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Cost-Benefit Analysis of Psychological Therapy

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Abstract

At present six million people are suffering from clinical depression or anxiety disorders, but only a quarter of them are in treatment. NICE Guidelines prescribe the offer of evidence-based psychological therapy, but they are not implemented, due to lack of therapists within the NHS. We therefore estimate the economic costs and benefits of providing psychological therapy to people not now in treatment.

The cost to the government would be fully covered by the savings in incapacity benefits and extra taxes that result from more people being able to work. On our estimates the cost could be recovered within two years – and certainly within five. And the benefits to the whole economy are greater still.

This is not because we expect the extra therapy to be targeted especially at people with problems about work. It is because the cost of the therapy is so small (£750 in total), the recovery rates are so high (50%) and the cost of a person on IB is so large (£750 per month).

These findings strongly reinforce the humanitarian case for implementing the NICE Guidelines. Current proposals for doing this would require some 8,000 extra psychological therapists within the NHS over the next six years.

Keywords: depression, anxiety, cost-benefit analysis, cognitive behavioural therapy, psychological therapists

JEL Classification: H5, I1

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Introduction

Mental illness causes as much of the misery in Britain today as poverty does (see Annex 1). It is our great hidden problem - little discussed because of the shame which surrounds it. Some 16% of all adults have a diagnosable condition of clinical depression or anxiety disorder.¹ Yet only a quarter of these are in treatment.

This is a huge problem involving massive suffering and major economic cost. So why is there so much untreated illness? The main reason is simple. The majority of patients with these problems who present in GP surgeries are only offered medication and it is what the majority of patients in treatment are receiving.² But the majority of those who go to the doctor with these problems would prefer psychological therapy. This emerges clearly from every survey of patient preferences.³ The evidence also shows that the majority of those who prefer psychological therapy choose not to get treated at all rather than go on medication. So we have massive under-treatment due to the poor availability of psychological therapy.

This would not matter much if psychological treatment was an inferior treatment. But hundreds of clinical trials for depression and anxiety disorders show that modern evidence-based treatments, especially cognitive behavioural therapy (CBT), are as effective as drugs in the short run, and more effective at preventing relapse (unless drugs continue to be taken indefinitely). For these reasons NICE Guidelines say that, unless their condition is very recent, all these patients should be offered the choice of CBT.⁴ CBT is a talking therapy in which patients are given tools to control their feelings including the ability to challenge negative thoughts and beliefs, and to cultivate positive thinking and action. Normally treatment does not involve more than 16 sessions. In some cases NICE also recommend other therapies.

But unfortunately the Guidelines are simply not implemented, due to lack of therapists within the NHS. This is the clearest breach of any of the NICE Guidelines for any illness affecting large numbers of people. It also represents the greatest gap between best practice and actual practice anywhere in the NHS and it affects millions.

That it continues is wrong in medical terms. But it is also a major economic issue – which is what this article is about. Depression and anxiety make it much more difficult for a person to work. There is thus a substantial loss of output. There is also a major cost to the Exchequer since about one million people are on incapacity benefits due to depression or anxiety disorders and it costs the Exchequer £750 for each month that someone is on these benefits rather than working.

These economic costs add weight to the humanitarian argument for implementing the NICE Guidelines. Because of them, there is now major government interest in proposals to implement the Guidelines by a major expansion of psychological therapy within the NHS. In its 2005 Election Manifesto the Labour Party committed itself to such a major expansion. But the scale and speed with which it happens depends in part on the strength of the economic case for doing it.

¹ ONS Psychiatric Morbidity Survey. Under 1% have psychotic disorders, which are not covered by this paper.

² See ONS Psychiatric Morbidity Survey.

³ For a survey of the studies see van Schaik et al. (2004). See also Chilvers et al (2001).

⁴ The National Institute for Health and Clinical Excellence (NICE) have produced separate guidelines for each of the main conditions, see their website.

This case rests on the standard comparison of costs and benefits. The cost of providing a standard course of CBT is £750, which provides for roughly 10 meetings – a reasonable average which allows for the usual drop-outs and a range of durations of treatment.⁵ To estimate the benefits, we draw not on one particular experiment but on a wide range of evidence from Britain and elsewhere (and not on one particular experiment).

The question is: What would be the impact of implementing the NICE Guidelines for a representative sample of people who have depression and/or anxiety disorders? To answer it, we address in sequence the following questions:

1. If people are treated for a disorder, what percentage are cured (above natural recovery)?
2. If people are cured, how much more work do they do?
3. As a result, how much benefit accrues to society as a whole (including the patient) and to the Exchequer?

