

# Effective Interventions Unit

## Evaluation Guide 6

### Designing an Economic Evaluation

**WHAT IS THE PURPOSE OF THIS GUIDE?** This is the sixth evaluation guide in the EIU evaluation series. It explains some of the principles of economic evaluation and when it might be useful. We briefly outline what this approach involves, illustrated with examples from the substance misuse field.

**WHO SHOULD READ IT?** Anyone involved in commissioning, planning, developing, delivering and evaluating services for drug users.

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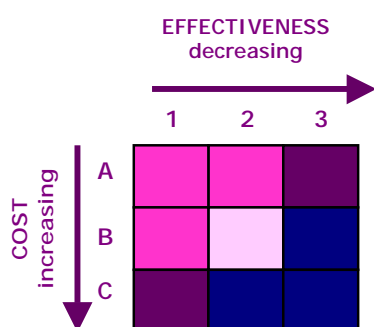
#### WHY IS ECONOMIC EVALUATION IMPORTANT?

As with all public services, only limited resources are available for tackling substance misuse. Resources need to be used wisely so that they have the maximum impact in helping individuals and the wider community. Economic evaluation allows the **costs** (the resources that they use) of different interventions to be considered alongside the **outcomes or 'benefits'** achieved. This can help to inform comparisons between different approaches and can allow resources to be used more efficiently.

The information from an economic evaluation may be useful when making decisions about the merits of a new service in comparison to an existing approach. Sometimes it is possible to decide if a change is worthwhile by simply adding up the pros and cons: this might be in the form of two simple lists that set out the likely resources needed and all the expected benefits. You will need to consider if a full-scale economic evaluation – and the time and expense this can involve - is worthwhile. In general, an economic evaluation is worth considering:

- If interventions differ greatly in cost
- If the collection of reliable economic data does not place unacceptable burdens on clients or staff
- If the study design is good enough to provide unbiased answers

One way in which information on costs and benefits can be brought together to provide information to decision-makers is illustrated below. For example, if (compared to the existing service) the new service appears to be more effective, but is also more costly (box C1) judgement is required as to whether the change in benefits are worth the change in costs.



Compared with existing treatment, the new treatment is:

1. more effective
2. of equal effectiveness
3. less effective

Compared with existing treatment, the new treatment is:

- A. less costly
- B. of equal cost
- C. more costly

■ ✓ = Recommend new treatment

■ ✗ = Recommend existing treatment

■ = Neutral

■ ? = Judgement required: Are the extra costs worth the extra benefits? / Do the decreased costs justify the loss in effectiveness?

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Many drug services operate in a 'client-centred' and responsive way to overcome the complex problems and issues facing an individual. This can make an economic evaluation seem too difficult and complicated to attempt. However, this process can help inform decisions and give new insights into how services should be organised.

### For example: economic evaluation of a community addiction service

The evaluation showed a very wide variation in individual 'client costs'. A small number of clients accounted for a very large proportion of total resources. Further analysis identified that a small percentage of clients were failing to make progress and taking up disproportionate amounts of staff time - and therefore 'blocking' places for those that could benefit - because they actually required a different type of more intensive provision. The cost analysis identified that improved assessment processes were needed.

### CONSIDERATIONS WHEN DESIGNING AN ECONOMIC EVALUATION

As with other evaluations, economic evaluations must have:

- Clear aims and objectives
- A strong underlying rationale for the intervention
- A study design that can adequately address the questions asked

It is rarely necessary to carry out an economic evaluation as a separate exercise because it can usually be incorporated into any evaluation that involves a **comparison**. A description of 'Comparative Evaluation Designs' is set out in EIU **Evaluation Guide 3 Designing an Evaluation**. At the planning stage, consider if additional information is needed for the economic component. You may find that the information is already being collected for other purposes or that it is readily available from routine data sources or local management information. For example, the Information and Statistics Division (ISD) hold national data on health service costs.

### DEFINITIONS AND CONCEPTS IN ECONOMIC EVALUATION

**WHAT ARE COSTS AND BENEFITS?** Costs are the resource 'inputs' required to provide an intervention and the resource 'outputs' of an intervention. Benefits simply mean the 'outcomes' of the intervention. Many of the input, outputs and outcomes required for the economic evaluation would be collected as part of a wider evaluation and all the economic evaluation does is to organise these data in a particular way.

