

‘Show me the money’: improving the economic evaluation of mental health services

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Background. Compared with the United Kingdom, mental health services in Ireland are under-funded and under-developed. This may be partly due to the neglect of economic analyses concerning mental health services in Ireland, as few policy makers would invest in the sector without evidence that such investment represents ‘value-for-money’ economically.

Aim. The aim of this paper is to highlight how mental health services can conduct economic service evaluations that ultimately will drive the policy-making agenda and future governmental investment.

Methods. A guide to the economic evaluation of mental health services, based on a narrative review of relevant policy documents and papers, in an Irish context.

Results. Three types of economic analyses that can be undertaken within mental health services are outlined: (a) cost-benefit analysis, (b) cost-utility analysis and (c) cost-minimisation analysis. In addition, a newly formulated questionnaire (i.e. the ‘EcoPsy 12’) is presented.

Conclusions. Economic evaluations of mental health services can provide re-assurances to policy-makers that (much-needed) investment in such services is economically viable.

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Introduction

Mental health problems contribute to over 13% of the global burden of disease [World Health Organisation (WHO), 2004]. Moreover, given that mental health is now recognised a significant public health issue, there is a pressing need to demonstrate the value-for-money (VFM) of investments in related services (WHO, 2006). The aim of this paper is to highlight how such services can conduct economic service evaluations that ultimately will drive the policy-making agenda and future governmental investment. The paper is divided into two sections. Referencing recent developments in the United Kingdom and Ireland, the first illustrates the importance of economic evaluations in mental health services, especially in primary care where ~95% of mental health presentations are initially seen (Coptly, 2004). The second section outlines ways in which economic service evaluations can be conducted within mental health services.

Recent developments in the United Kingdom and Ireland

Developments in the United Kingdom

With the goal of significantly increasing public access to evidence-based psychological therapies for depression

and anxiety, the UK’s National Health Service (NHS) rolled out the *Improving Access to Psychological Therapies* (IAPT) initiative in 2008 (O’Shea & Byrne, in press) By March 2011, 3660 new cognitive behavioural therapy (CBT) workers had been trained and 60% of the adult population had access to these services. Moreover, continued investment will ensure that by 2014, IAPT will provide interventions to 900 000 people with depression and anxiety, with recovery rates averaging 50% (Clark, 2011; Centre for Economic Performance, 2012).

Although IAPT was informed by National Institute for Health and Clinical Excellence (NICE) best-practice guidelines (NICE, 2009; NICE, 2011) its successful rollout was strongly influenced by reports presented to the UK government by Lord Layard and his colleagues from the London School of Economics (Layard *et al.* 2006; Layard *et al.* 2007). These (and follow-up) reports encompassed detailed economic analyses that demonstrated that IAPT more than pays for itself (i.e. it produces a net economic gain; see Table 1).

Mental health in the UK receives 13% of the NHS budget (Centre for Economic Performance, 2012). This is one of the highest health expenditure allocations in Europe (IAPT, 2011) but there are continued economically based arguments being put to government that make further increases in investment more likely. For example, a recent London School of Economics report indicated that increased expenditure on therapies for the most common mental disorders (e.g. through the IAPT initiative) would almost certainly cost the NHS

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Table 1. How IAPT pays for itself (Layard et al. 2006; Layard et al. 2007; IAPT, 2011)

Reason	Cost savings
Increased workforce productivity	A £0.6 billion per year investment would greatly reduce the annual £12 billion lost in output (i.e. GDP) due to depression and anxiety, including the £7 billion direct cost to the taxpayer in terms of incapacity benefits and lost tax receipts On average, those treated would work an extra 2 months and thus spend 2 months less on incapacity benefits. As the cost of 2 months of incapacity benefits is £1500 per person, and the total cost of treatment is £750 per person, this represents a substantial cost saving
Reduced healthcare costs	For those who 'recover' (around 50% of people), the following average efficiency savings per person are estimated: 3.2 fewer GP consultations, 1.5 fewer inpatient bed nights, and 0.7 fewer outpatient services use The overall savings to the NHS per person treated is £300 over a 2-year period
Overall net gain	For those treated, the extra GDP produced over 2 years is estimated to be £1200 per person, and society will also gain from approximated NHS savings of £300 per person. These gains far exceed the cost of £750

