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## Effectiveness of teaching general practitioners skills in brief cognitive behaviour therapy to treat patients with depression: randomised controlled trial

Michael King, Oliver Davidson, Fiona Taylor, Andrew Haines, Deborah Sharp, Rebecca Turner

### Abstract

**Objective** To assess the effectiveness of teaching general practitioners skills in brief cognitive behaviour therapy.

**Design** Parallel group, cluster randomised, controlled trial of an educational package on cognitive behaviour therapy.

**Setting** General practices in north London.

**Participants** 84 general practitioner principals and 272 patients attending their practices who scored above the threshold for psychological distress on the hospital anxiety and depression scale.

**Intervention** A training package of four half days on brief cognitive behaviour therapy.

**Main outcome measures** Scores on the depression attitude questionnaire (general practitioners) and the Beck depression inventory (patients).

**Results** Doctors' knowledge of depression and attitudes towards its treatment showed no major difference between intervention and control groups after 6 months. The training had no discernible impact on patients' outcomes.

**Conclusion** General practitioners may require more training and support than a basic educational package on brief cognitive behaviour therapy to acquire skills to help patients with depression.

### Introduction

Most people with psychological problems receive no treatment. Those who do seek help have severe problems, and most are managed by their general practitioners.<sup>1-3</sup> Although counselling is more frequently used in general practice, it is mainly carried out by trained professionals<sup>4</sup>; psychological interventions for use by general practitioners need to be evaluated.<sup>5</sup> Cognitive behaviour therapy is as effective as pharmacotherapy for treating depression, with the benefit of reduced rates of long term relapse.<sup>6</sup> It is also effective in depressed patients presenting to general practitioners.<sup>7</sup> Cognitive behaviour therapy is effective when delivered by general practitioners who have received extensive instruction, but most doctors do not have the time or inclination to undergo comprehensive training.<sup>8,9</sup> We assessed whether teaching general practitioners skills in brief cognitive behaviour therapy improved

their attitudes to the management of depression and the outcomes of their patients with common mental disorders.

### Methods

We undertook a parallel group, cluster randomised, controlled trial of basic training in brief cognitive behaviour therapy for general practitioners. Between October 1997 and January 1998 we contacted a random sample of general practitioners on the registers of the family health service authorities in the former North Thames Regional Health Authority.

### Randomisation

General practitioners were assigned to a group receiving brief cognitive behaviour therapy training and a control group. For randomisation we used a series of sealed, opaque envelopes in blocks of six; for every consecutive six general practitioners entered into the trial three were in each group, but the order of recruitment to the groups was random. Doctors from the same practice were randomised together to avoid exchange of training material and knowledge. The research assistant could not be kept blind to the allocation of doctors as she collected assessments at the training day, liaised with practice receptionists, and collected data from practice records. To avoid systematic bias we relied on self reported outcomes for both doctors and patients.

### Training

The training aimed to increase professional ease and positive attitudes towards managing patients with depression and to enable the acquisition of skills in the application of brief cognitive behaviour therapy. General practitioners were not expected to become proficient cognitive behaviour therapists. Rather, we aimed to teach them techniques for use in routine consultations. The course, consisting of four half day workshops at one week intervals, was developed and piloted in an earlier feasibility study (box).<sup>10</sup> Doctors in the control group were offered the course at the end of the trial but received no other advice or training at entry to the trial.

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## Evaluation of training

### *Learning objectives*

General practitioners completed two questionnaires at baseline and then six months after training: the depression attitude questionnaire<sup>11,12</sup> and a questionnaire developed by us in a feasibility study that explores doctors' knowledge of cognitive behaviour therapy and the extent to which they feel confident in applying it in their practice.<sup>10</sup> A high score for the confidence outcomes indicates lack of confidence in treating depression or anxiety.

The depression attitude questionnaire contains four factors: treatment attitude (high scores indicate a preference for biological theories and antidepressants, low scores indicate an orientation to psychotherapy), professional ease (high scores indicate that the doctor is uncomfortable in dealing with depression and sees it as unrewarding), depression malleability (high scores indicate pessimism about modifying the course of depression), and depression identification (high scores indicate difficulty in differentiating depression from unhappiness and little confidence in treatments beyond those usually provided).