We then compare these benefits with the cost. Our conclusions are that the benefits to the economy will exceed the costs, and that the savings to the Exchequer will exceed the Exchequer costs, possibly within two years of the treatment and certainly within five.

1. The Effects of Treatment on Health

For purposes of the analysis, we focus on the effect of taking into treatment a representative sample of patients who would otherwise have no treatment.⁶ We begin with the impact on their health.

As Table 1 shows, some 82% of those who begin treatment will persevere with it and of these 61% will recover within 4 months (ie they will cease to be diagnosed as a ‘case’ of the disorder). But some sufferers would recover in any event, so that the net effect of treatment on recovery is that shown in column (4) of the table.

This table is based on judgment and reflects hundreds of clinical trials. It is sometimes alleged that, when therapies are used in the ‘field’, the success rates are lower than in the clinical trials. This is not necessarily the case.⁷ But, to be on the safe side, we use success rates in Table 1 that are well below those obtained in the most successful

⁵ Curtis and Netten (2006) give a £66 cost per session, but the NICE Guidelines for PTSD gives an £82 cost per session. We envisage that some sessions would use computerised CBT or less intensive methods than one-to-one face-to-face one-hour sessions, thus reducing the cost. Our estimate also allows for the amortised cost of CBT training.

⁶ The weights given to the different conditions are shown in Annex 2.

⁷ The following five articles report field results of CBT where success rates were comparable with standard clinical trials. (Clinical trials are generally confined to patients with only one condition which in the field many patients have multiple conditions.) The results cover social phobia, anxiety and depression, agoraphobia, panic disorder and PTSD. See Lincoln et al (2003), Persons et al (2005), Hahlweg et al (2001), Wade et al (1998) and Gillespie et al (2002).

clinical trials.⁸ The assumptions made were endorsed at a one-day conference of leading experts held at the Department of Health in May 2006.

The table highlights the power of CBT, compared with no treatment. For both depression and anxiety disorders it is at least as effective as drugs during the treatment phase, but it is more effective than drugs in preventing relapse unless drugs are taken continuously⁹. Figure 1 illustrates this point.¹⁰

Thus the effect of treatment involves not simply whether the person recovers but how long he is well rather than ill, as a result of the treatment. This is examined in the first two columns of Table 2. Here we allow for two important points: that natural recovery goes on beyond 4 months, while at the same time some cured patients relapse into illness. The conclusion is that, in the 2 years after treatment ends, a treated patient will spend 6.5 months extra being well. In the longer period of 5 years, he will spend 13.1 months extra being well.

Thus there are substantial gains in healthy life, which relieves suffering. But what is the effect of this extra health upon employment?

2. Effect of Health upon Employment

To find the effect of health on employment, there are two possible sources of evidence: cross-sectional and longitudinal. We use both kinds, beginning with cross-sectional.

Table 3 is from the Psychiatric Morbidity Survey. As it shows, 51% of the mentally ill group are in employment, compared with 74% of those who are well – a difference of 23 percentage points. It would be unreasonable to assume that, if the same individual moves from mental illness to health, his probability of employment changes by the full difference of 23 percentage points; for there may be other reasons for his non-employment which continue to operate when his mental illness is cured. We therefore assume that the actual change will be 60% of the simple difference – that is 14 percentage points.¹¹

We can now revert to Table 2 to find the overall effect of treatment on employment. This is shown in Columns (4) and (5). The implication is that, following treatment, a person can expect on average to work 0.99 extra months in the following two years. If we consider the whole period of five years, the expected effect is roughly twice as large.

These effects come about in two ways: A mentally ill person with a job may risk losing it; timely treatment can prevent this; equally, those who are out of work due to mental illness become more likely to work if they recover from their illness.

⁸ These are summarised by Pilling and Clark in Annexes A1 and A2 of Department of Health, *An Outline Business Case for the National Roll-Out of Local Psychological Therapy Services*.

⁹ This means that if we simply replaced ongoing drug treatment by one-off CBT there would be little predictable change in health outcomes, nor in cost. That is one reason why our analysis focuses on getting more people treated. But the main reason for this is that we **want** more people to be treated.

¹⁰ This figure is based on quite small sample numbers. For the first 16 months the profiles are very similar to those in the larger samples studied by Paykel et al. (1999).

¹¹ This is a conservative assumption, for it does not allow for employment support of the kind envisaged in government proposals. This support would of course also add to the cost.

In addition, even if they do not lose their job, mentally ill workers are more likely to take time off sick, which imposes a significant economic cost. As Table 4 shows, workers who are mentally ill take more days off sick than workers who are well. The difference is 20 days per year. We can again assume that, if a once-sick person is well, his absence is reduced by 60% of this figure, that is 12 days a year.

