
Computer-Aided CBT Self-Help for Anxiety and Depressive Disorders: Experience of a London Clinic and Future Directions



Lina Gega, Isaac Marks, and David Mataix-Cols
London University

This article describes a broad-spectrum, computer-aided self-help clinic that raised the throughput of anxious/depressed patients per clinician and lowered per-patient time with a clinician without impairing effectiveness. Many sufferers improved by using one of four computer-aided systems of cognitive behavior therapy (CBT) self-help for phobia/panic, depression, obsessive-compulsive disorder, and general anxiety. The systems are accessible at home, two by phone and two by the Web. Initial brief screening by a clinician can be done by phone, and if patients get stuck they can obtain brief live advice from a therapist on a phone helpline. Such clinician-extender systems offer hope for enhancing the convenience and confidentiality of guided self-help, reducing the per-patient cost of CBT, and lessening stigma. The case examples illustrate the clinical process and outcomes of the computer-aided system. © 2003 Wiley Periodicals, Inc. *J Clin Psychol/In Session* 60: 147–157, 2004.

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This article describes the first-ever clinic to use four computer-aided cognitive behavior therapy (CCBT) systems to guide interactive self-help for sufferers from anxiety and depressive disorders. The clinic ran a free service in London for 15 months, in the last few months of which clients were to use all four, not just two, of the systems at home supplemented by brief live support on a phone helpline as needed. This article gives three detailed case illustrations to give practitioners a taste of CCBT. It also summarizes the

Correspondence concerning this article should be addressed to: Isaac Marks, 43 Dulwich Common, London SE217EU, United Kingdom; e-mail: i.marks@iop.kcl.ac.uk.

outcome of a cohort reported in detail elsewhere (Marks, Mataix-Cols, & Gega, 2003) and draws lessons for the future.

Why Have Computer-Aided Self-Help?

There are at least three reasons:

1. The demand for cognitive behavior therapy (CBT) for anxiety and depressive disorders exceeds the supply of suitably trained therapists, so waiting lists are often long.
2. Many sufferers prefer to avoid the stigma commonly incurred by seeing a therapist.
3. Many people prefer to confide sensitive information to a computer rather than to a human.

Why Have Computer-Aided Self-Help at Home?

Again, there are at least three reasons:

1. It is more convenient to do CCBT at home rather than to travel somewhere to have it. This difficulty is compounded in sufferers who become housebound due to agoraphobia, social anxiety, obsessions, or compulsions.
2. Doing CCBT at home guided by a system on a distant computer which is accessed by Internet or by phone eases the incorporation of new advances onto that system so that sufferers can benefit from them before they are widely known. Even in the mental health field, a surprising number of professionals do not know that anxiety and depressive disorders have long been treated successfully by appropriate CBT, and that with only brief input from a professional, self-help has been effective.
3. Doing CCBT at home guided by a system on a distant central computer reached by Internet or phone eases audit by that system of the outcome of masses of patients doing CBT.

None of these reasons would suffice if CCBT yielded inferior results to traditional CBT either face-to-face or by phone. However, evidence is accumulating that CCBT works well (National Institute of Clinical Excellence of England, 2002).

A Broad-Spectrum CCBT Clinic in London

Definition and Choice of CCBT

The clinic defined CCBT systems as those which help the patient rather than the therapist make most of the decisions about how to devise, execute, and complete CBT, including appropriate homework and relapse prevention. The clinic chose to use *FearFighter* for phobia/panic (Kenwright, Liness, & Marks, 2001; Marks, Kenwright, McDonough, Whitaker, & Mataix-Cols, in press), *Cope* for nonsuicidal depression (Osgood-Hynes et al., 1998), and *BTSteps* for obsessive-compulsive disorder (Greist et al., 2002). These CCBT systems all (a) allowed a therapist to delegate to them most of the tasks required to guide a patient through CBT self-help for anxiety or depressive disorders with a savings of at least two thirds of the therapist's time per patient, (b) could give patients access at home either immediately (by phoning *Cope* and *BTSteps*) or eventually (via *FearFighter* on the Web), and (c) were already of proven value in past research trials.

The clinic added a fourth CCBT system called *Balance* (Yates, 1996) for generalized anxiety/mild depression. This is a shorter, less interactive system and takes over fewer CBT tasks than the other three systems. In CD-ROM form, patients also could use *Balance* at home; a modified Internet version is now available as well.

