COST BENEFIT ANALYSIS

Continuing the series on consultancy, Adrienne Price examines relatively simple cost benefit analysis consultancy work of the type which nurses might conduct.

Table 1: Methodological principles of cost analyses

Chang and Henry's literature review suggests six principles for the conduct of cost analysis within health care.

- Analytical perspective: Conduct inquiry with a clear understanding of who pays the costs and who benefits from the initiative under review.
- Beneficial effects: Itemise the expected benefits that will accrue.
- Cost components: Detail the component costs – these may include start-up and ongoing costs associated with interventions.
- Discounting: Remember that costs and benefits may arise at different points – typically, benefits arrive after costs and possibly some time later. There may be a need to discount for this, acknowledging, for example, that with the passage of time costs may rise, and an intervention delayed may represent an intervention made more expensive to conduct (eg labour costs may rise).
- Sensitivity analysis: Ensure that you explore the impact of different options and the benefits at different points in time if the consultee has not specified at what point the benefits are to be judged.
- Efficiency measurement: Summarise what you understand to be the best option(s) in ways that demonstrate the benefits/cost savings over alternatives.

Most people's experience of a cost benefit analysis is drawn from the simple everyday process of budgeting. Given a particular budget limit, does a potential purchase represent good value for money?

While simple health care cost benefit analysis might still work with a very similar question, cost is not always understood in financial terms, and good value is not always represented as a comparison of purchases within a budget limit (Nas 1996). Within modern health care costs are just as likely to include the volume of time that staff might have to expend upon an initiative, or what a new project might demand of the trust in terms of skill mix review. Benefits might appear in a number of forms, at the corporate level in terms of more effective management, at the professional level in terms of more satisfying nursing care strategies and for the client in terms of a more coherent health care service (Nagaïke 1997).

Put simply, cost benefit analysis might be seen in terms of a system and involve consideration of several principles (Table 1) (Chang and Henry...
1999). That is, the consultant evaluates or measures the inputs that are necessary to achieve a given aim with regard to several different options – the costs. Then, an evaluation is made of the outcome that might accrue from each of the options in terms of which is best – the benefits, given the stated aim of the organisation, department or team (Fig 1).

This article will focus upon modest projects which do not assume that the consultee has a qualification in accountancy or economics, but which do regularly arise for the health care team. We shall make no pretence that this is as sophisticated as the large scale fiscal analyses conducted by management consultancies for big organisations.

For example, selecting which computer system and software to purchase for the recording of patient records, which course of action to follow when an aromatherapy service is to be included within a hospice, or which option to choose when educating a large number of nursing staff about research, could all be addressed through modest cost benefit analysis. As in the rest of this series, I will be assuming that the consultee (the person commissioning the consultancy work) is a manager or other executive of the organisation, while the consultant is a nurse.

**Cost-benefit analysis consultancy**

It is important to make a key distinction between cost benefit and other types of ‘purchase of expertise’ consultancies. All of these involve the consultee retaining the right to make decisions, either ignoring or using the recommendations of the consultant, they differ in the particulars of what they set out to do and the sort of work in which the consultant becomes engaged.

In evaluative consultancy the key questions are ‘how are we doing?’, or ‘is this initiative/service working well?’. The consultant looks back upon the initiative. In feasibility consultancy work the consultant assists the consultee to answer the question, ‘can we do this?’ (referring to a specific plan). In cost benefit analysis the emphasis moves to evaluation of which is the best way to achieve a particular goal, ‘how might we best go about reaching our aim?’. The consultant is asked to
advise on the options available, rather than to help the group or team work through decisions of their own (the subject of the final article on process consultancy).

**The process**

Several things need to be established with the consultee at an early stage. The first of these is what the aim of the organisation or team is. For example, imagine that a nurse consultant within a NHS trust has been charged with increasing evidence-based practice across the hospital. A preliminary review of research-educated staff in each of the departments suggests that this will be difficult to achieve, unless a critical mass of research, evidence-based practice facilitators can be established, one in each ward. The goal of the trust is to educate enough nurses to fulfil this role within one calendar year. A goal like this is relatively precise and should help the consultant to compare options and make accurate recommendations to the consultee.