IAPT, Improving Access to Psychological Therapies; GP, general practitioner; GDP, gross domestic product; NHS, National Health Service.

nothing as it would lead to substantial reductions in the £10 billion per year spent on physical healthcare caused by mental ill-health (Centre for Economic Performance, 2012).

Developments in Ireland

The proportion of the health budget allocated to mental health services in Ireland has steadily declined in recent years – from 13% in 1986 to 5.3% in 2010 (Mental Health Reform, 2010). To address the associated under-development of these services, *A Vision for Change* (VFC) (Department of Health & Children, 2006), proposed the provision of integrated, recovery-focused care that is delivered in the community, primarily by multi-disciplinary Community Mental Health Teams (CMHTs). However, despite recent developments such as the recruitment of over 400 health and social care professionals to professionally complete CMHTs and the rollout of counselling services in primary care (Ward, 2012) on the whole the implementation of the recommendations from VFC has progressed at a slow pace [Health Service Executive (HSE), 2012].

Progress has undoubtedly been hindered by a recessionary economic climate in which the HSE has recently cut €53 million from its mental health and primary care budget to offset its current budget deficit (Wall, 2012). However, figures also suggest that outdated approaches to mental health service provision remain prominent. For example, between 2007 and 2008, there was a 19% increase in the prescription of the anti-depressant Mirtazapine and a 10% increase for the benzodiazepine Alprazolam under the General Medical Services scheme [Mental Health Commission (MHC), 2011]. Furthermore, in both 2009 and 2010,

over €100 million was spent by the HSE on prescriptions for mental health difficulties in primary care (Primary Care Reimbursement Service, 2009; Primary Care Reimbursement Service, 2010).

In contrast to the United Kingdom, there has been a profound neglect of economic evaluations of mental health services in Ireland (Gibbons *et al.* 2012) and this may partly explain the lack of governmental investment in developing the area. However, one of the few evaluations that has been undertaken found that costs arising from mental health (i.e. direct care and decreased economic output) amounted to 2% (or €3 billion) of GNP in 2006 (O'Shea & Kennelly, 2008). Due to this significant economic burden and the expressed willingness of surveyed members of the public ($n = 435$) to pay extra taxation to fund community-based care, the report stressed that investing in mental health services is essential from an economic perspective (O'Shea & Kennelly, 2008).

Another welcome economic report undertaken by the Kildare/West Wicklow Adult Mental Health Service found that providing acute care in a community setting cost ~27% less (per capita) than providing such care in traditional acute settings (Gibbons *et al.* 2012). This 'Comprehensive Community Model' was also more efficient – it reduced waiting times and had higher attendance rates. However, far more reports of this nature are needed to move Ireland away from its long tradition of ignoring the economic aspects to mental health (O'Shea & Kennelly, 2008). Moreover, if mental health services wish to secure funding for much-needed service development (as the NHS did for IAPT), it is essential that development proposals have a comprehensive economic rationale, especially in our recessionary economy. The next part of this paper highlights ways

in which mental health services can incorporate an economic dimension into their service evaluations.

Ways to conduct economic service evaluations

There is a wide range of economic evaluation techniques available to mental health services, including cost-benefit analysis, cost-utility analysis and cost-minimisation analysis (Hoch & Smith, 2006) each of which are described below.