So what is the overall effect of treatment on work, via its effect on absenteeism? Treatment raises healthy months by 27% ($= 6.5/24$). Half the treated population is employed. And over a two year period they work an extra 24 days, equivalent to 1.2 months of work. So the total increase in work per person treated is 0.15 months ($= 1.2 \times .27 \times .5$). This represents a significant addition to the extra 0.99 months of employment recorded earlier.

3. Longitudinal Evidence

All of these estimates are based on cross-sectional evidence. What confidence can we have that we would get the same effects if we treated someone and followed his progress longitudinally? There are a number of longitudinal studies which we can compare with our own assumptions.¹²

For these purposes it is convenient to first summarise our assumptions, as follows. For people who are previously ill and receive treatment, we assume the following changes (for the two-year period after treatment):

Employment rate increased by 4 percentage points ($= 0.99/24$)

Absenteeism reduced by 3 days per year per worker ($= 12 \times 6.5/24$).

How do these estimates compare with the longitudinal evidence, most of which comes from the US.¹³ Two random assignment trials have traced the impact of treatment on employment. In one trial depressed patients were given enhanced mental health treatment,¹⁴ and compared with controls who received treatment as usual (Wells et al, 2000). The effect of enhanced treatment was to raise the employment rates 12 months later by 5 percentage points – similar to our own estimates.

In another random control trial patients with general anxiety disorder and/or panic disorder were given “collaborative mental health care” and compared with treatment as usual (Rollman et al, 2005).¹⁵ The effect of the special treatment was to raise the

¹² None of the enhanced interventions studied is more substantial than the intervention we are proposing.

¹³ This is a conservative assumption for it does not allow for employment support of the kind envisaged in government proposals. This support would of course also add to the cost.

¹⁴ “Matched clinics were randomized to usual care (mailing of practice guidelines) or to 1 of 2 Quality Improvement programs that involved institutional commitment to Quality Improvement, training local experts and nurse specialists to provide clinician and patient education, identification of a pool of potentially depressed patients, and either nurses for medication follow-up or access to trained psychotherapists.”

¹⁵ “Patients were randomly assigned to a telephone-based care management intervention or to notification alone of the anxiety disorder to patients and their physicians. The intervention involved non-mental health professionals who provided patients with psychoeducation, assessed preferences for guideline-based care,

employment rate 12 months later by 15 percentage points, and to reduce the absenteeism rate 12 months later by the equivalent of 31 days a year – both much bigger impacts than we have allowed for.

A small British study by David Clark also found absenteeism effects greater than we have allowed for. At the Centre for Anxiety Disorders and Trauma in Camberwell, patients were asked to fill in an employment questionnaire before and after CBT treatment. 122 patients completed the questionnaire. One question was “How many days have you had off sick in the last month?” Among those employed the average days per month off sick after treatment were 1.6 less than before treatment – an annual rate of 19 days.

The treatment effects discussed above combine the effect of treatment on health and the effect of health on employment. One further US study enables us to study the second of these links in the chain: from health to employment. This study covered people treated for depression with anti-depressants, and compared for the next two years the employment rate of those cured with those not cured (Simon et al, 2000). The difference was 15 percentage points - close to our assumption of 14 points. (That causality runs mainly from health to employment, and not vice versa, is shown by timing effects (Mintz et al, 1992)).¹⁶ The study also found that becoming healthy reduces a worker’s absenteeism by 12 days a year – exactly the same as the figure we assume.

So our assumptions about the employment effects of treatment appear quite reasonable in the light of the longitudinal evidence. **Note that we are not claiming huge effects.** We are saying that people who are treated are in consequence 4 percentage points more likely to be in work over the next two years. Clearly, if a person is cured of a chronic illness the effects last longer than this, and are thus greater. But we want to be conservative and ignore these longer term effects. (For one thing we are interested in the immediate savings to the Treasury.) We thus focus on employment effects which are quite small but, as we shall see, remarkably valuable relative to the cost.

4. Valuing the Benefits

Output effects

So what is the value of these benefits in employment? We assume (in line with DWP practice) that a previously disabled person who works earns on average an annual wage of £12,000 – or £1,000 a month. (This is a conservative assumption since the Labour Force Survey shows that employees who report ‘depression, bad nerves or anxiety’ earn on average £18,200 a year.) Thus the extra GDP produced by treating one person is £1,100, the extra earnings from 1.1 extra months of work. This compares with the treatment cost of £750 (see Table 5).

monitored treatment responses, and informed physicians of their patients’ care preferences and progress via an electronic medical record system under the direction of study investigators.”

