

# Implementing the NICE guidelines for depression and anxiety. A cost-benefit analysis

R. Layard, D. Clark, M. Knapp and G. Mayraz

## Summary

To implement the NICE guidelines for depression and anxiety requires a massive expansion of evidence-based psychological therapy.<sup>1</sup> As we show, **this would pay for itself in economic terms. It would also cost the Exchequer nothing.** For the savings in incapacity benefits and higher taxes would more than cover the cost of the therapy. It is unlikely that the government could cut numbers on invalidity benefit by 1 million (as it plans) without a programme of this kind.<sup>2</sup>

In what follows we focus on the costs and benefits of taking an individual into treatment, which involves (allowing for drop-out) an average of 11 sessions and a total cost of £770. The **benefits to society** (after allowing for failures and successes) are increased employment and output, reduced suffering, and savings on other NHS costs. The **benefits to the Exchequer** are savings on incapacity benefits, higher tax receipts and savings on other NHS costs.

The left-hand column on page 2 shows the expected benefits, if treatment is provided in a similar context to that within which the evidence of success was collected. This context involves therapists working together in ‘treatment centres’ where senior therapists supervise, monitor and support junior therapists. The junior therapists may be dispersed among GP practices, job centres, workplaces, voluntary organisations and the like, but they are employed by the centre.

The table estimates the benefits to be expected in the first 2 years after treatment. As it shows, a programme delivered on the basis of evidence would more than pay for itself both to society and to the Exchequer – even ignoring the reduction in suffering. If instead we focus on suffering, we find that the cost per QALY gained is only about £6,000, compared with NICE’s cut-off of around £30,000.

It is much more difficult to forecast the effects of a more decentralised pattern of provision, but it is possible that without the ongoing therapist supervision and training

---

<sup>1</sup> On the evidence base, see the NICE guidelines.

<sup>2</sup> M. Meacher, ‘The reform of incapacity benefit’.

that would be available in a treatment centre, there may be some attenuation of effect. For illustrative purposes, the right-hand column shows the results with 50% attenuation, a value that been reported with a different delivery system<sup>3, 4</sup>.

	Organised in Treatment Centres	Different organization with 50% reduction in effectiveness.
<b>Cost</b>	770	770
<b>Benefits to Exchequer</b>		
Reduced benefits & extra taxes	850	430
Savings in other NHS costs	?	?
<b>Benefits to society</b>		
Extra output	1,020	510
Savings in other NHS costs	?	?
Improved quality of life	3,300	1,670

As the preceding cost-benefit results show, the costs of a programme based on treatment centres would be fully justified. In what follows, we trace through the various steps in the argument.

<sup>3</sup> See for example Roy-Byrne et al (2005) *Archives of General Psychiatry*, 62, 240-298 where success rates for panic disorder were only 30% within GP practices, compared to 70-90% in Treatment Centres.

<sup>4</sup> For a fuller statement of the case for treatment centres see D. Clark, 'The case for providing psychological therapy within treatment centres', available at <http://cep.lse.ac.uk/mentalhealth>.

## PATIENT NUMBERS

At present about 2¾ million people visit GP surgeries each year with mental health problems. Of these 1% receive cognitive behavioural therapy (CBT) and 3% receive “psychotherapy”. Another 4% receive “counselling” – GPs employ about 5,000 counsellors. Most but by no means all the patients get drugs,<sup>5</sup> and their biggest complaint is that psychological therapy is not more widely available.

If the NICE Guidelines were implemented, evidence-based therapy would be available as an option for most mentally ill people unless their illness was mild and recent. Normally it would be CBT. It seems likely that roughly 30% of those who go to the GP would opt for therapy (and more would now go to the GP). This paper therefore assumes a need to treat 800,000 patients a year with (mostly) CBT.<sup>6</sup> Table 1 shows the assumed breakdown of those patients by type of condition. (The derivation of all tables is explained in the Annex.)

## BENEFITS

The effects of treatment are shown in Table 2 – what proportion of patients persist with the treatment, and what proportion of these recover from their condition by the end of the treatment (after the standard number of sessions). Next the table shows the estimated rate of natural recovery that would have occurred in that period, without any treatment. The final column shows the net impact of the treatment on the overall recovery rate.