Cost-benefit analysis

In a cost-benefit analysis, monetary values are placed on both the inputs (costs) and outcomes (benefits) of a particular programme or service. This allows policy makers and stakeholders to determine whether or not an overall net gain (i.e. when total benefits exceed total costs) is offered economically (Robinson, 1993). Moreover, cost-benefit analyses allow policy makers to consider the relative efficiency of various potential investments and are thus a useful decision-making tool (Tudor-Edwards & Thalany, 2001).

In a cost-benefit analysis conducted on a mental health service, all of the benefits from the service's interventions (e.g. 'recovery' from a mood problem) are converted into monetary benefits so that they can be compared against the monetary costs of providing these interventions (Hoch & Smith, 2006). For example, in IAPT's cost-benefit analyses (Layard *et al.* 2006; Layard *et al.* 2007; IAPT, 2011), estimated improvements in service users' clinical outcomes were converted into arising monetary benefits such as increased workforce productivity (i.e. less sick days and reduced use of incapacity benefits) and reduced healthcare costs (also referred to as the 'medical cost offset'). These benefits were projected over a 2-year period and compared against the cost of providing therapy (which took into account salary, equipment and other costs). As the benefits of IAPT easily exceeded its costs (as shown in Table 1), the analyses demonstrated that the initiative produced a net gain economically. Examples of costs and benefits that can be associated with mental health services are presented in Table 2.

An essential element of a cost-benefit analysis is deciding which benefits to measure and how to measure them (Hoch & Smith, 2006). A structured method of measurement can be undertaken using the 26-item *Trimbos and iMTA Questionnaire on Costs Associated with Psychiatric Illness* (TiC-P) (Hakkaart-Van Roijen, 2002). The TiC-P allows the systematic collection of data pertaining to both medical resource utilisation and costs attributable to production losses. The former is measured by asking service users how many contacts they had with different healthcare providers [e.g. general practitioner (GP), psychiatrist, medical specialist, physiotherapist, hospital] and their frequency of medication use during a set period of time (e.g. 3 months). The latter is measured by the reported number of days of absence from work, in terms of both short-term (<2 weeks) and long-term absence.

At 26 items, the TiC-P may be considered too lengthy by service providers and users. Hence, we present a newly formulated 12-item cost evaluation tool – the 'EcoPsy 12' (see Table 3). This tool's content and structure are informed by the TiC-P (Hakkaart-Van Roijen, 2002), governmental reports (Layard *et al.* 2006; O'Shea & Kennelly 2008; Gibbons *et al.* 2012) various rigorous cost-benefit analyses conducted within mental health services (Rollman *et al.* 2005; Soeteman *et al.* 2010; Gerhards, 2010) and a 10-point checklist that can be used to assess the quality of economic evaluations (Drummond *et al.* 1997). Whatever scale is used to collect output and health care usage data, these can be supplemented with measures that show general impairment (and thus probable reductions in productivity) such as the 5-item *Work and Social Adjustment Scale* (Mundt *et al.* 2002).

Cost-utility analysis

A cost-utility analysis aims to reveal the 'utility' (or cost-effectiveness) associated with health gains, most commonly through a metric called 'Quality Adjusted Life Years' (QALYs) (Chisholm *et al.* 1997). QALYs measure the benefits of healthcare interventions using a single index that combines life-years

Table 2. Costs and benefits that can be associated with mental health services

Costs	Benefits (for service users)
<ul style="list-style-type: none"> ● Salaries ● Premises costs (e.g. rent, heat, lighting) ● Equipment/psychometric tools ● Cost of medication provision ● Administrative costs 	<ul style="list-style-type: none"> ● Improvements in clinical outcomes ● Increased employment and productivity ● Less sick days from work ● Reduced use of primary and secondary care health services ● Increased quality of life and participation in the community and leisure activities

Table 3. *The EcoPsy-12*

PART 1: Health service use

1. **In the past 3 months, if you attended consultations with the following Primary Care professionals, please state the number of consultations you had with each:**

(please skip this question if you have NOT availed of the below services):