¹⁶ This meta-study looked at 8 studies (using different treatments) which gave data on the timing of changes in health and in employment.

Savings to the NHS

There are also economic savings through reduced uses of resources within the NHS – both on the physical health side and the mental health side. On the physical side there are at present many unnecessary referrals to the acute sector for conditions that are not “medically explicable” – sometimes estimated as half of all referrals to the acute sector (Nimnuan et al, 2001). In the USA it has been found that people suffering from anxiety cost roughly \$350 a year more than other people in terms of non-psychiatric medical costs (Greenberg et al, 1993, 2000). If the position was similar in Britain for all conditions, the savings per person treated would be roughly £100 (within the first two years).

There would also be important NHS savings on the mental health side – reduced referrals to the secondary sector and inpatient admissions, fewer visits to GPs and counselling sessions, and less medication. In one study, referrals to secondary mental health services fell by almost 80% when GPs could refer patients to a CCBT clinic nearby, and they returned to their original level when the facility was withdrawn.¹⁷

Our knowledge in this whole area is weak. But we include in Table 5 the guess that the overall savings to the NHS per person treated is £300 over a two year period – including both physical and mental health services.

Reduced suffering

Finally, we must of course value the reduction in suffering, which we can measure by the change in Quality-Adjusted Life Years (QALYs). We assume that the change in QALYs for each additional year of mental health is 0.2 QALYs.¹⁸ The expected gain in healthy life per person treated is 0.55 years in the subsequent two years – a gain of 0.11 QALYs. If we value a QALY at £30,000, as implied in much NICE discourse, this implies gains in QALYs worth £3,300 per person treated. On this basis the total gains to society per person treated are £4,700 – far exceeding the cost (see Table 5).

Savings to the Exchequer

A quite different issue is the gains to the Exchequer. These include:

- (a) the fiscal impact of increased employment, through reduced benefit payments and increased tax receipts, and
- (b) the savings in NHS costs.

¹⁷ Information from Isaac Marks – see Marks et al (2003).

¹⁸ According to the standard method of calculating QALYs, a person who is otherwise healthy but on the dimension of anxiety/depression reports ‘some problems, moderately anxious or depressed’ is given a QALY of 0.794 compared with 1.000 for someone who is completely healthy. This yields a QALY deficit of roughly 0.2. However, many people who suffer from anxiety/depression also suffer on one of the 2 other Euroqual dimensions of illness (mobility, self-care, usual activities and pain/discomfort) – in which case the marginal impact of moderately anxious or depressed is roughly 0.1. However we know that many of those other symptoms are due to mental illness, so we use the figure of 0.2. The figure is also consistent with the findings of Revicki et al (1998).

As we have noted, there are two main ways in which therapy can affect the numbers in employment and on IB. It can affect the flow of people out of employment and onto IB, and the flow of people out of IB and into employment. The net effect of these two effects can be seen in the total **stocks** of people in employment and on IB.

In Table 3 we can see how profound the impact is. It shows what proportion of the mentally ill are on Incapacity Benefits or Income Support, as compared with those not mentally ill. The difference is 30 percentage points. As before, we assume that if a person ceases to be ill the effect on his propensity to be on IB/IS is 60 per cent of that – that is 18 percentage points. So if a person is treated and spends 6.5 fewer months being ill, he will on average spend 1.17 fewer months on IB.

In line with DWP figures, we assume that the benefits paid per disabled person are £6,000 per year (including incapacity benefit, income support, housing benefit and council tax benefit), and that a person earning £12,000 a year generates £3,000 a year extra in NI, Income Tax and consumption taxes. This makes a cost per person on benefit of £9,000 a year – or £750 a month.

Thus the gains to the Exchequer when an extra person is treated are £900 in financial savings, plus NHS savings on top of that. This is well above the cost of £750. And it only covers the first two years.

Longer-term effects on IB

However, when a person is cured of a chronic illness, the effects last longer than two years. These longer-term gains are more speculative but highly relevant. The figures in Table 2 imply that the savings on IB over 5 years will be at least double what they are over 2 years. **Thus even if our estimates of the employment effects of better health were reduced by a half, the programme would still pay for itself over 5 years.**

The government is of course interested in aggregate effects as well as effects per person treated. How far will the programme contribute to the objective of reducing the numbers on incapacity benefits by 1 million by 2016? It appears that the Pathways to Work interviews and return to work bonuses have made little difference to the number of mentally ill people leaving IB.¹⁹ This shows the enormous importance of providing psychological therapies which can produce lasting changes in people and can also help to prevent them coming on to IB.