#### Example: costs and benefits measured as part of an evaluation of a new needle exchange outreach service

<b>Costs (Inputs and Outputs)</b>	<ul style="list-style-type: none"> <li>• Cost of staff time required to run the service (input)</li> <li>• Cost of needles and other equipment required for the service (input)</li> <li>• Cost of increase or decrease in numbers of people that need treatment for infections due to increases or decreases in the risk of infection (output)</li> </ul>
<b>Benefits (Outcomes)</b>	<ul style="list-style-type: none"> <li>• Increase in clients' physical and mental health</li> <li>• Non health benefits to clients (improved knowledge about disease transmission)</li> <li>• Reduction in anxiety among clients' family and friends</li> </ul>

**WHICH COSTS AND BENEFITS ARE IMPORTANT?:** It is important to discuss in detail with all stakeholders in the evaluation process which costs and benefits should be included in the economic evaluation. The type of costs and benefits to include will depend upon both the questions the evaluation is trying to address and the practicalities of collecting the information needed.

#### Example: Sample costs and benefits considered in an evaluation of the expansion of a methadone programme

<b>Direct costs and benefits</b>	<ul style="list-style-type: none"> <li>• Costs of increasing the level of service provision (e.g. staff time, cost of methadone)</li> <li>• Cost to clients of participating in the programme (e.g. travel costs, child care)</li> <li>• Benefits to clients who successfully complete the programme (e.g. reduction in drug use, increase in employability)</li> </ul>
<b>Wider costs and benefits</b>	<ul style="list-style-type: none"> <li>• Reductions in costs of detecting and dealing with drug related crime</li> <li>• Fewer people suffering the distress of being the victims of crime</li> <li>• Reduction in anxiety among clients' family and friends</li> </ul>

Understanding who bears the cost and who reaps the benefits can also provide information about:

- Whether the 'right' client group is benefiting. For example, do clients from the most socially disadvantaged backgrounds benefit as much as those from more advantaged backgrounds?
- The costs to clients or their families/friends. Do these limit uptake of an effective service?
- Whether limited resources elsewhere are having an impact on the use of an otherwise worthwhile service. For example, an inpatient treatment service may fail because clients do not have access to the services needed to prevent relapse once they are discharged.

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## MEASURES OF COST

Where limited resources are available, choices have to be made. Allocating funding to one service means that the resources can not be used elsewhere. If the resources had been used to fund an alternative service then there may have been different outcomes and 'benefits' to clients and the community. It is important to bear in mind the alternative 'benefits' that have been lost because of the choice that has been made. This is the 'cost' of funding a particular service. In addition to the individual **costs** (staff salaries etc.) explained earlier, there is also a wider meaning of 'cost' in economics that is **equal to the greatest amount of benefits possible had the limited resources been used in another way**. For example, if the funding available for drug services was used to establish one residential rehabilitation unit in an area then it would not be available to fund several community-based schemes. The 'cost' of this choice is the benefit lost from not providing the community-based schemes.

The type of resources that are likely to be of interest are staff time (labour), the use of equipment (reusables), equipment that can be used once only (consumables) and overheads (heat, power, light, rates). The prices of the resources may be based on market prices (e.g. salaries) or calculated using other information sources. For example, using average national salaries to cost the time of a voluntary worker.

Example: Calculation of weekly cost for labour, consumables, reusable and overheads					
<b>Labour</b>	Total time of each staff member per week	×	Hourly wage rate plus national insurance and employer pension contributions	=	Total staff cost per week
<b>Consumables</b>	Number of each consumable item used per week	×	Purchase cost for each consumable item	=	Total consumables cost per week
<b>Reusables (that last more than a year)</b>	Purchase or replacement cost of the item	÷	Number of years the item lasts for, then		
		+	Weeks in a year (52)	=	Total reusable cost per week
<b>Reusables (that last less than a year)</b>	Purchase cost of the item	÷	Number of weeks the item lasts	=	Total reusable cost per week
<b>Overheads</b>	Cost per year of each overhead	÷	Weeks in a year (52)	=	Total overhead cost per week
<b>Weekly cost per client is equal to the total weekly cost divided by number of clients seen per week</b>					

## MEASURES OF BENEFIT

Benefits are measures of 'outcome' and these are likely to be collected for the wider evaluation. They can relate to changes in clients' health and well being, and can also relate to the psychological and physical benefits felt by other people who are effected by the substance misuse (families/friends of the client, victims of crime, etc). Outcomes are explained in **Evaluation Guide 1: Definitions and Common Concepts**.