The table highlights the power of CBT, when compared with no treatment. For 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 continuously. Figure 1 illustrates this point. In what follows we focus on the difference between therapy and no treatment, and assume that most of those given therapy would not have otherwise been in treatment.<sup>7</sup>

Table 3 shows first the extra months of health resulting from treatment – in terms of effects in the first 2 years and the first 5 years. The next issue is how much more work

---

<sup>5</sup> Psychiatric Morbidity Survey.

<sup>6</sup> This is in line with a number of other studies.

<sup>7</sup> If instead the number of courses of treatment is unchanged but patients switch treatments, the current cost is roughly the same as today and the health and employment outcomes roughly the same as today.

will be done as a result of the extra months of health. We know the difference in employment rates and rates of absenteeism between people who are mentally ill and those who are not (see Annex Tables 1 and 2). We base our estimates on this information. If the difference in employment rates across the two groups is  $\Delta e$ , we assume that, if Y patients are well rather than ill, the number of extra workers is  $(0.6 \Delta e)Y$ . This is a conservative assumption and does not allow for the possible complementarities which could arise if therapy was accompanied by more intensive help from Job Centres, as has been provided in the Pathways to Work pilots.<sup>8</sup> From this assumption we can calculate that for the average person treated the number of extra person-months of employment in the 2 years following treatment would be 0.9 months.

In Table 4 we estimate these benefits in monetary units – beginning with the benefits to **society**. We assume that a ‘cured’ person in employment produces £12,000 a year on average (based on wage data). This is an extremely conservative assumption since the Labour Force Survey shows that the 1% of employees who report ‘depression, bad nerves or anxiety’ earn on average £18,200 a year. Even so, the resulting output (which includes an allowance for reduced absenteeism) exceeds the cost.

If, instead, we focus on the benefits to the **Exchequer**, these consist of reduced Incapacity Benefits (including Income Support) and increased tax receipts because more people are working. We know what proportion of the mentally ill are on Incapacity Benefits or Income Support, as compared with those not mentally ill (see Annex Table 1). If the difference in proportions on benefits is  $\Delta b$ , we again assume that if Y patients become well rather than ill the numbers on benefit falls by  $(0.6 \Delta b)Y$ . We shall assume that the incapacity benefits paid per disabled person are £6,000 per year (including 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. As the Table shows, these gains to the Exchequer when an extra person works are likely to cover the cost.

In addition, there will also be substantial cost-savings in other NHS costs – both on the physical side and the psychiatric side. On the physical side, there are many unnecessary referrals to the acute sector for conditions that are not “medically explicable” – sometimes estimated as  $\frac{1}{2}$  of all referrals to the acute sector.<sup>9</sup> In the USA it has been

---

<sup>8</sup> In our view each Treatment Centre should include, in addition to therapists, one employment expert, one benefit expert and one housing expert. The additional cost of this would yield additional benefits. Neither is included on our analysis. In our estimates the numbers of mentally ill people on Incapacity Benefit fall by 170,000 after 5 cohorts have been treated. This number could clearly be increased if treatment is accompanied by better help over job search and benefits.

<sup>9</sup> Nimmuan, C., Hotopf, M. and Wessely, S. *Journal of Psychiatric Research* 51(1): 361-7, July 2001.

found that people suffering from anxiety cost roughly \$350 more than other people in terms of non-psychiatric medical costs.<sup>10</sup> If the position was similar in Britain, the saving per person treated in Treatment Centres would be roughly £220 (within the first two years).

There would also be important savings in the treatment of mental illness – fewer referrals to the secondary sector, inpatient admissions, visit to GPs, counselling sessions and 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 this facility was withdrawn.<sup>11</sup>

Our knowledge in this whole area is weak. But we include in Table 4 the guess that the overall savings to the NHS per person treated is £320.

Finally, we also assume that the change in QALYs per additional healthy year is 0.2, with a QALY valued at £30,000, as implied in much NICE discourse.<sup>12</sup> This implies gains in QALYs worth £3,300 per person treated.

## COSTS PER PERSON

As regards cost, we shall assume that (averaged over those who drop out and those who do not) the average current cost per person who embarks on treatment is £750. The NICE Guidelines for post-traumatic stress disorder give a cost of £825 for 10 sessions,<sup>13</sup> but we assume that some patients will receive some of their treatment through computerised CBT, which gives good results for many of those who are willing to use it.<sup>14</sup> Since CCBT is cheaper, the overall figure of £750 seems reasonable – or £770 when we have allowed for amortised training costs (see below).

