Computerised cognitive behaviour therapy for depression and anxiety update

Computerised cognitive behaviour therapy for depression and anxiety update: a systematic review and economic evaluation

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Executive summary

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Executive summary

Background

Depression, anxiety, phobias and panic are common mental disorders usually treated within a primary care setting. Obsessive–compulsive disorder (OCD) is less common but, as with the other disorders, is associated with considerable occupational and interpersonal impairment. Medication is usually the first treatment offered, but is often associated with side-effects. There is substantial evidence to support the use of cognitive behaviour therapy (CBT) in the treatment of these disorders. However, access is limited owing to too few therapists, expense, waiting lists and patients' reluctance to enter therapy. Computerised cognitive behaviour therapy (CCBT) is a self-help option that offers patients the potential benefits of CBT with less therapist involvement.

Description of proposed service

This report evaluates CCBT for the treatment of anxiety, depression, phobias, panic and OCD.

Objective

The overall aim of the review is to update the National Institute for Health and Clinical Excellence (NICE) guidance on the clinical and cost-effectiveness of CCBT delivered alone or as part of a package of care compared with current standard treatments for depression and anxiety (including phobias). In addition, OCD will be included in this review. The software packages to be considered include Beating the Blues (BtB), Overcoming Depression: a five areas approach, FearFighter (FF), Cope and BT Steps. Other packages or programs incorporating CCBT will also be considered. More specifically, the review of CCBT aims to:

- evaluate clinical effectiveness in terms of improvement in psychological symptoms
- evaluate effectiveness in terms of interpersonal and social functioning
- evaluate effectiveness in terms of quality of life
- evaluate effectiveness in terms of preference, satisfaction and acceptability of treatment
- evaluate cost-effectiveness in comparison with current standard treatments
- estimate the possible overall cost in England and Wales.

Methods

Clinical effectiveness

A systematic review of the literature was performed to identify all studies describing trials of CCBT delivered either alone or as part of a package and either via a computer interface or over the telephone with a computer-led response. Databases were searched from 1966 to March 2004.

Cost-effectiveness

The cost-effectiveness assessment was in two parts. The first was a review of the literature and the evidence submitted by sponsors for each of the products. The second was the development of cost-effectiveness models of the five products across the three mental health conditions.

Results

Number and quality of studies

Clinical effectiveness

Twenty studies (including two academic in confidence) met the inclusion criteria for depression/anxiety and phobia/panic, ten of which included software packages and ten were other studies of CCBT. With regard to the included software package studies, four of the ten were RCTs. Of the ten other studies included in the review, nine were RCTs and one was a pseudorandomised trial. An additional two studies of CCBT as a treatment adjunct for therapist-led cognitive behaviour therapy (TCBT) were also identified.

Four studies of CCBT for OCD were identified, two of which were randomised controlled trials (RCTs), and all of which were studies of the included package, BT Steps.

Cost-effectiveness

The review of published studies identified one economic evaluation of CCBT. The only relevant study was also included in the submission of ▶

Ultrasis for BtB. This was a cost-effectiveness analysis undertaken alongside a randomised clinical trial of BtB compared with treatment as usual (TAU). This study was well conducted and had good internal validity. It estimated the cost per quality-adjusted life-year (QALY) to be £1250. However, the assumed cost of intervention was based on unrealistically high throughput numbers, the derivation of QALYs was weak and the trial was limited to 8 months.

The other packages only submitted information on the costs of their products and this was used in the economic modelling.

Evidence of effectiveness

Clinical effectiveness

Depression/anxiety

Ten studies of CCBT for depression were included in this review, six of the included software packages and four other studies. Three studies of BtB were included, two for Cope and one for Overcoming Depression. Two of these were RCTs. One found BtB to be more effective than TAU. Both the Cope studies and the Overcoming Depression study had no comparator, but showed improvement in symptoms of depression from baseline.

Four other studies of depression were included in this review, three of which were RCTs and one was pseudorandomised. Two studies compared CCBT with an information website. One found CCBT to be ineffective, and one found both to be effective. The fourth study compared CCBT with a waiting-list control and found CCBT to be effective.

Phobia/panic

Ten studies of CCBT for phobia/panic were included in this review, including four for FF. Of these four, two were RCTs, one showing both FF and TCBT to be effective and both more effective than relaxation. The other FF RCT compared FF with another CCBT package and found both CCBT packages to be effective. The other two FF studies were non-randomised studies. One compared CCBT with an historical cohort receiving TCBT and found both to be effective and the other compared two delivery methods of FF (Internet versus clinic computer) and found that both groups improved.