### *Patient outcomes*

We used the hospital anxiety and depression scale to screen consecutive patients aged 18 and over consulting the trial doctors.<sup>13,14</sup> Screening took place for the doctors in the intervention group within two weeks of training between January and July 1998. We excluded patients with psychoses, organic brain syndromes, learning disabilities, or who were unable to read English. In each practice a trained receptionist asked patients to complete questionnaires. The receptionist told participants in both trial arms that their doctor had been involved in a training programme, without specifying the nature of that training. We contacted patients with a subscale score of 11 or more for anxiety or depression on the hospital anxiety and depression scale and asked them to enter the study. To recruit patients with major psychological symptoms we chose a high threshold. We offered participants a £5 gift token for their time.

On receipt of a signed consent form patients were asked to complete the following questionnaires: the

Beck depression inventory, which measures severity of depressive symptoms and is a sensitive measure of change (high scores indicate greater depression)<sup>15</sup>; the state trait anxiety inventory, which measures changes in controlled trials of psychological and pharmacological therapies (high scores for the first dimension indicate greater "state" or short term anxiety, high scores for the second indicate greater "trait" or long term anxiety)<sup>16,17</sup>; and the short form 36 (SF-36), a brief measure of quality of life (comprises eight dimensions for which high scores indicate better quality of life).<sup>18</sup>

We told the doctors which of their patients scored above the threshold on the hospital anxiety and depression scale. Doctors in the control group provided their usual care, which could include any intervention or referral.

### **Patient follow up**

We followed up participants by post three and six months later, and again asked them to complete the three questionnaires. We collected data from the practice on consultation rates, home visits, psychotropic prescribing, referrals to mental health professionals and other health service providers, and certificated absences for sickness.

### **Power calculation**

To plan the trial we used data from a study of a mental health facilitator in general practice.<sup>19</sup> Using the observed difference between psychiatrists and general practitioners on the professional ease subscale of the depression attitude questionnaire, we designed the trial to detect a difference of 0.65 standard deviations between intervention and control doctors. To provide 85% power at a two sided 5% level of significance, 43 general practitioners were needed in each group. At the time of the study we had little information on spontaneous change in scores on the Beck depression inventory for patients attending general practitioners. From changes in scores every four months on the general health questionnaire in patients attending general practitioners (R Blizard, personal communication, 1995), we aimed to detect a difference of 0.5 standard deviations between patients attending intervention and control doctors. With individual randomisation we needed 73 patients in each group (1.7 patients per practitioner) to provide 85% power at a two sided 5% level of significance. Using a correction formula to allow for the clustered design, with an estimated intraclass correlation of 0.26 (R Blizard, personal communication, 1995), the revised sample size was 105 patients in each arm (2.5 patients per doctor).<sup>20</sup> As up to 30% of eligible patients might not take part, we estimated we would need to identify four to five patients per doctor.

### **Analysis**

We used linear regression to estimate differences in the four dimensions of the depression attitude questionnaire, while adjusting for baseline scores. We assessed the impact of training on patients' emotional symptoms by examining differences in scores on the Beck depression inventory and state trait anxiety inventory and four of the SF-36 dimensions that were most relevant to patients with depression. The SF-36 dimension representing role limitations due to emotional problems was dichotomised for analysis, since the original scale contains only four values. For

### **Content of training**

#### **First half day**

Clinical presentations of anxiety and depression, classification schema in general practice, recognition skills, common causes, and antidepressant treatment

#### **Second half day**

Introduction to the theory of behaviour and cognitive therapies, functional assessment of the presenting problems, and diaries, monitoring, and goal setting

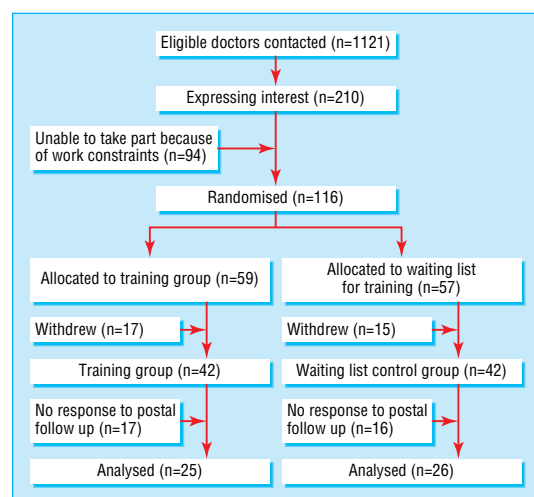
#### **Third half day**

Informing patients of the cognitive model, behavioural and cognitive assessments, activity scheduling, cognitive restructuring, and therapy guidelines