---

<sup>10</sup> Greenberg et al, *Journal of Clinical Psychiatry*, 60: 7, July 1999. [Check]

<sup>11</sup> Information from Isaac Marks – see Marks et al, *British Journal of Psychiatry* (2003), 183, 57-65.

<sup>12</sup> According to the standard method for 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 4 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 findings of D. Revicki et al. ‘Patient-assigned health state utilities for depression-related outcomes’, *Journal of Affective Disorders*, 1998, 48: 25-36.

<sup>13</sup> This contrasts with the cost per session of £66 in A. Netten *Unit costs of Health and Social Care* – presumably due to overhead costs of supervision, inservice training and the like.

<sup>14</sup> Proudfoot, J. *Neuroscience and Biobehavioral Reviews* 28 (2004) 353-363.

## TOTAL COSTS

We can now turn to total costs, scaled up for the number of patients. The biggest costs are the current costs that we have been discussing. For 800,000 patients treated a year, these would be £0.60 billion a year.

There are also the costs of training the extra 10,000 therapists needed (at 80 patients per therapist per year). We shall assume that half the new therapists are clinical psychologists (3-year trained) and half have the new grade of “psychological therapist” (of whom half are 1-year trained and half 2-year).

The cost of a clinical psychologist’s training is usually said to be £100k, but this is an exaggeration. The 3-year cost of the off-the-job training in universities is about £10,000, and only a half of the salary cost is an economic cost because half the time they are productively employed. Thus the true cost is £55,000.<sup>15</sup>

The cost of training a psychological therapist consists similarly of annual tuition (say £3,000) plus £10,000 per year in the value of lost services. Thus the total training cost is

	<b>Number</b>	<b>Total cost</b>
Clinical psychologists	4,500	£248 m
Psychological therapists		
1- year	3,000	£ 39 m
2- year	2,500	£ 66 m
		<hr/>
		£353 m
		<hr/>

This is a one-off cost, which can be amortised at 4% real rate of interest, to give an annualised cost of under £20 million (and under £20 per person treated). The total cost of treating 800,000 patients is thus £620 million.

We can now compare this cost with the benefits of providing psychological therapy for the extra 800,000 people. Table 5 begins with the benefits for society. It shows that the cost is fully justified, even if we only take into account the benefits over the first two years after treatment, and ignore altogether the value of reduced suffering. If

---

<sup>15</sup>  $(10+0.5(100-10))$  k.

instead we look at the benefits to the Exchequer, the policy again pays for itself, provided provision is organised through Treatment Centres rather than GPs.

The proposed program is thus fully justified. If one Centre was provided for every 250,000 people by 2013, this would require the establishment of roughly 40 new Centres a year. It would be far better to proceed deliberately in this way, preserving quality at each stage, than to establish faster a more widespread but watered-down version. The cost to the Exchequer would build up gradually, with a profile roughly as follows.

	<b>Costs (£m)</b>	
	<b>Current</b>	<b>Training<sup>16</sup></b>
2008 – 9	100	49
2009 – 10	200	53
2010 – 11	300	58
2011 – 12	400	59
2012 – 13	500	58
2013 – 14	600	53

---

<sup>16</sup> This assumes that clinical psychology intake is 650 in 2008, 750 in 2009, 850 in 2010, 750 in 2011, 650 in 2012 and 550 in 2013. (Drop-out needs to be more carefully modeled.)

**Table 1**  
**Breakdown of patients to be treated (%)**

Depression	25
Phobia	5
Obsessive-compulsive disorder	5
Panic Disorder	5
General anxiety disorder	40
Post-traumatic stress	20
Total	100

**Table 2**  
**CBT effectiveness (in Treatment Centres) (% 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	0	60
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
Average	82	60	20	33