With regard to the six other studies included for phobia and panic, all were RCTs. Three of these studies showed CCBT to be more effective than a waiting-list control, somewhat less effective than relaxation and slightly less effective than TCBT. Of the final three studies, of Computer-aided Vicarious Exposure (CAVE) for treatment of spider phobia, one found both three and six sessions of CCBT to be effective, the second found TCBT (single session) to be more effective than CCBT (single session) and a waiting-list control, and the final study showed CCBT, TCBT and relaxation to be effective.

OCD

Four studies of OCD, all for BT Steps, were included in the review. One of these was an RCT using TCBT and relaxation as comparators. In this trial, TCBT was significantly more effective than BT Steps, although both groups improved significantly from baseline and both were more effective than relaxation. In the other RCT, schedule support was more effective than on-demand support. Finally, in the two non-comparative trials less than half of patients who completed treatment using BT Steps improved from baseline.

Therapist time

Three studies gave no information regarding therapist time. Two studies reported no direct contact, with all contact being via the Internet, and the other studies reported from 5 minutes to 115 ± 44 minutes.

Cost-effectiveness

Cost-effectiveness models were constructed of the five products. These models were based partly on sponsors' submissions, but also on the advice of local experts and using evidence on key parameter values (such as throughput, utility values and costs) from other published sources. The results are presented as a series of incremental cost per QALY ratios and associated cost-effectiveness acceptability curves for each product under a range of purchasing scenarios.

Depression

The three products share the same basic model structure of a decision tree model comparing two arms: CCBT and TAU over an 18-month period. The BtB model was able to use the individual level results of the RCT and simply extend the benefits by another 10 months by making assumptions about relapse rates taken from the literature on CBT. The costs of the intervention were estimated using more realistic assumptions about likely throughput than the submission. For practice-based licences, the overall intervention costs per patient were £219.30 for BtB, £195.86 for Cope (with practice-provided Internet access and £170.30 without) and £72.64 for Overcoming Depression. For PCT-based licences the costs fell to £104.62, £110.53 and £66.64, respectively. ▶

The results in terms of incremental cost per QALY compared with TAU and chance of being cost-effective at £30,000 per QALY for BtB were £1801 and 86.8%, for Cope were £7139 and £62.6%, and for Overcoming Depression were £5391 and 54.4%. It is difficult to compare across products, given that there have been no head-to-head comparisons and the main clinical studies were undertaken on different populations. However, the strength of BtB lies in the fact that it has been evaluated in the context of an RCT with a control group. For this reason there is less uncertainty around the cost-effectiveness of BtB. The subgroup analysis found no differences in cost-effectiveness across the severity groupings.

[Commercial-in-confidence information has been removed.]

Phobia/panic

FF was compared with TCBT and relaxation. TCBT is equivalent to standard therapist-led CBT and was designed to consist of six hourly sessions. Relaxation involved around 1 hour of contact time with a trained behavioural therapist. The economic model is a four-cycle discrete-state Markov model lasting for 12 months and each cycle length is 3 months. The overall intervention cost of FF was £195.86 (with practice Internet access and £171.30 without) and £110.53 for a primary care trust (PCT) licence. The incremental cost per QALY of FF over relaxation was £2380. Its position compared with TCBT is less clear. Although one trial found TCBT to be more effective than FF, this difference was neither significant nor consistent across outcome measures. Assuming that this was a significant difference, the incremental cost per QALY of TCBT over FF was £17,608, but the probability of being cost-effective at £30,000 per QALY was just 61%. The main limitations of this model are that the effectiveness results were based on a small trial, the linkage of outcome to QALYs was indirect and the assumed throughput levels were uncertain.

OCD

Cost-effectiveness was assessed using a decision tree model with three arms: BT Steps, TCBT and relaxation. TCBT consisted of 11 weekly 1-hour sessions to negotiate self-exposure homework. Relaxation therapy patients were asked to perform relaxation exercises on a daily basis for 10 weeks. The intervention cost of BT Steps per patient has been estimated to be £837.23 for a practice-based licence with practice access to the Internet and £719.49 with no access to the Internet in general practice. A PCT licence is much cheaper at £248.83, assuming that it can achieve the same levels of throughput per practice. Using the practice-level licence cost meant that BT Steps was dominated by TCBT, which had significantly better outcomes in one trial and was cheaper. However, the cheaper PCT licence resulted in BT Steps costing less than the more effective TCBT. At the lower cost the incremental cost-effectiveness of BT Steps over relaxation was £15,581 and of TCBT over BT Steps was £22,484. The cost-effectiveness of BT Steps depends crucially on the licence and the throughput achieved per licence.

Conclusions

Clinical effectiveness

There is RCT evidence to support the effectiveness of BtB and FF. There is no RCT evidence for Cope and Overcoming Depression. Evidence from the one RCT of BT Steps suggests that it is less effective than TCBT, but patients improved significantly from baseline.