The next challenge is for the consultant to establish what parameters the cost benefit analysis will be conducted within. Chang and Henry (1999) consider this in terms of 'analytical perspective' describing who pays the cost and who benefits from particular initiatives. For example, there is usually a budgetary consideration within a cost benefit analysis, but there may be other parameters as well.

In our example, the consultee might instruct the consultant that options are to be considered which have a minimal impact on staffing over the winter months. The trust board is mindful that education can involve taking key staff away from work and they consider that there is little leeway to compromise staffing levels in the next six months. It may be necessary to help the consultee review the parameters that they feel must be set, and this highlights the need for collaboration at the start of the project. The consultee may have had little time to reason through these parameters. They have been implicit in his or her mind, so now the consultant must tactfully facilitate a rehearsal of them.

In some projects the consultee has already identified some options that he or she would like explored. At this point it is worth inquiring whether these are the only options that the consultee wants reports upon, or whether there is an opportunity for the consultant to suggest additional ones. One of the key strengths of internal consultants in such projects is that they may come from different backgrounds to the consultee and might furnish additional options previously not identified. Such lateral thinking might make a considerable contribution to the organisation, provided that it has been agreed from the outset that additional options would be welcome in the analysis.

Having established the aim and the parameters of what is to be analysed, the next job is to consider what might count as costs and as benefits within each of the options. In some projects certain costs will exist across all the options. For instance, in an analysis of different computer record systems the comparable costs of installing and running the system will be a cost consideration across each of the systems reviewed. In other projects however, costs may vary by option. For example, a review of which is the best means to educate a large number of staff as evidence-based practice facilitators might involve four different options:

- **option 1:** sending suitable staff on a short course at the local university
- **option 2:** utilising a distance learning programme where the consultant nurse acts as local facilitator
- **option 3:** creating an in-house programme of research evaluation lectures and seminars
- **option 4:** sending two senior nurses on a short research evaluation course and then asking

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In cost benefit analysis the emphasis moves to evaluation of which is the best way to achieve a particular goal, 'how might we best go about reaching our aim?'
them to ‘domino brief’ key nurses in their own directorate.

Costs in each of these options vary. For example, option one involves a significant loss of staff from work, albeit over a relatively short period of time. The very staff members who have been targeted for this role happen to also be senior nurses with other portfolios of expertise. Costs associated with option two are minimal in terms of lost practice time, but more expensive in terms of nurse consultant mentoring. It has been agreed that the nurses should have reached a similar standard of research appreciation, no matter where they work. We can continue this with the other options, but what the consultant arrives at is a list of the cost dimensions that will form the basis of this project (lost clinical time, financial cost, facilitation cost). A similar process can then be conducted with regard to benefits – the plus outcomes of each option.

While we might imagine that benefit dimensions might directly mimic those used in the cost analysis, in practice this is not always so. For example, in the project illustrated above different options might offer varying levels of evidence, evaluation, and skill development. In some options this is ‘assured’ because it has been assessed as part of a formal course. In others it might be rather less assured, because the consultant nurse evaluates the learning from staff lectures and seminars subjectively. Consider the dimension of ‘local need-specificity’. This refers to the extent to which different options tailor-made the education for the role envisaged. Options three and four might score more highly in this regard.

Having identified the dimensions of cost and benefit that the project will use, the consultant is ready to start gathering data.

or seminars held locally, and the sort of speakers she or he had in mind. This interview is probably pivotal because it also informs the questions that could usefully be asked at the university. For example, concerning the degree of tailoring possible within the programme to address some very specific needs.

Once all the data has been gathered, analysis of the information begins. The consultant needs to ascertain the costs and benefits of each option, and to check that all details pertaining to these are accurate (for instance the cost of a course might involve some discount for a group contract). By the close of the analysis, the consultant is charged with making a recommendation for one or other, sometimes a combination of two or more options. Whatever the recommendation is, it will usually consist of a best fit compromise.

The option chosen may not offer the greatest number of benefits, but then the costs are the fewest of all those reviewed. The consultant uses the parameters agreed with the consultee to guide this analytical process. In our working example, parameters associated with staff time and cost may seem the dominant concern. However much the consultant nurse wants highly educated facilitators, a balance is going to have to be struck, so for now, in the year ahead one option wins out. Perhaps it is a distance learning option, with the strict proviso that promises on a discounted cost (for block purchase) and the fact that the nurse consultant acts as local course facilitator is confirmed. It is pointed out that such nurse consultant facilitation permits local illustrations and examples to be used as part of the package.
Table 2: Format for a cost benefit analysis report

This should clearly set out the focus for the comparison of options and may simply list the options considered — an 'at a glance' cover sheet summary.

