
8. I am willing to be interviewed about my experiences of taking part in the study and for this interview to be tape recorded.	

When you have initialled all the boxes above, please complete below, including the date yourself:

Name of Patient \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Name of Person taking consent \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

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## Multi-Centre Randomised Controlled Trial of Collaborative Care for Depression

### Serious Adverse Event

A Serious Adverse Event (SAE) is defined in accordance with ICH/GCP as “Any untoward medical occurrence that:

- Is fatal or life threatening
- Requires hospitalisation or prolongs existing hospitalisation
- Results in significant or permanent disability or incapacity
- Is a new primary cancer
- Is a congenital anomaly or birth defect
- May jeopardise the patient and may require medical or surgical intervention to prevent one of the outcomes listed above”

Even in a clinical trial of a non-investigational medicinal product (non-CTIMP) like CADET the study investigator should report any SAE **that is both related to the research procedures and is unexpected**. An immediate report (within 24 hours) must be made orally or in writing to the Research Sponsor (University of Exeter). The immediate report must be followed by a detailed written report on the event. This report must also be sent to our main REC (South West REC) within 15 days of the CI becoming aware of the event.

If you are alerted to an SAE that is both related to CADET research procedures and is unexpected, please telephone the CADET coordinating centre immediately, and fax the *CADET disclosure/adverse event recording form* to XXXX, so that both the Sponsor and the Main REC can be notified within the relevant time period.

### Recording adverse events

1 At both 4 and 12 month assessments serious adverse events that might have occurred since the previous visit should be elicited from the participant. If a participant (or a patient’s GP or next of kin) discloses a serious adverse event please document it using the *CADET disclosure/adverse event recording form*. As CADET is a non-CTIMP we are not required to log all non-serious adverse events, however the *CADET disclosure/adverse event recording form* allows researchers to record other adverse events when it is not immediately clear that it falls into the “Serious Adverse Event” category, or which causes concern.

#### **2 General completion guidelines:**

3 Ask patient the date and start and stop time of event. If the patient cannot remember, then as near as possible. Document the outcome of the event and any actions taken. Confirm it with your site lead and have them countersign it.

4

**Please note** that ALL instances where the risk protocol is enacted must be recorded in the usual manner on the *CADET Risk Form* and countersigned by the site lead or their nominated deputy.

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## CADET Disclosure/Adverse Event Recording Form

Date of Incident:	Patient ID:	Patient Initials:	Sex:
<b>Details of disclosure</b>			
<b>Outcome:</b>			
<b>Please indicate type (tick all that apply):</b>			
Self harm:	<input type="checkbox"/>	Hospitalisation or prolongation of hospitalisation	<input type="checkbox"/>
Life threatening	<input type="checkbox"/>	Persistent or significant disability or incapacity	<input type="checkbox"/>
Death:	<input type="checkbox"/>	Other	<input type="checkbox"/>
<b>ADDITIONAL RELEVANT INFORMATION</b>			
<b>Action taken by research team (if any)</b>			
<b>Name of Researcher</b> (BLOCK CAPITALS)	<b>Date</b>	<b>Signature</b>	
<b>Name of PI</b> (BLOCK CAPITALS)	<b>Date</b>	<b>Signature</b>	

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### Report of Serious Adverse Event (SAE)

The Chief Investigator should report any SAE that is both related to the research procedures and is unexpected. Report the SAE to the sponsor within 24 hours and send the Report to the Research Ethics Committee that gave you favourable opinion of the research within 15 days of the CI becoming aware of the event.

#### 1. Details of Chief Investigator

Name	Prof David A Richards
Address	Mood Disorders Centre School of Psychology Washington Singer Laboratories University of Exeter
Telephone	XXXX
Email	XXXX
Fax	XXXX

#### 2. Details of study

Full Title of Study	Multi-Centre Randomised Controlled Trial of Collaborative Care for Depression
Name of Main REC	South West Research Ethics Committee
Main REC reference	09/H0206/1
Research Sponsor	University of Exeter
Sponsor's reference for this report (if applicable)	

#### 3. Type of Event

Please categorise this event, ticking all appropriate options

Death <input type="checkbox"/>	Life Threatening <input type="checkbox"/>	Hospitalisation or prolongation of hospitalisation <input type="checkbox"/>
Persistent or significant disability or incapacity <input type="checkbox"/>	Congenital anomaly or birth defect <input type="checkbox"/>	Other <input type="checkbox"/>

#### 4. Circumstances of the event

Date of SAE	
Location	
Describe the circumstances of the event          (attach copy of detailed report if necessary)	

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What is your assessment of the implications, if any, for the safety of study participants and how will these be addressed?	

## 5. Declaration

Signature of Chief Investigator	
Print Name	
Date of submission	

## 6. Acknowledgement of receipt by main

The South West Research Ethics Committee acknowledges receipt of the above

Signed	
Name	
Position on REC	
Date	

Signed original to be sent back to Chief Investigator (or other person submitting the report). Copy to be kept for information by main REC





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**EME  
HS&DR  
HTA  
PGfAR  
PHR**

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