The programme proposed in the LSE Depression Report envisaged a build up over a 6-year period, beginning in 2008/9 and reaching full-scale operation in 2013/4.²⁰ By that year 800,000 people would be receiving therapy each year. This corresponds to about one quarter of those who present at GP surgeries each year with mental health problems. It is also consistent with more detailed estimates based on the Psychiatric Morbidity Survey (Boardman and Parsonage, 2007). Current Department of Health proposals for the Comprehensive Spending Review also reflect similar thinking. They envisage a local psychological therapy service in every Primary Care Trust area, to which GPs could refer their patients or patients could refer themselves. The service would include some 30-60 therapists, the majority of whom would have had at least one year's

¹⁹ DWP Research Report No 354, p53. See also article by Richard Dorsett in this current issue.

²⁰ LSE Centre for Economic Performance, *The Depression Report. A New Deal for Depression and Anxiety Disorders*. June 2006.

training in CBT. The service would also include support staff with expertise in employment, benefits and housing. The team would have a physical centre but most of the care would be done on an outreach basis, for example in GP surgeries.

In Table 6 we estimate how such a programme would impact on the number on IB. The calculations are done on the assumption that all those treated receive standard treatment (costing around £750), leading to employment effects of the kind experienced in the past. This is not quite right. First, some will receive less intensive treatment (for less severe conditions). But, second, the new service will be much more employment-oriented than in the past.

Assuming these two differences cancel out the proposed programme will reduce the numbers of mentally ill people on incapacity benefits by 160,000 by 2016. This is less than proportional to the share of mentally ill people in the IB total. But, even so, it will in that year save the Exchequer £1.4 billion a year – not bad for a programme costing £0.4 billion a year.

5. Conclusion

Our analysis relates to the expected benefits from a standard treatment costing £750 per patient treated. We mainly look at benefits per patient over the first two years after treatment ends.

1. The extra GDP produced over those two years is likely to be around £1,200, and society will also gain from NHS savings of perhaps £300 and reduced suffering valued (on NICE criteria) at around £3,300. These gains far exceed the cost of £750.
2. The gain to the Exchequer is likely to be around £900 plus the NHS savings of perhaps £300. Thus the cost is fully repaid.

If, instead, we look at longer-term gains we find the following.

3. Even if we halve our assumptions about the effect of improved mental health on employment, the treatment will pay for itself.
4. By 2016 the new service would have reduced numbers on IB by 160,000, thus saving £1.4 billion a year to the Exchequer. The cost of the service will by then be £0.4 billion a year.

The fundamental reason for the excess of benefit over cost is the high cost of a person on IB (£750 a month) and the low cost of treatment per person (a one-off £750).

Table 1
Effectiveness of CBT in first 4 months (%)

	Retention rate (1)	Recovery rate (2)	Natural recovery rate (3)	Change in per cent who recover (4)
Depression	80	60	30	24
Phobia	85	70	5	55
Obsessive-compulsive disorder	80	55	5	40
Panic disorder	90	75	5	63
General anxiety disorder	80	50	20	24
Post-traumatic stress	85	75	20	47
Weighted average	82	61	22	32

Source: See Annex 2

Table 2
Impact on health and employment per person treated

	Extra months healthy		Extra months of employment per extra month of health (3)	Extra months of employment	
	In first 2 years (1)	In first 5 years (2)		In first 2 years (4)	In first 5 years (5)
Depression	4.63	9.55	0.14	0.65	1.33
Phobia	12.46	27.93	0.24	3.03	6.80
Obsessive-compulsive disorder	9.02	20.22	0.17	1.55	3.47
Panic disorder	14.21	31.85	0.14	2.04	4.57
General anxiety disorder	4.50	7.62	0.08	0.38	0.67
Post-traumatic stress	8.76	14.85	0.14	1.22	2.08
Weighted average	6.49	13.08	0.14	0.99	2.05

Source: See Annex 2

Table 3
Employment and IB rates for people aged 16-64 (%)

	Full-time work	Part-time work	Unemployed	Inactive	Total	% who are on IB and / or IS
No mental disorder	55	19	3	23	100	8
Depression	36	14	4	45	100	42
Phobia	22	11	6	61	100	54
Obsessive-compulsive	22	23	3	52	100	42
Panic disorder	30	20	5	45	100	35
General anxiety	42	18	4	36	100	24
Post-traumatic stress	36	14	4	45	100	42
Weighted average	35	16	4	45	100	38

Source : See Annex 2

Table 4
Working days lost due to sickness absence – average per year per worker

No mental disorder	5
Depression	24
Phobia	52
Obsessive-compulsive	34
Panic disorder	39
General anxiety	14
Post-traumatic stress	24
Weighted average	25

Source: See Annex 2

Table 5
Average costs and benefits per person treated (£)
(includes only benefits in first 2 years)

Costs	750
Benefits to society	
Extra output	1,100
Medical costs saved	300 ?
Extra QALYs	3,300
Total	4,700 ?
Benefits to Exchequer	
IB/IS/HB/CT + Taxes	900
Medical costs saved	300 ?
Total	1,200 ?