Though CCBT is sometimes wrongly described as Internet therapy and *FearFighter* can be accessed via the Internet, none of the clinic's systems constituted Internet therapy. "Internet therapy" best denotes treatment where the patient and therapist communicate by Internet (thus easing patient-therapist communication when it is convenient for one party to send a message and the other to answer it after a delay). In this regard, it resembles a phone voice-mail system. Internet therapy has its therapeutic decisions made not by a computer but by a live therapist in real time just as in face-to-face or phone therapy. Internet therapy thus does not save much of the therapist's time.

In contrast to Internet therapy, the *FearFighter*, *Cope*, and *BTSteps* computer systems help the patient make most CBT self-help decisions and thus save a great deal of therapists' time. The therapist's role in the clinic was restricted to briefly screening the patient and offering live advice (latterly solely by phone) if the patient got stuck during CCBT.

The clinic's patients accessed the *Cope* and *BTSteps* CCBT systems by phoning a computer on an interactive voice response (IVR) system. This was not phone therapy in the usual sense of that term. Patients phoning the *Cope* and *BTSteps* IVR systems read a manual before phoning the computer to do CCBT, and the computer helped them make most therapy decisions during the calls, thus saving therapist time.

Design and Operation of the CCBT Clinic

The clinic's broad-spectrum design was intended to give anxiety and depression sufferers access to one of four CCBT self-help systems. It publicized its service in local general practitioner offices, community mental health centers, psychiatric outpatient clinics, local newspapers, Yellow Pages, patient organizations, and elsewhere. The clinic accepted self-referrals who completed a screening questionnaire they had obtained from one of the aforementioned facilities or by phoning the clinic.

Inclusion criteria were presence of an anxiety or depressive disorder, motivation to do self-help, and no substance abuse, psychosis, or active suicidal plans. From the screening questionnaire, the staff judged referrals' likely suitability for CCBT and offered them a 30-min screening interview by phone, or face-to-face at the clinic in the case of earlier referrals. Broad diagnoses were made using a checklist summarizing relevant ICD-10 diagnostic criteria. Diagnoses were: 71 depression, 60 phobia/panic disorder, 35 generalized anxiety disorder, 35 obsessive-compulsive disorder (OCD), 26 stress/adjustment disorder, 7 mixed anxiety/depression, and 6 somatoform disorder. The clinic's staff were mainly two nurse practitioners totaling only one full-time-equivalent clinician; in addition, a research psychologist took on a mainly research rather than a clinical role.

How Clinic Patients Did CCBT

Staff gave patients who proved suitable at the screening interview an identification number allowing access to the clinic's four CCBT self-help systems that most suited them: *FearFighter* for phobia/panic, *Cope* for nonsuicidal depression, *BT-Steps* for (OCD), or *Balance* for general anxiety/mild depression. Patients knew that information given to the

CCBT system was confidential to staff and could not be accessed without knowing the patient's identification number and password (Many said they told the computer sensitive things they would not confide to a human.) None of the systems stored personal names or addresses.

Patients were told they could use their system as much as they wished. They were advised to use *FearFighter*, *Cope*, or *BT-Steps* at least six times over 12 weeks. During office hours, they also had six brief scheduled therapist contacts by phone or face-to-face for advice. Users of *Balance* (which is more basic than the other three systems) were asked to use it at least three times over four weeks and to have three brief therapist contacts by phone or face-to-face over the four weeks.

Where Patients Accessed CCBT

Patients accessed *FearFighter* on a PC mostly at the clinic, and occasionally at a free Internet café or medical center. When *FearFighter* became available on the Web, some could access it around the clock on a computer at home or elsewhere linked to the Internet.

The clinic gave *Cope* and *BT-Steps* users self-help booklets to guide their free phone calls made mostly from home to either *Cope*'s or *BT-Steps*'s IVR system in a computer in Madison, WI, U.S.A. Users could phone the computer from home at any time for as long and as often as they desired, and drove their interviews by key presses on their telephone keypad. The computer faxed to the clinic weekly reports of patients' phone calls, their duration, and the modules accessed, and for *Cope* patients, suicide risk. Had risk become high, which never happened, this would have been immediately faxed or phoned to the clinic.

Balance users accessed the system by a PC with a CD-ROM drive at the clinic, their home, a free Internet café, or a physician's office.