#### **Fourth half day**

Problem solving, guidelines for cognitive behaviour therapy in general practice, and summing up and review

secondary outcomes at general practitioner level we examined confidence in treating depression and anxiety, whereas for patients we explored differences in resource use. For continuous outcomes we report estimated mean differences with 95% confidence intervals and corresponding P values, whereas for binary outcomes we report odds ratios. Normality was assumed for each continuous outcome. We compared primary patient outcomes on the basis of both mid-point and end point measurements, using all available values, while adjusting for baseline measurements. We estimated differences between the trial arms within hierarchical regression models, which allowed for both the repeated measurements structure and the clustering of patients within doctors.<sup>21,22</sup> We analysed resource use outcomes within hierarchical regression models, which allowed for the clustering of patients within doctors. Only three pairs of colleagues were recruited from the same practices. Since there was therefore insufficient information to estimate variation both between doctors and between practices, we made no allowance for this in the analysis. As exploratory analyses we investigated the relation between practitioner confidence and practitioner effects on primary patient outcomes. These relations were estimated as regression slopes within multivariate hierarchical models, with adjustment for baseline patient scores. We used bayesian estimation for computational reasons, with vague priors placed on all variables.<sup>23</sup> We followed an intention to treat approach throughout. Analyses were performed with Stata (version 6), MLwiN (version 1.10, Institute of Education, London), and WinBUGS (version 1.3, Medical Research Council Biostatistics Unit, Cambridge).



**Fig 1** Flow of general practitioners through trial

**Table 1** Characteristics and baseline scores of doctors (42 in trained group, 42 in control group) and patients (137 in trained group, 135 in control group) Values are means (SDs) unless stated otherwise

Characteristics	Trained doctors	Control doctors
<b>General practitioners</b>		
Age (n=82)	43.0 (7.6)	45.0 (7.7)
No (%) male	18/42 (43)	22/41 (54)
No (%) fundholders	17/42 (40)	20/41 (49)
No (%) in single handed practice	4/42 (10)	2/41 (5)
No (%) full time	31/42 (74)	34/41 (83)
Dimensions on depression attitudes questionnaire:		
Treatment attitude (n=80)	48.8 (10.4)	48.1 (9.5)
Professional ease (n=82)	49.4 (14.3)	46.1 (14.5)
Depression malleability (n=83)	27.1 (11.1)	27.8 (10.6)
Depression identification (n=81)	36.3 (14.7)	33.3 (14.5)
Confidence in treating depression (n=82)	26.4 (12.3)	26.4 (15.7)
Confidence in treating anxiety (n=81)	38.3 (14.1)	35.6 (15.9)
<b>Patients</b>		
Age		
No (%) 18-39	56/136 (41)	56/135 (41)
No (%) 40-59	45/136 (33)	59/135 (44)
No (%) ≥60	35/136 (26)	20/135 (15)
No (%) male	45/136 (33)	35/135 (26)
Beck depression inventory (n=214)	20.0 (8.7)	19.3 (10.0)
State anxiety scale (n=205)	53.3 (12.4)	54.3 (11.7)
Trait anxiety scale (n=202)	56.2 (11.8)	55.4 (11.6)
SF-36 dimensions:		
No (%) with role limitations (emotional) in all areas queried	69/123 (56)	68/127 (54)
Social function (n=263)	50.7 (27.9)	48.8 (28.4)
Mental health (n=264)	42.4 (18.2)	43.8 (18.0)
Energy and vitality (n=259)	32.9 (19.2)	32.3 (19.7)

Standard deviations between patients for patient characteristics have been calculated with allowance for variation between doctors.

## Results

### Response rates

Of 116 doctors randomised, 32 subsequently withdrew because of work commitments (fig 1). Training took place in four blocks, with 9 to 14 doctors attending any one block. Overall, we screened 2412 patients consulting the participating doctors; 410 (17%) scored above the threshold for the hospital anxiety and depression scale and, of these, 272 (66%) answered questionnaires at baseline (fig 2). No major differences were found at baseline between each arm of the trial for doctors or patients (table 1).