- a. General Practitioner (GP) or GP Practice Nurse. ____
- b. Community Nurse. ____
- c. Primary Care Psychologist or Counsellor. ____
- d. Other service provider (e.g., occupational therapist, dentist):
 - Please state service provider _____
 - No. of consultations ____

2. **In the past 3 months, if you attended consultations with the following Secondary Care professionals, please state the number of consultations you had with each:**

(please skip this question if you have NOT availed of the below services):

- a. Psychiatrist. ____
- b. Psychologist or Counsellor (excluding addiction counsellor). ____
- c. Addiction (alcohol or drugs) counsellor. ____
- d. Other service provider (e.g., rehabilitation assistant, cardiologist)
 - Please state service provider _____
 - No. of consultations ____

3. **In the past 3 months, did you stay overnight in general or psychiatric hospital because of any mental or physical problem?**

Please Circle 'Yes' or 'No' to indicate your answer:

YES NO

If YES how many nights did you stay in hospital? ____

4. **In the past 3 months, did you use an ambulance or visit an emergency service? Please Circle 'Yes' or 'No' to indicate your answer:**

YES NO

If YES how many times did you avail of these services? ____

5. **Are you currently taking medication for your mental health difficulties? Please Circle 'Yes' or 'No' to indicate your answer:**

YES NO

If YES how many separate medications do you use? ____

If YES how many times a day (on average) did you take your medication in the last 3 months? ____

PART 2: Employment

1. **What is your current occupational status? (please tick as appropriate)**

Working__ Unemployed __ Student__ Looking after home__ Retired__ Unable to work because of long term illness or disability ____

If not currently working please skip to question 7

2. **If EMPLOYED, what is your occupation?**

3. **If EMPLOYED, do you work part time or full time?**

Table 3. Continued

4. If EMPLOYED, how many days of work have you missed in <i>the last 3 months</i> as a result of health difficulties? _____					
5. If EMPLOYED, how many days (or weeks) of work have you missed <i>in the last year</i> as a result of health difficulties? _____					
6. If EMPLOYED, to what extent do you think your mental health difficulties negatively impact upon how well you work (or your work productivity)? <i>(please circle as appropriate)</i>	Not at all	Slightly	Moderately	Markedly	Severely
7. If NOT CURRENTLY WORKING, to what extent do you think your mental health difficulties hinder your ability to seek and maintain employment? <i>(please circle as appropriate)</i>	Not at all	Slightly	Moderately	Markedly	Severely

and health-related quality of life during those years (Al-Janabi *et al.* 2011). QALYs are obtained by multiplying a weight representing quality of life in a health state [ranging from 0 (death) to 1.0 (perfect health)] by the length time spent in that health state (Hoch & Smith, 2006).

After the number of QALYs a service or intervention produces for service users is calculated, the cost per QALY is generated. The cost per QALY metric takes into account all the costs of service provision and shows the costs required to produce each QALY. In this way, from an investment perspective, comparisons can be made between those interventions that are relatively inexpensive (low cost per QALY) and those that are relatively expensive (high cost per QALY) (Phillips, 2009). Those interventions that have a low cost per QALY are considered to be more efficient than those that have a high cost per QALY (Drummond *et al.* 2009). The general consensus internationally is that up to around €30 000 per QALY represents the upper limit for VFM investment in a service or intervention, although figures such as these are open to debate (Hoch & Smith, 2006; Phillips, 2009).

For most clinical trials, the effects of an intervention on long-term life expectancy are difficult to predict, especially for relapsing mental health problems such as low mood. Thus, in these cases it is considered appropriate to exclude the (long-term) life years component of the QALY calculation (Edwards *et al.* 2004). Moreover, various clinically useful methods for calculating QALYs can be performed such as the 'standard gamble' and 'the time trade off' that use scaling techniques to incorporate service user preferences into QALYs (Mann *et al.* 2009). However, as such techniques are often complex, expensive and time-consuming, many governmental institutions in the United Kingdom (e.g. NICE), the United States and Canada use brief, standardised instruments such as the (6-item) EuroQol-6 Dimensions (EuroQoL Group,

1990) and the (6-item) Short-Form 6-Dimensions (Brazier & Roberts, 2004) for the calculation of the QALYs (Mann *et al.* 2009; Petrou & Gray, 2011).