Measures of benefit can be '**single outcome**'. This means looking at just **one outcome**, for example, change in levels of drug use. This is a simple approach, but it may not cover all the benefits of a service of project. For example, a reduction in drug use is desirable, but it is not the only aim of many drug treatment services.

Measures can also be '**multiple outcome**'. This means looking at **several individual outcomes**. For example, change in the level of drug use, changes in HIV risk behaviour, changes in physical health and changes in psychological health.

It is sometimes possible to examine **multiple outcomes in a single measure**. For example, there are some assessment tools in the drugs field that allow a 'score' to be calculated - such as the Maudsley Addiction Profile (MAP). These could potentially be used for economic evaluation. However, it would be important to get specialist advice before using such measures as part of an economic evaluation.

These different approaches to measuring benefits are set out in the following example.

Tackling  
drugs in  
Scotland

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Tel: 0131 244 5117 Fax: 0131 244 2689  
EIU@scotland.gsi.gov.uk  
<http://www.drugmisuse.isdscotland.org/eiu>

### Example: Potential methods of measuring the benefits of a needle exchange programme

Measure	When to use	Strengths and Weaknesses
<b>Single outcome</b> e.g. needles exchanged	Where a single measure reflects all benefits of interest	<ul style="list-style-type: none"> <li>• Simple</li> <li>• Can only compare interventions with same goal</li> <li>• May not adequately capture all benefits</li> </ul>
<b>Multiple outcomes measured individually</b> e.g. needles exchanged; infections; satisfaction of clients, family/friends and general public	When several different measures of outcome are required to reflect benefits	<ul style="list-style-type: none"> <li>• Simple</li> <li>• Allows trade off between outcomes to be considered</li> <li>• Can only compare interventions with same goal</li> <li>• Can be difficult to interpret if many different outcomes are used</li> </ul>
<b>Multiple outcomes included in a single unified measure</b> e.g. Maudsley Addiction Profile (MAP)	As with multiple outcomes and when it is necessary to consider the net benefit across several sectors of society e.g. health, social services, and law and order.	<ul style="list-style-type: none"> <li>• Trade off between outcomes directly incorporated into evaluation</li> <li>• May be able to compare interventions with different goals e.g. substitute prescribing to changes in law and order</li> <li>• Requires specialist advice</li> </ul>

## SENSITIVITY ANALYSIS

In any evaluation, you will need to allow for possible uncertainty in estimating inputs, outputs and outcomes. A 'sensitivity analysis' is simply a structured way of working out how changing the estimates for inputs, outputs and outcomes would change the results of an evaluation. This process allows more robust and credible conclusions to be drawn from the evaluation.

### Example: Types of uncertainty that would be candidates for sensitivity analysis on costs and/or benefits

The drop out rate from a methadone programme may vary between 30% and 70%

The number of needles exchanged per session varies between 1 and 15 with an average of 10

The cost of inpatient treatment for drug misuse may vary between £75 and £205 per day

For example, when evaluating a methadone programme it is important to take 'uncertainty' into account. As the rate of drop out increases, the operating costs of the service fall (less consumables and less staff time may be required). However, clients who drop out may require more costly health care from other services. You will need to estimate how the total cost changes as the drop out rate changes. Similarly, the drop out rate is directly related to the benefits of the service. The higher the drop out rate, the lower the benefits.

## SUMMARY

- Economic evaluation relates costs (inputs, outputs) to benefits (outcomes)
- In many circumstances economic evaluation is only a component of an evaluation
- Much of the data required by the economic component may also be required for a wider evaluation
- During planning discuss with stakeholders what data would be required
- Carefully consider whether the information economic evaluation provides is worth the additional work

## FURTHER RESOURCES

Cochrane Economic Methods Group. **Incorporation of economic evaluation into reviews**

<http://www.uea.ac.uk/hpp/healecon/cochrane.html>

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Drummond M, O'Brien B, Stoddart G and Torrance G. (1997) **Methods for the economic evaluation of health care programmes**.

Jefferson T, Demicheli V, Mugford M. (2<sup>nd</sup> Edition). (2000) **Elementary economic evaluation in health care**.

Phillips C. (1997) **Economic evaluation of health promotion**.