Case Illustration 1: *Cope* for Depression

Presenting Problem/Client Description

Jo was a 40-year-old woman, unemployed, divorced, and living on her own. Prompted by a poster she saw at her general practitioner's office, she contacted the self-help clinic. She completed and sent in a screening questionnaire and was offered a screening interview the same week. She chose to have it face-to-face rather than by phone as she preferred to disclose personal information to a professional whom she could see and judge as trustworthy. At her 30-min screening interview, she described racing thoughts, sleeplessness, agitation and inability to relax, fear of death, tearfulness, suicidal ideas, tiredness, and heartburn. She drank over 50 units of alcohol a week, smoked 35 cigarettes a day, and used cocaine about once a month. She also took prescribed and black-market sedatives. Jo had an unsupportive partner and financial problems.

She had been physically and sexually abused repeatedly during childhood and marriage, and had attempted suicide many years before. She also had been depressed since age 16 years. Her physicians prescribed diazepam until she was 25, and she became addicted to sedatives. Jo felt dismissed by and a nuisance to her physicians, saying that medication was their easy option and they were unaware of psychological treatments for depression. She was angry that she could not afford private treatment and was on a long waiting list. She worried that she could not choose whether her therapist was a man or a woman, a qualified therapist or a trainee, and the type of treatment she would receive.

Case Formulation

Jo was diagnosed with severe generalized anxiety disorder and recurrent moderate depression suitable for CBT with *Cope*.

Course of Treatment

The clinic offered Jo phone access to *Cope*'s phone-IVR self-help system for depression and a set of *Cope* explanatory booklets with sections to read before making each *Cope* call. She completed *Cope* over 12 weeks, during which time she worked on all of its main self-help modules: constructive thinking, behavioral activation, and assertiveness training. She spent a total of 2.5 hr making 16 *Cope* phone calls. She also received two hours (seven phone contacts) of live therapist support, divided equally between progress reviews (asking her to complete pen-and-paper ratings and monitoring her state), general support (including discussing relationship difficulties and referring her to a relationship counselor), and treatment advice (weekly monitoring of her alcohol and sedative consumption, and listing pros and cons of using these as a way of coping).

Outcome and Prognosis

By a three-month follow-up, Jo had improved considerably. Her pre, post, and follow-up ratings were 60% improvement in depression [Beck Depression Inventory; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961 (30, 15, and 10, respectively)]; 37% reduction in anxiety [Beck Anxiety Inventory; Beck, Epstein, Brown, & Steer, 1988 (46, 29, and 27, respectively)]; and 30% improvement in work and social adjustment [Mundt, Marks, Greist, & Shear, 2002 (22, 12, and 15, respectively; score range = 0–40)]. She felt much better, less anxious and depressed, and no longer desperate. She drank 30% less alcohol and smoked 50% less, but relationship and financial problems still distressed her. She did not take antidepressant medications due to side effects, and during her three-month follow-up tried two outside counseling sessions, which she stopped as she found them unhelpful. Jo said that the clinic had helped her when she was desperate, and that *Cope* gave her focus and a goal to work towards. She also valued her brief regular phone support with a clinician. She thought many people could benefit from the *Cope* system but probably did not know about it. She therefore became involved in patient advocacy and local campaigns to raise awareness of treatment for depression, including *Cope*. She appeared empowered to deal better with the future relapses that seemed likely.

Case Illustration 2: *FearFighter* for Agoraphobia/Panic Disorder

Presenting Problem/Client Description

A physician advised Dee, a single woman of 28 years, to contact the clinic. Dee had not worked for three years due to panic attacks when out alone or anticipating doing so. The attacks had begun five years earlier, seven months after nearly drowning on vacation abroad. Since then, she had not traveled abroad. She reported severe general anxiety every morning and agitated depression. An anxiety management course and fluoxetine had not improved her condition for long. She also had begun dothiepin (75 mg/day) two weeks before screening. Dee completed and returned a screening questionnaire. During her 30-min screening interview face to face, she said she felt tense and agitated in the morning and tired and sluggish in the evening. She had been tearful for most days during

the past few weeks and worried whether she would be able to get a job or enjoy social outings and vacations in the future. Dee avoided using public transport and going to shops, pubs, and restaurants unaccompanied as well as going to unfamiliar places far from home. She feared that if unaccompanied she would panic with nobody available to help her, and if far from home, she would be unable to get back to a safe place quickly.