Although QALYs allow comparisons of a diverse range of treatments in a 'common currency' that shows treatment effectiveness and cost utility in a single index (Al-Janabi *et al.* 2011), unfortunately there exists no universally accepted way of measuring its quality of life weight and different methods of measuring QALYs tend to produce substantially different results (Hoch & Smith, 2006). If looking to calculate QALYs, mental health services should take into account the lack of consensus in the area that still exists, despite ongoing efforts internationally (Drummond *et al.* 2009). To facilitate understanding of QALYs and the cost per QALY metric, we provide a hypothetical example below (see Table 4).

Cost-minimisation analysis

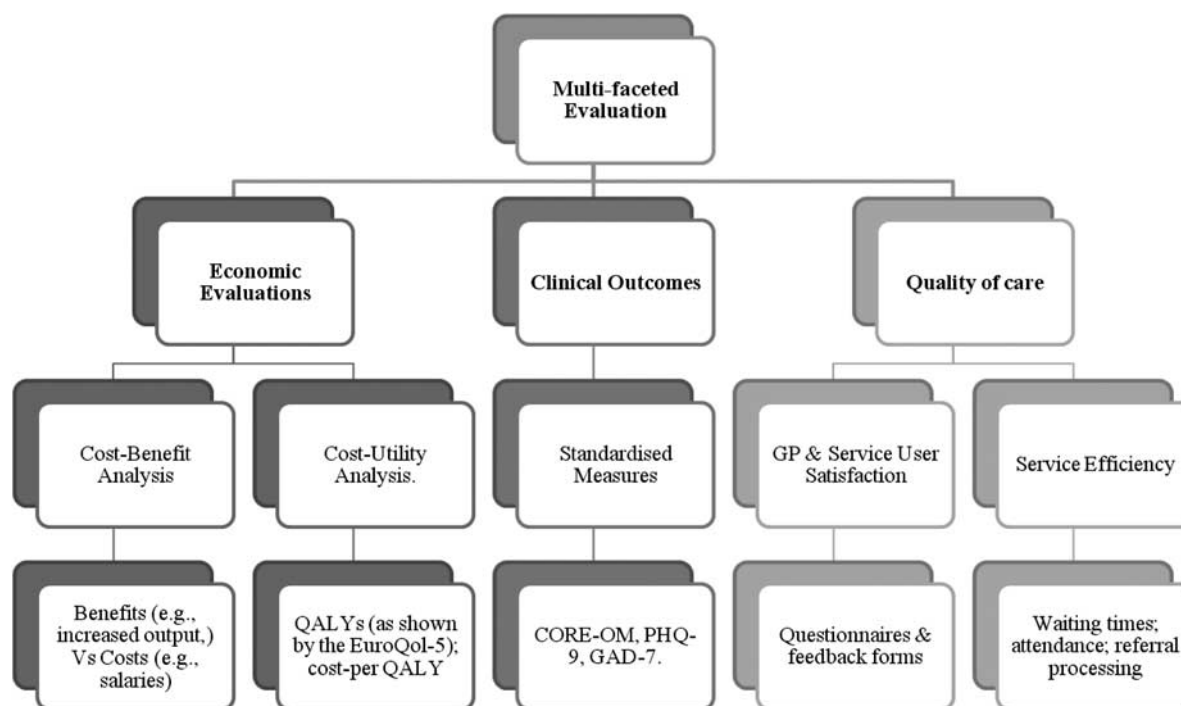
In a cost-minimisation analysis, only the costs of providing a service or intervention are focused on. This simple form of analysis is only appropriate when the benefits (i.e. improvements in service user outcomes) of two or more regimens have previously been shown to be equivalent (Hoch & Smith, 2006).