### Primary outcomes

#### General practitioners

Doctors' knowledge and attitudes as measured by the depression attitude questionnaire showed little difference at six months between the intervention and control groups. In the primary analysis (table 2) we adjusted for the baseline value of each outcome

**Table 2** Primary and secondary outcomes in doctors after adjustment for baseline levels. Values are means (standard deviations) unless stated otherwise

	Trained doctors (n=42)	Control doctors (n=42)	Intervention effect (95% CI)*	P value
Treatment attitude	46.3 (10.9) (n=25)	48.2 (8.8) (n=24)	-1.6 (-6.9 to 3.7) (n=46)	0.54
Professional ease	42.2 (14.0) (n=24)	47.3 (13.9) (n=25)	-5.1 (-11.9 to 1.7) (n=48)	0.14
Depression malleability	30.8 (9.7) (n=25)	28.1 (12.9) (n=23)	2.0 (-2.9 to 6.8) (n=48)	0.42
Depression identification	36.3 (11.4) (n=25)	36.3 (14.4) (n=25)	-0.5 (-7.1 to 6.0) (n=48)	0.87
Confidence in treating depression	20.9 (8.3) (n=25)	29.2 (17.4) (n=26)	-8.2 (-15.4 to -1.0) (n=50)	0.03
Confidence in treating anxiety	30.3 (14.5) (n=25)	36.5 (15.9) (n=25)	-7.8 (-15.3 to -0.2) (n=49)	0.04

\*Sum of numbers in intervention and control groups differs owing to adjustment for baseline levels.

**Table 3** Primary outcomes in patients at 6 months. Intervention effects are estimated in a repeated measures analysis with adjustment for baseline levels. Values are means (standard deviations) unless stated otherwise

	Trained doctors (n=137)	Control doctors (n=135)	Intervention effect (95% CI)*	P value
Beck depression inventory	17.5 (9.6) (n=104)	16.6 (11.5) (n=105)	-0.2 (-2.3 to 1.9) (n=196)	0.84
State anxiety	48.6 (13.8) (n=103)	48.2 (14.9) (n=98)	0.8 (-2.4 to 4.0) (n=181)	0.62
Trait anxiety	52.3 (13.2) (n=101)	50.4 (13.7) (n=95)	0.9 (-2.0 to 3.8) (n=177)	0.53
SF-36 dimensions:				
No (%) with role limitations (emotional) in all areas queried	54/115 (47)	35/106 (33)	2.7 (1.1 to 6.4)† (n=225)	0.03
Social function	58.5/118 (29.7)	61.7/111 (29.2)	-3.1 (-9.4 to 3.1) (n=237)	0.32
Mental health	51.8/117 (20.8)	54.1/109 (21.0)	0.1 (-4.4 to 4.6) (n=238)	0.96
Energy and vitality	37.9/117 (21.7)	39.0/109 (25.1)	-1.0 (-5.7 to 3.6) (n=233)	0.66

\*Sum of numbers in intervention and control groups differs owing to adjustment for baseline levels.  
†Odds ratio.

variable, whereas in an exploratory analysis we made additional adjustments for the five personal characteristics at baseline (table 1).

*Patients*

In the primary analysis we adjusted for the baseline value of each outcome variable (table 3), whereas in an exploratory analysis we made additional adjustments for the doctors' and patients' personal characteristics at baseline (table 1). The training had no discernible impact on the patients' outcomes, apart from slight evidence that the proportion of patients with role limitations due to emotional problems in the three areas queried was greater for patients registered with intervention than with control doctors.

**Secondary outcomes**

*General practitioners*

When adjusted for baseline scores, visual analogue scores for confidence in treating depression and anxiety showed some differences between intervention and control doctors at six months (table 2). Some evidence

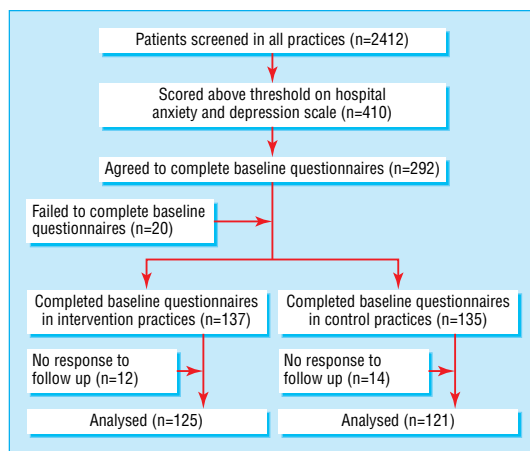
was found of lower scores in intervention doctors, which indicated greater confidence in treating both depression and anxiety.