- There is some evidence that CCBT is as effective as TCBT for the treatment of phobia/panic.
- There is some evidence that CCBT is more effective than TAU in the treatment of depression/anxiety.
- In studies reporting accurate estimates of therapist time, CCBT appears to reduce therapist time compared with TCBT and is therefore of use where access to TCBT is limited.
- CCBT is not as effective as TCBT in OCD.

Cost-effectiveness

Reviews

There was only one published economic evaluation of CCBT, which was an economic evaluation of BtB alongside an RCT. It concluded that BtB was cost-effective against TAU in terms of cost per QALY (less than £2000). It had a number of weaknesses that were addressed in the model. The submissions contained some cost data, but no other cost-effectiveness studies.

Depression

The results in terms of incremental cost per QALY compared with TAU and the chance of being cost-effective at £30,000 per QALY for BtB were £1801 and 86.8%, for Cope were £7139 and 62.6% and for Overcoming Depression were £5391 and 54.4%. The strength of BtB lies in the fact that it

has been evaluated in the context of an RCT with a control group. The subgroup analysis found no differences across the severity groupings.

[Commercial-in-confidence information has been removed.]

Phobia/panic

The incremental cost per QALY of FF over relaxation was £2380. Its position compared with TCBT is less clear.

OCD

Using the practice-level licence cost meant that BT Steps was dominated by TCBT, which had significantly better outcomes and was cheaper. However, the cheaper PCT licence resulted in the incremental cost-effectiveness of BT Steps over relaxation being £15,581 and TCBT over BT Steps being £22,484.

These conclusions are subject to substantial uncertainties around the organisational level for purchasing these products and the likely throughput. This is in addition to concerns with the quality of evidence on response to therapy, assumptions about longer term outcomes and quality of life.

Recommendations for research

Further research priorities include the following:

- The position of CCBT within a stepped care programme needs to be identified, as well as its relationship to other efforts to increase access to CBT and psychological therapies.
- Research is needed to compare CCBT with other therapies that reduce therapist time, in particular bibliotherapy.
- Further research is also needed to explore the use of CCBT via the Internet.
- Research needs to be carried out by independent researchers. Research should be carried out by those who are not associated with commercial or product gains.
- Studies of CCBT should be RCTs and need to include an intention-to-treat analysis to take into account patients who drop out of trials. The reasons for withdrawal from trials need to be identified as these relate directly to patient preference.
- Patient preference should be addressed in the trial design. Two possibilities are the inclusion of qualitative research methods and the use of patient preference trials.
- Research is needed to determine the level of therapist involvement needed when using CCBT programs to produce optimal outcomes.
- Studies need to be undertaken within the GP setting, as this is where most patients with anxiety, depression and phobias are treated.
- Efforts should be made to include patients with co-morbidities routinely treated within primary care.

Publication

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NHS R&D HTA Programme

The research findings from the NHS R&D Health Technology Assessment (HTA) Programme directly influence key decision-making bodies such as the National Institute for Health and Clinical Excellence (NICE) and the National Screening Committee (NSC) who rely on HTA outputs to help raise standards of care. HTA findings also help to improve the quality of the service in the NHS indirectly in that they form a key component of the 'National Knowledge Service' that is being developed to improve the evidence of clinical practice throughout the NHS.

The HTA Programme was set up in 1993. Its role is to ensure that high-quality research information on the costs, effectiveness and broader impact of health technologies is produced in the most efficient way for those who use, manage and provide care in the NHS. 'Health technologies' are broadly defined to include all interventions used to promote health, prevent and treat disease, and improve rehabilitation and long-term care, rather than settings of care.

The HTA Programme commissions research only on topics where it has identified key gaps in the evidence needed by the NHS. Suggestions for topics are actively sought from people working in the NHS, the public, service-users groups and professional bodies such as Royal Colleges and NHS Trusts.

Research suggestions are carefully considered by panels of independent experts (including service users) whose advice results in a ranked list of recommended research priorities. The HTA Programme then commissions the research team best suited to undertake the work, in the manner most appropriate to find the relevant answers. Some projects may take only months, others need several years to answer the research questions adequately. They may involve synthesising existing evidence or conducting a trial to produce new evidence where none currently exists.

Additionally, through its Technology Assessment Report (TAR) call-off contract, the HTA Programme is able to commission bespoke reports, principally for NICE, but also for other policy customers, such as a National Clinical Director. TARs bring together evidence on key aspects of the use of specific technologies and usually have to be completed within a short time period.

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Reviews in *Health Technology Assessment* are termed 'systematic' when the account of the search, appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

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