An example of a cost-minimisation analysis can be found in a recent observational study of IAPT that included 39 227 service users (Hammond *et al.* 2012). Here it was initially found that face-to-face, and telephone-delivered, low-intensity CBT were equally effective for mild-to-moderate anxiety and depression. A subsequent cost-minimisation analysis concluded that as telephone-delivered CBT cost 36.2% less per session to provide, it could thus be considered to be the more efficient and accessible intervention option. Another such example can be found in comparisons between CBT and medication interventions for panic and depression. Here various studies have found that

Table 4. Hypothetical example of how QALYs and cost-per QALYs can be used

1. Decide interventions to be compared using QALYs	Psychotherapy <i>v.</i> medication; for the treatment of anxiety; over 3 months in a small clinical sample
2. Collect needed data to calculate QALYs	The EuroQol-5 is administered to people in each group at pre- and post-intervention
3. Calculate QALYs	The changes in QALYs from pre-to post-intervention for each intervention are as follows: 2.7 QALYs for psychotherapy group; 1.8 QALYs for medication group
4. Collect needed data to calculate cost-per QALY	The costs of each intervention are as follows: psychotherapy: €6500; medication: €5800
5. Calculate cost-per QALY	For psychotherapy, the cost per QALY is: €6500/2.7 = €2407 For medication, the cost per QALY is: €5800/1.8 = €3222
6. Interpretation	Psychotherapy (2.7) produces more QALYs than medication (1.8). Furthermore, although medication costs less, it costs an additional €815 per QALY to provide
7. Recommendation	As psychotherapy is the more effective (in terms of QALYs) and efficient (in terms of cost per QALY) intervention, it would represent the better VFM investment

QALY, Quality Adjusted Life Years; VFM, value-for-money.

**Fig. 1.** Roscommon's multi-faceted evaluation approach.

Notes: CORE-OM, Clinical Outcomes in Routine Evaluation-Outcome Measure (Evans *et al.* 2002); PHQ-9, Patient Health Questionnaire-9 (Kroenke *et al.* 2001); GAD-7, Generalised Anxiety Disorder Scale-7 (Spitzer *et al.* 1999).

both interventions offer comparative effectiveness but that CBT interventions cost approximately one-third less (Hunsley, 2003).

Conclusions

Few politicians would sign off on investment in mental health services without re-assurances that such investment represents good VFM (Knapp, 2005). These re-assurances are especially important in the current

economic climate in which cost containment measures are commonplace. This paper outlined three ways in which mental health services can conduct economic evaluations that can ultimately provide these re-assurances and increase chances of much-needed investment. Each identified method can be conducted in short-term and service-based trials. This is important because most of the pre-existing economic evaluations conducted in Ireland have been based on global estimates and projections rather than short-term

service data that can provide direct evidence for the rational allocation of resources towards service development (Gibbons *et al.* 2012).

Finally, economic evaluations within mental health can be conducted on a stand-alone basis or as part of a multi-faceted approach that has been described elsewhere (Nelson & Steele, 2006). An exemplar of a multi-faceted approach can be seen within primary care adult mental health services in County Roscommon where a Programme for Government-funded (Department of the Taoiseach, 2011) stepped-care primary care service is being rolled out (Twomey & Byrne, 2012). This best-practice model will build upon an existing 3-year local pilot programme (Bourke & Byrne, 2012), and its evaluation will consist of the cost-benefit and cost-utility analyses highlighted in this paper, alongside evaluations of clinical outcomes (using standardised and validated measures), GP and service user satisfaction levels, and service efficiency (see Fig. 1). It is anticipated that the economic effects of this service will be notable given that it prioritises low-intensity and low-cost psychological interventions over higher-intensity and more expensive interventions (Twomey & Byrne, 2012).

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