*Patients*

Differences were found between the trial arms in referrals to mental health professionals and other health service providers and absences due to sickness (table 4). Intervention doctors were more likely than control doctors to refer their affected patients (odds ratio 3.4, 95% confidence interval 1.0 to 11.3) and less likely to offer certificates for sickness (0.4, 0.2 to 1.0). These borderline differences should be interpreted cautiously given the number of outcomes examined. No differences were found for the other secondary outcomes.

**Exploratory analyses of doctors' confidence in their skills and patient outcomes**

Given no evidence of benefit in patient outcomes, the question arises at what stage the intervention failed—for example, did the general practitioners use their skills but to no effect? Direct information on the extent to which their skills in brief cognitive behaviour therapy were implemented is not available, since practitioners indicated strongly at the feasibility stage that collection of this information would be unacceptable and might prevent their participation in the trial. However, we investigated the relation between practitioner confidence in treating depression and practitioner effects on patient depression, as measured by the score on the Beck depression inventory. We undertook similar analyses for practitioner confidence in treating anxiety and patients' scores on the state and trait anxiety inventory. All analyses were exploratory, as the trial was not designed for this purpose. In each case the confidence interval for the relation was wide and included the value corresponding to no association, meaning that we found no evidence of a relation between practitioners' confidence in applying skills in



**Fig 2** Flow of patients through trial

**Table 4** Secondary outcomes in patients. Values are numbers (percentages) unless stated otherwise

	Trained doctors (n=137)	Control doctors (n=135)	Intervention effect(95% CI)	P value
Mean (SD) consultations	4.5/130 (3.2)	4.3/124 (3.3)	0.1 (-1.0 to 1.2) (n=254)	0.81
Home visit took place	5/129 (4)	1/124 (1)	5.0 (0.6 to 43.1)* (n=253)	0.15
Psychotropic drugs prescribed	48/130 (37)	45/124 (36)	1.0 (0.6 to 1.8)* (n=254)	0.95
Patient referred	43/129 (33)	22/123 (18)	3.4 (1.0 to 11.3)* (n=252)	0.05
Certificates for absence due to sickness	9/130 (7)	18/124 (15)	0.4 (0.2 to 1.0)* (n=254)	0.06

\*Odds ratio.



brief cognitive behaviour therapy and clinical outcome in their patients.

### Missing data

For each primary outcome the pattern of non-response was similar in each arm of the trial. Non-response of doctors to the depression attitude questionnaire at follow up was unrelated to baseline values on the questionnaire. However, being younger or not having fundholder status was independently associated with non-completion of the questionnaire at follow up. For patients' primary outcomes, we found age and sex were not related to missing data on the Beck depression inventory and state trait anxiety inventory but some evidence that fewer men completed the SF-36 at six months. For each outcome, those with clinically worse values at baseline or at three months were more likely to have missing values at the next measurement.

### Cluster effects

We report the observed intraclass correlations that were taken into account in analysis of the patients' primary outcomes—that is, those representing the clustering between doctors remaining after adjustment for both intervention effect and baseline values (table 5). We also present corresponding estimates of variance both between general practitioners and within general practitioners. The unadjusted estimates of intraclass correlation are also presented. All estimates were obtained using hierarchical regression models. Clustering information for the role limitations (emotional) SF-36 outcome is reported on the original rather than dichotomous scale.

## Discussion

Basic training in brief cognitive behaviour therapy has little effect on general practitioners' attitudes to the identification and treatment of depression or the outcome of their patients with emotional problems. Our findings run counter to other studies where brief interventions by general practitioners have been regarded as effective in problem drinking and diabetes.<sup>24–26</sup> However, these disorders are more clearly defined and easier to target, and the interventions were only loosely based on behaviour principles. Interventions that included the delivery of behavioural and educational self help materials have been used successfully by general practitioners for patients with depression, somatisation disorders, and obsessive-compulsive disorder.<sup>27–29</sup> However, our finding of no benefit is important as it suggests that acquiring more complex skills in cognitive behaviour therapy is not straightforward for general practitioners.