**Table 3**  
**Impact on employment per person treated (in Treatment Centres)**

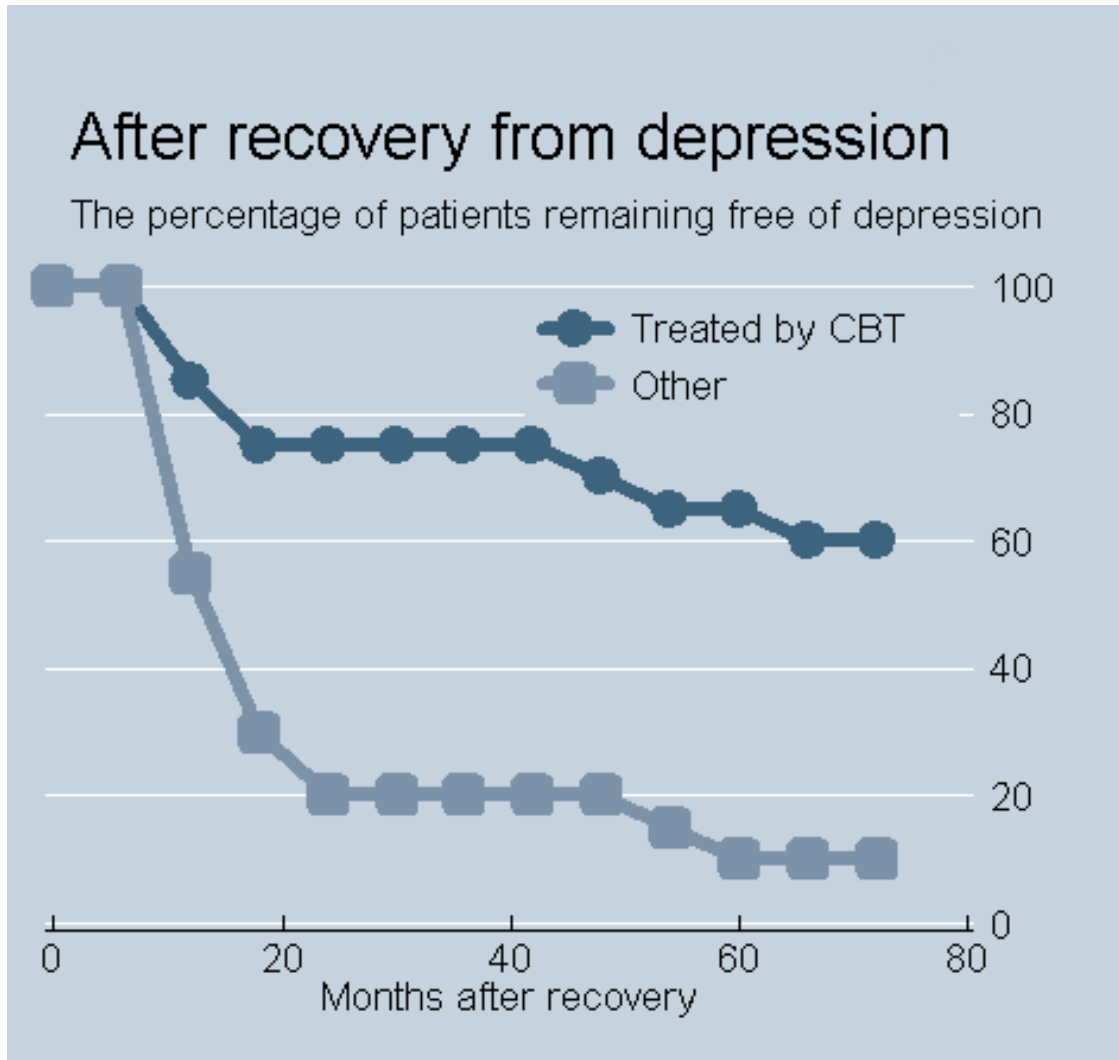
	Extra months healthy		Extra months of employment per extra month of health (3)	Extra months of employment	
	In first 2 years (1)	In first 5 years (2)		In first 2 years (4)	In first 5 years (5)
Depression	4.6	11.8	0.14	0.65	1.65
Phobia	14.3	35.7	0.24	3.48	8.69
Obsessive-compulsive disorder	9.0	20.2	0.17	1.55	3.47
Panic Disorder	14.2	31.8	0.14	2.04	4.57
General anxiety disorder	4.5	7.6	0.08	0.38	0.67
Post-traumatic stress	8.8	14.8	0.14	1.22	2.08
Average	6.6	13.5		0.92	1.95

**Table 4**  
**Average total costs and benefits per person treated (£)**  
**(includes only benefits in first 2 years)**

	<b>Organised in Treatment Centres (1)</b>	<b>Different organisation with 50% less effectiveness (2)</b>
<b>Costs</b>	770	770
<b>Benefits to society</b>		
Extra output	1,020	510
Medical costs saved	320 (?)	160 (?)
Extra QALYs	3,310	1,650
<b>Total</b>	4,650 (?)	2,320 (?)
<b>Benefits to Exchequer</b>		
IB+Taxes	850	420
Medical costs saved	320 (?)	160 (?)
<b>Total</b>	1,170 (?)	580 (?)