Case Formulation

Dee was diagnosed with agoraphobia with panic disorder suitable for self-exposure guided by *FearFighter*.

Course of Treatment

The clinic gave Dee immediate access to the *FearFighter* self-help system for phobia/panic. She spent five hours at the clinic on the system over five sessions, plus 55 min of live therapist support. She completed *FearFighter*'s nine steps, including education about the nature of fear and the principles of exposure, advice on how to get a friend or relative to be a cotherapist, guidance on how to set specific and measurable goals and then carry out effective exposure, suggestions on anxiety management and how to troubleshoot common difficulties, and reward for ongoing exposure and monitoring anxiety. Therapist support was divided between progress review (homework achieved, monitoring mood and anxiety) and treatment advice (fine tuning exposure tasks to maximize gains). The therapist taught Dee diaphragmatic breathing to control her anxiety symptoms enough to make her initial exposure tasks tolerable. As she moved up her anxiety hierarchy, the therapist encouraged her to do focused exposure without such anxiety control by revisiting the habituation rationale.

Outcome and Prognosis

By a one month follow-up, Dee felt much improved, used public transport, had a full-time job, and had been to a crowded concert and abroad where her problem had begun. She no longer had general anxiety and was not depressed. Her pre, post, and follow-up ratings were Fear Questionnaire (FQ) agoraphobia: 75% improvement (33, 8, and 9, respectively); FQ blood-injury: 83% improvement (12, 2, and 3, respectively); FQ social phobia: 67% improvement (18, 6, and 8, respectively); FQ global phobia: 50% improvement (2, 1, and 1, respectively); FQ anxiety/depression: 80% improvement (35, 7, and 8, respectively); and work & social adjustment: 88% improvement (25, 3, and 4, respectively).

Before trying *FearFighter*, Dee had said that she would prefer a therapist over computer-guided treatment, but at posttreatment evaluation she said she would choose 75% computer-guided and 25% therapist-guided treatment. She rated the clinic as 0 ("very good" on a scale in which 8 was "very poor") and thought that a similar approach could help people overcome problems similar to hers. Prognosis appeared good.

Case Illustration 3: *BTSteps* for OCD

Presenting Problem/Client Description

Jim, a 51-year-old married man, contacted the clinic after seeing a poster in a physician's office. He had been severely disabled by OCD and social phobia for over 15 years, and

had lived on disability benefits since then. An intense fear of contamination led Jim to avoid touching most objects at home unless he completed a self-cleaning routine of hand washing. He spent more than three hours a day on these rituals. Most of all, he dreaded and avoided touching the telephone; he feared contamination would spread to anything he touched afterwards and to other parts of his body. He strongly avoided public toilets; if he ever had to use one, he felt compelled to change and wash his clothes upon arriving home. He always carried a bottle of cleaning fluid on him to wash his hands. The OCD impaired his daily life and family relationships markedly and depressed him. Jim felt a “prisoner” to his OCD and had seriously considered suicide in the past. Both an elder brother (reported to have had schizophrenia) and a younger brother (who abused drugs) had committed suicide, which had greatly upset him.

At the time of his screening interview, Jim was on clomipramine (40 mg/day) and diazepam (15 mg/day). Past unsuccessful treatments had included “talking therapy” with psychologists, psychiatrists, and counselors and a one-week inpatient admission. He had never had a trial of exposure therapy.

Case Formulation

He was diagnosed as having OCD suitable for self-exposure, with self-imposed ritual prevention to be guided by *BTSteps*. Despite his avoidance of touching the telephone, he nevertheless agreed to use it to access *BTSteps*.

Course of Treatment

At the end of the 65-min screening interview, the clinician explained the rationale of exposure and ritual prevention. Jim decided to confront his fear of using the phone by using *BTStep*'s phone self-help system. The clinician gave him a *BTSteps* manual with several sections to read before making corresponding calls to the *BTSteps* phone-IVR self-help system. Jim could access *BTSteps*'s computer-guidance system from the comfort of his home any time day or night. By pressing keys on his telephone keypad, Jim decided which of 800 different voice files of individually tailored advice the computer would play for him.