Acknowledgements
Individual advisers should be acknowledged, but it is not normally necessary to name individual survivors from agencies who are bidding for a project. For example, a comparison of research education options should state the agencies tendering for the service, but their representatives are not normally named.

Contents page
As for evaluative report format, but several appendices may be included.

Summary
It should be made clear which options were being considered with regard to what aim. The summary should also make it clear what was concluded and which option(s) were recommended.

Introduction
This needs to be long enough to set the scene as to why a course of action has had to be debated. The introduction is important to the consultancy, not only as reader but also as user of the report. A well-organised introduction can be painted to by the consultant in support of final decisions made — i.e., 'This is why we proceed thus, and this is what was found.'

Report aim
This must be extremely accurate and succinct. For example, 'to recommend the most cost-effective way of educating 14 evidence-based practice co-ordinators to the standard detailed in Oakdale Hospital Trust Practice Development Plan (September 1998) during the course of 2000'.

Terms of reference
This section covers the parameters within which the consultant has been asked to work. If particular options have been directed as the focus for investigation then these should be detailed here.

Consultancy methods
These must be itemised clearly and in some detail so as to assure the reader that a thorough analysis has been conducted of all the options, taking into account what is involved in each. The consultant needs to know that the consultancy has covered relevant dimensions and been transparently fair, giving enough inquiry attention to each option. Inquiry methods vary widely dependent upon the nature of options under review.

Key terms
The dimensions used should be explained (cost and benefit ones) and any technical terms should be defined. For example, in a cost benefit analysis of different computer software for patient record keeping, this might include explanation of 'expandability' as a capacity of the system to grow with demand in the hospital.

Report (main body)
There are two ways of presenting this. First, each option can be examined in terms of costs and benefits before all are summarized in cost and benefit tables. Second, in terms of dimensions, so that each option is evaluated under the relevant dimension heading. The second approach works well when options share dimensions closely, for instance in terms of set-up and maintenance costs. The former works better when options are not quite 'too much a kind'.

Conclusions
Be decisive: how do you reach your conclusion (provide a brief account of process) and to what extent is your chosen option(s) a clear leader? Consultants sometimes acknowledge a close-run thing regarding the choice made and explain which parameter finally influenced their decision.

Recommendations
Beyond recommending a particular option it may be necessary to add some points about proceeding further. For example, in this article the selection of a distance learning option in the case study is subject to a competitive price being confirmed.

References
There may be many of these, for instance the specifications of equipment, the prospectuses of colleges examined. References tell the audit tale of the consultant's thoroughness in this instance. Because not all documents are referred to in text, the title might sometimes be changed to 'sources accessed'.

Appendices
Here is where to add the details of the inquiry questions, usually by option. They are important because the consultant may follow the recommendation and then be challenged on the fairness of the investigation.
### Fig 2. Simple cost table illustration (designing patient guide to scanning department)

<table>
<thead>
<tr>
<th>Cost dimension</th>
<th>Option 1 (hire writer)</th>
<th>Option 2 (outsource)</th>
<th>Option 3 (local product)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial costs (launch)</td>
<td>Modest: first draft available for £500 with option to request redraft at subsequent cost of £100 per draft</td>
<td>Considerable: project write to camera-ready copy quoted at £3,500 (most competitive quote of three)</td>
<td>Very modest: circa £200 for collation and secretarial work</td>
</tr>
<tr>
<td>Product development time (material creation)</td>
<td>Potentially expensive because of the process of correcting written work explaining what we require (if first brief not excellent)</td>
<td>Inexpensive, subject to accurate/full brief being prepared. Best quote confirms galley proofs available for review in 30 days.</td>
<td>Costly: Need to designate an author and attempt agreement of contents and illustrations. Stakeholders may struggle to reach agreement.</td>
</tr>
<tr>
<td>Risk factors (need for accurate and accessible information – corporate image)</td>
<td>Modest: The trust team held the final editorial decision and are responsible for correcting inaccuracies</td>
<td>Polished work likely, but risk that financial considerations dissuade us from requiring significant edits. Tension between cost and 'just so' product</td>
<td>Significant in this option. No-one in the team has experience of arranging tests for diverse client audience, judging 'fog factor' of text.</td>
</tr>
</tbody>
</table>

### Preparing a report

While the general report headings remain the same as for those in other purchase of expertise consultancy work, there are a number of nuances about cost benefit analysis report writing (Table 2). The first of these is the emphasis that must be placed upon setting out the dimensions of cost and benefit that were used by the consultant. This is akin to showing the working out of an equation in school or college.