**Table 5**  
**Total costs and benefits of treating 800,000 people (£ billion)**  
**(includes only benefits in first 2 years)**

	<b>Organised in Treatment Centres (1)</b>	<b>Different organisation with 50% less effectiveness (2)</b>
<b>Costs</b>	0.62	0.62
<b>Benefits to society</b>		
Extra output	0.81	0.41
Medical costs saved	0.26 (?)	0.13 (?)
Extra QALYs	2.65	1.32
<b>Total</b>	3.17 (?)	1.86 (?)
<b>Benefits to Exchequer</b>		
IB+Taxes	0.68	0.34
Medical costs saved	0.26 (?)	0.13 (?)
<b>Total</b>	0.94 (?)	0.47 (?)



Source: G.A. Fava et al, Six-year outcome of cognitive behaviour therapy for prevention of recurrent depression, *American Journal of Psychiatry*, 2004, 161: 10, October.

## Annex

### Notes to tables

#### Table 1

We take the balance of conditions from the PMS (Psychiatric Morbidity Survey). We halve “mixed anxiety and depression” and allocate them 50:50 between depression and GAD. For phobia we only include social phobia and agoraphobia. For PTSD, which is not diagnosed in the survey, we include it as applying to 20% of all patients treated, since it affects 3.4% of the population – and we assume that half of them were included under depression.

#### Table 2

David Clark based on NICE guidelines. Recovery rates denote proportion recovered by end of 4 months. Recovery means loss of specified diagnosis or reliable and clinically significant change when the former is not available. The CBT programmes that have been most effective in RCTs are generally chosen with UK data being used whenever possible on the assumption that the teams that developed the programmes may be available to train others.

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

#### Table 3

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 Annex Table 1. We assume that, for people who had disorder  $i$  and now do not, the employment rate increases by 0.6 ( $N_o - N_i$ ). This allows for the facts that some 10% of sufferers who are treated will be 65-74 and unlikely to return to work, and that some under 65 will also not return to work. The resulting estimates of increased activity where people recover from depression are consistent with US findings (see G. Simon et al. “Recovery from depression, work productivity and health care costs among primary care patients”, *General Hospital Psychiatry*, 22, 153-162, 2000.

Cols (4) and (5)  
Cols (1) and (2) multiplied by Col (3)

**Tables 4 and 5**

See text. Output gains allow for increased employment at £1000 per month and reduced absenteeism (see Annex Table 2). Here again we use the coefficient of 0.6 (results consistent with G. Simon et al.) 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 (see Annex Table 1).<sup>17</sup> The estimates of extra taxes are based on extra months in work.

---

<sup>17</sup> This is slightly more than extra months in work times the proportion of mentally-ill inactive people on IB and / or IS.

**Annex Table 1**  
**Employment and IB rates for people aged 16-64 (%)**

	<b>Full-time workers</b>	<b>Part- time workers</b>	<b>Unemployed</b>	<b>Inactive</b>	<b>Total</b>	<b>% who are on IB and / or IS</b>	<b>% who are on IS only</b>
<b>No mental disorder</b>	55	19	3	23	100	8	6
<b>Depression</b>	36	14	4	45	100	42	26
<b>Phobia</b>	22	11	6	61	100	54	42
<b>Obsessive-compulsive</b>	22	23	3	52	100	42	24
<b>Panic disorder</b>	30	20	5	45	100	35	26
<b>General anxiety</b>	42	18	4	36	100	24	13
<b>PTSD</b>	36	14	4	45	100	42	26

Source: Psychiatric Morbidity Survey. As before, phobia only includes agoraphobia and social phobia

**Annex Table 2**  
**Days per year lost due to sickness absence per person of each type in employment**

<b>No mental disorder</b>	5
<b>Depression</b>	24
<b>Phobia</b>	52
<b>Obsessive-compulsive</b>	34
<b>Panic disorder</b>	39
<b>General anxiety</b>	14
<b>PTSD</b>	24

Source: Psychiatric Morbidity Survey 2000.