Jim phoned the *BTSteps* computer-guidance system 62 times, for a total of 513 min over 10 weeks. He also had weekly phone support contacts with the clinician, which totaled 153 min. Of the 10 phone support calls, eight were from the clinician to Jim and two from Jim to the clinician. Of the 153 min of clinician time, 60 were spent reviewing progress, 53 on general support (e.g., How are you today? How's your family?), and 40 on treatment advice (e.g., how to prevent rituals more effectively).

The four hours the clinician spent with Jim on face-to-face screening and phone support was at least 50% less than is usual with severe and chronic OCD, although it is four times more than the total of an hour of screening and support that is usual for users of *BTSteps* (Greist et al., 2002).

Outcome and Prognosis

After 10 weeks of treatment, Jim was using the phone regularly without washing his hands, no longer divided his house into clean and unclean objects, and used public toilets anywhere he went. His scores on the Yale–Brown Obsessive-Compulsive Scale (Goodman et al., 1989) fell markedly to almost normal levels (Total: 20 to 4; Compulsions: 14

to 3; Obsessions: 6 to 1). His mood also improved, with Beck Depression Inventory scores falling from 27 to 17.

At the end of self-help for his OCD, Jim's social phobia remained unchanged, but he said he felt confident he could use the principles of self-exposure therapy learned during his OCD treatment to tackle his social anxiety. At a two-month follow-up, his OCD remained much improved, and he had begun doing voluntary work as a deliberate method to expose himself to social situations. Prognosis was promising.

Results With CCBT

Over 12 months of intake, the self-help clinic received 355 screening questionnaires. Of these 355 referrals, 8% were unsuitable on the questionnaire. The remainder (327 referrals) were offered a screening interview with a clinician, of whom 266 attended; of these, 210 (79%) were suitable for and offered CCBT. Of the 210 suitable clients, 42 (20%) refused CCBT and 60 (29%) dropped out early or gave no posttreatment data. Unsuitables, refusals, dropouts, and completers did not differ on initial severity, demographic variables, or computer literacy. Of all referrals, slightly over half were women, and a third were unemployed or students. Where information was available, over half had a current partner, and half had a postschool educational qualification.

The sample was chronic (mean problem duration = eight years) with moderately severe problems. Where information was available, 39% had given up work or were on long-term sick leave due to their problem, almost half were having current treatment from their physician or a mental health professional, and about half were on psychotropic medication. The vast majority had had past treatment for their problem, although only 20% had had CBT; 35% used computers most days at work.

By posttreatment, improvement on work/social adjustment was significant for *FearFighter*, *Cope*, and *Balance* users. Completers of each self-help system also improved significantly from pre- to posttreatment on measures specific to their problem. The clinically meaningful effect size of 0.8 or more was exceeded by *FearFighter* users on the FQ's global phobia and anxiety/depression scores, by *Cope* users on depression and on work/social adjustment, and by *BTSteps* users on the obsessive-compulsive Total and Obsessions and Compulsions subscores. *Balance* users did not attain this clinically meaningful effect size on any measure. Completers improved comparably to completers in other studies that used the same CCBT systems and measures.

Patients were fairly satisfied with their CCBT system, and even more satisfied with their live support and the self-help clinic as a whole. They rated a marginal preference for therapist over computer guidance. Satisfaction and preference (therapist vs. computer) ratings were similar among users of the four different systems.

A mean of 58 days elapsed from patients' starting to ending CCBT. Over that period, they had a mean of 64 min of support from a clinician. About half the patients had live support by phone and half face-to-face at the clinic. The clinic's patients who accessed the computer by phone spent very similar total times calling the computer as in previous studies—two hours on *Cope* calls and four hours on *BTSteps* calls.

Clinical Implications

CCBT plus brief access to live advice enabled therapists to treat many more patients per hour than is possible without CCBT. Used in this way, CCBT is a clinician *extender*, not a clinician replacer. Apart from 30 min of screening, staff gave a per-patient overall mean of about an hour of support distributed over three months. This support seems vital for

most sufferers if they are to complete self-help successfully. The reduction of per-patient time with a clinician is achieved by delegating to a computer self-help system most of the routine tasks involved in therapy, reserving for the clinician only those tasks which are not manageable by a computer at present.