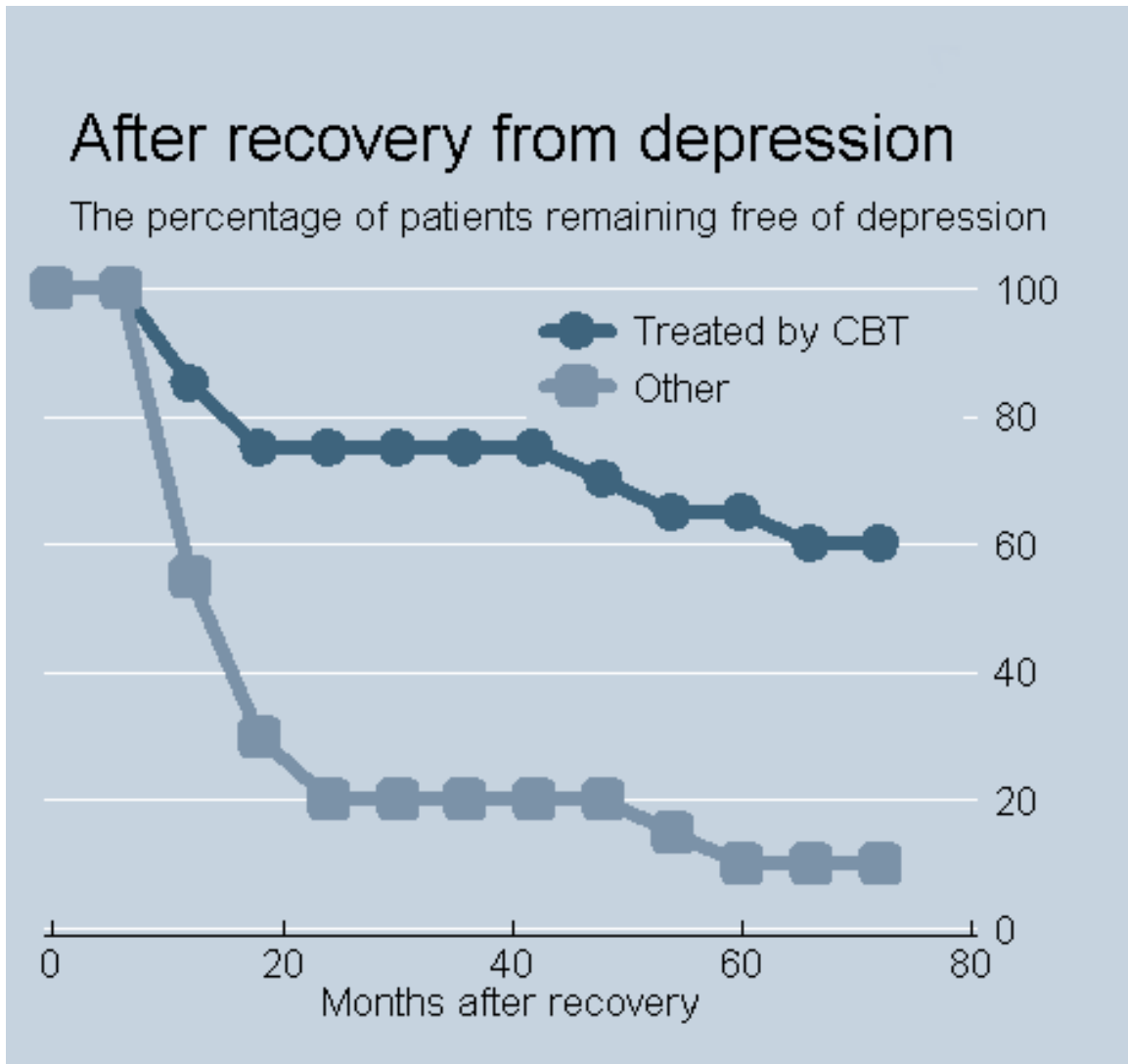
Source: See Annex 2

Table 6
Cumulative reductions in IB/IS and associated savings: selected years

Year	Number treated in year	Cumulative numbers cured (and not relapsed by end year)	Reduced numbers on IB/IS	Annual savings to Exchequer* (£ billion)
2010/11	320k	140k	25k	0.23
2013/14	800k	550k	100k	0.88
2016/17	800k	850k	160k	1.43

Source: See Annex 2 * Excludes NHS savings

Figure 1



Source: Fava et al (2004).