The consultant needs to know exactly which dimensions were used, and how the consultant gathered and analysed information regarding these, in the judgement of each option. For instance, in the example we have been using above it is important to explain that one dimension of cost (staff absence from practice) was thoroughly explored within the inquiry. Local university staff were quizzed about the possibility of lecturers bringing the course to the hospital. Distance learning programme providers were quizzed about how they calculated the study effort of the materials that they sent to students. In short, it is important to convince the consultee that options have been examined fully and fairly, with regard to the dimension concerned. Because it is important not to clutter the main body of the report with lots of details, this usually means that these are best presented within the appendices of the report. There, lists of key questions asked at interview and issues explored can be itemised at the consultee’s leisure.

Because there may be several options under consideration, and sometimes a dozen or more dimensions in larger projects, it is often helpful to display the costs and the benefits of options side by side in one or more tables. In practice I have found it easier to present, and easier to read, if separate tables are used for costs and for benefits. A very simple table of this type is set out in figure 2. On the one axis are the dimen-

### References


sions of cost being considered. On the other axis are the options being considered. This format provides boxes or cells into which succinct comments might be added. This sort of data presentation is not only attractive to examine, but easy to refer back to. It does however assume that you have operationally defined all the relevant terms earlier within the report.

The process of summarising costs and benefits within such tables often helps the consultant to write the conclusion and recommendations. As in other reports it is important to reach a clear conclusion. A hunch potch of 'maybes' is likely to leave the consultant wondering whether the consultancy was worth it. Decisive conclusions and recommendations are, however, still measured advice. It is often necessary to suggest that the recommended option meets the parameters set, as long as these hold good. A best-fit option for a one-year plan could be radically altered if the plan was longer term, if funding were different, or if the nature of the aim changed. The process of investigation may have alerted the consultant to just how approximate a fit the best option still is. In these circumstances it may be necessary to allude to stakeholder misgivings within the opening paragraph of the recommendations or to alert the consultee to this issue verbally when handing over the report.

By the time the report has been drafted and revised it should serve as a document that can be read against the following checklist with confidence:
- does the report explain the scope of inquiry underpinning these recommendations? – the consultee wants to know you have searched all avenues diligently
- have the comparisons been conducted transparently and fairly? – the recommendations should clearly be based upon data found and a measured weighing of costs and benefits
- does the report show that the consultant had our best interests at heart? – consultants are serving the consultee, and not representing a particular stakeholder, someone who is bidding for a contract
- could I defend this recommendation at the trust board, or when our decision is made public? – this is an acid test, especially where contracts, money or opportunities for sectional interests are at stake. To do this the consultee must be able to understand the analysis and conclusions, and trust the integrity of work undertaken.

Cost benefit analysis consultancy can therefore be conducted on a modest scale and at departmental or even ward or team level within health care organisations. It need not be solely a financial evaluation, although monetary costs or savings are nearly always an important dimension. There is scope here for analytical nurses to use their organisational ability to conduct an inquiry, and their conceptual skills to identify dimensions which may be used to compare options available. Conducted with integrity and attention to detail, they can make a telling contribution, helping managers to spend money wisely, and to get the most from resources already available.

Summary of key points

1. Cost benefit analysis involves clearly defining what is meant by 'cost' and 'benefit'. This is usefully done by using dimensions of cost and benefit, against which options will be compared. Costs and benefits may not simply be financial.

2. To make the comparison of options the aim of the consultee must be clear and well understood. This helps to suggest parameters within which the analysis of options will be made.

3. Inquiry methods depend upon the nature of options under consideration. This said, reducing the comparison of options into a costs table and a similar one for benefits, is a useful way of reaching a conclusion about data collected.

4. The final recommendations must always attend to the project aim agreed. Your integrity as a consultant rests upon you not being swayed by the pleas or inducements of stakeholders consulted.