The mean of about one hour's live support from a clinician is well below the mean of at least eight hours per clinician usually needed by chronic anxious/depressed patients, although total treatment time per client differs from one CBT therapist to another. During the clinic's year of intake, the full-time-equivalent of one clinician dealt with 355 referrals and delegated most therapy tasks to CCBT. Throughput per clinician at the clinic thus far exceeded the 50 referrals a year that CBT therapists on average screen and treat (Marks, 1985), although therapists vary greatly in this regard.

The greater throughput of patients per therapist with the help of CCBT did not appear to sacrifice effectiveness. Anxiety and depression sufferers at the clinic improved significantly and clinically meaningfully, and were fairly satisfied with CCBT despite a preference for face-to-face care. When nearby physicians and a secondary CBT service recommended the clinic to many patients, this markedly reduced patients' consultations with the physicians and the physicians' referrals to secondary mental health services. It also slightly shortened the waiting list for face-to-face CBT in secondary care.

During most of the clinic's period of operation, clients accessed two of the four systems (*Cope* and *BTSteps*) by phone at home, but the rest attended the clinic in person to use a stand-alone PC for the other two systems. Eventually, *FearFighter* and a modified form of *Balance* also became accessible at home on the Web. It then became possible to offer most patients CCBT self-help entirely at home without having to attend the clinic in person. In this final phase, the clinic became a virtual center, with clients obtaining CBT self-help advice at home via one of the four CCBT systems that were available any time of day or night. When users got stuck, they sought brief advice by phone from staff during office hours. Patients only obtained access to CCBT after they had been deemed suitable in a 30-min screening interview with CBT staff by phone. Thus, staff were able to treat more patients than had been possible before they used CCBT.

A rough cost comparison of CCBT with purely face-to-face CBT was calculated. It assumed the same throughput of patients managed per therapist using CCBT as in the clinic, a U.S. \$97-per-hour cost of a CBT therapist (Netten & Curtis, 2000) and license costs of CCBT as noted by a U.K. regulatory body. Assuming administrative costs like those of the clinic and 15% overheads, the estimated per-patient cost advantage of CCBT over face-to-face CBT would rise from about 15% per patient for 350 patients a year to 41% per patient for 1,350 patients per year. This advantage rises with volume savings as the number of patients rises, and discounts any value from CCBT at home giving clients immediate rather than delayed access to CBT, unrestricted access, easier disclosure of sensitive information, and removal of the need to travel to a therapist. This rough estimate of cost effectiveness needs to be validated.

In contrast to its lower per-patient cost, the total cost of CCBT nationally might rise if so many users who were previously untreated sought CCBT to offset savings from lower per-patient costs. Widespread dissemination of CCBT might eventually reduce demands on primary and secondary services and lessen medication use and chronicity. Despite its apparent cost effectiveness, the self-help clinic eventually had to close due to lack of funding—a problem common with new healthcare technologies. It may take years for healthcare funders and clinicians to widely agree to fund CCBT to reap its benefits.

Although a pragmatic evaluation such as our study may reveal more about implementation issues than a randomized controlled trial, it cannot tell us how much the patients may have improved due to the passage of time, contact with a service, CBT, CCBT, the

clinician's brief help, or the psychotropic drugs which some clients took, nor is it known if similar gains might have accrued from offering an appropriate CBT self-help book plus access to a helpline. The amount of improvement should be regarded with caution because almost half of the clients were noncompleters (refusers plus dropouts), even though completers and noncompleters were indistinguishable at the start.

Conclusion

CCBT is developing rapidly. Patients can now be screened and, if suitable, help themselves entirely at home by accessing two of the four CCBT systems used by the clinic by phone and two on the Internet. Those who get stuck during self-help can receive support from a clinician on a live helpline. As referrals can now be screened for CCBT and supported by clinicians entirely by phone while doing CCBT at home, self-help clinics can act as call centers for wide areas.

The model suggested is stepped care, with CCBT self-help as a potential first port of call for most anxiety/depression sufferers. Those who fail to improve sufficiently with CCBT could go on to have live clinician-guided help.

Some might benefit from posted self-help instructions (Burgess, Gill, & Marks, 1998) or self-help books, perhaps with access to a live helpline. Books may cost less than CCBT, but are less interactive and harder to modify on a large scale. It also is hard to track patients' progress with books whereas CCBT on the Internet or a central IVR computer eases the assessment of outcome on a mass scale.

Major hurdles at present include the reluctance of healthcare funders to pay for CCBT and the lack of personnel trained to support it. It can take many years for new technology to become routine in the health services.

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