Annex 2

Mix of conditions assumed (%)

Depression: 45; Phobia: 5; Obsessive compulsive disorder : 5;
Panic Disorder: 5; General anxiety disorder: 30; Post-traumatic stress disorder: 10.
These weights are used in all analyses.

Based on ONS, Psychiatric Morbidity Survey, Table 2.7, with an allowance for PTSD which is not identified in the PMS but may affect 3.4% of the population. Some judgment is exercised. Throughout the analysis the only data used on phobia are for social phobia and agoraphobia.

Table 1

Based on data in NICE guidelines. Recovery rates denote proportion recovered by end of 4 months among those who were retained. Recovery means loss of specified diagnosis **or** reliable and clinically significant change (when the former is not available).

$$\text{col (4)} = \text{col (1)} \times (\text{col (2)} - \text{col (3)})$$

Table 2

Cols (1) + (2)

All except depression

Assume natural recovery rate per 4 months for all people not recovered by the end of the treatment period is one half of the rates shown in Table 1 for recovery rates during the period. (This is because natural recovery rates are higher soon after the onset of illness. See Bruce et al in *American Journal of Psychiatry*, June 2005.)

Depression

We assume that, if untreated, depression lasts 9 months. After recovery, subsequent health is as shown in Figure 1, with subsequent natural recovery occurring again after 9 months.

Col (3)

The Psychiatric Morbidity Survey 2000, shows the employment rates (N_i) of people with each disorder i and with no disorder (N_o) – see Table 3. We assume that, for people who had disorder i and now do not, the employment rate increases by $0.6(N_o - N_i)$.

Cols (4) and (5)

Cols (1) and (2) multiplied by Col (3) – except in the bottom row.

Table 3

Psychiatric Morbidity Survey. PTSD is equated to depression

Table 4

See Table 3.

Table 5

See text. Output gains allow for increased employment **and** reduced absenteeism. Here again we use the coefficient of 0.6. The estimates of months off IB are based on extra months healthy times 0.6 times the difference between IB and / or IS rates for 'ill' and 'healthy' people.²¹ The estimates of extra taxes are based on extra months in work.

Table 6

See above assumptions. Note that the programme is assumed to begin in 2008/9

²¹ This is slightly more than extra months in work times the proportion of mentally-ill inactive people on IB and / or IS. This is because some people are off IB without being in work.

References

- Bailey, W. C., Richards, J. M., Brooks, C. M., Soong, S. J., Windsor, R. A. and Manzella, B. A. (1990), 'A Randomized Trial to Improve Self-Management Practices of Adults with Asthma', Archives of Internal Medicine, 150, 1664-1668.
- Bell, S., Clark, D., Knapp, M., Layard, R. Lord; Meacher, M. C., Priebe, S., Thornicroft, G., Turnberg, L. A. and Wright, B. (2006), *The Depression Report: A New Deal For Depression and Anxiety Disorders*, (London: London School of Economics).
- Boardman, J., and Parsonage, M. (2007), *Delivering the Government's Mental Health Policies*, published by The Sainsbury Centre for Mental Health.
- Chilvers, C., Dewey, M., Fielding, K., Gretton, V., Miller, P., Palmer, B., Weller, D., Churchill, R., Williams, I. and Bedi, N. (2001), 'Antidepressant Drugs and Generic Counselling for Treatment of Major Depression in Primary Care: Randomised Trial with Patient Preference Arms', (Br Med Assoc).
- Curtis, L. and Netten, A. (2006), *Unit Costs of Health and Social Care*, Kent: University of Kent, Personal Social Services Research Unit.
- Fava, G. A., Ruini, C., Rafanelli, C., Finos, L., Conti, S. and Grandi, S. (2004), 'Six-Year Outcome of Cognitive Behavior Therapy for Prevention of Recurrent Depression', American Journal of Psychiatry, 161, 1872-1876.
- Gillespie, K., Duffy, M., Hackmann, A. and Clark, D. M. (2002), 'Community Based Cognitive Therapy in the Treatment of Posttraumatic Stress Disorder Following the Omagh Bomb', Behavior Research Therapy, 40, 345-57.
- Greenberg, P. E., Kessler, R. C., Birnbaum, H. G., Leong, S. A., Lowe, S. W., Berglund, P. A. and Corey-Lisle, P. K. (2003), 'The Economic Burden of Depression in the United States: How Did it Change Between 1990 and 2000?', Journal of Clinical Psychiatry, 64, 1465-1475.
- Greenberg, P. E., Stiglin, L. E., Finkelstein, S. N. and Berndt, E. R. (1993), 'The Economic Burden of Depression in 1990', Journal of Clinical Psychiatry, 54, 405-18.
- Hahlweg, K., Fiegenbaum, W., Frank, M., Schroeder, B. and von Witzleben, I. (2001), 'Short-and Long-Term Effectiveness of an Empirically Supported Treatment for Agoraphobia', Journal of Consulting and Clinical Psychology, 69, 375-382.
- Lincoln, T. M., Rief, W., Hahlweg, K., Frank, M., von Witzleben, I., Schroeder, B. and Fiegenbaum, W. (2003), 'Effectiveness of an empirically Supported Treatment for Social Phobia in the Field', Behavior Research Therapy, 41, 1251-1269.