Our trial has several limitations. Owing to the losses to follow up among general practitioners, the impact of training on attitudes to depression was assessed within a smaller sample than planned. Although we recruited more patients than we had anticipated, we also had losses to follow up. However, since the observed intraclass correlations for the patients' primary outcomes were far lower (table 5) than the value of 0.26 allowed for in our power calculations, we retained sufficient power to detect the prespecified difference in patient outcomes. Although patients with clinically worse outcomes at one time of

**Table 5** Clustering between doctors for primary outcomes in patients (intraclass correlation coefficient measured at end point)

	Intraclass correlation coefficient		Variance	
	Unadjusted	Adjusted	Between doctors	Within doctors
Beck depression inventory	0.11	0.013	0.5	41.4
State anxiety	<0.001	<0.001	<0.001	86.7
Trait anxiety	0.033	<0.001	<0.001	66.8
SF-36 dimensions:				
Role limitations (emotional)	0.12	0.11	59.0	469.0
Social function	0.090	0.067	24.2	334.8
Mental health	0.063	0.010	2.1	207.2
Energy and vitality	<0.001	<0.001	<0.001	252.8

measurement were somewhat more likely to have missing data later on, the pattern of non-response was similar for both groups and thus differential bias was unlikely.

The high threshold on the hospital anxiety and depression scale may have meant that we focused too much on patients with severe problems or those with long term difficulties who general practitioners may not have considered suitable for cognitive behaviour therapy, had they been able to express their views. Basic skills in brief cognitive behaviour therapy may assist general practitioners in dealing with patients who are less disturbed than those in our trial. Our finding that trained doctors may have referred more of their depressed patients would suggest that the doctors had acquired sufficient skills to know when their own management was likely to be unproductive. Thus training may have had a paradoxical effect in making them feel unable to deal with more complex cases. A further limitation is that we could not guarantee patients always saw the same general practitioner. Finally, our earlier feasibility work had shown it was unacceptable to collect process measures on the extent to which the new skills were applied, and we lacked power to show whether or not confidence in use of the skills was related to patient outcome.

We presented the intraclass correlations for our patients' primary outcomes (table 5) to inform people designing cluster randomised trials using similar outcomes. It is generally agreed that clustering information should be published, but reporting varies; in particular, intraclass correlations may be calculated at the baseline or end point of the trial.<sup>30</sup> Our observed intraclass correlations at the end point were smaller than corresponding baseline values. The clusters may have become more alike during the course of the trial as a result of the shared experience of the trial. We suggest that intraclass correlations at the end point are more relevant for the design of future trials because power calculations require allowance for the clustering expected at the end rather than beginning of a trial.

Showing changes in patient outcomes is a challenging task in any trial of training for general practitioners. It may be possible that skills in brief cognitive behaviour therapy cannot be taught in this basic manner and that general practitioners require much more training if they are to change their attitudes and acquire skills that have a positive impact on their patients.<sup>8</sup> Conversely, it may be that the doctors did learn new skills but had no time to apply them. Our outcomes do not allow us to examine such possibilities. Future studies might also consider the inclusion of

### What is already known on this topic

Trained professionals can deliver effective cognitive behaviour therapy to depressed patients presenting to general practitioners

Limited evidence shows that cognitive behaviour therapy is effective when delivered by general practitioners who have received extensive instruction

Most doctors do not have the time or inclination to carry out such comprehensive training

### What this study adds

Basic training in brief cognitive behaviour therapy has little effect on general practitioners' attitudes to the identification and treatment of depression or the outcome of their patients with emotional problems

General practitioners may require more extensive training and support if they are to acquire skills in brief cognitive behaviour therapy that will have a positive impact on their patients

written materials for patients to improve adherence to and understanding of cognitive behaviour therapy.

We thank all patients and health professionals who took part, the late John Cohen who provided facilities for the training, and Robert Blizard who advised on the randomisation and data entry and provided then unpublished data for use in the power calculation. The exploratory analyses made use of methodology developed jointly with Simon Thompson and Rumana Omar.

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