- Marks, I. M., Mataix-Cols, D., Kenwright, M., Cameron, R., Hirsch, S. and Gega, L. (2003), 'Pragmatic Evaluation of Computer-Aided Self-Help for Anxiety and Depression', The British Journal of Psychiatry, 183, 57-65.
- Mintz, J., Mintz, L. I., Arruda, M. J. and Sun Hwang (1992), 'Treatments of Depression and the Functional Capacity to Work', Archives of General Psychiatry, 49, 761-768.
- Nimnuan, C., Hotopf, M. and Wessely, S. (2001), 'Medically Unexplained Symptoms: an Epidemiological Study in Seven Specialities', Journal of Psychosomatic Research, 51, 361-367.
- Paykel, E. S., Scott, J., Teasdale, J. D., Johnson, A. L., Garland, A., Moore, R., Jenaway, A., Cornwall, P. L., Hayhurst, H. and Abbott, R. (1999), 'Prevention of Relapse in residual Depression by Cognitive Therapy', Archives of General Psychiatry 56, 829-835.
- Persons, J. B., Roberts, N. A., Zalecki, C. A. and Brechwald, W. A. (2005), 'Naturalistic Outcome of Case Formulation-Driven Cognitive-Behavior Therapy for Anxious Depressed Outpatients', Behavior Research Therapy, 44/7, 1041-1051.
- Proudfoot, J., Guest, D., Carson, J., Dunn, G. and Gray, J. (1997), 'Effect of Cognitive-Behavioural Training on Job-Finding Among Long-Term Unemployed People', Lancet, 350, 96-100.
- Revicki, D. A., and Wood, M. (1998), 'Patient-Assigned Health State Utilities for Depression-Related Outcomes: Differences by Depression Severity and Antidepressant Medications', Journal of Affective Disorders 48, 25-36.
- Rollman, B. L., Belnap, B. H., Mazumdar, S., Houck, P. R., Zhu, F., Gardner, W., Reynolds III, C. F., Schulberg, H. C. and Shear, M. K. (2005), 'A Randomized Trial to Improve the Quality of Treatment for Panic and Generalized Anxiety Disorders in Primary Care', Archives of General Psychiatry, 62, 1332.
- Ryan, P., and Unwin, L. (2001), 'Apprenticeship in the British 'Training Market'', National Institute Economic Review, 178, 99.
- Simon, G. E., Revicki, D., Heiligenstein, J., Grothaus, L., VonKorff, M., Katon, W. J. and Hylan, T. R. (2000), 'Recovery from Depression, Work Productivity, and Health Care Costs Among Primary Care Patients', General Hospital Psychiatry, 22, 153-162.
- van Schaik, D. J. F., Klijn, A. F. J., van Hout, H. P. J., van Marwijk, H. W. J., Beekman, A. T. F., de Haan, M. and van Dyck, R. (2004), 'Patients' Preferences in the Treatment of Depressive Disorder in Primary Care', General Hospital Psychiatry, 26, 184-189.

Wade, W. A., Treat, T. A. and Stuart, G. L. (1998), 'Transporting an Empirically Supported Treatment for Panic Disorder to a Service Clinic Setting: A Benchmarking Strategy', Journal of Consulting and Clinical Psychology, 66, 231-9.

Wells, K. B., Sherbourne, C., Schoenbaum, M., Duan, N., Meredith, L., Unützer, J. Miranda, J., Carney, M. F. and Rubenstein, L. V. (2000), 'Impact of Disseminating Quality Improvement Programs for Depression in Managed Primary Care', JAMA 283, 212-220.

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